City of Austin

Watershed Protection and Development Review Department

Information Management Plan—*Final*

ESRI
380 New York Street, Redlands, CA 92373

Prepared for:

Mr. Philip Campman
Watershed Protection and Development Review Department
City of Austin
Austin, TX 78767
E-mail: Philip.Campman@ci.austin.tx.us

Prepared by:

ESRI
380 New York Street
Redlands, CA 92373
Phone: 909-793-2853
E-mail: ddjokic@esri.com

Change History

Version	Date	Description	Primary Author(s)
1.0	9/15/2006	First Submission	Dean Djokic
1.1	9/28/06	Inclusion of IMP Team Comments	Dean Djokic
1.2	11/21/06	Inclusion of CTM comments	Dean Djokic

Copyright © 2006 ESRI
All rights reserved.
Printed in the United States of America.

The information contained in this document is the exclusive property of ESRI. This work is protected under United States copyright law and other international copyright treaties and conventions. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system, except as expressly permitted in writing by ESRI. All requests should be sent to Attention: Contracts and Legal Services Manager, ESRI, 380 New York Street, Redlands, CA 92373-8100 USA.

The information contained in this document is subject to change without notice.

U.S. GOVERNMENT RESTRICTED/LIMITED RIGHTS

Any software, documentation, and/or data delivered hereunder is subject to the terms of the License Agreement. In no event shall the U.S. Government acquire greater than RESTRICTED/LIMITED RIGHTS. At a minimum, use, duplication, or disclosure by the U.S. Government is subject to restrictions as set forth in FAR §52.227-14 Alternates I, II, and III (JUN 1987); FAR §52.227-19 (JUN 1987) and/or FAR §12.211/12.212 (Commercial Technical Data/Computer Software); and DFARS §252.227-7015 (NOV 1995) (Technical Data) and/or DFARS §227.7202 (Computer Software), as applicable. Contractor/Manufacturer is ESRI, 380 New York Street, Redlands, CA 92373-8100 USA.

@esri.com, 3D Analyst, ACORN, ADF, AML, ArcAtlas, ArcCAD, ArcCatalog, ArcCOGO, ArcData, ArcDoc, ArcEdit, ArcEditor, ArcEurope, ArcExplorer, ArcExpress, ArcGIS, ArcGlobe, ArcGrid, ArcIMS, ARC/INFO, ArcInfo, ArcInfo Librarian, ArcInfo—Professional GIS, ArcInfo—The World's GIS, ArcLessons, ArcLocation, ArcLogistics, ArcMap, ArcNetwork, *ArcNews*, ArcObjects, ArcOpen, ArcPad, ArcPlot, ArcPress, ArcQuest, ArcReader, ArcScan, ArcScene, ArcSchool, ArcScripts, ArcSDE, ArcSdl, ArcSketch, ArcStorm, ArcSurvey, ArcTIN, ArcToolbox, ArcTools, ArcUSA, *ArcUser*, ArcView, ArcVoyager, *ArcWatch*, ArcWeb, ArcWorld, ArcXML, Atlas GIS, AtlasWare, Avenue, Business Analyst Online, BusinessMAP, Community, CommunityInfo, Data Automation Kit, Database Integrator, DBI Kit, EDN, ESRI, ESRI BIS, ESRI—Team GIS, ESRI—*The GIS Company*, ESRI—The GIS People, ESRI—The GIS Software Leader, FormEdit, GeoCollector, Geographic Design System, Geography Matters, Geography Network, GIS by ESRI, GIS Day, GIS for Everyone, GISData Server, JTX, MapBeans, MapCafé, MapData, MapObjects, Maplex, MapStudio, ModelBuilder, MOLE, NetEngine, PC ARC/INFO, PC ARCPLOT, PC ARCSHELL, PC DATA CONVERSION, PC STARTER KIT, PC TABLES, PC ARCEDIT, PC NETWORK, PC OVERLAY, PLTS, Rent-a-Tech, RouteMAP, SDE, Site·Reporter, SML, Sourcebook·America, Spatial Database Engine, StreetEditor, StreetMap, Tapestry, the ARC/INFO logo, the ArcAtlas logo, the ArcCAD logo, the ArcCAD WorkBench logo, the ArcCOGO logo, the ArcData logo, the ArcData Online logo, the ArcEdit logo, the ArcEurope logo, the ArcExplorer logo, the ArcExpress logo, the ArcGIS logo, the ArcGIS Explorer logo, the ArcGrid logo, the ArcIMS logo, the ArcInfo logo, the ArcLogistics Route logo, the ArcNetwork logo, the ArcPad logo, the ArcPlot logo, the ArcPress for ArcView logo, the ArcPress logo, the ArcScan logo, the ArcScene logo, the ArcSDE CAD Client logo, the ArcSDE logo, the ArcStorm logo, the ArcTIN logo, the ArcTools logo, the ArcUSA logo, the ArcView 3D Analyst logo, the ArcView Data Publisher logo, the ArcView GIS logo, the ArcView Image Analysis logo, the ArcView Internet Map Server logo, the ArcView logo, the ArcView Network Analyst logo, the ArcView Spatial Analyst logo, the ArcView StreetMap 2000 logo, the ArcView StreetMap logo, the ArcView Tracking Analyst logo, the ArcWorld logo, the Atlas GIS logo, the Avenue logo, the BusinessMAP logo, the Community logo, the Data Automation Kit logo, the Digital Chart of the World logo, the ESRI Data logo, the ESRI globe logo, the ESRI Press logo, the Geography Network logo, the MapCafé logo, the MapObjects Internet Map Server logo, the MapObjects logo, the MOLE logo, the NetEngine logo, the PC ARC/INFO logo, the Production Line Tool Set logo, the RouteMAP IMS logo, the RouteMAP logo, the SDE logo, The Geographic Advantage, The World's Leading Desktop GIS, *Water Writes*, www.esri.com, www.esribis.com, www.geographynetwork.com, www.gis.com, www.gisday.com, and Your Personal Geographic Information System are trademarks, registered trademarks, or service marks of ESRI in the United States, the European Community, or certain other jurisdictions.

Other companies and products mentioned in the ESRI Web site may be trademarks or registered trademarks of their respective trademark owners.

Table of Contents

Page

Executive Summary **1**

1.0 Introduction **3**

2.0 Current Information System **5**

2.1 Hardware 5
2.2 Software 5
2.3 Data/Database Design 6
2.4 People/Users 7
2.5 Workflows and Organizational Topics 7

3.0 Planned Information System **9**

3.1 Hardware 9
3.2 Software 10
3.3 Data/Database Design 12
3.4 People/Users 12
3.5 Workflows and Organizational Topics 13

4.0 Implementation Details **18**

4.1 Hardware 18
4.2 Software 19
4.3 Data/Database Design 21
4.4 People/Users 23
4.5 Workflows and Organizational Topics 24
4.6 Implementation Prioritization 26

5.0 Conclusion and Recommendations **32**

Appendixes

Appendix A—Notes from Meetings Held March 6–10, 2006 34
Appendix B—Internal Database Dependency Matrix 34
Appendix C—City Database Dependency Matrix 34
Appendix D—Grading by Category Matrix 34

Executive Summary

This document presents the Information Management Plan (IMP) for the City of Austin's (COA) Watershed Protection and Development Review Department (WPDRD). Development of the IMP is a continuation of the implementation of information management technologies at WPDRD. It builds on the studies performed by Camp Dresser & McKee (CDM) in 1996 and 1998 (Database Contract Summary Report). Since those studies were completed, several technological and organizational changes occurred that require the current update.

WPDRD has established an internal IMP team to lead the IMP implementation process. The IMP team performed the groundwork necessary for defining the current state of information technology in WPDRD and for identifying the future requirements. Particular attention was paid to the state of development of the department's geographic information system (GIS). ESRI has worked closely with the IMP team to develop the implementation plan. The following short-term goals were identified:

- Establish robust processes for quality data and analyses development.
- Create a centralized (enterprise) data environment that will facilitate easy access to all the data developed in WPDRD as well as interaction with external databases (City or wider).
- Ensure successful implementation of AMANDA.

To satisfy these requirements, the following recommendations are made:

- Hardware
    - Set up the department's central database server(s) environment for tabular and spatial data managed by department staff.
    - Utilize mobile computing for field data collection.

- Software
    - Implement the Oracle Corp. Oracle product for all relational database management system (RDBMS) storage needs.
    - Implement the ESRI ArcSDE product as the backbone for storage of spatial data.
    - Use the ESRI ArcPad product for development of light mobile solutions.
    - Move legacy applications into new (RDBMS, GIS) environment.
    - Implement a work order management system.
    - Implement a document management system.
    - Use ArcGIS geoprocessing/ModelBuilder functionality to develop custom GIS applications within WPDRD.

- Data/Database Design
    - Consolidate all data into an Oracle/ArcSDE environment and remove dependencies on legacy or personal systems.
    - Implement enterprise geodatabase design for all spatial data.
    - Develop data capture standards.

- Organize file structure and develop file naming conventions for storing documents and photos (in lieu of a document management system).

- People/Users
  - Hire new staff dedicated to implementation of enterprise data management system.
  - Train staff in geodatabase design, custom application development (SQL, geoprocessing, ArcPad) and ArcSDE operation/Oracle management to support enterprise implementation and to collaborate with and reduce dependency on Communications and Technology Management (CTM) staff for daily operations.
- Workflows and Organizational Topics
  - An information management coordination structure at the WPDRD level needs to be established to coordinate all the implementation activities and allocate resources.
  - Workflows for management of internal (department) database design and data collection and maintenance life cycles need to be developed and implemented.
  - Workflows for interaction with databases external to WPDRD need to be developed and implemented.

An incremental implementation approach is proposed. In this approach, small implementation steps are defined, completely implemented, and put into production before moving on to the next step. Any experiences developed during one step can be immediately used on the next, thus incrementally building know-how instead of having a long ramp-up time before any implementation activities can be performed. This approach is particularly valuable for geodatabase development (geodatabase design, data capture standards, data conversion/development). It is recommended to use the Drainage Infrastructure GIS project (DIG) as a prototype for IMP implementation.

WPDRD already has a lot of the capacity required for implementation of the IMP. Most of the activities involve streamlining current knowledge, processes, and technology and can produce very good results with a reasonable level of effort. While these initial activities are implemented and their results put into production, the more complex activities can be set into motion to eventually produce the desired result. This coordinated approach will ensure that all the activities work toward the common goal and there is no redundancy of effort.

1.0 Introduction

This document presents the Information Management Plan for the City of Austin's Watershed Protection and Development Review Department. While focusing on spatial technology (GIS), it also reviews other information technologies that can be utilized together with GIS to provide a better solution for current information technology practices at WPDRD.

Development of the IMP is a continuation of the implementation of information management technologies at WPDRD. It builds on the studies performed by Camp Dresser & McKee in 1996 and 1998 (Database Contract Summary Report). Since those studies were completed, several technological and organizational changes occurred that require the current update. Many of the recommendations from the 1998 report are still valid and should continue to be implemented. Conversely, there are several aspects of that report that are obsolete and will be refreshed in this study.

WPDRD has established an internal IMP team to lead the IMP implementation process. Based on the questionnaire provided by project consultant ESRI, the IMP team surveyed and interviewed WPDRD staff members broken into 24 sections. Based on these interviews, the IMP team has generated a series of documents describing the state of the information technology in WPDRD. These documents describe the relevant data, processes, and infrastructure used in WPDRD. The scope of these initial activities was to establish the overall picture of the information technologies in WPDRD and not to produce a detailed needs assessment report.

Following the initial interviews, the IMP team and ESRI performed a weeklong workshop during which each of the interviewed sections had the opportunity to discuss its views on the state of information technology implementation in WPDRD. During the workshops, the sections presented their current experiences, data needs, and expectations from a fully implemented information management system. The sections also tried to define their short-term goals for a successful implementation of the information management system in WPDRD (short-term success measure). Most of the short-term goals can be grouped as follows:

- Have robust processes in place for quality data and analyses development.
- Successfully implement AMANDA.
- Provide easy access to data developed by each section to other sections in WPDRD.
- Have easy access to the data developed by other sections and other City departments.
- Have an enterprise database that reduces the guesswork of where the data is and what it represents.

The interviews, workshops, and resulting documents form the basis for this document. Appendix A contains the summary of the discussions during the workshops. This document is not a detailed implementation plan with schedules, resource demands, and other implementation details but is a starting point for development of such documents (details on the proposed implementation process are provided in section 4.0). As IMP implementation in WPDRD progresses, additional, more detailed implementation and other technical

documents will have to be developed to address all the issues related to the IMP implementation process. This document can serve as a reminder of what these issues are.

In addition to this introduction, the document consists of three main parts: assessment of the current information system, view of the proposed system, and the preliminary implementation plan of how to get from the current to the proposed system. The Conclusion and Recommendations section summarizes the key findings.

GIS consists of five key components: hardware, software, data, people/users, and the procedures/workflows/applications/organization that tie everything together. These five components will be used in the document to describe the present and future information system at WPDRD and how to get to the final implementation.

2.0 Current Information System

This review includes current activities that will be implemented in the near future.

2.1 Hardware

Network capabilities within WPDRD provide adequate capacity for the department's current operations. It is important to note, though, that by moving the data and applications into a server environment, different demands are placed on the network infrastructure, so close monitoring of network behavior needs to be maintained as enterprise implementation at the WPDRD level is executed.

WPDRD is almost exclusively using the Microsoft Windows operating system and compatible hardware for its daily operations. The current desktop hardware seems to be satisfying current needs.

WPDRD has access to the City-wide network and information system. The CTM Office manages several resources that WPDRD utilizes. These include the centralized shared server space (drives G and H) as well as Oracle RDBMS and corporate ArcSDE environments. For WPDRD, access to the ArcSDE environment is read-only (updates are provided by WPDRD to CTM in the form of shapefiles that CTM then loads into ArcSDE), while the Oracle access is read/write. It has been noted that there is a lack of storage space on the shared drive. This issue was being addressed at the time of the workshops.

WPDRD does not extensively use mobile computing for its field operations. A few sections have laptops that are used in the field, but even those are not used to their full potential.

2.2 Software

WPDRD is almost exclusively using the Microsoft Windows operating system and Windows-based software. Besides general productivity applications (Microsoft Office), WPDRD uses the following data management applications on a regular basis:

- Microsoft Access 2000/2003
- Oracle
- Hydstra/TS
- ESRI suite of GIS applications
- Various modeling packages
- Internally developed applications
    - PIER
    - ROWMAN
    - AMANDA (in development)
    - Other
- CAD (Autodesk AutoCAD and Bentley MicroStation and a suite of design applications)

Notable omissions include a document management system and a work order management system (besides a rudimentary home-grown system in place in Field Operations). At other City departments, MRO's Maximo (which can be used as a work order management system) is being implemented (but as an asset management system), and Hummingbird's DM is being implemented as a document management system (EDIMS). While using standard applications across the City is desirable, it is important that these applications meet the department's business requirements. If these requirements are not met, other applications should be considered.

Each section uses a variety of applications in its daily operations. These applications vary depending on the section's business requirements (reporting, data entry, modeling, etc.). Some of the applications are shared between the sections (e.g., PIER), while others are used by sections independently from the rest of WPDRD. Several existing legacy applications became obsolete with changes in technology and have not yet been updated to operate in the new environment. It is a prevailing view that more customized GIS and RDBMS solutions would significantly increase the department's productivity.

More complex custom solutions are developed by CTM. CTM supports many of the departments within the City. While this arrangement is beneficial for the overall Citywide IT implementation (coordination of technologies between the departments, standardization of custom application development within the City, consolidation of licensing, etc.), it can pose obstacles for development of department-specific high-priority applications (lack of control over the resources dedicated to the project) and long-term custom application maintenance.

2.3 Data/Database Design

The department is a large producer and user of data. Appendix B presents various internal databases and data sources that different sections use and/or maintain. As expected from an organization that deals with diverse topics, data complexity, quality, implementation technology, and frequency of use varies widely across the sections.

Data is not stored in a centralized database but rather resides in a number of locations and underlying tabular database management software (Oracle, Microsoft Access and Excel) and spatial formats (ESRI shapefile and personal geodatabase). Most of the widely used data layers/databases reside in shared directories that are accessible to the whole department. Some of the layers, though, are local to the section that owns them and are not easily accessible to others.

More complex datasets (e.g., infrastructure) are not complete and impede efficient execution of the department's functions. Several of the datasets are currently in the process of being redesigned and collected (DIG, Pond) as part of GIS Capital Improvement Projects (CIP). Data collection is an ongoing process (not just maintenance of the data but actual collection of data that has not previously been collected in digital form). Infrastructure easement information has been identified as one of the most important sources of information that is not available as a complete GIS layer/database either at WPDRD or the City level.

Besides spatial and tabular data, WPDRD collects extensive digital photos and hard-copy documents of facilities and problem areas. The digital data is not organized or managed through a document management system but rather resides on CDs, shared server space and various personal computers as a collection of files in different formats while the hard-copy documents are scattered throughout several storage locations within the main administration building (OTS) and satellite locations (service centers, etc.). The location of these documents and the organization of the disk structures where they reside are not centralized, and each section maintains its own documents, making it difficult to share with other sections.

The department uses many external datasets (databases) in its daily operations. This data originates in other City departments and at the county, state, or federal levels. Appendix C presents the external data that WPDRD uses on a regular basis. Several external databases are used by a number of sections within WPDRD. The CSR/311 database is the most utilized one with seven sections using it, followed closely by the Travis Central Appraisal District (TCAD) Web database with six. Several sections are heavy users of the external databases. The Floodplain Management section leads the way with twelve databases utilized, followed by the Brownfields section with seven.

Interaction between WPDRD and the external data providers needs improvement both in how WPDRD sends its data to external providers and how external data is made available to WPDRD. Though some of the external data is easily accessible to WPDRD, several of the external databases important to WPDRD have limited accessibility and thus prevent efficient operations in WPDRD (CSR/311 in particular). During the workshops, several sections identified the access to external data as a significant problem for their operations.

2.4 People/Users

Most of WPDRD's staff is skilled in general use of computers (standard productivity software) and custom applications as they pertain to staff members' daily use. General skills in information technology (RDBMS, GIS, custom development) vary and are concentrated in a few groups whose business focus is information technology. Most of the other users rely on custom applications to perform their daily activities.

Simple automation of routine daily operations is done using any tools that the users are comfortable with. Custom development of more complex applications is done by CTM. During the workshops, many of the users expressed the feeling that they were not trained enough in IT technologies (GIS, RDBMS) and that such training would increase their productivity.

2.5 Workflows and Organizational Topics

Workflows tie the department's operations together. Many are in place either through applications or as part of everyday operations. The discussion in this document focuses on workflows in place for generating and correcting spatial data and its use. Most existing workflows are currently based on informal processes (knowing the people that are doing the data entry and passing the relevant information to them).

One of the organizational problems related to the data in WPDRD is the lack of clear ownership assignment to each dataset collected by WPDRD. Although there might be multiple groups collecting data for a single data layer, there can be only one group that is ultimately responsible for the quality of the dataset. That group is in charge of setting database design and data collection standards and performing the final quality control on the new or updated data.

During the workshops, several sections described the lack of a clear process for capturing the data that is not their responsibility but that they still gather during fieldwork. Besides the ownership problem just described, the other basic problem is the lack of common database design and standard procedures on how to capture the data. Thus, each group views a feature or an event that needs to be captured as an independent entity (from other groups) and collects only the information pertinent to its program. This results in each section collecting and storing partial data in its own format and not communicating that information to other sections. As a consequence, data about the same feature is collected multiple times by several sections using different data capture techniques/standards and stored in different formats.

Another missing workflow was related to the update/correction process of the existing data. This issue is also a direct result of the lack of formal data structure both in terms of layer ownership as well as established database design and data capture standards. If those were in place, data update workflows could be put in place as well.

Several of the sections also identified difficulties in obtaining timely data from other City departments or submitting data to the City. This is a problem due to both technical as well as organizational issues. (The CSR/311 system was identified as being especially difficult to interact with and take advantage of.)

WPDRD has an organizational structure (the GIS/Database Committee) whose original responsibility was to provide the guidance and coordination of information management within WPDRD with a focus on GIS technology. This committee provides technology recommendations to the CIP Advisory Committee. Over the years, however, the character of the GIS/Database Committee changed. With no established separate information technology user group to discuss technical or organizational issues, the committee was altered from a guidance committee to more of a power user group. As such, it lost some of the representation that it needs to have as a guidance entity

There are several CIPs related to the information technology implementation that are currently in progress (e.g., development of DIG and Pond databases). Several more projects have been requested but have not been funded yet (e.g., development of triangulated irregular networks [TIN] for the extent of the city watersheds).

3.0 Planned Information System

This section describes the optimum (by today's standards) implementation for information management in WPDRD. The way to achieve such implementation is presented in section 4.0.

3.1 Hardware

Three key components of hardware are discussed: desktop, server, and mobile.

Desktop

Most of the current desktop computers are sufficient for WPDRD's operations. A normal hardware update cycle should ensure that the desktop hardware stays current. For individual heavy GIS users, it is recommended that dual CPU computers become standard. They provide significant performance increase during heavy data processing for a relatively minimal increase in price. Memory and hard drive space are important and need to be properly sized (use GIS and OS system vendor recommendations for a high-end system). For users involved in visualization, a high-end (gaming/OpenGL) graphics subsystem is recommended.

Server

It is envisioned that the hardware infrastructure will continue to be maintained by CTM. Four types of servers might be necessary, depending on the data and application loads and final implementation:

- Data server: Where the finalized enterprise spatial and RDBMS data will reside
- Data development server: For development of large datasets (e.g., terrain model)
- Application server: For serving applications that are common to multiple sections or require large supporting datasets
- Web server: To support Web access to the data and applications

Enterprise data is defined as data (whether spatial or tabular) that is gathered and maintained to support missions within multiple sections or for department level initiatives. Enterprise data differs from Corporate data in that Corporate data is gathered and maintained to support cross-department endeavors or to satisfy multiple (and possibly unrelated) department initiatives. At a minimum, the data server will be needed to host enterprise spatial and tabular databases. The idea behind the central department data server is to gather in one place (including both hardware and software environments) all of the department's data. This will be stored in an RDBMS (Oracle). Spatial data will be managed in the RDBMS through ArcSDE. This implementation facilitates the exchange of data with the City's servers, since both would be using the same technology, and thus avoids the issues of data format conversion when up/downloading data between the two environments (shapefile/ArcSDE conversion).

WPDRD will have full RDBMS and ArcSDE management capabilities on the data server; that is, WPDRD will be able to create and edit database and ArcSDE instances residing on hardware maintained by CTM. This will enable WPDRD to have the flexibility needed to fulfill its operational requirements.

The physical organization of the servers will be determined during the implementation process. Many different configurations are possible, and the key issues that need to be addressed early on are the flexibility of the system to grow as new requirements are put on it and how to integrate it into the existing IT infrastructure (use of existing servers). The current process of hardware upgrade request can be maintained, that is, WPDRD will, on an annual basis, estimate its future server hardware needs that will then be implemented through CTM.

Mobile

Two types of mobile computing are envisioned. For heavy field data collection, a PDA type of device is recommended. These devices are lightweight and rugged and can be integrated (i.e., combined PDA and GPS units), favoring work in difficult field conditions. While convenient for field data collection, the PDA solution is limited in the functionality it can provide, so for more complex requirements, laptop/tablet solutions are recommended. These units can implement full GIS and RDBMS technologies that might be required to support more complex field applications (for example, generation of on-site reports, citations, receipts, or bills). Laptop/tablet approaches are already under development in support of some AMANDA-specific work processes; however, this technology should be expanded to support other work processes which involve field collection of data.

Each of the two mobile environments has its pros and cons and each will be more appropriate for a particular set of tasks in the department. It is expected that both types of devices will be implemented to meet the particular field demands.

At this time, real-time mobile connection to the City's network is not envisioned, as few of the sections have identified this as a critical issue. Basically, the data updates in the field are not immediately communicated to WPDRD's databases via wireless communication, but rather they are held in the mobile device until the person is back in the office and synchronizes his/her mobile device with WPDRD's database. The need for real-time mobile communication will increase, though, with the wider use of the work order management system and a maturing GIS to minimize travel time for the field operations division and related workgroups which spend a majority of their time in the field.

3.2 Software

From the information technology point of view, WPDRD already has access to the required CAD, RDBMS, and GIS software, but does not use document management or work order management systems. The following utilization of the key software technologies is envisioned:

- RDBMS—Full implementation of various currently dispersed databases into Oracle and ArcSDE (for spatial data). Interfaces to the Oracle database can be established through

different applications (other RDBMSs like Access, Excel, ArcGIS, Oracle custom forms, etc.), but the underlying data will be stored in the same RDBMS system. As legacy databases are moved into Oracle, the applications that were developed on top of them will have to be transitioned as well. (That was one of the reasons for keeping the legacy databases still active.)

- GIS—Full implementation of GIS technologies.
  - Server-side GIS for enterprise spatial data and application management
  - Full implementation of geodatabase technology and design
  - Mobile GIS for field operations
  - Utilization of geoprocessing and ModelBuilder functionality for capturing desktop-based data and application processing workflows
  - Development of customized solutions for standard GIS operations

- Work order management/infrastructure maintenance system—To maintain the department's infrastructure, work order management software closely integrated with the RDBMS and GIS would be beneficial. Such an implementation would leverage the existing database implementation at WPDRD and add functionality that is currently lacking. Early discussion at WPDRD and at the City level points to MRO's Maximo application as the likely candidate. Maximo is currently being implemented at Austin Energy, Austin Water and Public Works; however, the current implementation focuses on Maximo as an asset management system. CTM has in-house experience with this software and supports it at the City level. The decision on which software to implement should be based on the department's needs. The approach should be to assume that Maximo will meet the criteria (as it has many positive aspects), then see if it does not meet specific department requirements.

- Document management—An integrated (with RDBMS and GIS) document management system would benefit WPDRD since it manages many different types of documents. It is important to note that photos are a type of a document and should be managed through a document management system. As with the work order management system, WPDRD should review the current implementation of a document management system at other City departments, and unless the City's Enterprise Document and Image Management System (EDIMS) does not meet the department's needs, it should be implemented.

WPDRD would continue using other types of software that do not fall into the four general categories that were discussed so far. If opportunities exist to replace the current applications with newer versions that more tightly integrate with the base RDBMS and GIS technologies, then such exercises should be performed (e.g., replace the older versions of GeoRAS that operate in ArcView 3 with the new ones that work in ArcGIS).

It is important to note that, while critical for efficient data management at WPDRD, consolidating all data into a single database management system is just the first step in the process of developing an efficient end user system. The database needs to be supported by a suite of applications that will simplify users' interaction with the system. The key is that non-IT users should not have to know software intricacies (whether it is RDBMS, GIS, work order, or document management technologies) to complete their everyday tasks.

A suite of productivity applications should be developed to minimize repetitive manual operations and thus increase productivity and reduce opportunities for introduction of errors. These applications would include the general categories of reporting (development of standard reports, maps, letters of notification, bills, etc.), data entry (batch population of derived data, quality control that is not available out of the box), and data/information dissemination. These applications should complement the current suite of applications whenever possible (e.g., a GIS application to support AMANDA beyond what is currently planned). They should be customized for particular group needs to optimize the efficiency of each group. Trying to develop a single application that all groups within WPDRD would use in the same way will not be productive due to the diversity of operations that different groups within WPDRD perform.

3.3 Data/Database Design

Implementation of geodatabase design, data maintenance workflows, and GIS field data collection will simplify the data capture process and ultimately result in better quality and more timely datasets. The established geodatabase design principles (data design and capture standards) will facilitate efficient development of new data structures when additional data types are to be added to the existing database.

It is important that as the data is moved from the current formats (personal databases, shapefiles) into the enterprise database, it is cleaned as much as possible, that is, the data that goes into the enterprise database is "correct". The process of moving the data into a correctly designed geodatabase will serve as an immediate quality control on the data being imported. Activities like validation of attributes, connectivity, topology, and so forth, can be performed using standard, out-of-the-box data editing tools. Every such opportunity should be taken advantage of to minimize the need for later data cleanup.

3.4 People/Users

To support custom configuration and development, it is envisioned that more of the core RDBMS and GIS capabilities will be developed within the sections/workgroups, which in turn would mean less reliance on CTM or specialized department sections to fulfill section level missions. This capacity building is intended to facilitate quick response time to changing needs within a section. For example, each section should be able to update a database, generate ad hoc reports and maps, or compose a simple data processing/analysis workflow using ModelBuilder with little or no help from CTM.

WPDRD should take over the responsibilities for entry and maintenance of WPDRD's data in the enterprise environment. Dissemination of department data to other City departments would be done through a data dissemination server, preferably the existing Corporate SDE server. The data development environment will obviously be a read/write environment that WPDRD will have full control over but other departments will have no direct access to.

A clear definition of roles and responsibilities between the WPDRD and CTM needs to be defined in order to eliminate any potential confusion on which tasks are performed by which

group. If there are any overlapping tasks (done by both groups), clear communication workflows need to be developed for that activity coordination.

An example responsibility matrix is presented to demonstrate this concept. It identifies which responsibility is domain of which organization. This table needs to be refined as the IMP implementation progresses.

Example Responsibilities	**WPDRD**	**CTM**
Establish programming standards		X
Program client side applications	X	X
Program server side applications		X
Determine storage needs	X	
Provide storage space		X
Administer departmental SDE data	X	
Administer departmental SDE database servers		X

3.5 Workflows and Organizational Topics

Workflows

As mentioned in section 2.5, workflows tie the department's operations together, and the focus on workflows in this document is on spatial data creation and updates. A number of other workflows will be already in place through implementation of AMANDA and will not be discussed here.

This section assumes that the formal database design is completed and that all the correct information (metadata) about the layers used in WPDRD are properly established. Many of the questions/processes asked here will already be in place after the formal geodatabase design for the layer is completed. They are identified here to bring attention to the close interaction between the database design and the workflows for data collection and maintenance.

WPDRD needs to have several workflows in place to effectively execute its business across all the sections. The more sections that are involved in generating and using the data, the more important it will be to have proper workflows in place. The following workflows are envisioned:

1. **Database design coordination:** The focus of this workflow is managing the change in the current database design. For each layer that is shared among the sections, there needs to be a formal process in place that defines the following:
   a) Who is the custodian of the data model?
   b) Who initiates the request for changes to the data model?
   c) What is the format for the requested changes (name of the field to be added, reason for renaming an existing field, proposed change to the collection method, impact on existing applications, etc.)?
   d) Which person or group receives the request for change?

e) What is the process for approving or denying the change?
f) How is the change documented?
g) How is the information about the change disseminated to all interested parties (internal as well as external)?
h) How are the consequences of the change managed? (For example, if a change in database design requires change in an existing application, how is that request executed?)
i) How are all these aspects of a database change coordinated and sequenced?

