



SANTA FE IRRIGATION DISTRICT

INFORMATION TECHNOLOGY STRATEGIC PLAN

DRAFT FINAL REPORT



Version 0.6 - August 2008



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VERSION CONTROL

The following table provides a record of modifications to this document.

Version	Author(s)	Issue Date	Summary of Changes
0.1	Keith Kennedy Jim Kennedy Prem Sundaram	09/01/2007	Initial draft version for client review.
0.2	Jim Kennedy Prem Sundaram	10/22/2007	Updated based on client comments.
0.3	Jim Kennedy	05/07/2008	Updated based on review by General Manager.
0.4	Jim Kennedy	05/16/2008	Updated based on additional client comments.
0.5	Jim Kennedy Keith Kennedy Prem Sundaram	06/10/2008	Updated with comments from managers meeting.
0.6	Jim Kennedy Keith Kennedy	08/02/2008	Updated with comments following committee review.

Note: Versions of this document prior to Version 1.0 are to be considered draft.

EXECUTIVE SUMMARY

CGR Management Consultants LLC has developed this Information Technology Strategic Plan to be a road map for new and improved information systems and services at Santa Fe Irrigation District over the next five years. The Plan explains how information technology will help the District achieve the following six goals:

1. Aim for excellence
2. Maintain a high level of customer service, public responsibility and product and service quality
3. Improve manager performance, development and productivity, and staff performance and job satisfaction
4. Plan and control financial and physical resources
5. Capture institutional knowledge for improved succession planning
6. Balance the constraints of the District's financial resources with the need to progress in areas in which the District is advanced and with those in which the District is falling behind

The plan calls for a significant investment in systems that can provide technology enabled process improvement. One key element of the plan involves analyzing major business processes at the District so that the information systems can be implemented to support and improve these critical business activities.

Despite the growing importance of information technology in business and daily life, the role of information systems at the District has not significantly changed in many years. However, the District has already recognized the need for this change and recently, in 2006, initiated this change, of which this report is an element. The computer equipment and facilities are as good as or better than could be expected and the District has the resources and expertise to keep current systems running. But there is an absence of information technology services and resources aimed at the analysis, development and implementation of new and improved business processes. Most of the District's major processes are inter-departmental but in recent years each department has developed systems independently. This has resulted in restricted access to information, unnecessary manual effort, and inability to improve the District's efficiency and effectiveness.

We recommend that the Information Systems Section should not only manage the computer and communications resources but should take an active role in directing the District's information technology and provide expert counsel and services to all departments and sections to improve the District's business processes, in accordance with best practices. This role change for the Information Systems Section will require strong support from management and the authorization of adequate resources. We have identified 12 projects in four groups that will produce better business systems for the District. The groups are:

1. Infrastructure, to support new applications and business processes.
2. Administrative Applications, to improve management of the administrative function and to make access to information easier.
3. Operational Systems, to increase efficiencies within the Operations Department

4. Process Management, to increase efficiency, provide easier access to, and be more open with, information.

The projects will require a capital investment of approximately \$1.8 million. Maintenance and other costs will add about \$710,000 to the cost over the next five years. Additional resources will be needed by the Information Systems Section either through increased staffing or through contractor, consultant and vendor support. The required additional resources are estimated at 1 full time equivalent (FTE).

1. INTRODUCTION

On March 15, 2007 the Board of Directors for the Santa Fe Irrigation District approved a proposal by CGR Management Consultants LLC to prepare an Information Technology Strategic Plan for the District. The assignment commenced on May 7, 2007. This document presents the Information Technology Strategic Plan (“the Plan”) and details specific recommendations for implementation of the Plan over the next five years.

This planning study has been conducted in accordance with CGR’s Formula-IT Strategic Planning methodology. The project included the requested scope of work as follows:

- Evaluating and making recommendations on:
 - the District’s investment in technology
 - network access and usage policies
 - internal and external customer service including an analysis of existing IT service level agreements.