2. **Data collection process:** The workflow in this section deals with the creation of new data. For each layer, whether shared or not, the following needs to be in place:
   a) Who is the custodian of the data model?
   b) What is the physical database design for the layer?
   c) For each attribute, define methodology or multiple methodologies for collecting that value (e.g., field collected, calculated). Whenever possible, calculated processes should be used to minimize errors. Calculated values should be implemented through a tool to define the methodology and reduce potential errors.
   d) For each attribute, identify when in the data collection process it is captured (e.g., during stream walk-through, engineering survey, emergency response). This will also identify which section will collect the initial data.
   e) What is the process for QC, data verification, and final publishing of the collected data? It is quite possible that although one section is the custodian of the data (and as such has the ultimate responsibility over the dataset), another section will be the one who will be collecting the initial information, so such processes will be critical for establishment and maintenance of a high-quality database.
   f) How will it be communicated to other sections that there are missing features in an existing database for which they are the custodians? For example, during a stream walk-through, one section identifies a structure that is not represented in the database but is not part of their custodianship. In this situation, three different approaches can be envisioned, depending on how important this structure is for the section which is the custodian of the feature. In all three cases, the current field team makes a note (digital) about the existence of the "missing" structure. This note would contain at least the rough location of the structure and its general description to facilitate further dissemination of that information to other sections.
      i) Structure not important. Upon the return from fieldwork, this note is stored in a database where other sections can see it and use it as a reference that such structure exists.
      ii) Structure important but not critical. Upon the return, the note automatically generates the request to the responsible section to do the survey of the structure.
      iii) Structure critical. The section in the field performs a field survey of the missing structure (although it is not in their custodianship). The survey might not be complete for all the attributes, but it will cover the critical attributes for the custodial section. (For example, the section doing the fieldwork might not have the necessary skills to make some judgments, so that part of the survey will have to be completed later by the custodial section with those skills.) The collection methods should follow the same standards that the custodial section would follow if they did the survey themselves to minimize duplication of fieldwork. Upon

return from the field, the data is loaded in the database and the custodial section is notified about the addition so they can complete the survey if needed.

g) How will updates to department-owned data be communicated to WPDRD from outside agencies? This is a variation of the previous set of workflows when the "discoverer" of the missing facility is outside of WPDRD (or the City).

3. **Internal Data update process:** The workflow in this section deals with correction of data already in the database. It deals with similar issues as creation of new data but might follow slightly different paths, so it is identified separately to highlight that fact.

4. **External data update process:** The workflow in this section deals with interaction with data residing in data systems outside WPDRD (city, county, state, and federal). WPDRD interacts with various other databases that are generated by other departments or external agencies. Workflows for exchanging (receiving and sending) data with these databases need to be defined. This will be a rather complex process since it involves other agencies and technologies that have their own peculiarities over which WPDRD has no control. The critical issues that have to be dealt with involve

   a) Timeliness—Workflows need to accommodate the time frame when the data is needed in WPDRD (e.g., monthly updates will not be sufficient if WPDRD needs to make decisions based on daily events).
   b) Access control—This is often the main stumbling block in interaction with other databases because the owners of the data seldom want to provide direct access to their data to other agencies. The concern is the security of the core data and the database infrastructure. These are valid concerns, but there are many workarounds to this problem that do not compromise the security of the core data and still provide reasonable access to the underlying data. Such processes can be put in place and provide a viable alternative to providing access to external entities. For example, an agency can provide a daily "dump" of changes to their database that other agencies can harvest for what they need. This dump can be in the form of a documented XML structure that is generated by the data developer and posted in a location outside of the agency's firewall, thus eliminating the risk to the core data system. The external users will only see the XML and do not even have to know the source of the information or the underlying technology used to store it.
   c) Exchange format—Some formats are easier to use than others. XML structures are becoming prevalent as the method of data/information exchange and in general are recommended for such purposes. The only time when XML is not recommended is when massive volumes of data have to be exchanged. In that case, custom binary structures will provide better efficiency (space and speed) but will make the process more convoluted. In general, massive data exchanges should be performed only once and then only the changes need to be tracked for which XML structure might be appropriate (transaction updates).

The way the workflows will be implemented will vary. What is important is that they are all documented, even if it is just denoted to call the current data custodian in case an event happens. Any of the necessary workflows might have a set of tools/applications associated with them. For example, a Web site might be built to allow addition of new features to the

database. Depending on who accesses the application (using the login), the application might permit different levels of entry. For a general public user, it might ask only for a rough location of the new feature and its type, while for a member of the custodial section, it might ask for a full data entry record.

Organizational Topics

One of the important organizational issues is the coordination of information management and, in particular, GIS practices within WPDRD. The key function of this organizational structure is to get the input from all the sections that are involved in GIS activities, coordinate and prioritize them at the department level, and then present them to WPDRD and City management as a unified department view. The existing organizational infrastructure that is in place for CIP review is recommended (with refocus as described later on). It currently consists of four tiers; however, a fifth tier is recommended (four at the Department level and one at the City level):

Name	Role
Corporate GIS Operating Board	Coordinate activities at the City level. Ensure adequate resources are being allocated. Hold Departments accountable for the activities for which they have taken responsibility.
Lead Team	Approve proposed activities.
CIP Advisory Committee	Prioritize and recommend proposed activities.
GIS/Database Committee	Gather input from individual sections. Provide discussion venue for sections. Coordinate all inputs. Develop key GIS topics and estimate required resources at department level. Advise CIP Advisory Committee on department's GIS topics and resources.
GIS User Group (new)	Discuss technical or organizational issues which are beyond the scope of the GIS/Database Committee and present results to the GIS/Database Committee for approval.

The GIS/Database Committee needs to be refocused to its original mission—to be the venue through which all sections participate in the discussions related to implementation of information technology in WPDRD. This will require that all sections participate in the committee through representation and that the committee moves away from being a technical user group and becomes a coordination entity. The GIS/Database Committee should also serve as a coordination entity that coordinates activities between CTM and WPDRD. For example, if new implementation standards/methods/tool are established at CTM, they will be communicated to WPDRD through a CTM liaison that is a member of the GIS/Database Committee. Conversely, if WPDRD leads an IT initiative, it will be communicated to CTM so the rest of the City can benefit from it. This coordination should cover both technical and organizational aspects.

To promote technical sharing within WPDRD, it is recommended that a GIS User Group be established to play the role that the GIS/Database Committee is currently playing. As IMP implementation progresses, this group will have increased importance as more technology

will be available to share between the sections. This group can also serve as a technical branch of the GIS/Database Committee. That is, it can take on technical issues that are beyond the scope of the GIS/Database Committee. For example, many general decisions regarding details of a geodatabase design (e.g., should there be a limit to the length of an attribute name or should attribute names be upper, lower, or mixed case) can be made at the user group level and presented to the GIS/Database Committee for approval.

Although utilizing the Lead Team and CIP Advisory Committee to provide support for GIS activities leverages existing Department organizational infrastructure, the issue that will have to be resolved before this proposed strategy is accepted relates to the capacity of the two entities to perform such a role with respect to their available time and domain knowledge.

The fifth tier in this structure would be oversight from the Corporate GIS Operating Board (CGISOB). The CGISOB has been established as a formal mechanism for the decentralized GIS groups within the City to communicate more effectively with each other, establish standards, and coordinate major projects. By providing regular reports to this body, an accountability mechanism would be established that ensured department initiatives follow corporate standards and methodology. It would also allow the department to state resource needs.

An additional tier also exists, although it is not identified here as a separate organizational structure. This tier represents general GIS users within each section. They will have to discuss their needs within the sections and, through their representative, report them to the GIS/Database Committee. It is envisioned that all GIS users will participate at that level. For technical issues, they will also be able to take advantage of the GIS User Group.

4.0 Implementation Details

This section expands on section 3.0 and describes some of the critical implementation issues that need to be resolved during the implementation process.

4.1 Hardware

Since hardware technology changes rapidly, investment in hardware should be done more frequently than has occurred in the past. For example, a five-year server infrastructure plan can be made, but the purchasing should be on annual basis to cover the needs for one year ahead only. This will allow the department to have the most cost-effective hardware as well as to react to any significant departures from the plan by either slowing down or speeding up the infrastructure investment depending on the short-term implementation realities. This approach matches the current process (annual hardware requests). With proper organizational structure in place as discussed in section 3.5, all department hardware needs can be put together and presented to CTM as a single requirement, making implementation more streamlined.

Desktop

A regular hardware update cycle should be maintained to ensure that the desktop hardware stays current.

Server

Server needs will increase significantly as the enterprise implementation progresses. As data is moved from local machines into the central location (whether it is data moving from personal databases to enterprise RDBMS or photos moving to the shared drive or a document management system), the requirements for storage and speed of access will increase. Addition of new datasets (e.g., terrain data obtained from lidar surveys) can in itself dramatically increase the storage requirements. Centralization of the data will also increase the demand on the network resources as traffic will increase. The department needs to work with CTM to identify the best strategy to keep the server components flexible since CTM will be responsible for hardware maintenance and can leverage requirements from other departments to increase the purchasing power.

It is also important for the department to utilize its existing resources to their full potential before requesting more. Obviously, one problem that has manifested is the proliferation of similar (and oftentimes identical) datasets on the shared file server. There are several reasons why this duplication was thought necessary such as ambiguous ownership of datasets, competing data entry processes, differing data collection standards, etc. When existing data is being vetted for incorporation into the enterprise RDBMS or SDE, duplicate data files (shapefiles, access databases, etc.) should be rooted out and removed from the shared server space. Theoretically, an increase in data on the SDE server should correspond to an equal or greater decrease in data stored on the shared file server as these redundant datasets are removed.

Mobile

Mobile technology requirements are all about streamlining the field operations data collection. It should be chosen based on a close fit to the requirements, not leveraging the volume purchase approach. Any savings in the cost will most likely be lost due to decreased productivity if the equipment does not meet the exact field user needs. The software requirements for the hardware are driven by the data collection applications (ArcPad or ArcMap). Once these hardware requirements are met, all other requirements should stem from the field conditions the device will be used in and peripheral units it will have to communicate with (e.g., GPS, survey units, digital cameras, printers).

While server technology changes rapidly, mobile technology changes even more rapidly. Mass purchases of mobile technology for future needs are not recommended since the equipment is often obsolete within a year. Given that WPDRD does not have extensive experience with mobile devices, it is recommended that a few devices of each type (PDA, tablet, laptop) with accompanying accessories (GPS, digital cameras) be purchased and placed in immediate field use to develop and refine the field experience and, from that, develop better mobile equipment requirements.

It is also recommended that the department participate and support any Citywide mobilization efforts. CTM has a capable and established wireless communication division which should be leveraged as much as possible for such things as hardware standards, mobile communication standards and technology guidelines. In addition, since mobile computing and technology is a trend that is increasing in all parts of the City, the department should be proactive in communicating its needs in advance of any corporate initiatives dealing with mobile issues. The department in turn should focus its attention on addressing issues that are unique to its environment and user needs.

4.2 Software

Part of WPDRD's responsibilities includes inspection and maintenance of various facilities. In that respect, the department behaves as a utility, similar to Austin Water and Austin Energy. This part of WPDRD operations generates work orders that have to be performed on a daily basis. Currently, WPDRD does not have a centralized work order management system, which generates a number of inefficiencies.

Current tracking is done through disparate datasets, including several Access databases, the 311/CSR system, and paper documents, which is inefficient, confusing, and time consuming. Since WPDRD does not have an established tracking mechanism for service and maintenance requests, data collected on facility conditions from ad hoc fieldwork and formal field assessments (e.g., creek walks) often is not acted upon completely, or at all, or is acted upon with significant delay that could be avoided.

Maintenance records currently have no ties to the GIS system, which makes spatial analysis of past work performed extremely difficult, if not impossible. With no tie to the GIS system, work orders are usually created and associated to a physical address rather than infrastructure.

This can make finding the actual problem difficult since addresses are located in streets and much utility infrastructure is not in the street (channels, ponds, creeks, etc.).

Implementation of an integrated work order management system provides many opportunities to streamline WPDRD maintenance operations. For example:

- Actual usage of materials can be calculated and used for better budget planning.
- Impairment of facilities can be documented in a maintenance management system following field inspections to allow easy GASB 42 reporting on infrastructure.
- Maintenance activities can be used to flag features which need to be updated in the GIS due to changes performed in the field.
- Work reporting with a maintenance management system can generate reports that show the costs associated with maintaining infrastructure. This can be used to guage whether or not the department is allocating the proper amount of staff to maintenance needs and what type of infrastructure is requiring the most maintenance.
- Regular maintenance activities can be scheduled in advance and their execution grouped and optimized.

Implementing GIS and a maintenance management system at the same time offers the opportunity to integrate the two systems from the ground up, which avoids the "data silo" syndrome and the need for a costly integration retrofit. Since CTM has experience implementing for Austin Energy, Austin Water and Public Works, and since they are going to issue an RFP to convert Austin Energy's distribution maintenance group to Maximo for work order management, WPDRD can leverage that experience and streamline the implementation for the department. Implementing a work order management system supports "maintaining the integrity and function of WPDRD assets," a Master Plan goal.

As the enterprise solution for information management is implemented within WPDRD, communication between software components becomes more and more important. The lack of ability of different components to communicate with each other will prevent implementation of integrated solutions and generate inefficiencies in the system. As new software components are added to the system, it is critical that they are able to communicate with existing elements of the information infrastructure. At this point, the two main missing elements in the system are the work order management system and the document management system. As these are being selected, they need to be evaluated with the perspective of system integration with RDBMS and GIS as well as on their own merits.

Existing technologies need to be implemented to their fullest extent, thus leveraging the existing investment. This includes both the enterprise RDBMS (Oracle) as well as GIS (ArcGIS). More complete implementation of these systems will reduce redundancy (keeping data in several RDBMSs) and replace custom applications or workflows with functionality embedded in the core software (e.g., data replication, versioning, disconnected editing, and history maintenance).

Applications given priority in implementation should be those that are either very easy to implement to get quick return on the investment (e.g., Arc Hydro), their current implementation requires expensive maintenance (e.g., legacy applications), or their

implementation would significantly reduce manual labor. The software implementation process needs to be coordinated with hardware implementation and data development exercises. It does not make sense to implement the software technology if there is no data to manage or hardware platform to implement on.

To take the best advantage of the investment in information management technology, the core software should be tailored to meet specific section needs. Most of the core applications have extensive customization capabilities (e.g., configuration, scripting) that can be used for such development. Specific software configuration of generic underlying technology for each section allows the sections to focus on their workflows instead of having to modify their workflows to accommodate the core software behavior. Having said that, it is also important to review and, when necessary, modify the existing workflows if that will result in increased overall efficiency.

Custom solutions should be based as much as possible on the underlying core technology to keep the long-term maintenance cost-effective; for example, when core software is upgraded, it requires no or minimum upgrades to the custom solutions. Whenever possible, these customizations should be made by department staff since they will be more responsive to and cognizant of changing needs within sections. Customization should adhere to CTM standards and methodologies and should be coordinated with relevant CTM projects to ensure no duplication of effort and the most efficient and best use of resources.

Complex applications will still require involvement of professional programmers. That is especially the case with custom applications involving several information technologies such as integration of GIS and work order management or external numerical models. For such complex tasks, WPDRD can still rely on CTM or external consultants.

4.3 Data/Database Design

One of the most important elements for efficient implementation of a spatial data system is geodatabase design development. Geodatabase design defines physical and logical structures in the database and is required for both development of techniques for data development and quality control as well as for data access and application development. Geodatabase design is often an iterative process that should balance the needs of data development and maintenance applications with the needs of end user applications. The proper design provides the framework for development of high-quality data.

The most effective way to ensure that data is of good quality is to develop data input processes that minimize the potential for the introduction of errors (reduce the manual process), design the database so that invalid values are automatically identified, and develop clearly defined and published data development methods that are followed and can be reviewed by end users (develop confidence in the data and the data development process). In addition to the intrinsic data quality functions, additional QC functions can be developed to ensure the consistency of the data (e.g., identifying "orphan" records or ensuring that the identifiers are unique).

As elements in the geodatabase are defined, it is also important to clearly define their origin, ownership, and maintenance cycle. Different elements can and will be developed and maintained using different processes and by different entities. For example, some data will be digitized from paper maps, while other data will be generated through the LIMS system (or from entities outside WPDRD). Understanding of the ownership and maintenance cycle will have an impact on the database design, and their proper consideration at the design level can simplify the overall implementation.

The ownership of data needs to be defined at the department level as well. Distinction between the enterprise data that is of general interest to the whole department and the project data that is of interest only to a specific project/section has to be made and appropriate data maintenance procedures put in place. While the same people might maintain both types of datasets, the way maintenance is performed will be quite different and needs to be addressed separately.

Most of the data that WPDRD uses is currently not in a geodatabase format. Several of the data layers are in the process of being converted into geodatabase format (DIG, Pond). These projects should be used as pilot projects in developing internal knowledge about geodatabase design that can be used on other datasets. WPDRD needs to develop internal skills for geodatabase design and modifications of the design. It is expected that, due to the complexity of WPDRD's operations, all the capabilities of the geodatabase will be exercised.

Good quality and complete data are essential for successful information management implementation. Digital data needs to be of acceptable quality for immediate use by end users. Before being released for wide use, data must pass the quality control process. If the data is not of sufficient quality, users will develop distrust for the dataset and the entire implementation. This, however, does not mean that a successful information management (IM) implementation cannot occur without a complete dataset. It just means that data development and maintenance have to be addressed early in the implementation process and solutions for any of the identified issues have to be provided. If end users have an understanding of how the data will be developed and improved, they can become part of the solution rather than a problem (i.e., becoming a dissatisfied user).

As an example, consider the following scenario. The GIS data needed to support an activity in WPDRD is based on an out-of-date and inaccurate source. During the pilot project implementation, the problems with this data are identified. No other alternative sources are available. Based on those parameters, the implementation team devises the following workflow:

- Document the problems in the source data and their manifestation in the GIS environment. Document ramifications of the poor data on analysis results.
- Define who the data custodians are, so responsibility on who "owns" the data and who makes the changes to the data is clearly identified.
- Develop a strategy for data improvement. The strategy can vary widely depending on the application and data requirements. For example, if the data in the dataset is independent, then a simple strategy of fixing an individual datum as it is required in the analysis will work. Over time, the important data will be fixed (and that that does not get fixed is

irrelevant, so there is little or no harm done). On the other hand, if the data is heavily depended on (e.g., flow network), a more comprehensive data cleaning process will have to be put in place. Even then, strategies can be devised to reduce the waiting time before a dataset can be used (e.g., process one independent region or feature class at the time and bring it online while the other regions or feature classes are being cleaned).

- Develop quality control procedures and/or tools to allow end users to check the data before using it (domain experts who know the data best).
- Develop procedures and/or tools to allow the end users to report (and possibly fix) problem data. It is important that the procedures for reporting and updating are followed. The updates have to be frequent so end users can see that their input translates into immediate change in the dataset. This will keep end users motivated to provide continuous input.
- Document improvement of the dataset over time (show the "light at the end of the tunnel").

In this scenario, the end users are involved in the process from the beginning (they would have to be involved anyway as they are the domain experts that have to fix the original "bad" data); they can see immediate results from their intervention and those results provide immediate improvement in their analyses capabilities; and finally, they can make decisions on how the data improvement process evolves.

As concluded in previous studies and concurred with here, the effort to develop a single geodatabase design before any other activities can take place is not a productive approach for WPDRD. Instead, incremental geodatabase design and data development is suggested. The current DIG and Pond data conversion efforts should become the backbone for development of the enterprise geodatabase that will grow as additional datasets are brought into the geodatabase format. The lessons learned during these projects should form the foundation for development of in-house database design skills. Involvement of an outside consultant in this process should be placed in the context of technology transfer. That is, WPDRD staff should be trained as part of the project so they can continue with similar effort on other datasets.

4.4 People/Users

WPDRD needs to develop new skills to support efficient implementation of the information system. As discussed in previous sections, WPDRD should be able to manage its own data infrastructure and have basic application development skills. This includes knowledge of

- Database and geodatabase design (these do not necessarily follow the same design principles)
- Basic maintenance of an enterprise RDBMS (for more complex activities, CTM support can be utilized)
- Customization of backbone systems including SQL for RDBMS customization and ModelBuilder for GIS customization as well as built-in technologies for custom report and map generation (for more complex application development tasks, CTM support can be utilized)

While it is expected that the data management team in the Office of the Director takes the lead in these areas, other sections in the department which are heavy data creators would benefit from a better understanding and proficiency in these principles as well.

To develop these skills, a mixed approach to training and technology transfer-based projects is recommended. Standard training classes are an efficient vehicle for training a small number of people within an organization. It is suggested that several people in WPDRD become proficient with SQL, Oracle, geodatabase design principles, ArcSDE operations, and ArcGIS customization.

For training a larger number of people, a customized training approach is recommended. In this approach, the standard training is customized so that it covers in more depth those topics that are of interest to WPDRD while skimming topics that are not as important. Skipping topics is not recommended so the overall picture provided can be perhaps of use later on in the implementation process and users are at least aware of the software's capabilities. In this approach, department data would be used in the class exercises to make the examples more realistic and identify any potential problems that might need to be resolved.

The final approach for development of the department's information management skills is the technology transfer project approach. In this approach, a project is identified that will serve as the capacity building exercise. The project is led by either an experienced CTM or external staff member and includes department staff that are intimately involved in every aspect of the project implementation process. The project is run as any other externally contracted project but with the stipulation that, at the end of the project, WPDRD staff will be capable of implementing the lessons learned on similar projects with little or no external help (depending on the complexity of the problem). While such an approach increases the cost of the project, its overall effect will be deeper than if the technology transfer component was not included.

A variation on the theme is the "train the trainer" approach. This should be of interest to WPDRD for general topics of interest that are good to be revisited from time to time or for training new staff. In this approach, custom training is developed and then a department or CTM staff member is trained in delivering that class (this can be implemented for standard training as well but is probably not as efficient). Then that internal staff member can assume the trainer's role when the need arises.

4.5 Workflows and Organizational Topics

The importance of workflows has been discussed extensively throughout this document. It is important to emphasize that, in an enterprise system, any application or process is part of a larger methodology/process for data processing and/or analysis. Often, change in the workflow can significantly simplify (or complicate) an application, and as applications are designed, workflow alternatives should be considered as part of the overall process solution. The idea behind application development in an enterprise environment is optimization of the overall data process, not necessarily optimization of a single application.

Workflows often start as documentation of commonsense practices in place in an organization that produce acceptable results. Then they expand to cover those aspects of the information management implementation that are deemed problematic. As complexity of the issues

increases, the workflows become more complex as well and are more susceptible to being ignored, thus defeating the purpose of their existence (that is, to be followed). To avoid this, workflows need to be kept as simple as possible, they have to make sense, and they must stay current. If necessary, complex workflows can be translated into applications that guide users through their implementation (e.g., use of Task Assistant for guiding the user through a complex GIS implementation process).

Workflows also need to be reviewed from time to time, especially when new technology is introduced into the system. The new technology might make some of the workflows obsolete while some of the workflows might make the new technology easier (or more difficult) to implement.

WPDRD is considering ISO 9001 certification. ISO 9001 is part of the ISO 9000 group of standards for quality management systems (QMS). The intent of ISO 9001 certification is to ensure that consistent business processes are being applied in an organization's daily practice. The QMS is composed of all processes, procedures, templates, and other documents that guide work to high quality and customer satisfaction. It consists of processes that apply to the entire department and those specific to each project.

Since this standard deals with establishing processes (workflows) in the department, its implementation can result in a series of processes that can serve as a foundation for information technology implementation. Basically, the implementation of ISO 9001 at WPDRD will generate well-documented business processes that can then be automated within the information technology context. Not all the processes identified during the ISO 9001 certification will lend themselves to automation, but those that do will have the preliminary process analysis done.

ISO 9001 and IMP implementation can be concurrent activities. As part of IMP implementation, processes need to be defined (so they can be automated), then these processes can become part of the ISO 9001 certification process.

One of the important implementation issues is interaction with external data (workflow number 4 in section 3.5). As stated earlier, several sections rely heavily on external data for their operations. Many of these databases are maintained by other City departments either directly or through CTM. These databases must be made available to WPDRD in a much more integrated way than they are now. It is recommended that the CSR/311 system be used as the prototype for development of methodology for integration with external data sources maintained by other City departments; TCAD should be used for external data sources maintained by non-City agencies. These two databases are used by many different sections, and their increased availability will have an immediate impact on the department's operations.

CTM is currently in the process of implementing an application hub (3rd-party solution) that will allow external applications to interact with the CSR/311 database in a more integrated way. This effort should be used to identify the general methodology for implementation and changes in the workflows that it required and use that experience to devise a generic approach for interaction with other databases. While other databases might not have the application hub available, the process of integration implementation should be reusable.

From an organizational point of view, WPDRD will have to develop internal resources for enterprise information system implementation. It is recommended that a dedicated position be established for this purpose, as the expected workload is not something that can be shared efficiently with other duties. This position will be responsible for maintenance of the department's enterprise databases (Oracle and ArcSDE management), development of data entry and data quality applications, automation of day-to-day DBMS operations, customization of reports, and other department-specific IT operations. This person will be closely involved in both technical and organizational aspects of IMP implementation through the GIS/Database Committee and the GIS User Group.

Some redundancy in skills needs to be established, so other people in WPDRD should be trained in those skills as well, but they can be distributed among several people that will maintain their current activities. For example, some of the current GIS staff can be trained in common ArcSDE operations and others in development of custom applications using ModelBuilder.

Another organizational issue is establishment of the coordination structure for information management within WPDRD. The proposed approach described in section 3.5 takes advantage of existing organizational entities in WPDRD. As the actual implementation progresses, the effectiveness of such an arrangement needs to be reviewed and alternatives developed if necessary. The main review consideration should be the ability of all sections to have proper participation in the process, since there is no coordination possible if everyone is not included in the process.

4.6 Implementation Prioritization

This section of the document summarizes recommended information management implementation activities identified in previous chapters and sets their priorities and sequence. Perceived complexity of effort is presented to differentiate between simple (S), medium (M), and complex (C) tasks. Implementation of each group of activities can, and for many tasks should, be performed in parallel to optimize the lag time associated with some of the implementation activities. For example, development of workflows for data exchange with external data sources will have long inactive periods while coordination efforts are being established.

The following sequence of implementation is recommended:

- **Tasks 1, 2, and 3:** These should be implemented first and treated as interdependent activities. Task 1 will establish hardware, software, design, and personnel infrastructure for enterprise geodatabase implementation at WPDRD. CTM should be closely involved to support this activity. Tasks 2 and 3 will establish the initial datasets for enterprise geodatabase implementation and will serve as capacity (skill)-building exercises and as a blueprint for further data development activities in the enterprise environment.
- **Task 4:** Implementation of a work order management system is critical for efficient operation of a number of the department's sections and should be implemented as soon as possible. This task has a broader, Citywide scope because other departments are in need of such an application and might be looking for leads. CTM should be closely involved to support such implementation Citywide if possible.

- **Task 5:** More efficient data exchange processes with other departments/agencies must be established. CSR/311 and TCAD databases should be used as test cases. CTM should be closely involved to support such implementation Citywide.
- **Tasks 6 through 10:** These tasks are interdependent. Implementation of applications (whether custom or COTS) does not make sense if there is no data that these applications can operate on. The reverse is true as well. The department will have to develop an implementation priority list that will balance the data and application development efforts. Basically, this list will identify which combination of data and applications will provide the best return on investment (*return* is considered here in a more global sense, not just financial). The current set of IT CIPs that already exist in WPDRD should be used as a reference for prioritization.

Task 10 is identified as priority 3 at WPDRD level (there are more pressing tasks that need to be implemented first to establish the department's enterprise environment). For some sections, however, this task might be priority 1 as it is part of the section's core operation. Integration with external models is a complex task and might require considerable time to be fully integrated into the database design and daily workflows (even when using COTS products). With that in mind, it is recommended to immediately develop a candidate list of these models (e.g., RAS, HMS) and start exploring integration options to develop timely integration solutions.

No.	Priority	Task	Implementation Steps*	Complexity of Effort
1	1	Implement enterprise geodatabase at department level.	Establish department's server hardware environment. Hire dedicated department resource for enterprise geodatabase implementation. Train department staff in enterprise geodatabase maintenance. Establish department geodatabase design standards. Establish implementation coordination structure.	S S S S S
2	1	Implement DIG and Pond databases in enterprise geodatabase.	Geodatabase design. Develop transition workflow. Transfer data. Clean data.	S S S M
3	1	Develop workflows for DIG and Pond data collection and maintenance.	Document the process. Develop tools (if necessary).	S S
4	1	Select and implement work order management system.	Select the system. Implement the system.	S M/C
5	1	Develop workflows for external data maintenance.	Discuss with external sources. Document the process. Develop tools (if necessary).	S/M S S/M

No.	Priority	Task	Implementation Steps*	Complexity of Effort
6	2	Mobilize existing GIS applications (potentially large time savings).	Design implementation. Undergo training.	S S
7	2	Develop additional core data.	Develop data capture standards, applications, and coordination protocols. Receive training. Conduct data capture.	S/M S/M S/M/C
8	2	Implement COTS application.	Identify compatible technology. Receive training. Implement application.	S S S/M
9	2	Develop custom application.	Design application. Develop application.	Varies Varies
10	3	Integrate external numerical model.	Identify model(s) to integrate. Identify existing solutions. Design integration. Develop integration.	S S/M S/M/C S/M/C

* This column does not include all the steps for full implementation, such as documentation and training, but just the key elements.

Example Implementation Process

To demonstrate the implementation principles discussed in this document, this section presents the fundamental steps for implementation of the DIG database. Some of the mentioned steps might have been completed since DIG is an existing project; they are still mentioned here. The specific details are not presented (for example, that the database design meeting will last three days and will produce a 30-page document). Some of the steps will be executed in parallel.

When discussing utilization of City- or department-wide standards, it is important to note that, initially, there might be very few or none in place. As IMP is implemented, these standards will be developed using the current implementation as a vehicle. The decisions made for the early implementations become a standard that is updated with decisions needed for the next implementation (if any). While it would be better to have all the standards in place before an implementation is undertaken, that is not realistic, and it would delay the implementation and not necessarily improve the final product.

For every step in this process, any existing standards should be used (this will not be mentioned for every step further in the text; it is just assumed that it will be done). When necessary, discrepancies from the established standards will be noted, and if necessary, standards will be changed following proper procedures. Also, it is assumed that every step in this process results in appropriate documentation. This documentation can be a report, a series of operational steps, application user guide, help file, and so forth.