- Determining current and future technology requirements for the 4 departments and 13 sections at the District. This work included:
 - meetings with department heads and staff in each section
 - a review of existing requests and plans
 - development of a strategic vision and plan for future technology investments
 - evaluation of electronic document management including a consideration of records management practices
 - development of a prioritized list of IT related projects
 - determine costs and benefits for implementation of new systems

- Recommending a planning process to maintain the strategic plan over 5 years including:
 - development of IT governance structure and standards
 - estimating required resources for identified projects
 - obtaining buy-in for an on-going governance process

- Analyzing and making recommendations on the Information Systems Section’s organization, practices, controls, staffing levels and use of external resources relative to the five year plan.

The scope did not include in-depth analysis of systems and applications nor the detail of which vendors would be most suited to supply any new equipment, software or facilities that may be recommended.

We believe that the requested scope of work has been fully satisfied during the preparation of the Plan, and that this document provides the most suitable actionable plan that will enable the District to invest prudently in information technology over the next five years.

2. THE CURRENT STATUS OF THE DISTRICT'S INFORMATION TECHNOLOGY

The District's provides water services to a population of approximately 21,350 customers in a service area of approximately 16 square miles. Approximately 84 percent of the District's water demand is residential. The service area covers the cities of Solana Beach and Rancho Santa Fe. The City of Solana Beach is a coastal community in northern San Diego County, known for its design district on Cedros Avenue. Rancho Santa Fe is recognized as having one of the highest per capita incomes in the United States and provides its residents with a secluded, rural environment with horse trails running throughout the community.

2.1 The Business Situation

The District's main priorities are to deliver reliable, quality water to its customers, improve its financial condition, strengthen its organization, ensure reliable infrastructure, maximize utilization of local water resources, and deliver outstanding customer service.

The District wishes to move forward with an Asset Management Program and a long-range financial plan to ensure the District's long term ability to adequately fund the maintenance, replacement and enhancement of its water treatment and delivery facilities. The IT Strategic Plan is a key element in the preparation for the Asset Management Program because it provides the systems that support the maintenance and financial processes with necessary information.

2.2 The Current Information Systems

The current information systems the District are not adequate for the business needs, and are not in keeping with industry standards. The systems have been selected independently within departments and are not integrated. Access to information is difficult and takes time to research and compile. The financial system has limited capabilities, is fairly inflexible, cannot generate ad hoc reports, and requires a third party vendor at an hourly rate to create any special reports or program changes. Customers do not have access to their accounts, other than by phone, speaking directly to a customer service representative.

The GIS system is currently outsourced, because there is no capacity in-house to manage it. The SCADA system has only been implemented for the treatment plant and a few select places in the distribution system, but this is needed throughout the distribution system to create a comprehensive SCADA solution. The document archiving program is currently only accessed by one staff member, so all requests for archived documents must pass through this person.

From a business process perspective, inefficiencies are many due to the limited nature of reporting from the financial system. Staff in various departments track budgets, project

costs, and purchase order information separately either by hand or in Excel spreadsheets. Duplication of effort exists in several areas due to the lack of integrated systems.

2.3 The Current Role of the Information Systems Section

Despite the increasing importance of information technology in business and daily life, the Information Systems Section does not have a level of staffing that enables it to follow a full range of best practices in information technology. The computer equipment and facilities are as good as or better than could be expected, given that they had not been implemented or upgraded by following any type of plan or strategy.

The Information Systems Section has the resources and expertise to keep current systems running and it responds quickly and empathetically to users' requests for short-term assistance. However, the number of staff is not adequate at this time to keep the District's information technology efficient and effective. In addition, the location of the servers, adjacent to working spaces and without adequate clearance around the racks, provides some challenges for maintenance and protection.

The Information Systems Section is not participating to the extent that it should in numerous initiatives involving information technology currently taking place in departments at the District. There is a lack of information technology resources available for business process analysis; analysis, development and implementation of new and improved business processes; user training; and the development and maintenance of systems standards. As a result, departments have developed their own limited systems independently and staff spend considerable time seeking information and doing other work that could be automated.

Current departmental initiatives are already violating some of the basic information technology principles on which best practices, such as the following, are based:

- Data should be entered once
- Data should be entered as close to the source as possible
- Data should be entered by the department that creates the data or is most affected by the output and results
- Responsibilities for and ownership of data elements should be clearly defined
- Staff should be provided with the information needed to do their work, without having to refer to others
- Critical elements of work should be quantified and measured
- Systems should be compatible so that information flows are not restricted
- The technology platform should be common and District-wide so that systems can be improved quickly and efficiently, and maintenance and support overhead is minimized
- Process improvements should adhere to standards that balance the needs of the particular with the good of the majority

Unless reversed, the current path will further isolate departmental information, continue to reduce the District's efficiency and effectiveness, increase system maintenance costs exorbitantly, and fail to support satisfactorily the District's objectives.

3. BUSINESS REQUIREMENTS

3.1 Business Objectives

In the Fiscal Year 2008 Budget, the District's business goals were stated as:

- **Water** – Assure an adequate, diverse, and reliable supply of quality water that meets all customers' needs.
- **Assets** – Plan, provide, and maintain District facilities and other physical assets to achieve reliable and efficient district operations over the long term.
- **Finance** – Maintain a sound financial condition, establish reasonable customer rates, and achieve a prudent balance among District revenues, expenses, and reserves.
- **Relationships** – Build understanding and support for District activities among customers and involved agencies, and seek opportunities for mutually beneficial cooperative efforts.
- **Administration and Management** – Institute policies, administration and management to carry out District operations in an effective and efficient manner, utilizing best business practices.

In addition, District staff identified immediate budget objectives which support each of the strategic goals as follows:

Water

- Conduct up-to-date, long-term, integrated water management planning
- Expand and diversify the District's water supply portfolio so that all customer needs are met
- Maximize the use of local water resources
- Meet all applicable regulatory standards
- Promote efficient water use

Assets

- Develop a District needs assessment for the headquarters, operations yard, treatment plant, and other facilities
- Prepare and implement a long-range property plan
- Develop an integrated asset management plan for upgrade and replacement of the District's capital facilities, taking into account long-term needs
- Develop and implement an easement and right-of-way policy
- Implement appropriate technology to efficiently meet the District's operational needs

Finance

- Prepare and maintain an updated multi-year financial master plan
- Establish customer rates adequate to provide quality water services
- Provide regular, understandable, and meaningful financial information for Board review
- Periodically review and update the District's reserve and investment policies and situation
- Meet all the applicable regulatory and audit requirements

Relationships

- Measure customer satisfaction and obtain customer input on District services and rates
- Develop and implement an overall outreach and communications plan for customers and neighbor agencies
- Avoid surprising the public by providing a proactive outreach and education program on recycled water, water rates, water supply and other important issues
- Identify where opportunities and threats exist related to relationships, and develop effective interactions that help promote positive outcomes
- Continuously monitor and improve customer service

Administration and Management

- Implement and continuously improve business practices that support District operations in an effective and efficient manner
- Maintain an effective, efficient, and stable workforce, recognizing employees as one of the District's greatest assets
- Make provisions to assure that staff can accomplish the District's objectives and goals in an effective and efficient manner
- Cultivate and maintain ethics education and ethical practices
- Implement appropriate opportunities for outsourcing
- Develop and implement an appropriate risk management program

The Information Systems Section can help to provide better access to information and improved business processes that will contribute to meeting the District's objectives in each of the above five areas. In particular, the recommended role for the Information Systems Section and the recommended applications set out in Section 4, Strategic Vision, have been designed with the goal of supporting the District's business goals and objectives.

3.2 Departmental Requirements

Our discussions with the managers and staff of the departments and sections indicated a need for improved processes across the District. The main improvements required were related to:

- Organizational Efficiency
- Access to Information

- Improved Internal and External Customer Service
- Safety and Security
- Improved Management Control
- Prevention of Business Interruption

The discussions confirmed that the process improvements brought about by better information technology would contribute significantly towards achieving the District's strategic objectives and goals.

4. STRATEGIC VISION

4.1 Recommended Role of the Information Systems Section

To follow established best practices we recommend that the role of the Information Systems Section should be to:

1. direct the District's information technology
2. manage the resources and projects related to information technology services
3. provide expert counsel and services related to information technology to each department and across all departments.

These will extend the section's current services to include business systems analysis, systems development, user training, and information technology standards. Further detail is provided below. The appointment of a Systems Administrator has already moved the District towards this role for the Information Systems Section; however, it is not yet an organizational expectation that the Information Systems Section should provide these services. Further details on the elements of the role recommended above are provided in the sections below.