1. Establish the department's enterprise infrastructure.
   a) Reestablish GIS/Database Committee and its role.
   b) Establish the department's ArcSDE instance on CTM server.
   c) Develop core data management skills within the department (Oracle, ArcSDE administration).

2. Justify DIG implementation (each implementation needs justification, however short it is).
   a) DIG is a CIP that is already being worked on; the background for the project does not have to be established and some resources are already allocated to it.
   b) Data is being developed as part of the effort.
   c) Initial database design has been performed, providing a good starting point.
   d) There is a mobile component.
   e) DIG is an important database widely used in WPDRD (at least 13 sections use it, as identified during the workshops; see appendix B).
   f) There are several sections that produce data for the DIG database. Coordination between the sections is crucial for proper implementation.

3. Form a DIG implementation user group. The role of this group is to guide/coordinate the DIG implementation process within WPDRD. It will be this group's responsibility (not of one person or of one section) to see this project successfully completed and maintained. This group will have participants from every section that uses or produces DIG data. This can be a subgroup of the GIS/Database Committee (and as it is the first formal implementation of the process, this is probably a good idea, because the experience on this implementation will serve as the foundation for future implementations). Appendix B can be used as a starting point for identifying the relevant sections. It is recommended that a department-wide note about the formation of this group be sent to cover any possible omissions.

4. Establish DIG ownership, content, and data quality standards.
   a) All sections involved with the DIG database (whether producers or users) have to identify their specific requirements for the data in DIG:
      i) What is being collected (what features and what attributes are to be stored)?
      ii) Why is it being collected (how is the collected data going to be used)?
      iii) Who is responsible for what part of the database (establish ownership)?
      iv) How precise should the data be? If there are any discrepancies in the requirements from different sections for the same type of data, they need to be resolved.
         (1) If possible, the most demanding requirements should be implemented (e.g., accuracy of location or accuracy of a single measurement).
         (2) If the most demanding requirements cannot be implemented (e.g., too expensive), alternatives need to be provided to the section(s) whose requirements cannot be met at this time. The long-term cost of not immediately implementing the highest requirements should be evaluated.

5. Identify specific applications/uses for the data. At this point in the implementation, that does not need to be very detailed, but it needs to have enough detail to support the geodatabase design. For example, knowing that tracing through DIG infrastructure will be one of the applications will have ramifications on the geodatabase design (whether to

build a geometric network). Include any external applications or databases the DIG database needs to interact with (e.g., CSR/311).

6. Develop geodatabase design for the DIG database. Utilize as many intrinsic geodatabase capabilities (feature class, object class, relationship, topology, domains) as possible.
   a) Based on number 5, include in the database design any necessary data elements to support interaction with external applications.
   b) Build DIG geodatabase schema.

7. Define data capture methodologies based on specifications defined in number 4. Some of these will require field measurements (e.g., location and size of an outlet), some will be computed from existing GIS layers (e.g., Mapsco page), and some parameters will be computed from external sources (e.g., observed monthly flow at the outlet). Identify any potential data capture/QC applications.

8. Establish DIG metadata.

9. Develop data capture/QC applications. This step will first require prioritization of data capture/QC applications identified in number 7. Priority should be given to those applications that minimize potential introduction of errors into the database.

10. Develop workflows for data capture, maintenance, and dissemination.
    a) When different sections collect the same data
    b) When one section identifies data that is not captured and is not its responsibility
    c) When one section identifies problems with data that is not its responsibility
    d) How to inform department and City users that data has been updated
    e) How to post (disseminate) the changed data
    f) How to receive input from external (out-of-department) users (if different from internal users)
    g) When data is related to external systems (e.g., work order management system—which system manages unique IDs)

11. Develop workflows for interaction with external systems.
    a) Work order management system—Even if such system is not in place yet, this task is important because it identifies how the database will interact with such system. This allows incorporation of any future requirements into the current design, thus reducing the complexity of later integration.
    b) Interaction with document management system
    c) Interaction with CSR/311
    d) Interaction with the Pond database

12. Implement all the implementation components (as much as possible) on a pilot area and refine the components if necessary.

13. Implement custom solutions.
    a) Prioritize applications identified in number 5.
    b) Identify solutions that might satisfy requirements.
        i) Use configuration of core products if possible.
        ii) Identify third-party solutions.
        iii) Identify custom solutions to be developed.
            (1) Internally
            (2) Externally
    c) Develop application design/implementation plan.
    d) Implement number 13.b.

14. Establish training requirements and train staff.

15. Share project implementation experiences. Present implementation activities and solicit input/comments/sharing of ideas with the following:
    a) GIS/Database Committee
    b) GIS User Group
    c) Citywide audience
    d) External user/developer community (e.g., engineering companies that might be working on DIG data collection and using the standards set in the project)
    e) Broader community

16. Develop postproject (follow-up) activities. Since this is a data development activity, the project never really ends. Once the initial implementation is completed, the general activities will end, but the process of actually using the system will generate realities that will need to be addressed:
    a) Evaluation of design standards put in place for this project. Are they meeting the reality, and if not, how should they be modified to meet the requirements?
    b) Evaluation of workflows put in place. Are they on target, and if not, how should they be modified to streamline the operations?
    c) Follow-up on the aspects that were not initially implemented (e.g., data that was not collected initially or applications that were of lower priority).
    d) Database maintenance activities. Maintain DIG processes as IMP implementation progresses. For example, some of the workflows might change if wireless communication is implemented for fieldwork or additional data structures might be required once the document management system is implemented.
    e) Communication of any relevant experiences to the standardization structure.

5.0 Conclusion and Recommendations

The review of current information management practices in WPDRD identified a number of areas that can be improved. Improvement recommendations are based on the main premise of implementation of an enterprise data management system at the department level. This implementation will centralize all the data and data storage technologies in a single server environment where they can be managed more efficiently. The following improvements are recommended:

- Hardware
  - Set up the department's central database server(s) environment for tabular and spatial data managed by department staff.
  - Utilize mobile computing for field data collection. No real-time wireless connection is required at this time; offline work with office synchronization will suffice.

- Software
  - Implement Oracle for all RDBMS storage needs.
  - Implement ESRI ArcSDE as the backbone for storage of spatial data.
  - Use ESRI ArcPad for development of light mobile solutions.
  - Implement a work order management system.
  - Implement a document management system.
  - Move legacy applications into new (RDBMS, GIS) environment.
  - Use ArcGIS geoprocessing/ModelBuilder functionality to develop custom GIS applications within WPDRD.

- Data/Database Design
  - Consolidate all the data into an Oracle/ArcSDE environment and remove dependencies on legacy or personal systems.
  - Implement enterprise geodatabase design for all spatial data.
  - Develop data capture standards.
  - Organize file structure and develop file naming conventions for storing documents and photos (in lieu of a document management system).

- People/Users
  - Hire new staff dedicated to implementation of enterprise data management system.
  - Train additional staff in geodatabase design, custom application development (SQL, geoprocessing, ArcPad), ArcSDE operation, Oracle management, to support enterprise implementation and reduce dependency on CTM.

- Workflows/Organization Issues
  - An information management coordination structure at WPDRD level needs to be established to coordinate all the implementation activities and allocate resources.

- Coordination with the City GIS efforts needs to be established to ensure that City standards are maintained, development across the Departments is coordinated, and resource requirements are stated.
- Workflows for management of internal (department) database design and data collection and maintenance life cycles need to be developed and implemented.
- Workflows for interaction with databases external to WPDRD need to be developed and implemented.

While the list of recommendations seems to be long, WPDRD has many elements and activities already in place that can facilitate quick implementation of these recommendations. Wherever possible, a stepped implementation approach is proposed. In this approach, small implementation steps are defined, are completely implemented, and are put into production before moving on to the next step. This approach is particularly valuable for geodatabase development (geodatabase design, data capture standards, data conversion/development). If all the work is to be done at once before putting the system into production, it would take a long time before anything would be operational (and in the meantime, inefficient data management practices would generate more backlogs to process).

For example, one of the current IT CIPs (e.g., DIG) can be used as a test case for information management plan implementation (IMP pilot project). This dataset can become the focal point for which all the required information management elements are put in place. Once the implementation is completed for DIG and the dataset is put into production, the focus can be shifted to another dataset. The experiences from the DIG implementation can then be immediately applied to the new dataset. In the meantime, operational experiences are gained on the DIG dataset and can eventually be used to improve the design and implementation approach.

The prioritization of the implementation steps will have to be performed. This will be the role of the information management coordination structure that needs to be established in WPDRD.

As the implementation plan is put into action, detailed documentation will have to be developed for each step. Initial development of such documentation (e.g., geodatabase design, metadata standards) will require significant effort while department standards are developed and internal experience gained. Whenever possible, City experience should be leveraged. Once completed, however, consecutive documents will become much easier to produce and will become routine.

Appendixes A through D are under separate cover.

Appendix A

Notes from Meetings Held March 6–10, 2006

Appendix B

Internal Database Dependency Matrix

Appendix C

City Database Dependency Matrix

Appendix D

Grading by Category Matrix

Watershed Protection and Development Review

Information Management Plan Project

Notes from Meetings held March 6-10, 2006

Watershed Protection and Development Review Information Management Plan Project

Table of Contents

Overview Meeting 3
Stormwater Treatment 5
Water Quality Monitoring 8
Stream Restoration 11
Land Use Review 14
GIS/Planning 16
Zoning Review 20
Water Resource Evaluation 22
Master Plan 26
Building Inspections 29
Permit Center 30
ROW Management 31
Localized Flood Hazard Mitigation 34
Floodplain Management 37
Field Engineering Services 40
Contract Management 43
Brownfields 44
Flood Early Warning System (FEWS) 46
Financial Management 48
Field Operations 51
Creek Flood Hazard Mitigation and Pond Safety 54
Commercial Building Review 59
Site Plan/Subdivision Inspection 61
Spills and Complaints 64
Stormwater Discharge Permit Program 68
Development Assistance Center (DAC) 72
Wrap-up Meeting 75

Overview Meeting
3/6/2006

IMP Team – Leeanne Pacatte, Steve Wilkinson, Ann McCracken, Neil Galati, David Rodriguez, Dean Djokic

Attendees – Gerry Clayton, Nancy McClintock, Jim Grube, Daniel Herrera, Sandy Kelso, Henry Casas, Mike Ihnat, Mike Kelly, Pat Hartigan, Roger Glick, Martha Turner, William Templeton, Mike Newman, Joyce Pulich, Roderick Burns, George Zapalac, Catherine Esparza, Debra Fonseca, Matt Hollon, George Oswald, Mark Mauldin, Ellen Wadsworth

I. **Introduction** – Leeanne introduced the project and the ESRI Consultant – Dean Djokic. Dean presented the purpose and scope of the project.

A. Purpose of Project – To insure the cost efficient allocation of limited resources.
1. Data sharing improves efficiency.
2. The Department needs a plan – a strategy for how to hook the data into the Master Plan.
3. Integration creates more value – GIS is a good way to integrate the pieces and end up with more than the individual components.

B. Purpose of Overview Meeting – To bring everyone up to speed with what the project involves and what is going to occur.

C. All staff should think about how their work groups can take advantage of this project.

II. **Scope of Work**

A. Review the Current State
1. Review the existing documents
   a) The CDM reports that were done several years ago will be incorporated into this project.
2. Inventory of Departmental data and databases.
   a) Dean indicated that the Department seems to be doing well.
      (1) A lot of data is already in digital form, but the forms vary.
      (2) There are some legacy issues – hardware (MACs), software (Access databases).
      (3) The timing will be an issue.
      (4) He wants to explore shared opportunities and identify what other applications can be done and how he can help WPDRD run our business better.
3. Survey of work groups.

4. Individual sessions with work groups. The Scope of the Meetings:
    a) Review the assembled information.
    b) Identify data flows.
        (1) Data developers versus data users.
        (2) Interdependencies between the data.
        (3) Type of data (tabular versus spatial data) if not done in the same process.
    c) Current and planned data collection.
    d) Identify what was missed on the surveys.
    e) Identify current and planned IT infrastructure
        (1) Database
        (2) WEB
        (3) GIS
        (4) Information (pipes)
        (5) Desktop
        (6) Field
5. Needs assessment
    a) Data management (entry and management)
        (1) Desktop
        (2) Field
    b) Reports
        (1) Tabular
        (2) Maps
        (3) Internal users
        (4) External users – COA and general public
    c) Applications – what might we want to do once the system is in place
6. Safety Check
    a) What might and might not work (e.g., what is realistic).

B. <u>Identification of the Improved State</u>
    1. Identification of improved information system.
        a) What is it?
            (1) Infrastructure
            (2) Design
            (3) Processes
        b) How to get there?

C. <u>Detailed Implementation Plan</u> – Two products will come out of this.
    1. The documents.
    2. A forum for staff to discuss and get consensus. How does this fit in with the Department's Strategic Plan and the Master Plan?

D. The Information Management Plan Project itself will take about three months, but the application development is in the hands of the Department.

Stormwater Treatment
3/6/2006

IMP Team – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Mike Kelly, Pat Hartigan, Ginny Rohlich, John Gleason

Unable to Attend – Tom Franke

I. **Data**

A. Producers

15	Integrated Pest Management System
74	Retrofit Program
4	Pond Geodatabase

1. They have project specific files that could have maps and layers.
2. They have tracking data in spreadsheets. They identify, prioritize and implement projects involved with treating stormwater.
3. They use layers that have been created. They identify the points where they have an actual or potential pond.
4. Points of interest and drainage areas associated with points of interest.
   a) They create and collect both points and polygons, but primarily points.
   b) Their pond polygons eventually go into PIER/AMANDA. The ones they create are preliminary in nature and don't get used by anyone else. The preliminary ponds aren't needed after the pond goes into AMANDA.
5. The Integrated Pest Management Database is a small Access database that is owned by this group. John Gleason maintains this database and Ann McCracken administers. It is separate in function from their other work.

B. Users – This group is more of a user than a producer of data.

2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
6	Lookup Table Database
18	stormwater monitoring sites
19	stormwater monitoring data
20	Hydstra/TS database
21	USGS monitoring
30	PIER

1. Ponds
    a) If they find a pond and it isn't there, they create a point. There isn't a procedure for getting the pond into the Commercial or Residential Pond Database.
    b) They typically deal with the Residential Pond Database.
2. What is the information that is critical to them?
    a) EII Water Quality Monitoring Sites
    b) Stormwater Monitoring Sites
    c) Pond Databases
    d) Development Review (PIER/AMANDA)

II. **Applications**

A. Watershed delineation – preliminary off DEM and then tweaked for drainage system.

B. "Flow" Modeling (mass balance)

C. Map Production (some can be standardized)

D. Reports

E. Field Work (less than 10%)

III. **Goals**

A. Ability to use "other" data in a more efficient manner.

B. Ability to supplement current data with "discoveries" in the field (e.g., ponds and other data).

C. Project tracking tool – more consistent and accurate.

IV. **Success Criteria** – They could use some help with standardizing their methodologies and storing and presenting their data, but they haven't felt a need for this so far.

A. Access to "other" data.

B. Organization of their own data.

C. Local applications (reports/maps).

V. **Issues**

A. Have a mechanism for providing information about features that do not exist when doing field work.

B. Need a mechanism for “linking” their points and polygons in the as-built state.

C. Produce a database design for the stormwater component. There are different ways to store data now. What they do isn’t consistent with what they are collecting. This could be standardized.

D. They create mostly spreadsheets for each project to store the data. The spreadsheets are set up differently each time (in different formats). There is a good potential for automation here. Need to separate the data from the application so the data stays consistent and can be shared.

E. Difficulty in using “other” data.

F. Lack of centralized “future land use”. It would be nice to have that as a standardized layer. Currently the different work groups have different versions of the same data.

VI. **Action Items**

A. The IMP Team needs to let this group know when they need to get the details of their data attributes together.

Water Quality Monitoring
3/6/2006

IMP Team – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Roger Glick, Rich Robinson, Mr. Bai, Jim Hubka (via conference call)

I. **Data**

A. Producers

17	dry weather screening
18	Stormwater monitoring sites
19	stormwater monitoring data
20	Hydstra/TS database
21	USGS monitoring

1. They see themselves primarily as a data generator and provider.
2. There is a spatial component to their data. It is in a shape file. There is a field in the database that has the lat/longs that goes into ArcView. They do the GIS work themselves.
3. They have their own naming conventions for their sites (e.g., 3 numbers and 3 letters).
4. Their data resides on their server, which is maintained by CTM.
5. They have a lot of time series data and very little geometric data.
6. They are comfortable with how they are managing their spatial data.
7. They have to revisit their sites every 5 years. These are throughout the City. They divide the City up, so they can get out to each site during the 5 years.
8. The purpose of their data collection is long-term planning, rather than for health and safety.
9. They spend up to 4-5 hours per week answering requests for data. A lot of time is spent trying to figure out what the user wants.
10. Their data isn't available openly, so people call up to get it. They have limited seats and want to preserve the integrity of the data. They would like to make their data available on the Web, but this hasn't been a high priority.
11. Hydstra is the repository for their raw data. Access holds snapshots of this data, which they do analyses on. Hydstra is in dBase 3 or 4. Why Access vs. Hydstra?
    a) More flexible with outside applications
    b) Hydstra has event based data that is used to develop reports to query events. Then the reports are stored and manipulated in Access.
    c) Hydstra is depository of raw information then reports are opened in Access. If re-running queries then past raw data run through Hydstra again to catch errors in data.

12. Dean asks about moving from Hydstra to Oracle?
    a) High cost.
    b) Too much overhead with maintaining Oracle.
    c) Not a city wide application in Water Quality so not practical.
13. One half of their section does less than 10% field work. The other half of their section does 75% field work. In the field they collect samples and get them to the lab to put into an Access database, which they use to query and QA/QC the data. They add the time, assign an ID, then they the upload the data into Hydstra, which needs this additional information. Their meters don't write a sample ID, which is why they need to do this intermediary step. This doesn't cost them a lot of time.
14. Small space, large temporal
15. Intermediate files for temporal data

B. Users
1. They need the storm sewer outfalls. The last dataset they got in 1992 from Ellen Wadsworth. If they find a new outfall, it goes into their Dry Weather Screening Database. They do not communicate this information back to the source.
2. They get data annually from USGS.
3. They could use impervious cover and land use data for the City.
4. Existing land use !!!! (same problem as before).

II. Applications

A. PDA for Field Work (dry weather screening)

B. PDA for Field Work (site maintenance)

C. Data dissemination application (via the Web).

D. Standard textual report application for internal and external users. Automate components of these reports where applicable.

E. Watershed delineations for new locations.

F. Access database that pulls data from hydstra (every three months) and uses these data for analysis support

III. Goals

A. They would like to make their data available to others in a spatial format via the Web.

B. SWAT in ArcGIS would be nice. It is still in ArcView.

IV. **Success Criteria**

A. They would like to make their data available to others in a spatial and temporal context via the Web.

B. SWAT in ArcGIS would be nice – but that is not as critical as it is out of their hands

V. **Issues**

A. Have a mechanism for providing info about features that do not exist when doing field work (about other people's data)

B. Had discussions regarding KISTERS implementation. Nothing yet. Waiting until the merging of the two is more complete.

Stream Restoration
3/6/2006

IMP Team – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Gerry Clayton, Morgan Byars, George Walker, Ann Winer

I. **Data**

A. Producers

64	Creek Erosion

1. The Creek Erosion data needs to be renamed Stream Restoration. The CSR download is part of this. Currently this data consists of a number of shape files and some attribute data, stored in a number of locations, primarily on Ann Winer's PC. The photos are on the G drive.
   a) In this application, the Drainage Complaint Data is going to be kept separate from the CSR data, but it would be useful to have them merged into one dataset.
   b) The CSR portion of this data is in the form of a quarterly download, but real-time access is what they ultimately want.
2. Their business is the correction of problem sites. They identify localized problems and reach based problems.
3. Their data consists of the following:
   a) Site ID (generated)
   b) CSR ID (link to the CSR Database).
   c) Location of the problem
   d) Severity of problem (1, 2, or 3) code
   e) Type of site (e.g., house, street, etc.)
   f) Threat type
   g) Photographs of the site and the problem
   h) They need the TIN, DEM, contour, LIDAR, and the BAD (best available data), so they can extract elevations.
4. They generate local and detailed surveys of cross-sections. No one else has this data and it would be useful to other work groups, such as the Floodplain Office.
   a) In-situ and design
   b) Workflow for integration of design (as-built into existing type).
5. Database design for sites, tying with "incident" db, photos, etc. Need full database design and workflows for current-design-as-built process.

B. Users

1. Site layer with points of "interest" – Some of these turn into projects and others don't. These are not tied back to the Drainage Complaint or CSR Database.
2. Site Photos – These are not linked to their data.
3. CSR/311 Database
4. Drainage Complaint Database (Work Request)

5. Need TIN, DEM, contour, LIDAR, the BAD data so they can extract elevations

II. **Applications**

A. Call Database (CSR/311)

B. Design (CAD)

C. GeoRas/Ras

D. Basic hydrology (regression, TR-55, or City's HMS)

E. Standard Reports and Maps

F. Field Work (assessment less than 10%, but quite simple at this point).

G. Field Work (watershed erosion assessment) – would be interesting.

H. Document management system, but this would be a big ticket item.

III. **Goals**

A. Database design and data quality (include management of paper files, CAD, imagery, etc.).

B. Data entry forms to minimize quality input issues, updates with new information (e.g., direct upload to CSR System). Dean thinks they should design their data structure for their projects even if this doesn't go into the enterprise geo-database. However, they should put this data in a shared directory.

C. Develop preliminary reach based prioritization system (application).

D. Make data available to enterprise (currently done by hand).

IV. **Success Criteria**

A. Database design and data quality (include management of paper files, CAD, imagery, etc.).

B. Data entry forms to minimize quality input issues, updates with new information (e.g., direct upload from CSR/311 System). Dean thinks they should design their data structure for their projects even if this doesn't go into the enterprise geo-database. However, they should put this data in a shared directory.

V. Issues

A. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

B. Need facilities management application.

C. Issues with linear referencing (definition of the reach and location can be changing).

D. They want to be open to all of the data. The modeling data won't necessarily be part of the enterprise data.

E. They need a more complex database design and a facilities management application with photos. There is more of a life cycle with their projects.

F. Disparity between CSR/311 System and Drainage Complaint Database. The Drainage Complaint Database sometimes references the ID in the CSR System and at other times doesn't. They have not taken downloads from the Drainage Complaint Database for awhile. The ArcView 3 application that used to pull data from the Drainage Complaint Database no longer works because of the migration to SDE.

G. Problem with access to CSR/311 Database. Downloads were not made available until recently and these will only occur on a quarterly basis.

H. There are different ways to navigate to a point of interest (e.g., address, city, grid, project, etc.).

I. Manage historical topography for evaluation of geo-morphologic changes (vector and imagery). They are hard copy and need to be scanned.

Land Use Review
3/7/2006

IMP Team – Leeanne Pacatte, Ann McCracken, David Rodriguez, Steve Wilkinson, Neil Galati, Dean Djokic

Attendees – George Zapalac, Diana Ramirez, Roderick Burns

Unable to Attend – Sheila Rainosek, Shari Pape

I. **Data**

A. Producers

30	PIER

1. People fill out applications for various land development projects. The primary database for this group is PIER. The Intake group starts the data tracking process by inputting the data into PIER. PIER gets some of the information from the geo-database. AMANDA will do this as well.
2. This group is part of the Development Review process. They are comprised of various review teams in different disciplines going through the applications. Other departments are involved as well. They review the plans and go through various iterations. Eventually the plans are approved if they aren't cancelled.
3. Diana is responsible for notifications. When an application comes in, they notify the owners of all properties within 300 feet of that property. Currently, this is a manual process, but AMANDA will create the shape that includes all of those addresses. They should be able to generate and print the letter to these property owners from AMANDA.
4. AMANDA will replace PIER sometime this year, but there is no clear indication of when it will be implemented.
5. AMANDA will have a GIS component, but there may still be a need for some other viewer in parallel. Bert's group may be working on this.

B. Users

1. They use ownership maps from TCAD (Travis County Central Appraisal District) and other neighboring counties.
2. AMANDA requirements – It is hoped that AMANDA will provide data that will be useful for other work groups.
3. The reviewers use GIS to get information while they are reviewing an application. They use viewers that are in ArcView 3.3.

II. **Applications**

A. Ability to generate ad-hoc maps that will be more detailed (more layers) than what AMANDA provides. Ideally, the list of spatial layers can be expanded based on the needs of a particular review group. This is more of a historical occurrence since the "old" application was not flexible enough.

III. **Goals**

A. They already have an application that meets their needs.

IV. **Success Criteria**

A. AMANDA works

V. **Issues**

A. Will all of the critical fields that the other work groups need, get filled in in AMANDA?

B. AMANDA has high priority and will meet their needs. It controls data access, population of data, etc.

C. Need to get users off of ArcView 3.3 viewers and on to ArcIMS. However, it isn't possible to add other information into an ArcIMS Viewer. A Web application won't work because there are pieces of data that can't go out for the public. It might be necessary to develop a separate, flexible application to provide what the users need. The users would put their data in a catalog they can pull from instead of having it sitting on separate PCs.

GIS/Planning
3/7/2006

IMP Team – Leeanne Pacatte, Ann McCracken, David Rodriguez, Neil Galati, Dean Djokic

Attendees – Matt Hollon, Erin Wood, Ellen Wadsworth, Sandy Kelso, Robbie Botto, Jon Meade, Roxanne Jackson

Unable to Attend – Christin Atkinson

I. **Data**

A. Producers

2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
6	Lookup Table Database
8	Floodplain GIS
12	Stormwater Discharge Permit Program Database (SDPP)
16	Underground Storage Tanks
26	Urban Watershed Fund Database
28	Operating Permit Database
30	PIER
52	Drainage Infrastructure GIS
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
64	Creek Erosion
65	GIS water quality loading model
67	Impervious cover
68	Land use
69	Maps (see tab fro details)
70	Masterplan Toolbox (see tab for details)
72	Digital Photographs
73	Rainwater Harvesting location
74	Retrofit Program
75	Riparian buffer zones

76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. This group is assisting with the Pond Geo-Database project (#4) and are thus working on the current Pond Databases (#2, #3)
2. This group is also working on the DIG Project (#52).
3. Floodplain GIS (#8) - Changes to make this a more robust GIS application on the Web are in the works. The Planning/GIS group is peripheral to this project, but they may do some of the layers. Watershed Engineering hasn't adopted their future land use and impervious cover maps. They have different assumptions on what they use and use a zoning max method. This isn't necessarily a bad thing, but the critical issue is to clearly identify what layer is used for what. There is also a need to separate out what is enterprise data and what is privately used, so the public doesn't get confused. Floodplain and Planning/GIS do need to communicate on what assumptions they are making in the layers they use.
4. SDPP (#12) – The owners of this Oracle database want it to be spatially enabled. Some of the features are related to the ponds.
5. In addition to working on the Pond and DIG projects, this group may join other Department projects in the future.
6. Their major coverages are in okay shape but with some work still needed.

B. <u>Users</u>

II. Applications

A. Floodplain GIS Application (#8) – in the works.

III. Goals

A. Enterprise Database design

B. Data development procedures/applications

C. Data sharing

D. Planning – tracking future development

IV. Success Criteria

A. Enterprise Database design

B. Data implementation workflows

V. **Issues**

A. Provide a single layer for each particular purpose (e.g. single layer for impervious data)
   1. Communication issues exists between engineers (modelers)
   2. Workflow - trying to get accurate/timely information.
   3. Come up with city-wide methodologies for development of base layers like impervious areas and land use that are "interpretation"-based.

B. Problems with lack of data outside of City jurisdiction needed to support modeling and other analysis methods.

C. "Standardization" of GIS tools and engineering models. The modelers should be involved with selecting their models, not just the GIS/Planning group. It was noted that there is a lot of overlap between the GIS/Planning group and the Water Resource Evaluation modelers.

D. Workflow issues dealing with external data (consultants). Part of the Information Management Plan will involve dealing with the workflow issues and problems associated with this.

E. SDE and versioning issues. There is no access to those capabilities for data developers. SDE is really read only uploaded through submission of shape files. There is no formal process for how to get CTM to update the SDE layer, so they end up updating the GIS Repository in WPDRD instead. Bert currently wants the updates to the SDE in shape files. CTM will not give them versioning, so it might be better to go with a small, multi-user application that ESRI is coming out with where you don't have to have an SDE license. Versioning can be difficult to use without a lot of communication between the maintainers of the data.

F. Need geo-database design alternatives meeting

G. "How to" on terrain modeling. Note from Ellen: What does this mean? That more people need training on watershed modeling? Several employees in ERM are experienced at modeling and GIS modeling so the statement isn't accurate.. We did talk about how attempts were being made to make sure everyone uses the same base elevation data for modeling so features for different missions would coincide.

H. Need to come up with a mechanism for recording information on sites that are studied by multiple Divisions / programs – Field units could support this if work flow and plans were re-designed to include a more cooperative effort in collecting field data.

I. Need data dictionaries that incorporate consistent naming conventions

J. Need to determine how to deal with all the different unique identifiers for the databases they would like to spatially enable. Some use street addresses, some use ABBE, some have permit numbers, some have naming conventions, etc.

K. Need – a clear data "conversion/development" plan with time commitments, ordering (prioritization), end user involvement, update processes, etc." This should be identified as the first step in the implementation process.

L. Need to determine how to prioritize the vast number of needs within the Department and how to communicate and coordinate across the Department rather than by squeaky wheel.

M. There are inconsistencies in how they (GIS/Planning) do their projects, which results in some inefficiencies.

N. They (GIS/Planning) need a replacement model for the CRWR model that is currently in ArcView.

O. There need to be some strategies for ad hoc access to databases. It was noted that it is better to use Access or Excel with Oracle tables than to have Access or Excel databases. It is also dangerous to use SQL prompts to edit Oracle tables.

VI. **Action Items**

A. Dean would like for Matt and Ellen to send him a list of models they want to support.

Zoning Review
3/7/2006

IMP Team Attendees –David Rodriguez, Steve Wilkinson, Neil Galati, Dean Djokic

Attendees –Clara Hilling

Unable to Attend – Sylvia Benavidez, David Cancialosi

I. **Data**

A. Producers
1. AMANDA drives the process and data collection. Need mapping to navigate to the site and help with determinations (standard and ad-hoc mapping).
2. They review residential house plans
3. They do sign review (commercial signs)
4. They do Board of Adjustments variances and sign variances

B. Users
1. They use GIS to get zoning and as a look up tool (neighborhood plan, etc.)
2. Variances have a 96% approval rate (the board approves 96% of them). This will be captured by AMANDA.
3. All the rules cannot be fully automated so reviewers need to go over the applications.
4. Neil explained the process of an application for zoning review (AMANDA will generate a folder to track the steps along the way).
5. CTM will manage the images in AMANDA. There are currently one million images in PIER.
6. In AMANDA the folder will have all the attachments associated with the image/plan/application. While PIER has many images, they are not associated with a plan/application.
7. This group's needs are similar to Land Use Review.
8. Database populations go through AMANDA.
9. Liquor licenses go through a separate zoning review. Automation of liquor licenses is not practical due to the lack of accurate/current data. In addition, liquor license applicants must check on whether they are 300' from a school/church, so it is up to the applicant to be honest because zoning maps might not be current. This would be difficult to automate because of the need for a human component (check actual distance in field).