4.1.1 Direct the District's Information Technology

- Advise on policies, procedures, methodologies, and technologies for computer and communications based information technology throughout the District
- Recommend to the managers how information technology can enable business process improvements for all departments and sections
- Advise management on appropriate levels and types of resources for cost-effective information technology throughout the District.

4.1.2 Manage the Resources and Projects Related to Information Technology

- Install, or assist the installation of, all computer and communications hardware, including personal computers, networks, system and application software, and voice, data and image communications
- Manage the operation and maintenance of the computers and communications resources, including monitoring the efficiency and utilization of the key components
- Provide assistance to users of the communications and computer systems

- Estimate the costs of major information technology projects
- Ensure data integrity
- Provide facilities for users to maintain their data securely
- Prepare, implement and maintain business continuity and disaster recovery plans and procedures for computer and related manual systems
- Advise on outside computer and communications consulting services.

4.1.3 Provide Expert Counsel and Services Related to Information Technology

- Act as business systems consultants to user departments, including advising on equipment, applications, methodologies, the feasibility and justification for new business processes and systems improvements, systems implementations and post-implementation reviews
- Provide technical education for users
- Evaluate and provide user productivity tools, appropriate to the business and the level of user sophistication
- Assist the implementation of software packages and undertake custom software development with in-house or outside resources to improve business processes
- Maintain and enhance applications software
- Assist users to prepare and maintain their own systems, in accordance with information technology standards
- Assist users with technical problems, including software issues
- Evaluate and recommend computer and communications hardware, including PCs, networks, mobile units and system software
- Evaluate and recommend application software and outside information technology consulting services.

The aim of the centralized Information Systems Section should be to assist the user departments to be more efficient and effective in achieving their goals. Hence the prioritization of limited information technology resources should be discussed with the users. Typically this is done by forming an Information Technology Advisory Group (ITAG) with members representing users from all departments.

After years in their current role, the Information Systems Section will have considerable difficulty changing its strategy and meeting the needs of the other departments for business systems analysis, systems development, user training and the implementation of information technology standards. It will need substantial management direction and backing and will need to display resources and expertise that raises management's and users' expectations of the assistance that the section can provide.

4.2 Recommended Applications

The requirements of the District, its departments and sections for improved processes and better access to information are best met by the Information Systems Section initiating a program of project work in four areas:

1. Infrastructure
2. Administrative Applications
3. Operational Applications
4. Process Management

Each of these areas is explained briefly below. Further details of the 12 individual projects making up this program of work are provided in Section 5.2 and Appendix 2.

4.2.1 Infrastructure

The infrastructure group includes IT and network infrastructure, IT policies and procedures and disaster recovery planning.

Infrastructure projects are required to improve the District's computer and communications network to run more, and increasingly sophisticated, software as the demand for information technology increases. The development of IT policies and standards are included in the projects.

Business Continuity and Disaster Recovery Planning is essential for every organization. The objective of the Disaster Recovery Plan will be to ensure information technology support for the continuity or timely recovery of business processes. Though the project would focus on a Business Continuity and Disaster Recovery Plan for the Information Systems Section the effect of the planning would be felt by all departments. The departments would need to consider how they could reduce downtimes and how they would catch up if they had to reprocess data from a prior time.

4.2.2 Administrative Systems

The administrative systems group covers the replacement of financial administration systems and the implementation of electronic document and

records management and workflow.

Much of the District's information is stored in documents. An Electronic Document and Records Management System (EDRMS) makes it easier to retrieve and share that information. The project would involve all departments of the District and would be aimed at enhancing organizational effectiveness as well as meeting security, legal and regulatory requirements.

Wherever practical, the District should be moving towards informative and interactive web-based systems. The projects in this area have the opportunity to save labor and improve internal and external communications.

4.2.3 Operational Systems

The operational systems projects are mainly required by the Operations and Maintenance and Engineering and Planning Departments. There are several projects which will significantly help the District to meet its asset management objectives. The projects include asset and maintenance management, GIS, automated meter reading and SCADA support for the water distribution system.

4.2.4 Process Management

Projects in this group are needed to ensure the success of the business process improvements. One project is aimed at gaining control of the current situation and catch up the business process knowledge that has not been acquired over the recent years. The other project is aimed at measuring performance and providing improved reporting.

4.3 Recommended Facilities

The existing computer hardware and network facilities are comprised of:

- Computer Rooms
- Cable plant and distribution facilities
- Network servers
- Local and Wide Area Networking equipment
- Desktop workstations
- Backup facilities
- Printers
- Uninterruptible Power

The network is a collapsed backbone architecture based on Internet Protocol (IP). Servers and desktops primarily use Microsoft operating systems. The existing facilities are well maintained and provide a reliable platform for the current inventory of software applications. However, there are a number of improvements to facilities that will be addressed as part of the IT Strategic Plan:

1. The network will need to be upgraded to provide additional throughput and capacity in certain areas. Additionally, a number of other network switches may need to be upgraded.
2. Upgrades to wide-area bandwidth are required.
3. Production and low volume scanning facilities will be required to convert paper to electronic images.
4. Additional facilities for mobile access to the District's network are needed for staff working "in the field".
5. A significant number of additional servers and data storage will be required to support planned new applications. These servers will require additional rack space and power in the computer room.
6. Additional disaster recovery facilities will need to be put in place.

4.4 Recommended Staffing

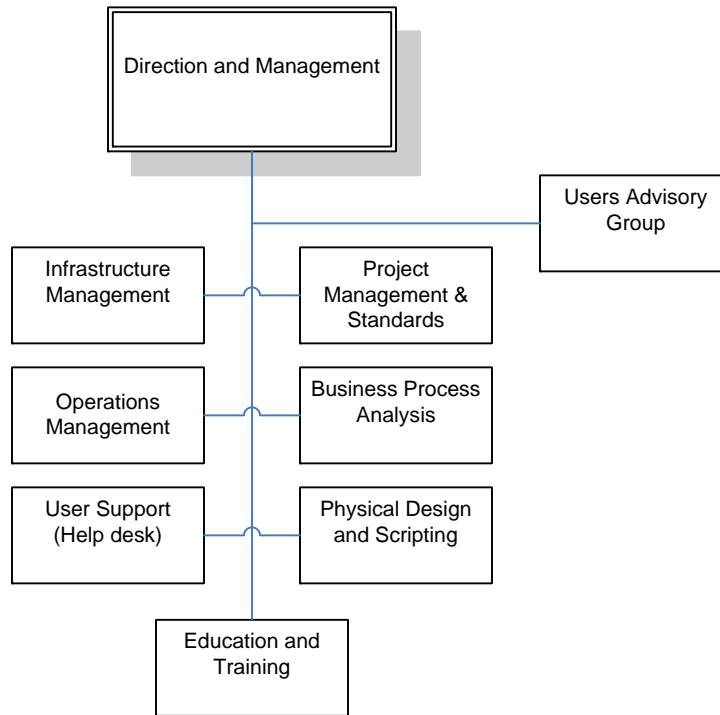
The required capabilities of the Information Systems Section can be provided by:

- a. Staff and consultants who are experts in computer and network design, operations and troubleshooting.
- b. Staff who manage daily operations of the network, maintain the network, back-up data and programs, and tend to the security of the network.
- c. A tiered organizational structure for user help that has advanced users in each Department as the first tier of help, information technology staff or consultants who operate a Help Desk (or "Service Desk") as the second tier and consultants and vendors as the last tier of support.
- d. Staff and consultants with expertise and experience in information technology business applications.
- e. Staff and consultants who can script applications and modify packaged software.
- f. Staff in the departments and consultants with experience of project management.

The Manager of Administrative Services should convene an Information Technology Advisory Group who will meet monthly for the foreseeable future to advise on user priorities. The ITAG should be comprised of representatives of users in all departments.

Diagram 4.4.1 illustrates the required functions and areas of capability that are required by the District. The Information Systems Section should be organized and staffed so as to provide these capabilities.

Diagram 4.4.1 – Functions Required For Information Systems



5. INFORMATION SYSTEMS WORK

Although this report mainly addresses the work of improving business processes that the Information Systems Section needs to do, because it has been missing in the past, it is important to realize that the non-project work that the section does is just as essential. This section describes the non-project work and then the project work.