II. Applications

A. Adaptation of a viewer (legacy application) to be in AMANDA. Bert's GIS for AMANDA will be very similar to the GIS in PIER (same functions as before), with the addition of 1) Inspector Selection – assignment of building, environmental, etc inspectors to cases and 2) Notification Buffer Tool – around a certain property (300' radius) a mailing list is generated to send out letters to citizens (notification letters).

B. Look into the possibility of using a buffer around application (point on map) to see if it could be automated, but this could be unrealistic due to the poor quality of the data.

III. Goals

A. AMANDA.

IV. Success Criteria

A. AMANDA works

V. Issues

A. Need for additional AMANDA applications (on top of what current enterprise GIS applications do)

B. Need for notification (300/500 ft) – mailings

C. Need for inspector assignment

Water Resource Evaluation
3/7/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, David Rodriguez, Dean Djokic

Attendees – Rob Clayton, Chris Herrington, Scott Hiers, Martha Turner, Mateo Scoggins

Unable to Attend – Ed Peacock, David Johns

I. **Data**

A. Producers

13	Field Sampling Database (FSDB)
20	Hydstra/TS database
21	USGS monitoring
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
61	Drinking water wells
62	Education and Outreach
72	Digital Photographs
75	Riparian buffer zones

1. Field Sampling Database (#13) – This is their mission critical database that three different sections use.
   a) This database contains the watershed cross-reference table (WATERSHED_NO). The watershed geometry gets changed (and the IDs) which makes the cross-reference table difficult to maintain. There is no programmatic enforcement between the Watershed shape file and the lookup table. The Watershed lookup table is only modified when the code changes, but the shape file IDs can be changed at any time. Also, Ellen maintains the shape file and Rob/Chris maintain the Oracle table. These could be easily maintained in a geo-database.
   b) It is difficult for them to get their data entered in a timely manner.
   c) The data is collected by different groups and goes into a large Oracle database.
   d) A lot of different field components are entered and new methods are added frequently.
   e) They maintain and improve this database themselves.
   f) There is a field component to this database. It would be great to enter the data from the field, but the large amount of data to be entered makes this seem to be an unreasonable task. However, an ArcPad application would be possible.

g) The field sampling data is on the Web.

2. Hydstra/TS Database (#20) – They store some data in this database.
3. USGS Monitoring (#21) – They store some of this data in their Field Sampling Database. This data is split between the Hydrstra/TS Database and the Field Sampling Database. It doesn't really exist separately.
4. Biological Resource Map (#57) is in their work group, but doesn't exist except in the CEF Database (#58).
5. Drinking Water Wells (#61) doesn't exist as is. This data would be either in the USGS Monitoring or Field Sampling Database.
6. Education and Outreach (#62) – Some of this data is in the Field Sampling Database.
7. Central Files Review Database (needs to be renamed to Development Review Tracking Database) – This is an Access database. It contains a record of every development case they have reviewed. Some of this data is in PIER and some data has been added specific to their projects. Scott Hiers, Mike Lyday and Sylvia Pope maintain this database. Jo Dee Myatt does the data entry. This database documents what they do to assist the environmental review of site plans. It primarily tracks paper and their performance measures. It is also used to track engineering firms that don't do a good job. There is one big table in this database. This database could be linked to the Critical Environmental Features Database by Case # to get a spatial component.

B. Users

2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
6	Lookup Table Database
12	Stormwater Discharge Permit Program Database (SDPP)
14	Spills and Complaints
19	stormwater monitoring data
20	Hydstra/TS database
30	PIER
52	Drainage Infrastructure GIS
53	FEWS Site Locations
59	Digital Elevation Models
64	Creek Erosion
65	GIS water quality loading model
67	Impervious cover
68	Land use
71	On-site wastewater treatment systems
72	Digital Photographs
75	Riparian buffer zones

76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. The watershed geometry is developed by others. The IDs are not well maintained (see above).
2. The critical data they use are #s19, 20, 2, 3, 4, 14, 52, and 53.
3. There is a disconnect between the users' needs and the implementation of the layers. A user needs assessment of base layers, and data collection strategy (data workflows) needs to be done. Also, the users should talk to the data developers. All of the design is in the PIER database
4. There is a lack of process between external submissions to the actual database. Documents are scanned, but not as features.

II. Applications

A. User needs assessment

B. Field work – creek walk /site survey

C. Annual data reports

D. Basin characteristics for a watershed at any give point

E. Riparian integrity evaluation

F. Web application for selecting a location to get a collection of water quality data for that location. This would be a public application. They already have a back end, but need a GIS front end.

III. Goals

A. User needs assessment – geo-database design

B. Technology transfer – possible GIS applications

C. References to the base data.

IV. Success Criteria

A. Data quality for data developed by other groups (complete in design and content)

B. Data delivery standards for "consultant" community

C. Serving data to the community

V. **Issues**

A. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

VI. **Action Item**

A. They need to come up with a list of what they would like to have automated, both tabularly and spatially.

Master Plan
3/7/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, Dean Djokic

Attendees – Jean Drew, Mike Ihnat

The Master Plan is made up of three missions – Flooding, Erosion and Water Quality. It is a way to compile problems from all three areas, score them and come up with recommendations for solutions. There are 45 watersheds and the Master Plan was conducted on 17 of these watersheds in 2000. Watersheds are being added over time and the information updated. There is a Master Plan Team (MIP Team), which is comprised of staff from the different mission areas. They are working as a group to revise the problem scores and improve the accuracy of the results.

I. Data

A. Producers

70	Masterplan Toolbox (see tab for details)

1. The Master Plan Toolbox is designed to take input data and produce the scores. It needs to be converted from ArcView 3.3 to ArcGIS. It wasn't very stable in ArcView 3.3, so needs to be improved as well as converted. CTM is working on it, but has taken 2.5 years and the application still isn't finished. They do have some outdated documentation on the ArcView 3.3 version.
2. The MIP Team is trying to do the updated problem scores manually for their CIP Planning. Each group does their own scores.
3. Their data (maps and other documents) is stored in a specified area on the G drive. This is basically a filing system with folders on the various projects. They are trying to keep it organized.
4. The MIP Team re-uses existing data for analysis purposes.

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
7	RSMP
8	Floodplain GIS
12	Stormwater Discharge Permit Program Database (SDPP)
14	Spills and Complaints
16	Underground Storage Tanks

1. They could use the Drainage Complaint Database (and the CSR Data) for Flood and Erosion information for areas where they do not have technical assessments.
2. The Pond Databases could weigh into solutions development.
3. The FEMA Creeks Database could provide information on the floodplains, which relates to the problem scores.
4. The RSMP program is a money source.
5. The Floodplain GIS could be used to analyze the floodplains.
6. They could also use the Spills, SDPP and UST Databases as well, particularly to get data related to problems.
7. A map from all of the above sources could be put together to get better information on the projects.

II. Applications

A. Master plan toolbox – convert from ArcView 3.3 to ArcGIS. Apply problem scores to current conditions. The scores are used for CIP prioritization.

B. Field application for site survey

C. Project tracking

D. A database for better organizing their documents and data would be useful.

E. The availability of more comprehensive layers would be useful for projects, such as preparing bond election maps.

III. Goals

A. Need access to the data used in their analyses (where and what).

B. Database design for their component

C. Workflows for data updates

D. Help them to think ahead what can be done with technology

E. Project tracking

IV. Success Criteria

A. Access to the data and a big picture of the data organization

B. Geodatabase design for their data.

V. **Issues**

A. They need a database for storing their results (evaluations).

B. Workflows

C. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

D. Disconnect between existing applications (eCAPRIS) and actual needs.

E. It could be useful to include additional staff besides Jean in coming up with goals for this group.

Building Inspections
3/7/2006

IMP Team Members Attending –David Rodriguez, Steve Wilkinson, Dean Djokic

Attendees –Renee Vannatter

Unable to Attend – Dan Garcia

I. **Data**

A. Producers
   1. AMANDA

B. Users
   1. AMANDA

II. **Applications**

A. Field Aspect – primarily tabular
   1. Determines what are code violations and who gets the call (311, code enforcement, solid waste services)
   2. It is confusing to customers regarding who they need to call for code enforcement.
   3. Renee believes that when AMANDA is working, it will satisfy Building Inspection requirements.
   4. Renee states that the four hour turnaround on inspection requests is not realistic due to the number of inspections versus the number of inspectors.

III. **Goals**
   A. AMANDA

IV. **Success Criteria**
   A. AMANDA works

V. **Issues**
   A. The functionality of the GIS component will be similar to the current viewer. Two different types of users of the GIS component through AMANDA were identified. 1) External users – they need about 5 layers to display. 2) Internal users – they need more layers to choose from and display.
   B. AMANDA provides a limited GIS functionality mostly focusing on a single event (e.g. permit). Look for custom GIS applications that would produce a regional map of events.

Permit Center
3/8/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, Steve Wilkinson, Neil Galati, Dean Djokic

The Permit Center is the end of the Development Review process. This is where the permits are issued.

Attendees – Debra Fonseca

Unable to Attend – Cande Coward

I. **Data**

A. Producers
1. PIER/AMANDA - They do some stand-alone permits which involve their getting involved with the process. They collect the money from the application, then the inspectors inspect the work. Certificate of Occupancies go through Renee unless the customer gets a temporary CO, which they pay a fee for.
2. PIER/AMANDA has triggers and verifications built in to make sure the applicant is paid up, has insurance, etc. They provide a banking function to applicants, so they can draw down from an escrow account.

B. Users
1. They do sometimes look at service area information via GIS. This capability is supposed to be built into AMANDA.
2. They do reports out of PIER/AMANDA.

II. **Applications**

III. **Goals**
A. AMANDA

IV. **Success Criteria**
A. AMANDA works

V. **Issues**

ROW Management
3/8/2006

IMP Team Attendees –David Rodriguez, Steve Wilkinson, Neil Galati, Dean Djokic

Attendees –Jason Redfern, Pat Lowe

Unable to Attend – Johnny Anglin

I. **Data**

A. Producers

35	ROW Inspection Calls DB
36	Certified Traffic Control Contractor DB
37	SUEP Street Use Excavation Permits DB
38	Traffic Control Inspections DB
39	ROWMAN
40	Utility Coordination

1. The above listed databases are the ones this group maintains. They are Access, Oracle and Web based applications.
2. ROWMAN is a CTM developed application. ROW Management would like to modify some search features within the application, but AMANDA may provide this functionality.

B. Users

II. **Applications**

A. A Utility Coordination database is being created to get comments. This will be handled by AMANDA. The Coordination Committee has representatives from all the utility companies to address problems before a construction project begins.

B. PIER is not being used for the Coordination Committee. All forms/paper related to a project is stored in a folder.

C. ROW Management is in desperate need for GIS.

D. ROW and Excavation will be in AMANDA, but Utility Coordination will not be.

E. If a unique entry in AMANDA, and a unique event (needing road closure) can be tied together, then should be able to pass information back and forth.

F. Neil did a demo with AMANDA demonstrating the types of queries possible (Address, People, Property, etc.).

G. They use Access instead of Oracle because they have staff with Access experience. Pat has created a multi-user database so inspectors can be out in field and in sync with server so everyone has the same information.

H. Inspectors use laptops out in the field because a lot of typing is required.

I. Utility Coordination wants a GIS application to keep track of what is going on in the space and the process.

J. GIS access to the project database - AMANDA tie-in

K. WEB site for dissemination of road closure/event events.

III. **Goals**

A. AMANDA.

IV. **Success Criteria**

A. AMANDA works

B. GIS tie-in (map enabled operations) – geocode current records and enable future ones.

V. **Issues**

A. ROW Management wants to query using street segments.

B. ROW Management wants an internet (Web based) application so citizens can do a lot of the entry of information about events.

C. Dean suggests a formal password to “friendly’s” to be able to submit ROW Permit Requests.

D. Pilot for AMANDA has problems with the sync ups for mobile users because it is not real time. Sync up doesn’t occur until the end of the day. It needs to be instant.

E. Neil suggested using the duel laptop/tablet instead of just a laptop.

F. Dean asks if Oracle could be the database program handling the information while using an Access front end, for the Utility Coordination database. The problem is that no one in ROW Management is capable of handling the Oracle programming. Oracle has better multi-user capabilities than Access.

G. Road works page could use spatial data (map) to help illustrate special events.

H. There is no spatial component in AMANDA for ROW information

I. Look into using AMANDA to tie into GIS component (GIS is not “captured” in ROW applications).

J. Internet application for external requests – space and attributes (tie into AMANDA)

K. Mobile client for AMANDA limited (might even be canned)

L. ABBE (address database of valid addresses – street centerlines – address segments; address points)

Localized Flood Hazard Mitigation
3/8/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, David Rodriguez, Dean Djokic

Attendees –Mike Newman, Han Tran, Arthur Romero, Nathan Gullo

Unable to Attend – Steve Sun

I. **Data**

A. Producers

52	Drainage Infrastructure GIS
72	Digital Photographs

1. They contribute to the above.

B. Users

1	Drainage Complaints
8	Floodplain GIS
9	Easements
30	PIER
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
67	Impervious cover
68	Land use
70	Masterplan Toolbox (see tab for details)
78	TIN
79	Watershed boundary

1. City databases
   a) They use contours, addresses, property lines, easements, aerial photos, building footprints, public and private utility infrastructure (cables, electric, water, etc.), railroads, and property owners,
   b) General Permits – These don't go through PIER/AMANDA. Mike's group and other City Departments apply for these.
2. Department databases
   a) Storm drains, junctions/manholes, inlets, outfalls (existing)
   b) Storm drains, junctions/manholes, inlets, outfalls (suggested) – They own these layers. Eventually when the storm drains existing gets updated on a regular basis, the suggested ones could get moved over.

c) Drainage complaint points – they own these layers (generate space for those complaints that relate to the localized flooding events – events outside floodplains – "unexpected")
d) The CSR data is critical to this work group. They need this data for the Localized Flood Viewer GIS application that is currently not working since the SDE was implemented.
e) They don't use the existing Easements Database, but have need of this data.
f) Impervious cover (#67) data is really important to them.
g) They don't have access to a lot of the Department's GIS coverages.

II. **Applications**

A. PIER users

B. Utility coordination

C. Access to CSR/311 (like erosion group)

D. Watershed (creek)/drainage area (local) delineation and characterization – would be nice!!! ArcHydro is something they might want to see as a demo.

E. Interface to StormCAD application for H&H calculations.

F. DIG is critical for this group.

G. Not sure if a field application would be useful or not, but need clarification if they do.

III. **Goals**

A. Getting access to the existing data

B. Preparing inputs for StormCAD and outputs back to GIS

IV. **Success Criteria**

A. Having the DIG (part of it is interface to H&H)!

V. **Products**

A. Maps and reports related to the drainage complaint points (building and yard flooding)

B. Master plan updates

VI. **Issues**

A. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

B. Workflows for databases whose data are entered by different groups. Specify workflow that identifies what are the required data.

C. Workflow for migration from planned to existing features (storm drains)

D. Access to city-wide data (needs to be more consistent – e.g. changing locations or names of layers)

E. Need to share their data with other work groups (OSS) in read only form and other departments, such as Public Works and the Water Utility. Their data is the data Han maintains and the Localized Flood Viewer.

F. Data capture design for contractor's work

G. Manage documents in electronic form (pdf) – design for "document management"

H. Directory structure for project data (reports, GIS, CAD, excel, H&H models, etc.)

Floodplain Management
3/8/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, David Rodriguez, Dean Djokic

Attendees – Gary Kosut, Ray Windsor, Fang Yu, Todd Pankey, Ross Clark, Katina Butler

I. **Data**

A. Producers

5	FEMA Creeks (P)
8	Floodplain GIS
9	Easements (P)
10	LOMA/LOMR
11	Variance Database
27	One Stop Shop Performance Measure Spreadsheet (P)
30	PIER (P)
40	Utility Coordination (P)
59	Digital Elevation Models (P)
67	Impervious cover (P)
68	Land use (P)
72	Digital Photographs (P – their own)
77	Stream Centerline (P)
78	TIN (P)
79	Watershed boundary (P)

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
6	Lookup Table Database
7	RSMP
20	Hydstra/TS database
21	USGS monitoring
29	Customer Wait Time
30	PIER
40	Utility Coordination

52	Drainage Infrastructure GIS
53	FEWS Site Locations
54	Critical Low Water Crossings
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
67	Impervious cover
68	Land use
70	Masterplan Toolbox
72	Digital Photographs
74	Retrofit Program
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. City databases
   a) Public Works – easements database from Andy Holm in Real Estate.
   b) They use contours, addresses, property lines, easements, aerial photos, building footprints, public and private utility infrastructure (cables, electric, water, etc.), railroads, and property owners,
   c) TCAD and data from other counties
2. Department
   a) DFIRM –They are the owners of this data.
   b) City floodplain maps
   c) H&H models and supporting data

II. Applications

A. PIER/AMANDA users

B. Utility coordination

C. WEB/ftp distribution of modeling data and models (H&H)

D. Need access to CSR/311 System.

E. HAZUS

F. Watershed (creek)/drainage area (local) delineation and characterization – would be nice!!! ArcHydro is something they might want to see as a demo.

G. GeoHMS/GeoRAS

H. DIG is critical for this group.

I. Not sure if a field application would be useful or not, but need clarification if they do.

III. **Goals**

A. Web distribution of existing models

B. Integration of GIS and modeling (modeling support under different modeling conditions)

C. Model scenario management

IV. **Success Criteria**

A. Web distribution of existing models

B. Floodplain GIS app (WEB)

V. **Issues**

A. Exchange with external agencies such as DOT on issues related to flooding

B. CTP for FEMA

C. Data capture design for contractor's work

D. Manage documents in electronic form (pdf) – design for "document management"

E. Directory structure for project data (reports, GIS, CAD, excel, H&H models, etc.)

F. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data)

G. Workflows for databases whose data are entered by different groups (e.g. how to add pond rating curve to the pond database – it might be coming from a model).

H. Access to City-wide data (needs to be more consistent – e.g. changing locations or names of layers)

I. Generate Agenda management system data (to support City Council meetings)

J. Might want to consider waiting six months for ArcGIS 9.2 instead of going with WISE, which is proprietary and limited.

Field Engineering Services
3/8/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, David Rodriguez, Dean Djokic

Attendees – Mike Newman, Charles Brading, Gary Zwernemann, Jonathan Janek

Unable to Attend – Ray Wilmot

I. **Data**

A. Producers

1	Drainage Complaints
5	FEMA Creeks

1. Excel for easements

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
8	Floodplain GIS
9	Easements
30	PIER
37	SUEP Street Use Excavation Permits DB
39	ROWMAN
40	Utility Coordination
52	Drainage Infrastructure GIS
53	FEWS Site Locations
54	Critical Low Water Crossings
64	Creek Erosion
72	Digital Photographs
77	Stream Centerline
79	Watershed boundary

1. State Databases
    a) One call system (TESS – TX Excavation) that produces requests for "call before you dig." This is a system that notifies utility locators that work is about to be done in a specific area. The utility locator needs to go out and mark the appropriate lines within 48 hours. This data is not stored anywhere as it would be too labor intensive. It would be useful for the Utility Locator to have a map to show him where he needs to go. They've had 20,000 requests over time and they've done about 10% of these. It would be useful to view these requests in terms of the total number and to visually be able to see how many they did.
2. City Databases
    a) They are a contributor to the CSR/311 system. Gary Zwernemann investigates a lot of the drainage related calls that come in.
3. Department Databases
    a) Digital Photographs (#72) is critical to them. This group takes a lot of photos and they need a way to better manage them.

II. **Applications**

A. CSR/311 – Jonathan needs the Map Page field to print out on the service request form. It would be great if the Mapsco page and section (e.g. 525T) could be somewhere near the field that lists the citizens address on the Service Request. When the 311 system was first instituted, we were told that we would be able to attach a WORD document for ease of reference. This would allow more detailed explanation of some complaints since the current fields are somewhat limited on the amount of information that can be written. Jonathan has a lot of information on his hard drive (site visit notes, phone call record, photos, Arcview map image, CAF responses, e-mails, etc.) pertinent to various citizen complaints which would be nice to share with others if possible. Jonathan's records are mostly stored on his computer by a physical address (e.g., 11901 Indianhead Drive).

B. They need to be able to geo-reference photos (by location, case #, etc.) and low water crossings.

C. There are field applications that would be useful to this group.

D. CAF (customer assistance form) comes through the City Council. They could use support for that system and history tracking to reduce the duplication of work.

E. FEMA Creek Database improvements (e.g., be able to bulk enter inspections) are needed.

III. **Goals**

A. Having the DIG implemented would be very useful to them, particularly for utility location mapping – profile mapping along the line of tool in utility.

B. Organize information already collected into a coherent information "system"

IV. **Success Criteria**

A. Having the DIG implemented would be very useful to them, particularly for utility location mapping – profile mapping along the line of tool in utility).

B. Enterprise implementation of local data (information design and common space)

V. **Issues**

A. Investigate how other Departments deal with One Call System (TESS – TX Excavation) that produces requests for "call before you dig". Potentially develop a City-wide application.

B. Need to investigate who keeps the CAF responses. Need to have access to the results. Is there a system to manage this? There should be a connection from this system to the CSR/311 System.

C. Generate sections layer (map reference system).

D. Interaction with other infrastructure providers (ATT, SBC, Cable, etc.)

Contract Management
3/8/2006

IMP Team Attending – Leeanne Pacatte, David Rodriguez, Dean Djokic

Attendees – John Routh

I. **Data**

A. Producers

1. John writes professional service agreements for engineers and does some project tracking.
2. John indicated that George would like a filing system of data/information.
3. Dean asks if there is any spatial component to John's job. John is more of a resource to the program/project. He gets contracts and helps facilitate the contract's execution. He only interacts with others for a short time. Someone else tracts the contracts once John is done with them.
4. John works with project managers to help put contracts together with subcontractors.
5. John checks that the scope and fees are in alignment with the services being bought.
6. John rewrites/edits definitions of project to reflect the "boiler plate" for the city and possibly adds an addition to list the price of the project.

B. Users

II. **Applications**

A. John indicated (outside the meeting) that it would be useful to be able to rapid scan the signed contract for internal use only.

III. **Goals**

IV. **Success Criteria**

V. **Issues**

Brownfields
3/8/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, Dean Djokic

Attendees – Diane Chapa

Unable to Attend – Catherine Esparza

Introduction – Sites are determined to be Brownfields if someone requests to see if it is one and the Brownfields group researches the site and determines that it qualifies. They use this information to get money to clean it up.

I. **Data**

A. Producers
1. Brownfield excel file stored on local storage.
2. It was noted that they cannot publish a Brownfields list because of liability issues.

B. Users

8	Floodplain GIS
16	Underground Storage Tanks
30	PIER
56	Abandoned Waste Disposal Contract
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
68	Land use
79	Watershed boundary

1. City Databases
   a) TCAD (appraisal information)
   b) Lots/parcels/ownership
   c) Neighborhood housing

II. **Applications**

A. They need an application to geo-reference current Brownfield sites and tie into current property information.

B. They need to identify the reuse potential for targeted brownfields. This would tie into neighborhood plans (as something more than a text file) to recommend uses of brownfields. This application would map out where Brownfield sites are and have a lookup table to show the types of use for it. This information could be used to market the property.

C. Property information

III. **Goals**

A. Need quick reference to Brownfields information. This would be an internal use.

B. Identify projects that need money – projects that can be helped with grants. Need to have a layer of projects.

IV. **Success Criteria**

A. Need quick reference to Brownfields information.

V. **Issues**

A. Need access to HAZMAT locations

B. Need access to current and past commercial property database with bad "chemicals" (fire dept.?)

C. Need access to the current ownership/parcel information.

D. Need data on neighborhood housing, parks, etc. and other projects to see if these projects can be supported.

Flood Early Warning System (FEWS)
3/8/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Susan Janek, Kena Pierce, Matt Porcher, Ross Clark

I. **Data**

A. Producers

20	Hydstra/TS database (partial)
53	FEWS Site Locations
54	Critical Low Water Crossings
55	Emergency Notification System Areas
72	Digital Photographs (partial)

1. QNX Fews - Hydrolynx – Time series database
2. FEWS - Stream and rain gage database
3. Datawise – Controls crossings and sirens
4. VEIUX (nexrad stuff plus predictive ~ 60 minutes)
5. They give their data to Stormwater Monitoring (manually – not automated)/

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
6	Lookup Table Database
7	RSMP
8	Floodplain GIS
9	Easements
10	LOMA/LOMR
11	Variance Database
19	stormwater monitoring data
20	Hydstra/TS database
21	USGS monitoring
30	PIER
39	ROWMAN
40	Utility Coordination
52	Drainage Infrastructure GIS
59	Digital Elevation Models

60	Edwards Aquifer Contributing and Recharge Zone Boundaries
64	Creek Erosion
67	Impervious cover
68	Land use
70	Masterplan Toolbox (see tab for details)
72	Digital Photographs
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

II. **Applications**

A. HEC1/RAS/HMS, GeoRAS/GeoHMS

B. Need Map2Map

III. **Goals**

A. Big Picture - Implement decision system for providing flood recommendations based on real time gage data (Nexpert). Hand out recommendations to emergency management people in automated way.

IV. **Success Criteria**

A. Automate generation of pdfs of floodplains for multitude of flow scenarios.

V. **Issues**

A. Involvement with WEB EOC (Emergency operation center) - Office of Emergency M Management.

Financial Management
3/9/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, David Rodriguez, Steve Wilkinson, Dean Djokic

Attendees – Mike Ihnat, Joyce Pulich, Karin Oaks, Carol Barnes, Connie Campa

I. **Data**

A. Producers

26	Urban Watershed Fund Database
31	Fiscal Surety
32	Stratus Fee Waiver Tracking
33	Catellus (Mueller Redevelopment) Fiscal Surety Waiver Tracking
34	Parkland Fee Tracking
37	SUEP Street Use Excavation Permits DB (partial)

1. Pond letters database (will be incorporated into the Ponds Geo-database)
   a) When a customer insists they have a pond that they cannot find in the Commercial Pond Database, Evie goes out and checks to see if the pond exists. If she still can't find it, she contacts Robert Acosta.
   b) If she verifies there is a pond and it isn't in the Pond Database, there is no mechanism for getting this information back into the Pond Database. Matt Hollon is working on correcting this problem in the new Pond Geo-Database.
2. Pond Lawsuit Database – needs to be incorporated into Pond Geo-database.
3. CIS (City's Financial System) – They enter data into this system.
4. License agreements (for private use of public lands) – needs to be captured in the matrix – has spatial component. CTM designed this database to track the financial records for license agreements. It was originally created in Public Works then went to ISS, back to PW and now to WPDRD through several reorganizations. Andy Halm from ROW Mgmt also has a similar database that he uses. This may be another opportunity for combining databases. Anna Villasana on the 12th floor is the primary user.
5. Stratus Fee Agreement Database – This is related to Circle C and is basically a credit bank with them. This database is set up to track the amount and to make sure Stratus doesn't use too much. There are other developers that can use the money too. It tracks the dollar amount per project.
6. Catellus Database – This is similar to the Stratus Database.

7. Parkland Fee Tracking – Carol Barnes inherited this stand-alone database. It is for the Parks Department. The developer can pay money in lieu of developing a park. The Parks Department doesn't have a link to it and they probably have their own database. The two databases should be reconciled and perhaps combined. Carol also takes in money for the county parks too.
8. SUEP (#37) – They have three people who enter data into this database.
9. Data Warehouse – Pulls data out of AFS2 and puts it into Access.
10. They enter plat data into a spreadsheet that gets uploaded into the Carma Database. Scott gets the data to enter into the spreadsheet.
11. Connie enters data into a spreadsheet that gets uploaded into something that produces their performance measures.

B. Users

2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
6	Lookup Table Database
7	RSMP
27	One Stop Shop Performance Measure Spreadsheet
30	PIER
37	SUEP Street Use Excavation Permits DB
43	LIS Archive

1. They are also interested in the RSMP Database, because they track the financial part of it.
2. City-wide
   a) eCAPRIS, … (look it up in the provided materials)
   b) LIS Archive (#43) – They use the old billing system mainly for the Drainage Refund project, as well as for the lawsuit. It is a research tool.

II. Applications

A. Field work (pond "investigation") – automating form input. Needs connection to pond collection/assessment process.

B. Site measurements (e.g. impervious cover for drainage fees) – goes into CIS. Austin Energy is the owner of this system. The Financial Management group inputs changes into this system based on the discounts for ponds.

C. They need better reporting capabilities from the CIS/LIS database.

D. There is an old application that CTM developed based on LIS. This application no longer works.

III. **Goals**

A. Reduction in duplicated databases

B. Better access and reporting to data

C. Ability to share their data with other sections in the department/internal customer

D. Reduction in duplication of data entry (e.g. populating CIS database)

IV. **Success Criteria**

A. Streamline (reduce duplicate entries/errors) performance measures

B. Need access to new Pond Geo-database.

V. **Issues**

A. The Commercial Pond Database is used for research to determine if the pond is there. Karin does this and also will generate ticket for field work for Evie to go out and identify if the pond is there or not.

B. Need a mechanism for providing information about features that do not exist when doing field work (about other people's data)

C. Reference to the pond is coming from CIS (billing system for the utility). The same pond might be referenced by a different identifier depending on which database it is in. The two databases needs to be cross referenced.

D. Interaction with Parks database? Does not seem to be much of it (informal). Might be a spatial component (by one of 10 parkland zones). Needs to be coordinated with the City as well as the County.

E. Need to cover CIS database

F. There are a number of spreadsheets and Access databases that currently track internal information.

G. Performance measurement calculations and reporting (spreadsheets for exchange data with other systems at the City level). Should not be retyped as is done now.

Field Operations
3/9/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Katherine Loayza, Jim Grube, Bill Booth, David Chapman, Daniel Herrera, Tony Glass

Unable to Attend – Danny Lopez

I. **Data**

A. Producers

1	Drainage Complaints
2	Residential Ponds
4	Pond Geodatabase
52	Drainage Infrastructure GIS (partial)
72	Digital Photographs (partial)

1. CSR/311 – There are different time requirements for responding, depending on what it is.
2. The Drainage Complaint Database (#1) has become basically a Work Request Database since the CSR/311 System was implemented. Field Operations prioritizes the work list and sends it out to the superintendents. They have a schedule of work for the month.
3. DIG (#52) – None of the infrastructure work they've done for the past 13 years has been tracked because there has not been a system to track it in.
4. Digital Photos (#72) – They do have the pond photos sorted by ticket number. Everyone has their own pictures. Jonathan has a lot of pictures of their stuff. There needs to be a central location for storing photos and a consistent naming convention to be used to reference them.

B. Users

3	Commercial Ponds
5	FEMA Creeks
6	Lookup Table Database
8	Floodplain GIS
9	Easements
28	Operating Permit Database
30	PIER
31	Fiscal Surety
37	SUEP Street Use Excavation Permits DB
39	ROWMAN

53	FEWS Site Locations
54	Critical Low Water Crossings
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
64	Creek Erosion
74	Retrofit Program

1. They will use AMANDA.
2. They use Easements in ArcView, but not the Access Database that Floodplain uses. They need the separate easements recorded after the plat. Public Works doesn't maintain these, but it would be really useful if they did.

II. **Applications**

A. Field work (pond "investigation") – automating form input. They can have laptops in the field.
   1. CSR/311 tie in for immediate reaction. The dispatcher routes the 311 calls. It would be good if they could tie into the dispatcher and send information to the computer via cell/radio.
   2. It would be great if they had a digital ticket, but it isn't mission critical to get this right away. Instead of getting pages, if they had a laptop in the field, they could go right out there and update the ticket from the field, and not have to go back and forth so much.

B. Application for field work reporting/status.

C. It would be good to have a database that would overlay with the Master Plan to confirm that they are doing the work. Matt did this for them manually.

D. They would like a map that shows them where they've done work based on the type of work.

III. **Goals**

A. Access to other data. PIER is very difficult to use. It is also difficult to find current and accurate easement information.

B. A functioning DIG system is critical to them.

C. A photo referencing system would be useful.

IV. **Success Criteria**

A. Streamlined access to the data spatially.

B. Updates to the data

V. **Issues**

A. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

B. Make sure the right types of easements are entered in an identifiable way.

C. Field Operations give Catellus money (#33). Need to find out from Carol Barnes if these funds will be tracked. Explore the need for interaction with #33.

D. They need to be able to use 311 to report other people problems.

Creek Flood Hazard Mitigation and Pond Safety
3/9/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Mapi Vigil, Roxanne Cook, Johnny Price, Pamela Kearfott, Bond Harper, Glen Taffinder, Elizabeth Hernandez

Unable to Attend – Joe Guerrero, Marco Guzman

I. Creek Flood Data

A. Producers

4	Pond Geodatabase (partial)
7	RSMP
30	PIER (partial)

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
6	Lookup Table Database
7	RSMP
8	Floodplain GIS
9	Easements
10	LOMA/LOMR
11	Variance Database
20	Hydstra/TS database
21	USGS monitoring
22	Legal Settlement Tracking Database
23	Development Agreement Tracking
24	Red Tag DB
25	Environmental Inspection -Red Tag DB
30	PIER
31	Fiscal Surety
32	Stratus Fee Waiver Tracking
33	Catellus (Mueller Redevelopment) Fiscal Surety Waiver Tracking
40	Utility Coordination

41	GAIN 2000
42	Records Storage Tracking
52	Drainage Infrastructure GIS
53	FEWS Site Locations
54	Critical Low Water Crossings
55	Emergency Notification System Areas
56	Abandoned Waste Disposal Contract
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
61	Drinking water wells
62	Education and Outreach
63	ERM library database
64	Creek Erosion
67	Impervious cover
68	Land use
70	Masterplan Toolbox (see tab for details)
71	On-site wastewater treatment systems
72	Digital Photographs
74	Retrofit Program
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. EII (environmental integrity index)
2. Emergency Notification System Areas (55) - They use this because they are volunteers for the FEWS program
3. Digital Photos (#72) – These need to be better organized. They keep quite a few photos related to their projects.
4. City databases
   a) One Stop Shop Viewer
   b) W/WW utility data
   c) City clerk Council action documents
   d) AMANDA (TCAD)
   e) Property ownership (Travis County)

II. **Pond Safety Data**

A. Producers

2	Residential Ponds (partial)
3	Commercial Ponds (partial)
4	Pond Geodatabase (partial)
30	PIER (partial)

B. Users

1	Drainage Complaints
5	FEMA Creeks
6	Lookup Table Database
8	Floodplain GIS
9	Easements
10	LOMA/LOMR
11	Variance Database
20	Hydstra/TS database
21	USGS monitoring
23	Development Agreement Tracking
24	Red Tag DB
25	Environmental Inspection -Red Tag DB
30	PIER
40	Utility Coordination
41	GAIN 2000
42	Records Storage Tracking
52	Drainage Infrastructure GIS
53	FEWS Site Locations
54	Critical Low Water Crossings
55	Emergency Notification System Areas
56	Abandoned Waste Disposal Contract
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
61	Drinking water wells
62	Education and Outreach
63	ERM library database
64	Creek Erosion

67	Impervious cover
68	Land use
70	Masterplan Toolbox
72	Digital Photographs
73	Rainwater Harvesting location
74	Retrofit Program
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. Digital Photos (#72) – Pond Safety would like to be able to reference the photos directly from the Pond Database.
2. EII (environmental integrity index)
3. City Databases
   a) One Stop Shop Viewer
   b) W/WW utility data
   c) City clerk Council action documents
   d) AMANDA (TCAD)
   e) Property ownership (Travis County)

III. Applications

A. Field work – automating form input. Dam safety – ArcPad, creek walk.

B. Application for field work reporting/status.

C. Access to CIS for ownership information

D. Have an automated process for data assembly for a particular type of analysis (e.g., base map, custom layers, documents, etc.).

E. Pond Safety GIS that would eventually part of the Pond Geo-database

IV. Goals

A. Have automated process for data assembly for a particular type of analysis (base map, custom layers, docs, photos, etc.).

B. Data access – just knowing who has what that can be useful in the project

C. Integrate GIS and tabular components (RSMP). Workflow for data update from personal to SDE.

D. Masterplan toolbox implemented in a meaningful way

E. Research library

V. **Success Criteria**

A. Research library/database design

B. Data access to external data

VI. **Issues**

A. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

B. Time series database

C. Need a library of "research" materials (directory structure for all supporting materials). This could be combined with #63, which is ERM's library.

D. Need to store all the information associated with the review of external (CIP) projects – reviews of consultant submitting projects. The whole history (initial comments, all the way up to final submission).

E. Standards for data submission for data coming from external sources (consultants).

F. Find reference to EII

G. There is a need for a workflow driven process (check off list generating next steps in the workflow) – AMANDA is not going to cover their needs in this area.

H. At last check there were plans for the implementation of AMANDA to include RSMP and then turn off the current RSMP database/GIS. This would create a major problem for the Creek Flood Hazard Mitigation group.

I. They do not have enough data storage space.

J. PIER is not a good research tool. They'd like something that's easier to find things in. Making it spatial would also help them find projects.

K. There is a lot of good data in the City, but people don't always know that it is there. There is also a lot of duplication of data. Just knowing who has what data would be useful.

L. RSMP GIS and tabular data are not meeting the needs of the Creek Flood Hazard Mitigation group. Bond creates the GIS data, but she can't link it to the Oracle database. She was able to update it from her geo-database, but after CTM switched it to the SDE server, she has not been able to update it.

Commercial Building Review
3/9/2006

IMP Team Attendees – Leeanne Pacatte, David Rodriguez, Steve Wilkinson, Dean Djokic

Attendees –Carol Raney, Tim Langan

I. **Data**

A. Producers

B. Users

30	PIER

II. **Applications**

A. Need to tie together GIS and PIER (search in space to pull out permit images in PIER)

III. **Goals**

A. AMANDA works with CHANGES to meet their requirements

IV. **Success Criteria**

A. AMANDA works with CHANGES to meet their requirements

V. **Issues**

A. AMANDA is very "layered" to the point that the users will spend hours working with each permit. What took 20 minutes with PIER will take hours with AMANDA. AMANDA will effectively shut them down. ISSUE #1.

B. Research Issues
1. Carol's biggest concern with AMANDA is research into the history.
2. AMANDA is missing research capabilities.
3. Research – documents associated with a number (parcel, address, etc). "Pseudo Spatial Locator".

C. Addressing Issues
1. Change of addresses within the system (Addressing Department) is a major problem for this group. This group works at pulling up all former review permits for a building (the history of the building), but faces challenges when the address for a building has changed the way it is denoted within the system. ISSUE #3.

2. Communication between Building Review and Addressing is not going well. The Addressing Department is not information Building Review when they change address spellings.
3. Address mapping capability – they need to be able to manage when an address changes – have a lookup of what one address went through so they can find what these were over time.

D. Steve is hoping to keep PIER accessible even after AMANDA is online, in a read-only capability.

E. Possible GIS Applications to keep from typing the GIS information into PIER, could possibly be automated, or linked.

F. Carol wants AMANDA to be "grouped" like PIER as far as permits are considered. ISSUE #2

G. Right now each permit needs to be a case in AMANDA. For them it would be better to have multiple permits to be a single case (e.g. electric and gas permits will now have to be two cases in AMANDA, while in the past it would be just one – a master permit with multiple trade permits).

H. They need access to 1980 building footprint GIS layer (planimetrics) that they used to have.

Site Plan/Subdivision Inspection
3/9/2006

Mark Mauldin is the lead for the Site Inspection Group (construction of private property and future public property) while Ruben Cantu is the lead over Subdivision Inspection (infrastructure the City will maintain). The Site Inspections will go into the first phase of AMANDA, while the Subdivision Inspections will be part of Phase II of AMANDA. Henry Casas is the Manager over both of these groups.

IMP Team Attending – Leeanne Pacatte, Ann McCracken, Steve Wilkinson, Dean Djokic

Attendees – Henry Casas, Mark Mauldin, Ruben Cantu

I. **Data**

A. Producers

3	Commercial Ponds
4	Pond Geodatabase
25	Environmental Inspection -Red Tag DB
28	Operating Permit Database (partial)
30	PIER (partial)
51	EV Complaint
72	Digital Photographs

1. Red Tags (#24 and #25) – There are two Red Tag databases. One is Susan Scroggin's and the other is the one the Site Inspection group maintains. The new red tags (#25) will be in AMANDA, but not the historical data. Each inspector has their own geographical area and they are responsible for taking care of just that portion.
2. Subdivision Inspections is still doing a lot of paper tracking. They aren't entering anything into a database. They collect the as-builts when the project is complete. These go to the File Room to be scanned in.
3. Digital Photographs (#72) – Site Inspections takes photos. These are in folders by address. They will be able to bring them into AMANDA. Subdivision Inspections could use a photo organizing system.

B. Users

2	Residential Ponds
6	Lookup Table Database
9	Easements
24	Red Tag DB
28	Operating Permit Database
30	PIER
31	Fiscal Surety

35	ROW Inspection Calls DB
37	SUEP Street Use Excavation Permits DB
39	ROWMAN
52	Drainage Infrastructure GIS
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
71	On-site wastewater treatment systems

1. Site Inspections needs to know when a pond is proposed on an approved plan.
2. Easements (#9) – Subdivision Inspections sometimes needs to research easements.
3. City
   a) eCID (Construction Inspection Database – Public Works). Subdivision Inspections provide corrections and uses for reporting. Not everything works in eCid and Public Works currently has a team working to correct this issue. Site/Subdivision is considering using MS Project for better work load analysis if this is not included in the eCid updates or as a short term solution.

II. Applications

A. Project management application – resources, scheduling, workloads, etc. (looking into using MS Project)

B. Field application – tablet (use GotoMyPC to connect and use whatever they have on the desktop)

C. Access to the desktop functionality in the field (remote access or downloads before going to the field) for subdivision group.

III. Goals

A. AMANDA Works

IV. Success Criteria

A. AMANDA Works!

B. Remote access

V. **Issues**

A. Need to include historical Red Tag data into AMANDA. Does not seem to be planned in the implementation. Will need to maintain the legacy database.

B. Need ability to “red tag” property in AMANDA.

C. Need strategy for storing various project files in a coherent way (replace paper trail), particularly for the subdivision group.

D. Need for remote access

Spills and Complaints
3/9/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, Dean Djokic

Attendees – Sharon Cooper, Eric Kaufman

I. **Data**

A. Producers

12	Stormwater Discharge Permit Program Database (SDPP) (owned by SDPP Group)
14	Spills and Complaints (owned by Spills Group)
56	Abandoned Waste Disposal Contract
70	Masterplan Toolbox (partial)

1. "Six pages" of other data sources (get the report with that info). Note: This is for Spills.
2. Coal tar ban communication database – to keep track of incoming and outgoing communication with different users, manufacturers, etc., regarding the cold tar sealant topic. This might be a standard approach for dealing with other topics as well. This database has been speced out, but not created yet. There are significant contaminants in this product that are carcinogenic, so they are trying to prevent it from being flushed to creeks and lakes when it is applied. Austin is the first city in the nation to ban this product. There are potential political and legal issues involved. They might want a spatial component eventually.

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
6	Lookup Table Database
8	Floodplain GIS
9	Easements
10	LOMA/LOMR
13	Field Sampling Database (FSDB)
15	Integrated Pest Management System
16	Underground Storage Tanks
17	dry weather screening

18	stormwater monitoring sites
19	stormwater monitoring data
20	Hydstra/TS database
21	USGS monitoring
24	Red Tag DB
25	Environmental Inspection -Red Tag DB
28	Operating Permit Database
30	PIER
39	ROWMAN
51	EV Complaint
52	Drainage Infrastructure GIS
54	Critical Low Water Crossings
55	Emergency Notification System Areas
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
61	Drinking water wells
62	Education and Outreach
63	ERM library database
64	Creek Erosion
66	Golf course protection
67	Impervious cover
68	Land use
69	Maps (see tab fro details)
70	Masterplan Toolbox (see tab for details)
71	On-site wastewater treatment systems
72	Digital Photographs
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. Operating Permit (#28) – They could use a link to the Operating Permit Database now in case there is a spill in that area.
2. ROWMAN (#39) – They used to have access to an ROW event database, but they no longer do. They really need this if it is #39.

3. Digital Photographs (#72) – it would be nice if photos were organized and named consistently and they could just send the link to it. Dates need to be associated with the photos.
4. City
   a) CIS
   b) Hazmat Sites

II. **Applications**

A. Field work both with PDA and laptop requirements. The investigation would need to be recorded on a laptop because it involves a lot of text, but the sampling portion could be handled by a PDA because there are lots of checkboxes.

B. Inspection allocation

C. Emergency response – routing, real time!!!!

D. Spill tracing (overland and through pipes)

III. **Goals**

A. Mobilize Mac database and move to current technology. Make it spatial so it can be related to all the other water quality data.

B. Ability to data mine and look for cause-effect relationships

C. Streamline data input/access process. Eliminate handwriting component and allow entry directly through database.

IV. **Success Criteria**

A. Mobilize Mac database and move to current technology. Make it spatial so it can be related to all the other water quality data.

V. **Issues**

A. Storm Drain Markings – Need to keep track of "don't dump into creek" signs. This may be an education project. It's a preventative.

B. Need off-line access to data (e.g. when cell towers are intermittent, or they shut down the servers due to sever weather). Need to keep data on the laptop.

C. Access to owner/manager information (maintenance people to call in case of emergency).

D. Since they are first responders, they have lots of reference materials. These are in paper form, so it would be nice to have them in digital form.

E. Access to the weather data for personal safety and impact on flows. Real-time access would be nice

F. Need to access/interact with Open records requests. Needs a management system for this - multi department multi group. Collaboration management on reporting.

G. Need to access/interact with CAF – customer assistance form (complaints). Need to respond to those within 10 days. Same need as above.

H. They would like to correlate their data with the sampling and monitoring data to help them make Master Plan and other decisions.

Stormwater Discharge Permit Program
3/9/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, Dean Djokic

Attendees – Sharon Cooper, John Watkins, Terri Calero

Background: There is a similar process with this program as for spills and complains but the SDPP program deals with fixed sites. In addition, there is a permitting process where they send out notices and collect fees. They send out annual permit/billing notices to 1200 facilities. There is also an inspection process. The forms are different and the site investigation is somewhat more detailed. The inspections are more scheduled than with spills. They look for problems rather than respond to them. The Spills group handles a problem if it is happening right now, but once it's contained (if it's a permittable site), the SDPP group is given the problem and an SDPP inspector goes out to do an inspection. Regular inspections are prioritized. Priority 1 sites are inspected once a year. Priority 2s are the bulk of their sites (primarily automotive) and these sites are inspected every 2 years. Priority 3s are fuel dispensing facilities and they are inspected every 3 years. However, there is an override that will bump up a site's priority if the site has had a lot of problems staying clean in the past. The inspectors have territories except for the Team leader who goes around to the worst sites. They print out a priority list regularly and go out unannounced.

I. **Data**

A. Producers – pretty much the same as the Spills Group.

12	Stormwater Discharge Permit Program Database (SDPP) (owned by SDPP Group)
14	Spills and Complaints (owned by Spills Group)
56	Abandoned Waste Disposal Contract
70	Masterplan Toolbox (partial)

B. Users – pretty much the same as the Spills Group.

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
6	Lookup Table Database
8	Floodplain GIS
9	Easements

10	LOMA/LOMR
13	Field Sampling Database (FSDB)
15	Integrated Pest Management System
16	Underground Storage Tanks
17	dry weather screening
18	Stormwater monitoring sites
19	Stormwater monitoring data
20	Hydstra/TS database
21	USGS monitoring
24	Red Tag DB
25	Environmental Inspection -Red Tag DB
28	Operating Permit Database
30	PIER
39	ROWMAN
51	EV Complaint
52	Drainage Infrastructure GIS
54	Critical Low Water Crossings
55	Emergency Notification System Areas
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
61	Drinking water wells
62	Education and Outreach
63	ERM library database
64	Creek Erosion
66	Golf course protection
67	Impervious cover
68	Land use
69	Maps (see tab fro details)
70	Masterplan Toolbox (see tab for details)
71	On-site wastewater treatment systems
72	Digital Photographs
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN

79	Watershed boundary

1. City
   a) CIS
   b) HAZMAT sites

II. **Applications**

A. Field work both with PDA and laptop requirements. A tablet application would be good, so they can walk around and enter data on the move. There is more data than can be feasibly captured in PDA. This way they could do their report in the field and print it so the responsible party can have a copy. Currently they use carbon paper or mail the copy.

B. They need a digital version of what is in the folders right now. They have difficulty keeping track of the folders. The inspection detail doesn't go into the database and would need to if they want to be able to print the inspection form from the database.

C. Streamline permit payment/receipt process. Certified mailing printing/log entry. Payment process through Finance is antiquated. These should be automated instead of handwritten. Also, the certified mailing cards log book is tedious and time consuming.

III. **Goals**

A. Streamline data input/access process

B. Ability to data mine and look for cause-effect relationships

IV. **Success Criteria**

A. Coordination with spills database.

B. Streamline data input/access process

V. **Issues**

A. Need off-line access to data (e.g. when cell towers are intermittent, or they shut down the servers due to sever weather). Keep data on the laptop.

B. Access to owner/manager information (maintenance people to call in case of emergency).

C. Need access to CAF (Customer Assistance Form) Database. Need to respond to these within 10 days.

D. Need to interact with open record requests. Need a management system for this – multi department, multi group. Collaborate with management on reporting.

E. Need to coordinate this database with the Spills Database and add a spatial component.

F. SDPP Database has some problems that if they were fixed, would improve the efficiency of this work group.

G. Their current process and number of sites isn't changing, but their group is taking on more responsibilities, so they have to try harder to streamline their process if they want to get everything done.

Development Assistance Center (DAC)
3/10/2006

IMP Team Attending – Leeanne Pacatte, David Rodriguez, Steve Wilkinson, Neil Galati, Dean Djokic

Attendees – Chris Johnson, Brandon Bailey

Background – There are two parts to DAC – 1) Consulting Side and 2) Record Research Side (History, Files - where everything is stored). Brandon works on the Record Management side. Navigating through the code is the main focus of DAC. There are two types of people using DAC - 1) One type has knowledge of the code and just needs a little guidance. 2) The other type is Joe Property Owner who owns a piece of land and wants to know what he can do with it.

VI. **Data**

A. Producers

B. Users

8	Floodplain GIS
29	Customer Wait Time
30	PIER
41	GAIN 2000
42	Records Storage Tracking

1. This group uses PIER and GIS heavily. They currently use ArcView 3 because ArcIMS applications are limiting in capabilities and performance.
2. Need easements
3. They have a contract with Iron Mountain – DB, and one internal database (#41, #42)
4. GAIN2000 is in FoxPro
   a) There is a detailed description of the process to request and retrieve data. They have problems with that.
   b) Internal program – RSTS (#42) Oracle database. This is a redundant system to GAIN2000. This system says what is in the box, but not necessarily where the box is.
   c) GAIN2000 can tell where the box is, but not what is in the box.
   d) GAIN2000 is a legacy database they are trying to phase out.

VII. **Applications**

A. Address/grid/parcel research to identify property. From that identify case file number and from that some on-line data, and then if necessary get the boxes related to the history of the "location".

VIII. **Goals**

A. AMANDA works

B. Good GIS system for research

IX. **Success Criteria**

A. GIS as general research tool

B. AMANDA works!

C. Move Records Storage Tracking (#42) into Gain 2000 (#41)

X. **Issues**

A. Database of floodplain determinations – by parcels. Having access to the existing ones would be good.

B. Currently there is no capture of what is being determined during interaction with the client – so that would be of interest

C. GAIN 2000 interaction with Iron Mountain is not automated, which introduces inefficiencies.

D. Data issues with box identification once a day or every other day. They get about 800 customers a month. They spend about 10 minutes per problem, with several phone calls.

E. Records Storage Tracking (#42) was developed by CTM and is in Oracle. Nothing new gets put in this database. All is now going to GAIN 2000 (#41). Need to merge data from #42 into #41.

F. Internet application not efficient compared to the internal application, so people still come to DAC as they can get things done faster (those that do it a lot). Would help if they could pull all documents at once instead of a page at a time.

G. Since this department's functionality will be handled by AMANDA, it is important to determine what won't be covered by the AMANDA rollout.

H. AMANDA will help Chris. He is relatively happy with the software, but needs more coworkers.

I. DAC needs more coverages than what the ArcIMS website offers. So if ArcIMS can add more feature classes to a site it would help. However, it is still slow and the display window is too small.

J. Chris has 1-1 contact with customers so no reports are generated. This step is needed because the land development code is so complicated.

K. Steve indicated that it was once hypothesized about documenting and saving research already done on a parcel so they won't have to do it again. But the answers DAC generates for public are specific to the question, not necessarily the property. They would like to access a database where the determinations have already been done on a property.

L. Migration of systems and human error are the greatest cause of errors in records/fields.

Wrap-up Meeting
3/10/2006

IMP Team – Leeanne Pacatte, Steve Wilkinson, Ann McCracken, Neil Galati, David Rodriguez, Dean Djokic

Attendees – Joyce Pulich, Ellen Wadsworth, Mike Ihnat, Sandy Kelso, Joe Guerrero, Chris Herrington, Jon Meade, Susan Janek, Matt Porcher, Catherine Esparza, Ed Peacock

XI. **Introduction** – Leeanne announced that she was pleased with how the process has gone so far and the wealth of information that has come out of it.

XII. **Summary from Dean**

A. We will share – We don't have an option here. There is plenty of good data around.

B. We will use the technology we have – We have good technology.

XIII. **Review the Current State –** There is still some work to do here to capture the current state.

A. Inventory of Departmental data and databases. The preparation was critical – data and personnel forms.

B. Individual sessions with work groups.
1. 27 sessions
2. 33 pages of notes in digital form
3. 2.5 notepads of handwritten notes
4. 30 contact hours
5. The focus of the meetings was more on the data requirements than the functions.

XIV. **Initial Findings**

A. There are plenty of needs
1. Data input processes
2. Field work
3. Database design
4. Applications
5. The needs will be different for different groups.
6. The IT infrastructure is okay, but need to make sure there is enough shared storage space.

B. There are plenty of issues
   1. Duplication of data entry efforts
      a) There is a set of technical ways the data could come to us in digital form rather than re-entering or re-digitizing it.
      b) There are lots of ways to automate the work flow before it gets to us to make our lives easier.
      c) Get the citizens to enter some of the data. It is technically doable, but whether or not we can institutionally get the citizens to do it the way we want isn't clear. Providing incentives would help.
   2. Unorganized Data - To facilitate data sharing we need a tighter organization of our data inventory. Need to incorporate:
      a) Naming conventions
      b) Organizational structure across the Department
      c) Published directory structure
      d) Formal database design – both spatial and attribute – enterprise wide
      e) Well defined data inventory
   3. Lack of infrastructure for development of mission critical applications. Dean doesn't think we have the IT structure available to do this right now. The City isn't set up to support that. He will try to find ways to deal with this big problem. How can we get what we ask for on time?
   4. Lack of interaction with other departments and entities and the ability to share data between.

C. Database Design
   1. Work flows and methodologies are important, not just the physical design
   2. Identify ownership
      a) Can't have people complaining about data but not being willing to maintain it.
      b) Need a chain of command and chain of responsibility. It is critical to have this in place and to keep it organized.

D. Data maintenance workflows are critical in maintaining a database as we implement the tools, work flows, processes and methodologies. We need to do this immediately even if we start with an empty database.

E. Applications
   1. Got the whole spectrum from "we don't need anything" to "we need everything."
   2. A lot of these applications already exist. They can be purchased and implemented or given to us by other departments/entities.
   3. Applications should be driven by the end users.
   4. If you have a decent database you will be able to build your applications faster.

XV. **Initial Approach**

A. How will we share?
   1. There will be a consolidation of all the things we have in a place where they are easily accessible.
   2. Define buckets of information that have a home. They need to be designed pretty tightly.
   3. Different groups will be responsible for different chunks of data.

B. Timing - We are going to build and implement the enterprise database one dataset at a time. It is not feasible to design and build it all at once. Do it one layer at a time. Get that one up and running, add applications to it, then move on.
   1. Need to determine which of the critical data sets to start with (e.g., Easements).
   2. There is no reason why a database can't evolve over time. The critical issue is planning. Up front space is a big integrator. How are all the different unique identifiers we have going to connect? Need to take care of this up front.

C. Work Flows – how are we going to collect and maintain the data? This is critical.

D. How are we going to load data? – Need to minimize duplication of effort.
   1. Use field units – depends on use (ex. PDA, laptops in trucks, tablets you carry around). There will be different types for different needs.
   2. Different mechanisms for communicating with the central database.
      a) Live link
      b) Periodic download
   3. There needs to be a data augmentation process. Keep the field workers from doing unnecessary work. Have them enter just the x and y coordinates and get the rest electronically.
   4. Need to identify where people in one program can either update or submit data to another group.
   5. The general public needs a way to help us develop the database. Get them to submit data via the Web. Provide incentives. Take advantage of what the citizen already did. This goes for both attribute and spatial data.
   6. If we do a good geo-database design for our spatial data, we won't have to develop as many custom applications. We won't be able to enter bad data. We need to take advantage of the additional functionality the geo database provides.

E. Define the work flows that will nail down when the data changes and what we need. Identify how the two worlds interact.

XVI. **Conclusion**

A. There is a great potential here to do something good fairly quickly.

B. Steve indicated that we want to take advantage of the plan that Dean is developing. We need to learn to maximize our resources (ex. ESRI contract money, CIP funds, etc.) in an efficient and effective way. We need to develop the plan then follow it.

C. We need to make it easier for people to collect data for other work groups by:
   1. Making the form easier for them to use, collect data from, etc.
   2. Facilitate the process.
   3. Provide incentives.
   4. Try to make the focus on the entire department, not just their individual work group. This will save time and money for the City over all. This is something that Dean needs to look at. This is an important issue.

Watershed Protection and Development Review

Information Management Plan Project

Notes from Meetings held March 6-10, 2006

Watershed Protection and Development Review Information Management Plan Project

Table of Contents

Overview Meeting 3
Stormwater Treatment 5
Water Quality Monitoring 8
Stream Restoration 11
Land Use Review 14
GIS/Planning 16
Zoning Review 20
Water Resource Evaluation 22
Master Plan 26
Building Inspections 29
Permit Center 30
ROW Management 31
Localized Flood Hazard Mitigation 34
Floodplain Management 37
Field Engineering Services 40
Contract Management 43
Brownfields 44
Flood Early Warning System (FEWS) 46
Financial Management 48
Field Operations 51
Creek Flood Hazard Mitigation and Pond Safety 54
Commercial Building Review 59
Site Plan/Subdivision Inspection 61
Spills and Complaints 64
Stormwater Discharge Permit Program 68
Development Assistance Center (DAC) 72
Wrap-up Meeting 75

Overview Meeting
3/6/2006

IMP Team – Leeanne Pacatte, Steve Wilkinson, Ann McCracken, Neil Galati, David Rodriguez, Dean Djokic

Attendees – Gerry Clayton, Nancy McClintock, Jim Grube, Daniel Herrera, Sandy Kelso, Henry Casas, Mike Ihnat, Mike Kelly, Pat Hartigan, Roger Glick, Martha Turner, William Templeton, Mike Newman, Joyce Pulich, Roderick Burns, George Zapalac, Catherine Esparza, Debra Fonseca, Matt Hollon, George Oswald, Mark Mauldin, Ellen Wadsworth

I. **Introduction** – Leeanne introduced the project and the ESRI Consultant – Dean Djokic. Dean presented the purpose and scope of the project.

A. Purpose of Project – To insure the cost efficient allocation of limited resources.
1. Data sharing improves efficiency.
2. The Department needs a plan – a strategy for how to hook the data into the Master Plan.
3. Integration creates more value – GIS is a good way to integrate the pieces and end up with more than the individual components.

B. Purpose of Overview Meeting – To bring everyone up to speed with what the project involves and what is going to occur.

C. All staff should think about how their work groups can take advantage of this project.

II. **Scope of Work**

A. Review the Current State
1. Review the existing documents
   a) The CDM reports that were done several years ago will be incorporated into this project.
2. Inventory of Departmental data and databases.
   a) Dean indicated that the Department seems to be doing well.
      (1) A lot of data is already in digital form, but the forms vary.
      (2) There are some legacy issues – hardware (MACs), software (Access databases).
      (3) The timing will be an issue.
      (4) He wants to explore shared opportunities and identify what other applications can be done and how he can help WPDRD run our business better.
3. Survey of work groups.

4. Individual sessions with work groups. The Scope of the Meetings:
    a) Review the assembled information.
    b) Identify data flows.
        (1) Data developers versus data users.
        (2) Interdependencies between the data.
        (3) Type of data (tabular versus spatial data) if not done in the same process.
    c) Current and planned data collection.
    d) Identify what was missed on the surveys.
    e) Identify current and planned IT infrastructure
        (1) Database
        (2) WEB
        (3) GIS
        (4) Information (pipes)
        (5) Desktop
        (6) Field
5. Needs assessment
    a) Data management (entry and management)
        (1) Desktop
        (2) Field
    b) Reports
        (1) Tabular
        (2) Maps
        (3) Internal users
        (4) External users – COA and general public
    c) Applications – what might we want to do once the system is in place
6. Safety Check
    a) What might and might not work (e.g., what is realistic).

B. <u>Identification of the Improved State</u>
    1. Identification of improved information system.
        a) What is it?
            (1) Infrastructure
            (2) Design
            (3) Processes
        b) How to get there?

C. <u>Detailed Implementation Plan</u> – Two products will come out of this.
    1. The documents.
    2. A forum for staff to discuss and get consensus. How does this fit in with the Department's Strategic Plan and the Master Plan?

D. The Information Management Plan Project itself will take about three months, but the application development is in the hands of the Department.

Stormwater Treatment
3/6/2006

IMP Team – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Mike Kelly, Pat Hartigan, Ginny Rohlich, John Gleason

Unable to Attend – Tom Franke

I. **Data**

A. Producers

15	Integrated Pest Management System
74	Retrofit Program
4	Pond Geodatabase

1. They have project specific files that could have maps and layers.
2. They have tracking data in spreadsheets. They identify, prioritize and implement projects involved with treating stormwater.
3. They use layers that have been created. They identify the points where they have an actual or potential pond.
4. Points of interest and drainage areas associated with points of interest.
   a) They create and collect both points and polygons, but primarily points.
   b) Their pond polygons eventually go into PIER/AMANDA. The ones they create are preliminary in nature and don't get used by anyone else. The preliminary ponds aren't needed after the pond goes into AMANDA.
5. The Integrated Pest Management Database is a small Access database that is owned by this group. John Gleason maintains this database and Ann McCracken administers. It is separate in function from their other work.

B. Users – This group is more of a user than a producer of data.

2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
6	Lookup Table Database
18	stormwater monitoring sites
19	stormwater monitoring data
20	Hydstra/TS database
21	USGS monitoring
30	PIER

1. Ponds
    a) If they find a pond and it isn't there, they create a point. There isn't a procedure for getting the pond into the Commercial or Residential Pond Database.
    b) They typically deal with the Residential Pond Database.
2. What is the information that is critical to them?
    a) EII Water Quality Monitoring Sites
    b) Stormwater Monitoring Sites
    c) Pond Databases
    d) Development Review (PIER/AMANDA)

II. **Applications**

A. Watershed delineation – preliminary off DEM and then tweaked for drainage system.

B. "Flow" Modeling (mass balance)

C. Map Production (some can be standardized)

D. Reports

E. Field Work (less than 10%)

III. **Goals**

A. Ability to use "other" data in a more efficient manner.

B. Ability to supplement current data with "discoveries" in the field (e.g., ponds and other data).

C. Project tracking tool – more consistent and accurate.

IV. **Success Criteria** – They could use some help with standardizing their methodologies and storing and presenting their data, but they haven't felt a need for this so far.

A. Access to "other" data.

B. Organization of their own data.

C. Local applications (reports/maps).

V. **Issues**

A. Have a mechanism for providing information about features that do not exist when doing field work.

B. Need a mechanism for “linking” their points and polygons in the as-built state.

C. Produce a database design for the stormwater component. There are different ways to store data now. What they do isn’t consistent with what they are collecting. This could be standardized.

D. They create mostly spreadsheets for each project to store the data. The spreadsheets are set up differently each time (in different formats). There is a good potential for automation here. Need to separate the data from the application so the data stays consistent and can be shared.

E. Difficulty in using “other” data.

F. Lack of centralized “future land use”. It would be nice to have that as a standardized layer. Currently the different work groups have different versions of the same data.

VI. **Action Items**

A. The IMP Team needs to let this group know when they need to get the details of their data attributes together.

Water Quality Monitoring
3/6/2006

IMP Team – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Roger Glick, Rich Robinson, Mr. Bai, Jim Hubka (via conference call)

I. **Data**

A. Producers

17	dry weather screening
18	Stormwater monitoring sites
19	stormwater monitoring data
20	Hydstra/TS database
21	USGS monitoring

1. They see themselves primarily as a data generator and provider.
2. There is a spatial component to their data. It is in a shape file. There is a field in the database that has the lat/longs that goes into ArcView. They do the GIS work themselves.
3. They have their own naming conventions for their sites (e.g., 3 numbers and 3 letters).
4. Their data resides on their server, which is maintained by CTM.
5. They have a lot of time series data and very little geometric data.
6. They are comfortable with how they are managing their spatial data.
7. They have to revisit their sites every 5 years. These are throughout the City. They divide the City up, so they can get out to each site during the 5 years.
8. The purpose of their data collection is long-term planning, rather than for health and safety.
9. They spend up to 4-5 hours per week answering requests for data. A lot of time is spent trying to figure out what the user wants.
10. Their data isn't available openly, so people call up to get it. They have limited seats and want to preserve the integrity of the data. They would like to make their data available on the Web, but this hasn't been a high priority.
11. Hydstra is the repository for their raw data. Access holds snapshots of this data, which they do analyses on. Hydstra is in dBase 3 or 4. Why Access vs. Hydstra?
    a) More flexible with outside applications
    b) Hydstra has event based data that is used to develop reports to query events. Then the reports are stored and manipulated in Access.
    c) Hydstra is depository of raw information then reports are opened in Access. If re-running queries then past raw data run through Hydstra again to catch errors in data.

12. Dean asks about moving from Hydstra to Oracle?
    a) High cost.
    b) Too much overhead with maintaining Oracle.
    c) Not a city wide application in Water Quality so not practical.
13. One half of their section does less than 10% field work. The other half of their section does 75% field work. In the field they collect samples and get them to the lab to put into an Access database, which they use to query and QA/QC the data. They add the time, assign an ID, then they the upload the data into Hydstra, which needs this additional information. Their meters don't write a sample ID, which is why they need to do this intermediary step. This doesn't cost them a lot of time.
14. Small space, large temporal
15. Intermediate files for temporal data

B. Users
1. They need the storm sewer outfalls. The last dataset they got in 1992 from Ellen Wadsworth. If they find a new outfall, it goes into their Dry Weather Screening Database. They do not communicate this information back to the source.
2. They get data annually from USGS.
3. They could use impervious cover and land use data for the City.
4. Existing land use !!!! (same problem as before).

II. Applications

A. PDA for Field Work (dry weather screening)

B. PDA for Field Work (site maintenance)

C. Data dissemination application (via the Web).

D. Standard textual report application for internal and external users. Automate components of these reports where applicable.

E. Watershed delineations for new locations.

F. Access database that pulls data from hydstra (every three months) and uses these data for analysis support

III. Goals

A. They would like to make their data available to others in a spatial format via the Web.

B. SWAT in ArcGIS would be nice. It is still in ArcView.

IV. **Success Criteria**

A. They would like to make their data available to others in a spatial and temporal context via the Web.

B. SWAT in ArcGIS would be nice – but that is not as critical as it is out of their hands

V. **Issues**

A. Have a mechanism for providing info about features that do not exist when doing field work (about other people's data)

B. Had discussions regarding KISTERS implementation. Nothing yet. Waiting until the merging of the two is more complete.

Stream Restoration
3/6/2006

IMP Team – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Gerry Clayton, Morgan Byars, George Walker, Ann Winer

I. **Data**

A. Producers

64	Creek Erosion

1. The Creek Erosion data needs to be renamed Stream Restoration. The CSR download is part of this. Currently this data consists of a number of shape files and some attribute data, stored in a number of locations, primarily on Ann Winer's PC. The photos are on the G drive.
   a) In this application, the Drainage Complaint Data is going to be kept separate from the CSR data, but it would be useful to have them merged into one dataset.
   b) The CSR portion of this data is in the form of a quarterly download, but real-time access is what they ultimately want.
2. Their business is the correction of problem sites. They identify localized problems and reach based problems.
3. Their data consists of the following:
   a) Site ID (generated)
   b) CSR ID (link to the CSR Database).
   c) Location of the problem
   d) Severity of problem (1, 2, or 3) code
   e) Type of site (e.g., house, street, etc.)
   f) Threat type
   g) Photographs of the site and the problem
   h) They need the TIN, DEM, contour, LIDAR, and the BAD (best available data), so they can extract elevations.
4. They generate local and detailed surveys of cross-sections. No one else has this data and it would be useful to other work groups, such as the Floodplain Office.
   a) In-situ and design
   b) Workflow for integration of design (as-built into existing type).
5. Database design for sites, tying with "incident" db, photos, etc. Need full database design and workflows for current-design-as-built process.

B. Users

1. Site layer with points of "interest" – Some of these turn into projects and others don't. These are not tied back to the Drainage Complaint or CSR Database.
2. Site Photos – These are not linked to their data.
3. CSR/311 Database
4. Drainage Complaint Database (Work Request)

5. Need TIN, DEM, contour, LIDAR, the BAD data so they can extract elevations

II. **Applications**

A. Call Database (CSR/311)

B. Design (CAD)

C. GeoRas/Ras

D. Basic hydrology (regression, TR-55, or City's HMS)

E. Standard Reports and Maps

F. Field Work (assessment less than 10%, but quite simple at this point).

G. Field Work (watershed erosion assessment) – would be interesting.

H. Document management system, but this would be a big ticket item.

III. **Goals**

A. Database design and data quality (include management of paper files, CAD, imagery, etc.).

B. Data entry forms to minimize quality input issues, updates with new information (e.g., direct upload to CSR System). Dean thinks they should design their data structure for their projects even if this doesn't go into the enterprise geo-database. However, they should put this data in a shared directory.

C. Develop preliminary reach based prioritization system (application).

D. Make data available to enterprise (currently done by hand).

IV. **Success Criteria**

A. Database design and data quality (include management of paper files, CAD, imagery, etc.).

B. Data entry forms to minimize quality input issues, updates with new information (e.g., direct upload from CSR/311 System). Dean thinks they should design their data structure for their projects even if this doesn't go into the enterprise geo-database. However, they should put this data in a shared directory.

V. Issues

A. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

B. Need facilities management application.

C. Issues with linear referencing (definition of the reach and location can be changing).

D. They want to be open to all of the data. The modeling data won't necessarily be part of the enterprise data.

E. They need a more complex database design and a facilities management application with photos. There is more of a life cycle with their projects.

F. Disparity between CSR/311 System and Drainage Complaint Database. The Drainage Complaint Database sometimes references the ID in the CSR System and at other times doesn't. They have not taken downloads from the Drainage Complaint Database for awhile. The ArcView 3 application that used to pull data from the Drainage Complaint Database no longer works because of the migration to SDE.

G. Problem with access to CSR/311 Database. Downloads were not made available until recently and these will only occur on a quarterly basis.

H. There are different ways to navigate to a point of interest (e.g., address, city, grid, project, etc.).

I. Manage historical topography for evaluation of geo-morphologic changes (vector and imagery). They are hard copy and need to be scanned.

Land Use Review
3/7/2006

IMP Team – Leeanne Pacatte, Ann McCracken, David Rodriguez, Steve Wilkinson, Neil Galati, Dean Djokic

Attendees – George Zapalac, Diana Ramirez, Roderick Burns

Unable to Attend – Sheila Rainosek, Shari Pape

I. **Data**

A. Producers

30	PIER

1. People fill out applications for various land development projects. The primary database for this group is PIER. The Intake group starts the data tracking process by inputting the data into PIER. PIER gets some of the information from the geo-database. AMANDA will do this as well.
2. This group is part of the Development Review process. They are comprised of various review teams in different disciplines going through the applications. Other departments are involved as well. They review the plans and go through various iterations. Eventually the plans are approved if they aren't cancelled.
3. Diana is responsible for notifications. When an application comes in, they notify the owners of all properties within 300 feet of that property. Currently, this is a manual process, but AMANDA will create the shape that includes all of those addresses. They should be able to generate and print the letter to these property owners from AMANDA.
4. AMANDA will replace PIER sometime this year, but there is no clear indication of when it will be implemented.
5. AMANDA will have a GIS component, but there may still be a need for some other viewer in parallel. Bert's group may be working on this.

B. Users

1. They use ownership maps from TCAD (Travis County Central Appraisal District) and other neighboring counties.
2. AMANDA requirements – It is hoped that AMANDA will provide data that will be useful for other work groups.
3. The reviewers use GIS to get information while they are reviewing an application. They use viewers that are in ArcView 3.3.

II. **Applications**

A. Ability to generate ad-hoc maps that will be more detailed (more layers) than what AMANDA provides. Ideally, the list of spatial layers can be expanded based on the needs of a particular review group. This is more of a historical occurrence since the "old" application was not flexible enough.

III. **Goals**

A. They already have an application that meets their needs.

IV. **Success Criteria**

A. AMANDA works

V. **Issues**

A. Will all of the critical fields that the other work groups need, get filled in in AMANDA?

B. AMANDA has high priority and will meet their needs. It controls data access, population of data, etc.

C. Need to get users off of ArcView 3.3 viewers and on to ArcIMS. However, it isn't possible to add other information into an ArcIMS Viewer. A Web application won't work because there are pieces of data that can't go out for the public. It might be necessary to develop a separate, flexible application to provide what the users need. The users would put their data in a catalog they can pull from instead of having it sitting on separate PCs.

GIS/Planning
3/7/2006

IMP Team – Leeanne Pacatte, Ann McCracken, David Rodriguez, Neil Galati, Dean Djokic

Attendees – Matt Hollon, Erin Wood, Ellen Wadsworth, Sandy Kelso, Robbie Botto, Jon Meade, Roxanne Jackson

Unable to Attend – Christin Atkinson

I. **Data**

A. Producers

2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
6	Lookup Table Database
8	Floodplain GIS
12	Stormwater Discharge Permit Program Database (SDPP)
16	Underground Storage Tanks
26	Urban Watershed Fund Database
28	Operating Permit Database
30	PIER
52	Drainage Infrastructure GIS
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
64	Creek Erosion
65	GIS water quality loading model
67	Impervious cover
68	Land use
69	Maps (see tab fro details)
70	Masterplan Toolbox (see tab for details)
72	Digital Photographs
73	Rainwater Harvesting location
74	Retrofit Program
75	Riparian buffer zones

76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. This group is assisting with the Pond Geo-Database project (#4) and are thus working on the current Pond Databases (#2, #3)
2. This group is also working on the DIG Project (#52).
3. Floodplain GIS (#8) - Changes to make this a more robust GIS application on the Web are in the works. The Planning/GIS group is peripheral to this project, but they may do some of the layers. Watershed Engineering hasn't adopted their future land use and impervious cover maps. They have different assumptions on what they use and use a zoning max method. This isn't necessarily a bad thing, but the critical issue is to clearly identify what layer is used for what. There is also a need to separate out what is enterprise data and what is privately used, so the public doesn't get confused. Floodplain and Planning/GIS do need to communicate on what assumptions they are making in the layers they use.
4. SDPP (#12) – The owners of this Oracle database want it to be spatially enabled. Some of the features are related to the ponds.
5. In addition to working on the Pond and DIG projects, this group may join other Department projects in the future.
6. Their major coverages are in okay shape but with some work still needed.

B. <u>Users</u>

II. Applications

A. Floodplain GIS Application (#8) – in the works.

III. Goals

A. Enterprise Database design

B. Data development procedures/applications

C. Data sharing

D. Planning – tracking future development

IV. Success Criteria

A. Enterprise Database design

B. Data implementation workflows

V. **Issues**

A. Provide a single layer for each particular purpose (e.g. single layer for impervious data)
   1. Communication issues exists between engineers (modelers)
   2. Workflow - trying to get accurate/timely information.
   3. Come up with city-wide methodologies for development of base layers like impervious areas and land use that are "interpretation"-based.

B. Problems with lack of data outside of City jurisdiction needed to support modeling and other analysis methods.

C. "Standardization" of GIS tools and engineering models. The modelers should be involved with selecting their models, not just the GIS/Planning group. It was noted that there is a lot of overlap between the GIS/Planning group and the Water Resource Evaluation modelers.

D. Workflow issues dealing with external data (consultants). Part of the Information Management Plan will involve dealing with the workflow issues and problems associated with this.

E. SDE and versioning issues. There is no access to those capabilities for data developers. SDE is really read only uploaded through submission of shape files. There is no formal process for how to get CTM to update the SDE layer, so they end up updating the GIS Repository in WPDRD instead. Bert currently wants the updates to the SDE in shape files. CTM will not give them versioning, so it might be better to go with a small, multi-user application that ESRI is coming out with where you don't have to have an SDE license. Versioning can be difficult to use without a lot of communication between the maintainers of the data.

F. Need geo-database design alternatives meeting

G. "How to" on terrain modeling. Note from Ellen: What does this mean? That more people need training on watershed modeling? Several employees in ERM are experienced at modeling and GIS modeling so the statement isn't accurate.. We did talk about how attempts were being made to make sure everyone uses the same base elevation data for modeling so features for different missions would coincide.

H. Need to come up with a mechanism for recording information on sites that are studied by multiple Divisions / programs – Field units could support this if work flow and plans were re-designed to include a more cooperative effort in collecting field data.

I. Need data dictionaries that incorporate consistent naming conventions

J. Need to determine how to deal with all the different unique identifiers for the databases they would like to spatially enable. Some use street addresses, some use ABBE, some have permit numbers, some have naming conventions, etc.

K. Need – a clear data "conversion/development" plan with time commitments, ordering (prioritization), end user involvement, update processes, etc." This should be identified as the first step in the implementation process.

L. Need to determine how to prioritize the vast number of needs within the Department and how to communicate and coordinate across the Department rather than by squeaky wheel.

M. There are inconsistencies in how they (GIS/Planning) do their projects, which results in some inefficiencies.

N. They (GIS/Planning) need a replacement model for the CRWR model that is currently in ArcView.

O. There need to be some strategies for ad hoc access to databases. It was noted that it is better to use Access or Excel with Oracle tables than to have Access or Excel databases. It is also dangerous to use SQL prompts to edit Oracle tables.

VI. **Action Items**

A. Dean would like for Matt and Ellen to send him a list of models they want to support.

Zoning Review
3/7/2006

IMP Team Attendees –David Rodriguez, Steve Wilkinson, Neil Galati, Dean Djokic

Attendees –Clara Hilling

Unable to Attend – Sylvia Benavidez, David Cancialosi

I. **Data**

A. Producers
1. AMANDA drives the process and data collection. Need mapping to navigate to the site and help with determinations (standard and ad-hoc mapping).
2. They review residential house plans
3. They do sign review (commercial signs)
4. They do Board of Adjustments variances and sign variances

B. Users
1. They use GIS to get zoning and as a look up tool (neighborhood plan, etc.)
2. Variances have a 96% approval rate (the board approves 96% of them). This will be captured by AMANDA.
3. All the rules cannot be fully automated so reviewers need to go over the applications.
4. Neil explained the process of an application for zoning review (AMANDA will generate a folder to track the steps along the way).
5. CTM will manage the images in AMANDA. There are currently one million images in PIER.
6. In AMANDA the folder will have all the attachments associated with the image/plan/application. While PIER has many images, they are not associated with a plan/application.
7. This group's needs are similar to Land Use Review.
8. Database populations go through AMANDA.
9. Liquor licenses go through a separate zoning review. Automation of liquor licenses is not practical due to the lack of accurate/current data. In addition, liquor license applicants must check on whether they are 300' from a school/church, so it is up to the applicant to be honest because zoning maps might not be current. This would be difficult to automate because of the need for a human component (check actual distance in field).

II. Applications

A. Adaptation of a viewer (legacy application) to be in AMANDA. Bert's GIS for AMANDA will be very similar to the GIS in PIER (same functions as before), with the addition of 1) Inspector Selection – assignment of building, environmental, etc inspectors to cases and 2) Notification Buffer Tool – around a certain property (300' radius) a mailing list is generated to send out letters to citizens (notification letters).

B. Look into the possibility of using a buffer around application (point on map) to see if it could be automated, but this could be unrealistic due to the poor quality of the data.

III. Goals

A. AMANDA.

IV. Success Criteria

A. AMANDA works

V. Issues

A. Need for additional AMANDA applications (on top of what current enterprise GIS applications do)

B. Need for notification (300/500 ft) – mailings

C. Need for inspector assignment

Water Resource Evaluation
3/7/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, David Rodriguez, Dean Djokic

Attendees – Rob Clayton, Chris Herrington, Scott Hiers, Martha Turner, Mateo Scoggins

Unable to Attend – Ed Peacock, David Johns

I. **Data**

A. Producers

13	Field Sampling Database (FSDB)
20	Hydstra/TS database
21	USGS monitoring
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
61	Drinking water wells
62	Education and Outreach
72	Digital Photographs
75	Riparian buffer zones

1. Field Sampling Database (#13) – This is their mission critical database that three different sections use.
   a) This database contains the watershed cross-reference table (WATERSHED_NO). The watershed geometry gets changed (and the IDs) which makes the cross-reference table difficult to maintain. There is no programmatic enforcement between the Watershed shape file and the lookup table. The Watershed lookup table is only modified when the code changes, but the shape file IDs can be changed at any time. Also, Ellen maintains the shape file and Rob/Chris maintain the Oracle table. These could be easily maintained in a geo-database.
   b) It is difficult for them to get their data entered in a timely manner.
   c) The data is collected by different groups and goes into a large Oracle database.
   d) A lot of different field components are entered and new methods are added frequently.
   e) They maintain and improve this database themselves.
   f) There is a field component to this database. It would be great to enter the data from the field, but the large amount of data to be entered makes this seem to be an unreasonable task. However, an ArcPad application would be possible.

g) The field sampling data is on the Web.

2. Hydstra/TS Database (#20) – They store some data in this database.
3. USGS Monitoring (#21) – They store some of this data in their Field Sampling Database. This data is split between the Hydrstra/TS Database and the Field Sampling Database. It doesn't really exist separately.
4. Biological Resource Map (#57) is in their work group, but doesn't exist except in the CEF Database (#58).
5. Drinking Water Wells (#61) doesn't exist as is. This data would be either in the USGS Monitoring or Field Sampling Database.
6. Education and Outreach (#62) – Some of this data is in the Field Sampling Database.
7. Central Files Review Database (needs to be renamed to Development Review Tracking Database) – This is an Access database. It contains a record of every development case they have reviewed. Some of this data is in PIER and some data has been added specific to their projects. Scott Hiers, Mike Lyday and Sylvia Pope maintain this database. Jo Dee Myatt does the data entry. This database documents what they do to assist the environmental review of site plans. It primarily tracks paper and their performance measures. It is also used to track engineering firms that don't do a good job. There is one big table in this database. This database could be linked to the Critical Environmental Features Database by Case # to get a spatial component.

B. Users

2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
6	Lookup Table Database
12	Stormwater Discharge Permit Program Database (SDPP)
14	Spills and Complaints
19	stormwater monitoring data
20	Hydstra/TS database
30	PIER
52	Drainage Infrastructure GIS
53	FEWS Site Locations
59	Digital Elevation Models
64	Creek Erosion
65	GIS water quality loading model
67	Impervious cover
68	Land use
71	On-site wastewater treatment systems
72	Digital Photographs
75	Riparian buffer zones

76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. The watershed geometry is developed by others. The IDs are not well maintained (see above).
2. The critical data they use are #s19, 20, 2, 3, 4, 14, 52, and 53.
3. There is a disconnect between the users' needs and the implementation of the layers. A user needs assessment of base layers, and data collection strategy (data workflows) needs to be done. Also, the users should talk to the data developers. All of the design is in the PIER database
4. There is a lack of process between external submissions to the actual database. Documents are scanned, but not as features.

II. Applications

A. User needs assessment

B. Field work – creek walk /site survey

C. Annual data reports

D. Basin characteristics for a watershed at any give point

E. Riparian integrity evaluation

F. Web application for selecting a location to get a collection of water quality data for that location. This would be a public application. They already have a back end, but need a GIS front end.

III. Goals

A. User needs assessment – geo-database design

B. Technology transfer – possible GIS applications

C. References to the base data.

IV. Success Criteria

A. Data quality for data developed by other groups (complete in design and content)

B. Data delivery standards for "consultant" community

C. Serving data to the community

V. **Issues**

A. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

VI. **Action Item**

A. They need to come up with a list of what they would like to have automated, both tabularly and spatially.

Master Plan
3/7/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, Dean Djokic

Attendees – Jean Drew, Mike Ihnat

The Master Plan is made up of three missions – Flooding, Erosion and Water Quality. It is a way to compile problems from all three areas, score them and come up with recommendations for solutions. There are 45 watersheds and the Master Plan was conducted on 17 of these watersheds in 2000. Watersheds are being added over time and the information updated. There is a Master Plan Team (MIP Team), which is comprised of staff from the different mission areas. They are working as a group to revise the problem scores and improve the accuracy of the results.

I. Data

A. Producers

70	Masterplan Toolbox (see tab for details)

1. The Master Plan Toolbox is designed to take input data and produce the scores. It needs to be converted from ArcView 3.3 to ArcGIS. It wasn't very stable in ArcView 3.3, so needs to be improved as well as converted. CTM is working on it, but has taken 2.5 years and the application still isn't finished. They do have some outdated documentation on the ArcView 3.3 version.
2. The MIP Team is trying to do the updated problem scores manually for their CIP Planning. Each group does their own scores.
3. Their data (maps and other documents) is stored in a specified area on the G drive. This is basically a filing system with folders on the various projects. They are trying to keep it organized.
4. The MIP Team re-uses existing data for analysis purposes.

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
7	RSMP
8	Floodplain GIS
12	Stormwater Discharge Permit Program Database (SDPP)
14	Spills and Complaints
16	Underground Storage Tanks

1. They could use the Drainage Complaint Database (and the CSR Data) for Flood and Erosion information for areas where they do not have technical assessments.
2. The Pond Databases could weigh into solutions development.
3. The FEMA Creeks Database could provide information on the floodplains, which relates to the problem scores.
4. The RSMP program is a money source.
5. The Floodplain GIS could be used to analyze the floodplains.
6. They could also use the Spills, SDPP and UST Databases as well, particularly to get data related to problems.
7. A map from all of the above sources could be put together to get better information on the projects.

II. Applications

A. Master plan toolbox – convert from ArcView 3.3 to ArcGIS. Apply problem scores to current conditions. The scores are used for CIP prioritization.

B. Field application for site survey

C. Project tracking

D. A database for better organizing their documents and data would be useful.

E. The availability of more comprehensive layers would be useful for projects, such as preparing bond election maps.

III. Goals

A. Need access to the data used in their analyses (where and what).

B. Database design for their component

C. Workflows for data updates

D. Help them to think ahead what can be done with technology

E. Project tracking

IV. Success Criteria

A. Access to the data and a big picture of the data organization

B. Geodatabase design for their data.

V. **Issues**

A. They need a database for storing their results (evaluations).

B. Workflows

C. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

D. Disconnect between existing applications (eCAPRIS) and actual needs.

E. It could be useful to include additional staff besides Jean in coming up with goals for this group.

Building Inspections
3/7/2006

IMP Team Members Attending –David Rodriguez, Steve Wilkinson, Dean Djokic

Attendees –Renee Vannatter

Unable to Attend – Dan Garcia

I. **Data**

A. Producers
   1. AMANDA

B. Users
   1. AMANDA

II. **Applications**

A. Field Aspect – primarily tabular
   1. Determines what are code violations and who gets the call (311, code enforcement, solid waste services)
   2. It is confusing to customers regarding who they need to call for code enforcement.
   3. Renee believes that when AMANDA is working, it will satisfy Building Inspection requirements.
   4. Renee states that the four hour turnaround on inspection requests is not realistic due to the number of inspections versus the number of inspectors.

III. **Goals**
   A. AMANDA

IV. **Success Criteria**
   A. AMANDA works

V. **Issues**
   A. The functionality of the GIS component will be similar to the current viewer. Two different types of users of the GIS component through AMANDA were identified. 1) External users – they need about 5 layers to display. 2) Internal users – they need more layers to choose from and display.
   B. AMANDA provides a limited GIS functionality mostly focusing on a single event (e.g. permit). Look for custom GIS applications that would produce a regional map of events.

Permit Center
3/8/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, Steve Wilkinson, Neil Galati, Dean Djokic

The Permit Center is the end of the Development Review process. This is where the permits are issued.

Attendees – Debra Fonseca

Unable to Attend – Cande Coward

I. **Data**

A. Producers
1. PIER/AMANDA - They do some stand-alone permits which involve their getting involved with the process. They collect the money from the application, then the inspectors inspect the work. Certificate of Occupancies go through Renee unless the customer gets a temporary CO, which they pay a fee for.
2. PIER/AMANDA has triggers and verifications built in to make sure the applicant is paid up, has insurance, etc. They provide a banking function to applicants, so they can draw down from an escrow account.

B. Users
1. They do sometimes look at service area information via GIS. This capability is supposed to be built into AMANDA.
2. They do reports out of PIER/AMANDA.

II. **Applications**

III. **Goals**
A. AMANDA

IV. **Success Criteria**
A. AMANDA works

V. **Issues**

ROW Management
3/8/2006

IMP Team Attendees –David Rodriguez, Steve Wilkinson, Neil Galati, Dean Djokic

Attendees –Jason Redfern, Pat Lowe

Unable to Attend – Johnny Anglin

I. **Data**

A. Producers

35	ROW Inspection Calls DB
36	Certified Traffic Control Contractor DB
37	SUEP Street Use Excavation Permits DB
38	Traffic Control Inspections DB
39	ROWMAN
40	Utility Coordination

1. The above listed databases are the ones this group maintains. They are Access, Oracle and Web based applications.
2. ROWMAN is a CTM developed application. ROW Management would like to modify some search features within the application, but AMANDA may provide this functionality.

B. Users

II. **Applications**

A. A Utility Coordination database is being created to get comments. This will be handled by AMANDA. The Coordination Committee has representatives from all the utility companies to address problems before a construction project begins.

B. PIER is not being used for the Coordination Committee. All forms/paper related to a project is stored in a folder.

C. ROW Management is in desperate need for GIS.

D. ROW and Excavation will be in AMANDA, but Utility Coordination will not be.

E. If a unique entry in AMANDA, and a unique event (needing road closure) can be tied together, then should be able to pass information back and forth.

F. Neil did a demo with AMANDA demonstrating the types of queries possible (Address, People, Property, etc.).

G. They use Access instead of Oracle because they have staff with Access experience. Pat has created a multi-user database so inspectors can be out in field and in sync with server so everyone has the same information.

H. Inspectors use laptops out in the field because a lot of typing is required.

I. Utility Coordination wants a GIS application to keep track of what is going on in the space and the process.

J. GIS access to the project database - AMANDA tie-in

K. WEB site for dissemination of road closure/event events.

III. **Goals**

A. AMANDA.

IV. **Success Criteria**

A. AMANDA works

B. GIS tie-in (map enabled operations) – geocode current records and enable future ones.

V. **Issues**

A. ROW Management wants to query using street segments.

B. ROW Management wants an internet (Web based) application so citizens can do a lot of the entry of information about events.

C. Dean suggests a formal password to “friendly’s” to be able to submit ROW Permit Requests.

D. Pilot for AMANDA has problems with the sync ups for mobile users because it is not real time. Sync up doesn’t occur until the end of the day. It needs to be instant.

E. Neil suggested using the duel laptop/tablet instead of just a laptop.

F. Dean asks if Oracle could be the database program handling the information while using an Access front end, for the Utility Coordination database. The problem is that no one in ROW Management is capable of handling the Oracle programming. Oracle has better multi-user capabilities than Access.

G. Road works page could use spatial data (map) to help illustrate special events.

H. There is no spatial component in AMANDA for ROW information

I. Look into using AMANDA to tie into GIS component (GIS is not “captured” in ROW applications).

J. Internet application for external requests – space and attributes (tie into AMANDA)

K. Mobile client for AMANDA limited (might even be canned)

L. ABBE (address database of valid addresses – street centerlines – address segments; address points)

Localized Flood Hazard Mitigation
3/8/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, David Rodriguez, Dean Djokic

Attendees –Mike Newman, Han Tran, Arthur Romero, Nathan Gullo

Unable to Attend – Steve Sun

I. **Data**

A. Producers

52	Drainage Infrastructure GIS
72	Digital Photographs

1. They contribute to the above.

B. Users

1	Drainage Complaints
8	Floodplain GIS
9	Easements
30	PIER
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
67	Impervious cover
68	Land use
70	Masterplan Toolbox (see tab for details)
78	TIN
79	Watershed boundary

1. City databases
   a) They use contours, addresses, property lines, easements, aerial photos, building footprints, public and private utility infrastructure (cables, electric, water, etc.), railroads, and property owners,
   b) General Permits – These don't go through PIER/AMANDA. Mike's group and other City Departments apply for these.
2. Department databases
   a) Storm drains, junctions/manholes, inlets, outfalls (existing)
   b) Storm drains, junctions/manholes, inlets, outfalls (suggested) – They own these layers. Eventually when the storm drains existing gets updated on a regular basis, the suggested ones could get moved over.

c) Drainage complaint points – they own these layers (generate space for those complaints that relate to the localized flooding events – events outside floodplains – "unexpected")
d) The CSR data is critical to this work group. They need this data for the Localized Flood Viewer GIS application that is currently not working since the SDE was implemented.
e) They don't use the existing Easements Database, but have need of this data.
f) Impervious cover (#67) data is really important to them.
g) They don't have access to a lot of the Department's GIS coverages.

II. **Applications**

A. PIER users

B. Utility coordination

C. Access to CSR/311 (like erosion group)

D. Watershed (creek)/drainage area (local) delineation and characterization – would be nice!!! ArcHydro is something they might want to see as a demo.

E. Interface to StormCAD application for H&H calculations.

F. DIG is critical for this group.

G. Not sure if a field application would be useful or not, but need clarification if they do.

III. **Goals**

A. Getting access to the existing data

B. Preparing inputs for StormCAD and outputs back to GIS

IV. **Success Criteria**

A. Having the DIG (part of it is interface to H&H)!

V. **Products**

A. Maps and reports related to the drainage complaint points (building and yard flooding)

B. Master plan updates

VI. **Issues**

A. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

B. Workflows for databases whose data are entered by different groups. Specify workflow that identifies what are the required data.

C. Workflow for migration from planned to existing features (storm drains)

D. Access to city-wide data (needs to be more consistent – e.g. changing locations or names of layers)

E. Need to share their data with other work groups (OSS) in read only form and other departments, such as Public Works and the Water Utility. Their data is the data Han maintains and the Localized Flood Viewer.

F. Data capture design for contractor's work

G. Manage documents in electronic form (pdf) – design for "document management"

H. Directory structure for project data (reports, GIS, CAD, excel, H&H models, etc.)

Floodplain Management
3/8/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, David Rodriguez, Dean Djokic

Attendees – Gary Kosut, Ray Windsor, Fang Yu, Todd Pankey, Ross Clark, Katina Butler

I. **Data**

A. Producers

5	FEMA Creeks (P)
8	Floodplain GIS
9	Easements (P)
10	LOMA/LOMR
11	Variance Database
27	One Stop Shop Performance Measure Spreadsheet (P)
30	PIER (P)
40	Utility Coordination (P)
59	Digital Elevation Models (P)
67	Impervious cover (P)
68	Land use (P)
72	Digital Photographs (P – their own)
77	Stream Centerline (P)
78	TIN (P)
79	Watershed boundary (P)

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
6	Lookup Table Database
7	RSMP
20	Hydstra/TS database
21	USGS monitoring
29	Customer Wait Time
30	PIER
40	Utility Coordination

52	Drainage Infrastructure GIS
53	FEWS Site Locations
54	Critical Low Water Crossings
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
67	Impervious cover
68	Land use
70	Masterplan Toolbox
72	Digital Photographs
74	Retrofit Program
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. City databases
   a) Public Works – easements database from Andy Holm in Real Estate.
   b) They use contours, addresses, property lines, easements, aerial photos, building footprints, public and private utility infrastructure (cables, electric, water, etc.), railroads, and property owners,
   c) TCAD and data from other counties
2. Department
   a) DFIRM –They are the owners of this data.
   b) City floodplain maps
   c) H&H models and supporting data

II. Applications

A. PIER/AMANDA users

B. Utility coordination

C. WEB/ftp distribution of modeling data and models (H&H)

D. Need access to CSR/311 System.

E. HAZUS

F. Watershed (creek)/drainage area (local) delineation and characterization – would be nice!!! ArcHydro is something they might want to see as a demo.

G. GeoHMS/GeoRAS

H. DIG is critical for this group.

I. Not sure if a field application would be useful or not, but need clarification if they do.

III. **Goals**

A. Web distribution of existing models

B. Integration of GIS and modeling (modeling support under different modeling conditions)

C. Model scenario management

IV. **Success Criteria**

A. Web distribution of existing models

B. Floodplain GIS app (WEB)

V. **Issues**

A. Exchange with external agencies such as DOT on issues related to flooding

B. CTP for FEMA

C. Data capture design for contractor's work

D. Manage documents in electronic form (pdf) – design for "document management"

E. Directory structure for project data (reports, GIS, CAD, excel, H&H models, etc.)

F. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data)

G. Workflows for databases whose data are entered by different groups (e.g. how to add pond rating curve to the pond database – it might be coming from a model).

H. Access to City-wide data (needs to be more consistent – e.g. changing locations or names of layers)

I. Generate Agenda management system data (to support City Council meetings)

J. Might want to consider waiting six months for ArcGIS 9.2 instead of going with WISE, which is proprietary and limited.

Field Engineering Services
3/8/2006

IMP Team Attendees – Ann McCracken, Leeanne Pacatte, David Rodriguez, Dean Djokic

Attendees – Mike Newman, Charles Brading, Gary Zwernemann, Jonathan Janek

Unable to Attend – Ray Wilmot

I. **Data**

A. Producers

1	Drainage Complaints
5	FEMA Creeks

1. Excel for easements

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
8	Floodplain GIS
9	Easements
30	PIER
37	SUEP Street Use Excavation Permits DB
39	ROWMAN
40	Utility Coordination
52	Drainage Infrastructure GIS
53	FEWS Site Locations
54	Critical Low Water Crossings
64	Creek Erosion
72	Digital Photographs
77	Stream Centerline
79	Watershed boundary

1. State Databases
    a) One call system (TESS – TX Excavation) that produces requests for "call before you dig." This is a system that notifies utility locators that work is about to be done in a specific area. The utility locator needs to go out and mark the appropriate lines within 48 hours. This data is not stored anywhere as it would be too labor intensive. It would be useful for the Utility Locator to have a map to show him where he needs to go. They've had 20,000 requests over time and they've done about 10% of these. It would be useful to view these requests in terms of the total number and to visually be able to see how many they did.
2. City Databases
    a) They are a contributor to the CSR/311 system. Gary Zwernemann investigates a lot of the drainage related calls that come in.
3. Department Databases
    a) Digital Photographs (#72) is critical to them. This group takes a lot of photos and they need a way to better manage them.

II. **Applications**

A. CSR/311 – Jonathan needs the Map Page field to print out on the service request form. It would be great if the Mapsco page and section (e.g. 525T) could be somewhere near the field that lists the citizens address on the Service Request. When the 311 system was first instituted, we were told that we would be able to attach a WORD document for ease of reference. This would allow more detailed explanation of some complaints since the current fields are somewhat limited on the amount of information that can be written. Jonathan has a lot of information on his hard drive (site visit notes, phone call record, photos, Arcview map image, CAF responses, e-mails, etc.) pertinent to various citizen complaints which would be nice to share with others if possible. Jonathan's records are mostly stored on his computer by a physical address (e.g., 11901 Indianhead Drive).

B. They need to be able to geo-reference photos (by location, case #, etc.) and low water crossings.

C. There are field applications that would be useful to this group.

D. CAF (customer assistance form) comes through the City Council. They could use support for that system and history tracking to reduce the duplication of work.

E. FEMA Creek Database improvements (e.g., be able to bulk enter inspections) are needed.

III. **Goals**

A. Having the DIG implemented would be very useful to them, particularly for utility location mapping – profile mapping along the line of tool in utility.

B. Organize information already collected into a coherent information "system"

IV. **Success Criteria**

A. Having the DIG implemented would be very useful to them, particularly for utility location mapping – profile mapping along the line of tool in utility).

B. Enterprise implementation of local data (information design and common space)

V. **Issues**

A. Investigate how other Departments deal with One Call System (TESS – TX Excavation) that produces requests for "call before you dig". Potentially develop a City-wide application.

B. Need to investigate who keeps the CAF responses. Need to have access to the results. Is there a system to manage this? There should be a connection from this system to the CSR/311 System.

C. Generate sections layer (map reference system).

D. Interaction with other infrastructure providers (ATT, SBC, Cable, etc.)

Contract Management
3/8/2006

IMP Team Attending – Leeanne Pacatte, David Rodriguez, Dean Djokic

Attendees – John Routh

I. **Data**

A. Producers

1. John writes professional service agreements for engineers and does some project tracking.
2. John indicated that George would like a filing system of data/information.
3. Dean asks if there is any spatial component to John's job. John is more of a resource to the program/project. He gets contracts and helps facilitate the contract's execution. He only interacts with others for a short time. Someone else tracts the contracts once John is done with them.
4. John works with project managers to help put contracts together with subcontractors.
5. John checks that the scope and fees are in alignment with the services being bought.
6. John rewrites/edits definitions of project to reflect the "boiler plate" for the city and possibly adds an addition to list the price of the project.

B. Users

II. **Applications**

A. John indicated (outside the meeting) that it would be useful to be able to rapid scan the signed contract for internal use only.

III. **Goals**

IV. **Success Criteria**

V. **Issues**

Brownfields
3/8/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, Dean Djokic

Attendees – Diane Chapa

Unable to Attend – Catherine Esparza

Introduction – Sites are determined to be Brownfields if someone requests to see if it is one and the Brownfields group researches the site and determines that it qualifies. They use this information to get money to clean it up.

I. **Data**

A. Producers
1. Brownfield excel file stored on local storage.
2. It was noted that they cannot publish a Brownfields list because of liability issues.

B. Users

8	Floodplain GIS
16	Underground Storage Tanks
30	PIER
56	Abandoned Waste Disposal Contract
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
68	Land use
79	Watershed boundary

1. City Databases
   a) TCAD (appraisal information)
   b) Lots/parcels/ownership
   c) Neighborhood housing

II. **Applications**

A. They need an application to geo-reference current Brownfield sites and tie into current property information.

B. They need to identify the reuse potential for targeted brownfields. This would tie into neighborhood plans (as something more than a text file) to recommend uses of brownfields. This application would map out where Brownfield sites are and have a lookup table to show the types of use for it. This information could be used to market the property.

C. Property information

III. **Goals**

A. Need quick reference to Brownfields information. This would be an internal use.

B. Identify projects that need money – projects that can be helped with grants. Need to have a layer of projects.

IV. **Success Criteria**

A. Need quick reference to Brownfields information.

V. **Issues**

A. Need access to HAZMAT locations

B. Need access to current and past commercial property database with bad "chemicals" (fire dept.?)

C. Need access to the current ownership/parcel information.

D. Need data on neighborhood housing, parks, etc. and other projects to see if these projects can be supported.

Flood Early Warning System (FEWS)
3/8/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Susan Janek, Kena Pierce, Matt Porcher, Ross Clark

I. **Data**

A. Producers

20	Hydstra/TS database (partial)
53	FEWS Site Locations
54	Critical Low Water Crossings
55	Emergency Notification System Areas
72	Digital Photographs (partial)

1. QNX Fews - Hydrolynx – Time series database
2. FEWS - Stream and rain gage database
3. Datawise – Controls crossings and sirens
4. VEIUX (nexrad stuff plus predictive ~ 60 minutes)
5. They give their data to Stormwater Monitoring (manually – not automated)/

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
6	Lookup Table Database
7	RSMP
8	Floodplain GIS
9	Easements
10	LOMA/LOMR
11	Variance Database
19	stormwater monitoring data
20	Hydstra/TS database
21	USGS monitoring
30	PIER
39	ROWMAN
40	Utility Coordination
52	Drainage Infrastructure GIS
59	Digital Elevation Models

60	Edwards Aquifer Contributing and Recharge Zone Boundaries
64	Creek Erosion
67	Impervious cover
68	Land use
70	Masterplan Toolbox (see tab for details)
72	Digital Photographs
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

II. **Applications**

A. HEC1/RAS/HMS, GeoRAS/GeoHMS

B. Need Map2Map

III. **Goals**

A. Big Picture - Implement decision system for providing flood recommendations based on real time gage data (Nexpert). Hand out recommendations to emergency management people in automated way.

IV. **Success Criteria**

A. Automate generation of pdfs of floodplains for multitude of flow scenarios.

V. **Issues**

A. Involvement with WEB EOC (Emergency operation center) - Office of Emergency M Management.

Financial Management
3/9/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, David Rodriguez, Steve Wilkinson, Dean Djokic

Attendees – Mike Ihnat, Joyce Pulich, Karin Oaks, Carol Barnes, Connie Campa

I. **Data**

A. Producers

26	Urban Watershed Fund Database
31	Fiscal Surety
32	Stratus Fee Waiver Tracking
33	Catellus (Mueller Redevelopment) Fiscal Surety Waiver Tracking
34	Parkland Fee Tracking
37	SUEP Street Use Excavation Permits DB (partial)

1. Pond letters database (will be incorporated into the Ponds Geo-database)
   a) When a customer insists they have a pond that they cannot find in the Commercial Pond Database, Evie goes out and checks to see if the pond exists. If she still can't find it, she contacts Robert Acosta.
   b) If she verifies there is a pond and it isn't in the Pond Database, there is no mechanism for getting this information back into the Pond Database. Matt Hollon is working on correcting this problem in the new Pond Geo-Database.
2. Pond Lawsuit Database – needs to be incorporated into Pond Geo-database.
3. CIS (City's Financial System) – They enter data into this system.
4. License agreements (for private use of public lands) – needs to be captured in the matrix – has spatial component. CTM designed this database to track the financial records for license agreements. It was originally created in Public Works then went to ISS, back to PW and now to WPDRD through several reorganizations. Andy Halm from ROW Mgmt also has a similar database that he uses. This may be another opportunity for combining databases. Anna Villasana on the 12th floor is the primary user.
5. Stratus Fee Agreement Database – This is related to Circle C and is basically a credit bank with them. This database is set up to track the amount and to make sure Stratus doesn't use too much. There are other developers that can use the money too. It tracks the dollar amount per project.
6. Catellus Database – This is similar to the Stratus Database.

7. Parkland Fee Tracking – Carol Barnes inherited this stand-alone database. It is for the Parks Department. The developer can pay money in lieu of developing a park. The Parks Department doesn't have a link to it and they probably have their own database. The two databases should be reconciled and perhaps combined. Carol also takes in money for the county parks too.
8. SUEP (#37) – They have three people who enter data into this database.
9. Data Warehouse – Pulls data out of AFS2 and puts it into Access.
10. They enter plat data into a spreadsheet that gets uploaded into the Carma Database. Scott gets the data to enter into the spreadsheet.
11. Connie enters data into a spreadsheet that gets uploaded into something that produces their performance measures.

B. Users

2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
6	Lookup Table Database
7	RSMP
27	One Stop Shop Performance Measure Spreadsheet
30	PIER
37	SUEP Street Use Excavation Permits DB
43	LIS Archive

1. They are also interested in the RSMP Database, because they track the financial part of it.
2. City-wide
   a) eCAPRIS, … (look it up in the provided materials)
   b) LIS Archive (#43) – They use the old billing system mainly for the Drainage Refund project, as well as for the lawsuit. It is a research tool.

II. Applications

A. Field work (pond "investigation") – automating form input. Needs connection to pond collection/assessment process.

B. Site measurements (e.g. impervious cover for drainage fees) – goes into CIS. Austin Energy is the owner of this system. The Financial Management group inputs changes into this system based on the discounts for ponds.

C. They need better reporting capabilities from the CIS/LIS database.

D. There is an old application that CTM developed based on LIS. This application no longer works.

III. **Goals**

A. Reduction in duplicated databases

B. Better access and reporting to data

C. Ability to share their data with other sections in the department/internal customer

D. Reduction in duplication of data entry (e.g. populating CIS database)

IV. **Success Criteria**

A. Streamline (reduce duplicate entries/errors) performance measures

B. Need access to new Pond Geo-database.

V. **Issues**

A. The Commercial Pond Database is used for research to determine if the pond is there. Karin does this and also will generate ticket for field work for Evie to go out and identify if the pond is there or not.

B. Need a mechanism for providing information about features that do not exist when doing field work (about other people's data)

C. Reference to the pond is coming from CIS (billing system for the utility). The same pond might be referenced by a different identifier depending on which database it is in. The two databases needs to be cross referenced.

D. Interaction with Parks database? Does not seem to be much of it (informal). Might be a spatial component (by one of 10 parkland zones). Needs to be coordinated with the City as well as the County.

E. Need to cover CIS database

F. There are a number of spreadsheets and Access databases that currently track internal information.

G. Performance measurement calculations and reporting (spreadsheets for exchange data with other systems at the City level). Should not be retyped as is done now.

Field Operations
3/9/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Katherine Loayza, Jim Grube, Bill Booth, David Chapman, Daniel Herrera, Tony Glass

Unable to Attend – Danny Lopez

I. **Data**

A. Producers

1	Drainage Complaints
2	Residential Ponds
4	Pond Geodatabase
52	Drainage Infrastructure GIS (partial)
72	Digital Photographs (partial)

1. CSR/311 – There are different time requirements for responding, depending on what it is.
2. The Drainage Complaint Database (#1) has become basically a Work Request Database since the CSR/311 System was implemented. Field Operations prioritizes the work list and sends it out to the superintendents. They have a schedule of work for the month.
3. DIG (#52) – None of the infrastructure work they've done for the past 13 years has been tracked because there has not been a system to track it in.
4. Digital Photos (#72) – They do have the pond photos sorted by ticket number. Everyone has their own pictures. Jonathan has a lot of pictures of their stuff. There needs to be a central location for storing photos and a consistent naming convention to be used to reference them.

B. Users

3	Commercial Ponds
5	FEMA Creeks
6	Lookup Table Database
8	Floodplain GIS
9	Easements
28	Operating Permit Database
30	PIER
31	Fiscal Surety
37	SUEP Street Use Excavation Permits DB
39	ROWMAN

53	FEWS Site Locations
54	Critical Low Water Crossings
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
64	Creek Erosion
74	Retrofit Program

1. They will use AMANDA.
2. They use Easements in ArcView, but not the Access Database that Floodplain uses. They need the separate easements recorded after the plat. Public Works doesn't maintain these, but it would be really useful if they did.

II. **Applications**

A. Field work (pond "investigation") – automating form input. They can have laptops in the field.
   1. CSR/311 tie in for immediate reaction. The dispatcher routes the 311 calls. It would be good if they could tie into the dispatcher and send information to the computer via cell/radio.
   2. It would be great if they had a digital ticket, but it isn't mission critical to get this right away. Instead of getting pages, if they had a laptop in the field, they could go right out there and update the ticket from the field, and not have to go back and forth so much.

B. Application for field work reporting/status.

C. It would be good to have a database that would overlay with the Master Plan to confirm that they are doing the work. Matt did this for them manually.

D. They would like a map that shows them where they've done work based on the type of work.

III. **Goals**

A. Access to other data. PIER is very difficult to use. It is also difficult to find current and accurate easement information.

B. A functioning DIG system is critical to them.

C. A photo referencing system would be useful.

IV. **Success Criteria**

A. Streamlined access to the data spatially.

B. Updates to the data

V. **Issues**

A. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

B. Make sure the right types of easements are entered in an identifiable way.

C. Field Operations give Catellus money (#33). Need to find out from Carol Barnes if these funds will be tracked. Explore the need for interaction with #33.

D. They need to be able to use 311 to report other people problems.

Creek Flood Hazard Mitigation and Pond Safety
3/9/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, David Rodriguez, Dean Djokic

Attendees – Mapi Vigil, Roxanne Cook, Johnny Price, Pamela Kearfott, Bond Harper, Glen Taffinder, Elizabeth Hernandez

Unable to Attend – Joe Guerrero, Marco Guzman

I. Creek Flood Data

A. Producers

4	Pond Geodatabase (partial)
7	RSMP
30	PIER (partial)

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
5	FEMA Creeks
6	Lookup Table Database
7	RSMP
8	Floodplain GIS
9	Easements
10	LOMA/LOMR
11	Variance Database
20	Hydstra/TS database
21	USGS monitoring
22	Legal Settlement Tracking Database
23	Development Agreement Tracking
24	Red Tag DB
25	Environmental Inspection -Red Tag DB
30	PIER
31	Fiscal Surety
32	Stratus Fee Waiver Tracking
33	Catellus (Mueller Redevelopment) Fiscal Surety Waiver Tracking
40	Utility Coordination

41	GAIN 2000
42	Records Storage Tracking
52	Drainage Infrastructure GIS
53	FEWS Site Locations
54	Critical Low Water Crossings
55	Emergency Notification System Areas
56	Abandoned Waste Disposal Contract
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
61	Drinking water wells
62	Education and Outreach
63	ERM library database
64	Creek Erosion
67	Impervious cover
68	Land use
70	Masterplan Toolbox (see tab for details)
71	On-site wastewater treatment systems
72	Digital Photographs
74	Retrofit Program
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. EII (environmental integrity index)
2. Emergency Notification System Areas (55) - They use this because they are volunteers for the FEWS program
3. Digital Photos (#72) – These need to be better organized. They keep quite a few photos related to their projects.
4. City databases
   a) One Stop Shop Viewer
   b) W/WW utility data
   c) City clerk Council action documents
   d) AMANDA (TCAD)
   e) Property ownership (Travis County)

II. **Pond Safety Data**

A. Producers

2	Residential Ponds (partial)
3	Commercial Ponds (partial)
4	Pond Geodatabase (partial)
30	PIER (partial)

B. Users

1	Drainage Complaints
5	FEMA Creeks
6	Lookup Table Database
8	Floodplain GIS
9	Easements
10	LOMA/LOMR
11	Variance Database
20	Hydstra/TS database
21	USGS monitoring
23	Development Agreement Tracking
24	Red Tag DB
25	Environmental Inspection -Red Tag DB
30	PIER
40	Utility Coordination
41	GAIN 2000
42	Records Storage Tracking
52	Drainage Infrastructure GIS
53	FEWS Site Locations
54	Critical Low Water Crossings
55	Emergency Notification System Areas
56	Abandoned Waste Disposal Contract
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
61	Drinking water wells
62	Education and Outreach
63	ERM library database
64	Creek Erosion

67	Impervious cover
68	Land use
70	Masterplan Toolbox
72	Digital Photographs
73	Rainwater Harvesting location
74	Retrofit Program
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. Digital Photos (#72) – Pond Safety would like to be able to reference the photos directly from the Pond Database.
2. EII (environmental integrity index)
3. City Databases
   a) One Stop Shop Viewer
   b) W/WW utility data
   c) City clerk Council action documents
   d) AMANDA (TCAD)
   e) Property ownership (Travis County)

III. Applications

A. Field work – automating form input. Dam safety – ArcPad, creek walk.

B. Application for field work reporting/status.

C. Access to CIS for ownership information

D. Have an automated process for data assembly for a particular type of analysis (e.g., base map, custom layers, documents, etc.).

E. Pond Safety GIS that would eventually part of the Pond Geo-database

IV. Goals

A. Have automated process for data assembly for a particular type of analysis (base map, custom layers, docs, photos, etc.).

B. Data access – just knowing who has what that can be useful in the project

C. Integrate GIS and tabular components (RSMP). Workflow for data update from personal to SDE.

D. Masterplan toolbox implemented in a meaningful way

E. Research library

V. **Success Criteria**

A. Research library/database design

B. Data access to external data

VI. **Issues**

A. Have a mechanism for providing information about features that do not exist when doing field work (about other people's data).

B. Time series database

C. Need a library of "research" materials (directory structure for all supporting materials). This could be combined with #63, which is ERM's library.

D. Need to store all the information associated with the review of external (CIP) projects – reviews of consultant submitting projects. The whole history (initial comments, all the way up to final submission).

E. Standards for data submission for data coming from external sources (consultants).

F. Find reference to EII

G. There is a need for a workflow driven process (check off list generating next steps in the workflow) – AMANDA is not going to cover their needs in this area.

H. At last check there were plans for the implementation of AMANDA to include RSMP and then turn off the current RSMP database/GIS. This would create a major problem for the Creek Flood Hazard Mitigation group.

I. They do not have enough data storage space.

J. PIER is not a good research tool. They'd like something that's easier to find things in. Making it spatial would also help them find projects.

K. There is a lot of good data in the City, but people don't always know that it is there. There is also a lot of duplication of data. Just knowing who has what data would be useful.

L. RSMP GIS and tabular data are not meeting the needs of the Creek Flood Hazard Mitigation group. Bond creates the GIS data, but she can't link it to the Oracle database. She was able to update it from her geo-database, but after CTM switched it to the SDE server, she has not been able to update it.

Commercial Building Review
3/9/2006

IMP Team Attendees – Leeanne Pacatte, David Rodriguez, Steve Wilkinson, Dean Djokic

Attendees –Carol Raney, Tim Langan

I. **Data**

A. Producers

B. Users

30	PIER

II. **Applications**

A. Need to tie together GIS and PIER (search in space to pull out permit images in PIER)

III. **Goals**

A. AMANDA works with CHANGES to meet their requirements

IV. **Success Criteria**

A. AMANDA works with CHANGES to meet their requirements

V. **Issues**

A. AMANDA is very "layered" to the point that the users will spend hours working with each permit. What took 20 minutes with PIER will take hours with AMANDA. AMANDA will effectively shut them down. ISSUE #1.

B. Research Issues
1. Carol's biggest concern with AMANDA is research into the history.
2. AMANDA is missing research capabilities.
3. Research – documents associated with a number (parcel, address, etc). "Pseudo Spatial Locator".

C. Addressing Issues
1. Change of addresses within the system (Addressing Department) is a major problem for this group. This group works at pulling up all former review permits for a building (the history of the building), but faces challenges when the address for a building has changed the way it is denoted within the system. ISSUE #3.

2. Communication between Building Review and Addressing is not going well. The Addressing Department is not information Building Review when they change address spellings.
3. Address mapping capability – they need to be able to manage when an address changes – have a lookup of what one address went through so they can find what these were over time.

D. Steve is hoping to keep PIER accessible even after AMANDA is online, in a read-only capability.

E. Possible GIS Applications to keep from typing the GIS information into PIER, could possibly be automated, or linked.

F. Carol wants AMANDA to be "grouped" like PIER as far as permits are considered. ISSUE #2

G. Right now each permit needs to be a case in AMANDA. For them it would be better to have multiple permits to be a single case (e.g. electric and gas permits will now have to be two cases in AMANDA, while in the past it would be just one – a master permit with multiple trade permits).

H. They need access to 1980 building footprint GIS layer (planimetrics) that they used to have.

Site Plan/Subdivision Inspection
3/9/2006

Mark Mauldin is the lead for the Site Inspection Group (construction of private property and future public property) while Ruben Cantu is the lead over Subdivision Inspection (infrastructure the City will maintain). The Site Inspections will go into the first phase of AMANDA, while the Subdivision Inspections will be part of Phase II of AMANDA. Henry Casas is the Manager over both of these groups.

IMP Team Attending – Leeanne Pacatte, Ann McCracken, Steve Wilkinson, Dean Djokic

Attendees – Henry Casas, Mark Mauldin, Ruben Cantu

I. **Data**

A. Producers

3	Commercial Ponds
4	Pond Geodatabase
25	Environmental Inspection -Red Tag DB
28	Operating Permit Database (partial)
30	PIER (partial)
51	EV Complaint
72	Digital Photographs

1. Red Tags (#24 and #25) – There are two Red Tag databases. One is Susan Scroggin's and the other is the one the Site Inspection group maintains. The new red tags (#25) will be in AMANDA, but not the historical data. Each inspector has their own geographical area and they are responsible for taking care of just that portion.
2. Subdivision Inspections is still doing a lot of paper tracking. They aren't entering anything into a database. They collect the as-builts when the project is complete. These go to the File Room to be scanned in.
3. Digital Photographs (#72) – Site Inspections takes photos. These are in folders by address. They will be able to bring them into AMANDA. Subdivision Inspections could use a photo organizing system.

B. Users

2	Residential Ponds
6	Lookup Table Database
9	Easements
24	Red Tag DB
28	Operating Permit Database
30	PIER
31	Fiscal Surety

35	ROW Inspection Calls DB
37	SUEP Street Use Excavation Permits DB
39	ROWMAN
52	Drainage Infrastructure GIS
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
71	On-site wastewater treatment systems

1. Site Inspections needs to know when a pond is proposed on an approved plan.
2. Easements (#9) – Subdivision Inspections sometimes needs to research easements.
3. City
   a) eCID (Construction Inspection Database – Public Works). Subdivision Inspections provide corrections and uses for reporting. Not everything works in eCid and Public Works currently has a team working to correct this issue. Site/Subdivision is considering using MS Project for better work load analysis if this is not included in the eCid updates or as a short term solution.

II. Applications

A. Project management application – resources, scheduling, workloads, etc. (looking into using MS Project)

B. Field application – tablet (use GotoMyPC to connect and use whatever they have on the desktop)

C. Access to the desktop functionality in the field (remote access or downloads before going to the field) for subdivision group.

III. Goals

A. AMANDA Works

IV. Success Criteria

A. AMANDA Works!

B. Remote access

V. **Issues**

A. Need to include historical Red Tag data into AMANDA. Does not seem to be planned in the implementation. Will need to maintain the legacy database.

B. Need ability to “red tag” property in AMANDA.

C. Need strategy for storing various project files in a coherent way (replace paper trail), particularly for the subdivision group.

D. Need for remote access

Spills and Complaints
3/9/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, Dean Djokic

Attendees – Sharon Cooper, Eric Kaufman

I. **Data**

A. Producers

12	Stormwater Discharge Permit Program Database (SDPP) (owned by SDPP Group)
14	Spills and Complaints (owned by Spills Group)
56	Abandoned Waste Disposal Contract
70	Masterplan Toolbox (partial)

1. "Six pages" of other data sources (get the report with that info). Note: This is for Spills.
2. Coal tar ban communication database – to keep track of incoming and outgoing communication with different users, manufacturers, etc., regarding the cold tar sealant topic. This might be a standard approach for dealing with other topics as well. This database has been speced out, but not created yet. There are significant contaminants in this product that are carcinogenic, so they are trying to prevent it from being flushed to creeks and lakes when it is applied. Austin is the first city in the nation to ban this product. There are potential political and legal issues involved. They might want a spatial component eventually.

B. Users

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
6	Lookup Table Database
8	Floodplain GIS
9	Easements
10	LOMA/LOMR
13	Field Sampling Database (FSDB)
15	Integrated Pest Management System
16	Underground Storage Tanks
17	dry weather screening

18	stormwater monitoring sites
19	stormwater monitoring data
20	Hydstra/TS database
21	USGS monitoring
24	Red Tag DB
25	Environmental Inspection -Red Tag DB
28	Operating Permit Database
30	PIER
39	ROWMAN
51	EV Complaint
52	Drainage Infrastructure GIS
54	Critical Low Water Crossings
55	Emergency Notification System Areas
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
61	Drinking water wells
62	Education and Outreach
63	ERM library database
64	Creek Erosion
66	Golf course protection
67	Impervious cover
68	Land use
69	Maps (see tab fro details)
70	Masterplan Toolbox (see tab for details)
71	On-site wastewater treatment systems
72	Digital Photographs
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN
79	Watershed boundary

1. Operating Permit (#28) – They could use a link to the Operating Permit Database now in case there is a spill in that area.
2. ROWMAN (#39) – They used to have access to an ROW event database, but they no longer do. They really need this if it is #39.

3. Digital Photographs (#72) – it would be nice if photos were organized and named consistently and they could just send the link to it. Dates need to be associated with the photos.
4. City
   a) CIS
   b) Hazmat Sites

II. **Applications**

A. Field work both with PDA and laptop requirements. The investigation would need to be recorded on a laptop because it involves a lot of text, but the sampling portion could be handled by a PDA because there are lots of checkboxes.

B. Inspection allocation

C. Emergency response – routing, real time!!!!

D. Spill tracing (overland and through pipes)

III. **Goals**

A. Mobilize Mac database and move to current technology. Make it spatial so it can be related to all the other water quality data.

B. Ability to data mine and look for cause-effect relationships

C. Streamline data input/access process. Eliminate handwriting component and allow entry directly through database.

IV. **Success Criteria**

A. Mobilize Mac database and move to current technology. Make it spatial so it can be related to all the other water quality data.

V. **Issues**

A. Storm Drain Markings – Need to keep track of "don't dump into creek" signs. This may be an education project. It's a preventative.

B. Need off-line access to data (e.g. when cell towers are intermittent, or they shut down the servers due to sever weather). Need to keep data on the laptop.

C. Access to owner/manager information (maintenance people to call in case of emergency).

D. Since they are first responders, they have lots of reference materials. These are in paper form, so it would be nice to have them in digital form.

E. Access to the weather data for personal safety and impact on flows. Real-time access would be nice

F. Need to access/interact with Open records requests. Needs a management system for this - multi department multi group. Collaboration management on reporting.

G. Need to access/interact with CAF – customer assistance form (complaints). Need to respond to those within 10 days. Same need as above.

H. They would like to correlate their data with the sampling and monitoring data to help them make Master Plan and other decisions.

Stormwater Discharge Permit Program
3/9/2006

IMP Team Attending – Leeanne Pacatte, Ann McCracken, Dean Djokic

Attendees – Sharon Cooper, John Watkins, Terri Calero

Background: There is a similar process with this program as for spills and complains but the SDPP program deals with fixed sites. In addition, there is a permitting process where they send out notices and collect fees. They send out annual permit/billing notices to 1200 facilities. There is also an inspection process. The forms are different and the site investigation is somewhat more detailed. The inspections are more scheduled than with spills. They look for problems rather than respond to them. The Spills group handles a problem if it is happening right now, but once it's contained (if it's a permittable site), the SDPP group is given the problem and an SDPP inspector goes out to do an inspection. Regular inspections are prioritized. Priority 1 sites are inspected once a year. Priority 2s are the bulk of their sites (primarily automotive) and these sites are inspected every 2 years. Priority 3s are fuel dispensing facilities and they are inspected every 3 years. However, there is an override that will bump up a site's priority if the site has had a lot of problems staying clean in the past. The inspectors have territories except for the Team leader who goes around to the worst sites. They print out a priority list regularly and go out unannounced.

I. **Data**

A. Producers – pretty much the same as the Spills Group.

12	Stormwater Discharge Permit Program Database (SDPP) (owned by SDPP Group)
14	Spills and Complaints (owned by Spills Group)
56	Abandoned Waste Disposal Contract
70	Masterplan Toolbox (partial)

B. Users – pretty much the same as the Spills Group.

1	Drainage Complaints
2	Residential Ponds
3	Commercial Ponds
4	Pond Geodatabase
6	Lookup Table Database
8	Floodplain GIS
9	Easements

10	LOMA/LOMR
13	Field Sampling Database (FSDB)
15	Integrated Pest Management System
16	Underground Storage Tanks
17	dry weather screening
18	Stormwater monitoring sites
19	Stormwater monitoring data
20	Hydstra/TS database
21	USGS monitoring
24	Red Tag DB
25	Environmental Inspection -Red Tag DB
28	Operating Permit Database
30	PIER
39	ROWMAN
51	EV Complaint
52	Drainage Infrastructure GIS
54	Critical Low Water Crossings
55	Emergency Notification System Areas
57	Biological Resource maps
58	Critical Environmental Features (CEF Database)
59	Digital Elevation Models
60	Edwards Aquifer Contributing and Recharge Zone Boundaries
61	Drinking water wells
62	Education and Outreach
63	ERM library database
64	Creek Erosion
66	Golf course protection
67	Impervious cover
68	Land use
69	Maps (see tab fro details)
70	Masterplan Toolbox (see tab for details)
71	On-site wastewater treatment systems
72	Digital Photographs
75	Riparian buffer zones
76	Stream Buffer Zones (critical water quality and water quality transition zones)
77	Stream Centerline
78	TIN

79	Watershed boundary

1. City
   a) CIS
   b) HAZMAT sites

II. **Applications**

A. Field work both with PDA and laptop requirements. A tablet application would be good, so they can walk around and enter data on the move. There is more data than can be feasibly captured in PDA. This way they could do their report in the field and print it so the responsible party can have a copy. Currently they use carbon paper or mail the copy.

B. They need a digital version of what is in the folders right now. They have difficulty keeping track of the folders. The inspection detail doesn't go into the database and would need to if they want to be able to print the inspection form from the database.

C. Streamline permit payment/receipt process. Certified mailing printing/log entry. Payment process through Finance is antiquated. These should be automated instead of handwritten. Also, the certified mailing cards log book is tedious and time consuming.

III. **Goals**

A. Streamline data input/access process

B. Ability to data mine and look for cause-effect relationships

IV. **Success Criteria**

A. Coordination with spills database.

B. Streamline data input/access process

V. **Issues**

A. Need off-line access to data (e.g. when cell towers are intermittent, or they shut down the servers due to sever weather). Keep data on the laptop.

B. Access to owner/manager information (maintenance people to call in case of emergency).

C. Need access to CAF (Customer Assistance Form) Database. Need to respond to these within 10 days.

D. Need to interact with open record requests. Need a management system for this – multi department, multi group. Collaborate with management on reporting.

E. Need to coordinate this database with the Spills Database and add a spatial component.

F. SDPP Database has some problems that if they were fixed, would improve the efficiency of this work group.

G. Their current process and number of sites isn't changing, but their group is taking on more responsibilities, so they have to try harder to streamline their process if they want to get everything done.

Development Assistance Center (DAC)
3/10/2006

IMP Team Attending – Leeanne Pacatte, David Rodriguez, Steve Wilkinson, Neil Galati, Dean Djokic

Attendees – Chris Johnson, Brandon Bailey

Background – There are two parts to DAC – 1) Consulting Side and 2) Record Research Side (History, Files - where everything is stored). Brandon works on the Record Management side. Navigating through the code is the main focus of DAC. There are two types of people using DAC - 1) One type has knowledge of the code and just needs a little guidance. 2) The other type is Joe Property Owner who owns a piece of land and wants to know what he can do with it.

VI. **Data**

A. Producers

B. Users

8	Floodplain GIS
29	Customer Wait Time
30	PIER
41	GAIN 2000
42	Records Storage Tracking

1. This group uses PIER and GIS heavily. They currently use ArcView 3 because ArcIMS applications are limiting in capabilities and performance.
2. Need easements
3. They have a contract with Iron Mountain – DB, and one internal database (#41, #42)
4. GAIN2000 is in FoxPro
   a) There is a detailed description of the process to request and retrieve data. They have problems with that.
   b) Internal program – RSTS (#42) Oracle database. This is a redundant system to GAIN2000. This system says what is in the box, but not necessarily where the box is.
   c) GAIN2000 can tell where the box is, but not what is in the box.
   d) GAIN2000 is a legacy database they are trying to phase out.

VII. **Applications**

A. Address/grid/parcel research to identify property. From that identify case file number and from that some on-line data, and then if necessary get the boxes related to the history of the "location".

VIII. **Goals**

A. AMANDA works

B. Good GIS system for research

IX. **Success Criteria**

A. GIS as general research tool

B. AMANDA works!

C. Move Records Storage Tracking (#42) into Gain 2000 (#41)

X. **Issues**

A. Database of floodplain determinations – by parcels. Having access to the existing ones would be good.

B. Currently there is no capture of what is being determined during interaction with the client – so that would be of interest

C. GAIN 2000 interaction with Iron Mountain is not automated, which introduces inefficiencies.

D. Data issues with box identification once a day or every other day. They get about 800 customers a month. They spend about 10 minutes per problem, with several phone calls.

E. Records Storage Tracking (#42) was developed by CTM and is in Oracle. Nothing new gets put in this database. All is now going to GAIN 2000 (#41). Need to merge data from #42 into #41.

F. Internet application not efficient compared to the internal application, so people still come to DAC as they can get things done faster (those that do it a lot). Would help if they could pull all documents at once instead of a page at a time.

G. Since this department's functionality will be handled by AMANDA, it is important to determine what won't be covered by the AMANDA rollout.

H. AMANDA will help Chris. He is relatively happy with the software, but needs more coworkers.

I. DAC needs more coverages than what the ArcIMS website offers. So if ArcIMS can add more feature classes to a site it would help. However, it is still slow and the display window is too small.

J. Chris has 1-1 contact with customers so no reports are generated. This step is needed because the land development code is so complicated.

K. Steve indicated that it was once hypothesized about documenting and saving research already done on a parcel so they won't have to do it again. But the answers DAC generates for public are specific to the question, not necessarily the property. They would like to access a database where the determinations have already been done on a property.

L. Migration of systems and human error are the greatest cause of errors in records/fields.

Wrap-up Meeting
3/10/2006

IMP Team – Leeanne Pacatte, Steve Wilkinson, Ann McCracken, Neil Galati, David Rodriguez, Dean Djokic

Attendees – Joyce Pulich, Ellen Wadsworth, Mike Ihnat, Sandy Kelso, Joe Guerrero, Chris Herrington, Jon Meade, Susan Janek, Matt Porcher, Catherine Esparza, Ed Peacock

XI. **Introduction** – Leeanne announced that she was pleased with how the process has gone so far and the wealth of information that has come out of it.

XII. **Summary from Dean**

A. We will share – We don't have an option here. There is plenty of good data around.

B. We will use the technology we have – We have good technology.

XIII. **Review the Current State –** There is still some work to do here to capture the current state.

A. Inventory of Departmental data and databases. The preparation was critical – data and personnel forms.

B. Individual sessions with work groups.
1. 27 sessions
2. 33 pages of notes in digital form
3. 2.5 notepads of handwritten notes
4. 30 contact hours
5. The focus of the meetings was more on the data requirements than the functions.

XIV. **Initial Findings**

A. There are plenty of needs
1. Data input processes
2. Field work
3. Database design
4. Applications
5. The needs will be different for different groups.
6. The IT infrastructure is okay, but need to make sure there is enough shared storage space.

B. There are plenty of issues
   1. Duplication of data entry efforts
      a) There is a set of technical ways the data could come to us in digital form rather than re-entering or re-digitizing it.
      b) There are lots of ways to automate the work flow before it gets to us to make our lives easier.
      c) Get the citizens to enter some of the data. It is technically doable, but whether or not we can institutionally get the citizens to do it the way we want isn't clear. Providing incentives would help.
   2. Unorganized Data - To facilitate data sharing we need a tighter organization of our data inventory. Need to incorporate:
      a) Naming conventions
      b) Organizational structure across the Department
      c) Published directory structure
      d) Formal database design – both spatial and attribute – enterprise wide
      e) Well defined data inventory
   3. Lack of infrastructure for development of mission critical applications. Dean doesn't think we have the IT structure available to do this right now. The City isn't set up to support that. He will try to find ways to deal with this big problem. How can we get what we ask for on time?
   4. Lack of interaction with other departments and entities and the ability to share data between.

C. Database Design
   1. Work flows and methodologies are important, not just the physical design
   2. Identify ownership
      a) Can't have people complaining about data but not being willing to maintain it.
      b) Need a chain of command and chain of responsibility. It is critical to have this in place and to keep it organized.

D. Data maintenance workflows are critical in maintaining a database as we implement the tools, work flows, processes and methodologies. We need to do this immediately even if we start with an empty database.

E. Applications
   1. Got the whole spectrum from "we don't need anything" to "we need everything."
   2. A lot of these applications already exist. They can be purchased and implemented or given to us by other departments/entities.
   3. Applications should be driven by the end users.
   4. If you have a decent database you will be able to build your applications faster.

XV. **Initial Approach**

A. How will we share?
   1. There will be a consolidation of all the things we have in a place where they are easily accessible.
   2. Define buckets of information that have a home. They need to be designed pretty tightly.
   3. Different groups will be responsible for different chunks of data.

B. Timing - We are going to build and implement the enterprise database one dataset at a time. It is not feasible to design and build it all at once. Do it one layer at a time. Get that one up and running, add applications to it, then move on.
   1. Need to determine which of the critical data sets to start with (e.g., Easements).
   2. There is no reason why a database can't evolve over time. The critical issue is planning. Up front space is a big integrator. How are all the different unique identifiers we have going to connect? Need to take care of this up front.

C. Work Flows – how are we going to collect and maintain the data? This is critical.

D. How are we going to load data? – Need to minimize duplication of effort.
   1. Use field units – depends on use (ex. PDA, laptops in trucks, tablets you carry around). There will be different types for different needs.
   2. Different mechanisms for communicating with the central database.
      a) Live link
      b) Periodic download
   3. There needs to be a data augmentation process. Keep the field workers from doing unnecessary work. Have them enter just the x and y coordinates and get the rest electronically.
   4. Need to identify where people in one program can either update or submit data to another group.
   5. The general public needs a way to help us develop the database. Get them to submit data via the Web. Provide incentives. Take advantage of what the citizen already did. This goes for both attribute and spatial data.
   6. If we do a good geo-database design for our spatial data, we won't have to develop as many custom applications. We won't be able to enter bad data. We need to take advantage of the additional functionality the geo database provides.

E. Define the work flows that will nail down when the data changes and what we need. Identify how the two worlds interact.

XVI. **Conclusion**

A. There is a great potential here to do something good fairly quickly.

B. Steve indicated that we want to take advantage of the plan that Dean is developing. We need to learn to maximize our resources (ex. ESRI contract money, CIP funds, etc.) in an efficient and effective way. We need to develop the plan then follow it.

C. We need to make it easier for people to collect data for other work groups by:
   1. Making the form easier for them to use, collect data from, etc.
   2. Facilitate the process.
   3. Provide incentives.
   4. Try to make the focus on the entire department, not just their individual work group. This will save time and money for the City over all. This is something that Dean needs to look at. This is an important issue.

City of Austin: Watershed Protection and Development Review Department

Db #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Section \ Database dependency u = user p = producer r = responsible party a = administrator a/c = joint administrator with CTM	Drainage Complaints\Work Order	Residential Ponds	Commercial Ponds	Pond Geodatabase	FEMA Creeks	Lookup Table Database	RSMP	Floodplain GIS	Easements	LOMA/LOMR	Variance Database	Stormwater Discharge Permit Progra	Field Sampling Database (FSDB)	Spills and Complaints	Integrated Pest Management Systen	Underground Storage Tanks
Stormwater Treatment		u	u	p		u									r	
Water Quality Monitoring																
Stream Restoration	u															
Land Use Review																
GIS/Planning		p	p	r		u		p				p				p
Zoning Review																
Water Resource Evaluation		u	u	u		u						u	r/a	u		
Master Plan	u	u	u	u	u		u	u				u		u		u
Building Inspections																
Permit Center																
ROW Management																
Localized Flood Hazard Mitigation	u							u	u							
Floodplain Management	u	u	u	u	p	u	u	r	r/a	r/a	r/a					
Field Engineering Services	u	u	u	u	r			u	u							
Brownfields								u								u
Flood Early Warning System (FEWS)	u	u	u	u	r	u	u	u	u	u	u					
Financial Management		u	u	u	u	u	p									
Field Operations	r	r	u	p	u	u		u	u							
Creek Flood Hazard Mitigation	u	u	p	p	u	u	r	u	u	u	u					
Pond Safety	u	p	p	p		u		u	u	u	u					
Commercial Building Review																
Site Plan Inspection		u	r	p		u			u							r
Subdivision Inspection									u							
Spills and Complaints	u?	u	u	u		u		u	u	u		p	u	r/a	u?	u
Stormwater Discharge Permit Program	u	u	u	u		u		u	u	u		r	u	p	u?	u
Development Assistance Center (DAC)									u							
OSS Legal Coordination/Enforcement				u												
Water Quality Education																
WPDR Data Management	a	a	a	a	a	a	a/c	a/c				a/c		a	a	a
OSS Support																

Db #	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Section \ Database dependency	Dry weather screening	Stormwater monitoring sites	Stormwater monitoring data	Hydstra/TS database	USGS monitoring	Legal Settlement Tracking Database	Development Agreement Tracking	Red Tag DB	Environmental Inspection -Red Tag	Urban Watershed Fund Database	One Stop Shop Performance Measu	Operating Permit Database	Customer Wait Time	PIER \ AMANDA	Fiscal Surety	Stratus Fee Waiver Tracking	Catellus (Mueller Redevlopment) Fis	Parkland Fee Tracking	ROW Inspection Calls DB	Certified Traffic Control Contractor D	SUEP Street Use Excavation Permit	Traffic Control Inspections DB	ROWMAN	Utlity Coordination
Stormwater Treatment		u	u	u	u									u										
Water Quality Monitoring	r/a	r/a	r/a	r/a	r/a																			
Stream Restoration																								
Land Use Review													p	p	p/r	p/r	p/r	p/r						
GIS/Planning										p?		p		p										
Zoning Review											u		p	p										
Water Resource Evaluation			u	p	p									u										
Master Plan																								
Building Inspections											u			p										
Permit Center											u		p	p										
ROW Management											u		u?	u					r/a	r/a	r	r/a	r	r/a
Localized Flood Hazard Mitigation														u										
Floodplain Management				u	u						p		u	p										p
Field Engineering Services														u							u		u	u
Brownfields														u										
Flood Early Warning System (FEWS)			u	p	u									u									u	u
Financial Management										r	u			u	r	r	r	r			p			
Field Operations												u		u	u						u		u	
Creek Flood Hazard Mitigation				u	u	u	u	u?	u					p	u	u	u							u
Pond Safety				u	u		u	u?	u					u										u
Commercial Building Review											u		u	u										
Site Plan Inspection						u	u	u	p/r		u	r/p		p	u				u		u		u	
Subdivision Inspection						u	u				u			p										
Spills and Complaints	u?	u?	u?	u?	u			u	u			u?		u									u	
Stormwater Discharge Permit Program	u?	u?	u?	u?	u			u	u			u?		u									u	
Development Assistance Center (DAC)												u	u?	u										
OSS Legal Coordination/Enforcement						r	r	r			u	u	u	u										
Water Quality Education																								
WPDR Data Management										a	a	a	a/c	u										
OSS Support						r	r	r			r			p										

Db #	41	42	43	44	45	48	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
Section \ Database dependency	GAIN 2000	Records Storage Tracking	LIS Archive	SOPT Sound Permit Tracking	VMTS - Vehicle Mileage Tracking Sy	Call Out Customer Contact System	Public Notice Tracking System	EV Complaint	Drainage Infrastructure GIS (DIG)	FEWS Site Locations	Critical Low Water Crossings	Emergency Notification System Area	Abandoned Waste Disposal Contrac	Biological Resource maps	Critical Environmental Features (CEI	Digital Elevation Models	Edwards Aquifer Contributing and Re	Drinking water wells	Education and Outreach	ERM library database	Stream Restoration	GIS water quality loading model	Golf course protection
Stormwater Treatment																							
Water Quality Monitoring																							
Stream Restoration																					r		p
Land Use Review							r																
GIS/Planning									p					p	p	r	p				u?	r	
Zoning Review				r																			
Water Resource Evaluation									u	u				r	r	u	r	r	p		u	u	r
Master Plan																							
Building Inspections					u?	r																	
Permit Center																							
ROW Management																							
Localized Flood Hazard Mitigation									p						u	u							
Floodplain Management									u	u	u					p	u						
Field Engineering Services									u	u	u										u		
Brownfields													u	u	u								
Flood Early Warning System (FEWS)									u	r	r	r				u	u				u		
Financial Management			u																				
Field Operations									p	u	u						u				u		
Creek Flood Hazard Mitigation	u	u							u	u	u	u	u	u	u	u	u	u	u	u	u		
Pond Safety	u	u							u	u	u	u	u	u	u	u	u	u	u	u	u		
Commercial Building Review																							
Site Plan Inspection								r/a	u								u						
Subdivision Inspection																							
Spills and Complaints								u?	u		u	u	r	u	u	u	u	u	u	u	u?		u?
Stormwater Discharge Permit Program								u?	u		u	u?	p	u	u	u	u	u	u	u	u?		u?
Development Assistance Center (DAC)	r	r																					
OSS Legal Coordination/Enforcement								u															
Water Quality Education																			r	r			
WPDR Data Management									a												a?		
OSS Support																							

Db #	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81
Section \ Database dependency	Impervous cover	Landuse	Maps (for ERM)	Masterplan Toolbox	On-site wastewater treatment systen	Digital Photographs	Rainwater Harvesting location	Retrofit Program	Riparian buffer zones	Stream Buffer Zones (critical water q	Stream Centerline	TIN	Watershed boundary	Development Review Tracking Datal	Brownfields
Stormwater Treatment								r							
Water Quality Monitoring	u	u													
Stream Restoration	u	u		u		u						u			
Land Use Review															
GIS/Planning	r	r	r	r		p	r	p	p	r	r	r	r		
Zoning Review															
Water Resource Evaluation	u	u	u	u	u	p			r	u	u	u	u	a	
Master Plan				a											
Building Inspections															
Permit Center															
ROW Management															
Localized Flood Hazard Mitigation	u	u		u		p						u	u		
Floodplain Management	p	p		u		p		u	u	u	p	p	p		
Field Engineering Services						p					u		u		
Brownfields		u											u		r
Flood Early Warning System (FEWS)	u	u		u		p			u	u	u	u	u		
Financial Management															
Field Operations						p		u							
Creek Flood Hazard Mitigation	u	u		u	u	u	u	u	u	u	u	u	u		
Pond Safety	u	u		u		u	u	u	u	u	u	u	u		
Commercial Building Review															
Site Plan Inspection					u	p									
Subdivision Inspection						u									
Spills and Complaints	u	u	u	p	u	u			u	u	u	u	u		
Stormwater Discharge Permit Program	u?	u	u	p	u	u			u	u	u	u	u		
Development Assistance Center (DAC)															
OSS Legal Coordination/Enforcement															
Water Quality Education															
WPDR Data Management															
OSS Support															

Db #	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17	18	19	21	22	23
Section \ City Database Dependency	Land Use (NPZ)	Impervious Cover (WPDRD?)	CSR\311 (CTM)	TCAD (TCAD)	Easement (Public Works)	Terrain Model (CTM)	City Addresses (CTM)	Property lines (CTM)	Building footprints (CTM)	Utility infrastructure (AWU and AE	Railroads (CTM)	HAZUS (?)	TESS (TX Excavation)	Neighborhood planning and zonin	HAZMAT locations (Fire)	CIS (FSD)	eCAPRIS (FSD)	Parks (PARD)	eCID (Public Works)	WCAD (WCAD)	HCAD (HCAD)
Stormwater Treatment	x																				
Water Quality Monitoring	x	x																			
Stream Restoration			x																		
Land Use Review				x																x	x
GIS/Planning																					
Zoning Review																					
Water Resource Evaluation																					
Master Plan			x														x				
Building Inspections																					
Permit Center																					
ROW Management																					
Localized Flood Hazard Mitigation			x																		
Floodplain Management			x	x	x	x	x	x	x	x	x	x								x	x
Field Engineering Services			x							x			x								
Contract Management																					
Brownfields	x			x				x						x	x					x	x
Flood Early Warning System (FEWS)																					
Financial Management																x	x	x			
Field Operations			x																		
Creek Flood Hazard Mitigation and Pond Safety				x				x		x										x	x
Commercial Building Review																					
Site Plan/Subdivision Inspection																			x		
Spills and Complaints															x	x					
Stormwater Discharge Permit Program															x	x					
Development Assistance Center (DAC)																					
OSS Legal Coordination/Enforcement																					
Water Quality Education																					
WPDR Data Management			x	x			x										x				
OSS Support				x																x	x

City of Austin: Watershed Protection and Development Review Department

Section \ Grading Category	Access to Department Data	Access to City Data	Data quality issues for data owned by the section	Database issues for other data	Data quality for section data	Data quality for other data	GIS Applications	GIS Training	**Total**
Stormwater Treatment	3	2	2	3	4	3	2	3	**22**
Water Quality Monitoring	3	2	3	3	3	3	2	2	**21**
Stream Restoration	3	3	2	1	2	3	2	3	**19**
Land Use Review	4	4	3	3	3	3	2	2	**24**
GIS/Planning	2	2	4	2	4	2	4	4	**24**
Zoning Review	4	3	3	3	3	3	3	2	**24**
Water Resource Evaluation	2	3	4	2	4	3	3	3	**24**
Master Plan	2	4	2	3	3	3	3	3	**23**
Building Inspections	4	3	3	3	3	3	3	1	**23**
Permit Center	4	3	3	3	3	3	3	1	**23**
ROW Management	2	3	3	3	2	3	1	1	**18**
Localized Flood Hazard Mitigation	2	2	2	2	2	3	2	3	**18**
Floodplain Management	3	3	3	3	4	3	3	4	**26**
Field Engineering Services	3	2	2	2	3	3	2	2	**19**
Brownfields	3	2	2	2	2	3	2	3	**19**
Flood Early Warning System (FEWS)	3	4	3	3	4	3	3	3	**26**
Financial Management	4	2	2	2	3	3	2	1	**19**
Field Operations	2	2	3	2	3	3	2	1	**18**
Creek Flood Hazard Mitigation	3	3	3	2	4	3	3	3	**24**
Pond Safety	3	3	2	2	3	3	2	3	**21**
Commercial Building Review	4	3	3	3	3	3	2	1	**22**
Site Plan Inspection	3	3	3	3	2	2	2	2	**20**
Subdivision Inspection	2	2	1	2	2	2	1	1	**13**
Spills and Complaints	3	3	2	3	3	3	1	1	**19**
Stormwater Discharge Permit Program	3	3	4	3	4	3	1	1	**22**
Development Assistance Center (DAC)	4	3	4	3	3	3	3	3	**26**
OSS Legal Coordination/Enforcement	3	3	3	3	3	3	1	1	**20**
Water Quality Education	3	3	3	3	4	3	3	3	**25**
WPDR Data Management	3	3	3	3	3	3	3	4	**25**
OSS Support	3	3	4	3	3	3	3	2	**24**
Average	**2.37**	**2.20**	**2.10**	**2.00**	**2.40**	**2.30**	**1.83**	**1.77**	**16.97**

City of Austin

MEMORANDUM

TO: Karen Sharp, Deputy Chief Information Officer
Communications and Technology Management

FROM: Victoria J.L. Hsu, P.E., Director
Watershed Protection and Development Review Department

DATE: November 7, 2006

SUBJECT: WPDR Information Management Plan Transmittal

The Watershed Protection and Development Review Department recently completed a high-level Information Management Plan. This plan is an update to the 1998 CDM report. It was initiated by the Data Management section at WPDR to perform a baseline IT assessment focusing on database and spatial data development. The project was completed through consulting services provided by ESRI as a part of the City's existing GIS site license. Once the current state was assessed, the optimum (by today's standards) implementation for information management was recommended. Finally, implementation details were drafted which laid out a near-term action plan.

Highlights from the plan include recommendations that the Department implement work order and document management systems. We will be working internally and with CTM over the next several months to pursue these recommendations. In addition, we are developing a process for evaluating and prioritizing other department-level IT initiatives which will feed into our overall CIP spending plan process. We will keep CTM informed of these initiatives and coordinate with the appropriate personnel and the GIS Operating Board.

If you need additional information, please do not hesitate to call Philip Campman, Department GIS Coordinator at 974-6314, or Mike Ihnat, P.E., Chief Administrative Officer for the Department, at 974-3035.

Victoria J. L. Hsu, P.E., Director
Watershed Protection and Development Review Department

VH: *pc*