5.1 Information Systems Section Work

The main functions currently performed by the Information Systems Section are:

- Network administration
- Network management
- Help desk support
- Application system support
- System back-up and restore
- Hardware procurement
- Hardware maintenance
- Hardware upgrades

These functions have been heavily focused on maintaining the network infrastructure and providing desktop support to end users. Under the new role that the Information Systems Section will play, a number of additional functions will be needed:

- Development and enforcement of policies, procedures and standards
- Justification of new systems
- Software selection
- Project management
- Business process analysis
- Disaster recovery planning

5.2 Recommended Information Technology Projects

To meet the business requirements set out in Section 4 above, the Information Systems Section needs to do project work in four areas. In these areas, 12 projects need to be undertaken. The list of projects is:

Table 5.2.1 – List of 12 IT Projects in Four Logical Groups

Infrastructure

1. Information Technology Policies and Procedures
2. IT and Network Infrastructure
3. Disaster Recovery Planning

Administrative Applications

4. Financial Administration
5. Electronic Document and Records Management and Workflow

Operational Applications

6. CADD and GIS
7. GIS Portal
8. Asset Management and Maintenance
9. Automated Meter Reading
10. Water Distribution SCADA

Process Management

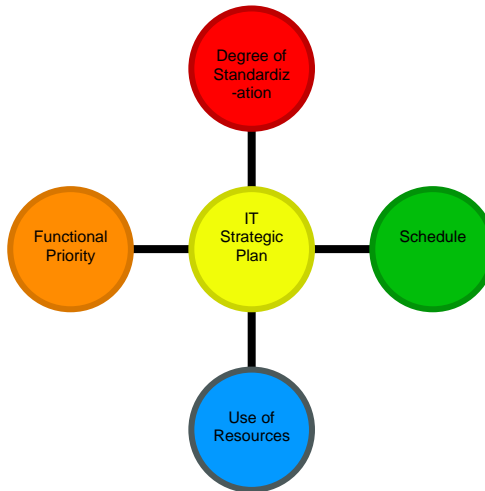
11. Process Analysis
 12. Performance Management and Reporting
-

Each of the projects is defined in Appendix 2.

5.3 Recommended Approach to Projects

In order to illustrate the different ways that the IT Strategic Plan could be developed, we considered four different strategic dimensions that could be used to identify different approaches for accomplishing the projects. The four dimensions are illustrated in diagram 5.3.1 and described further below.

Diagram 5.3.1 – Strategic Dimensions



5.3.1 Degree of Standardization

One way to approach the projects would be to define standards to which every project must adhere. The opposite approach is to have a “best of breed” approach in which each project is worked on independently without any guiding standards. The best of breed approach can provide the most functional applications for the specific process, but they cause serious problems when data has to be exchanged with other applications or gathered for District-wide reporting. Standards compliant systems tend to the opposite characteristics.

We recommend that systems should comply with standards, unless they are specialist systems that require little or no interfaces with other systems and little or no support from the Information Systems Section.

5.3.2 Functional Priority

There are three functional priority alternatives:

1. Administrative Systems.
2. Operational Systems.
3. Process Systems.

To give priority to Administrative Systems means that the District will use more common District-wide administrative systems. For example, everyone would use the same time document management system to store documents.

An operational systems approach would place the focus of the Plan on systems that directly support the operations of water treatment, water distribution and maintenance of the assets that make operations possible.

The Process Systems alternative places the focus of activity on support for processes, many of which will be cross-departmental but not necessarily District-wide.

Considering the need to improve the District's business processes we recommend the Process approach to systems development. However, there is clearly a balance to be struck because of the need to move forward in the operational and administrative areas. Therefore as a further recommendation the process analysis should be limited in scope and focus tightly on the processes that will impact administration and the maintenance of assets.

5.3.3 Overall Schedule

We reviewed whether a shorter or longer schedule than five years would be appropriate for the Information Technology Strategic Plan. For the number of projects that need to be done we recommend that a five year plan would be most appropriate.

5.3.4 Use of Resources

The two alternatives are:

1. Internal Resources
2. External Resources

There are constraints on the number of staff that it is practical to recruit to catch up with the role that the Information Systems Section should play, so a balance of internal and external resources would be best. Initially, external resources could be used, potentially to be replaced by staff time if a new staff member is recruited and trained.

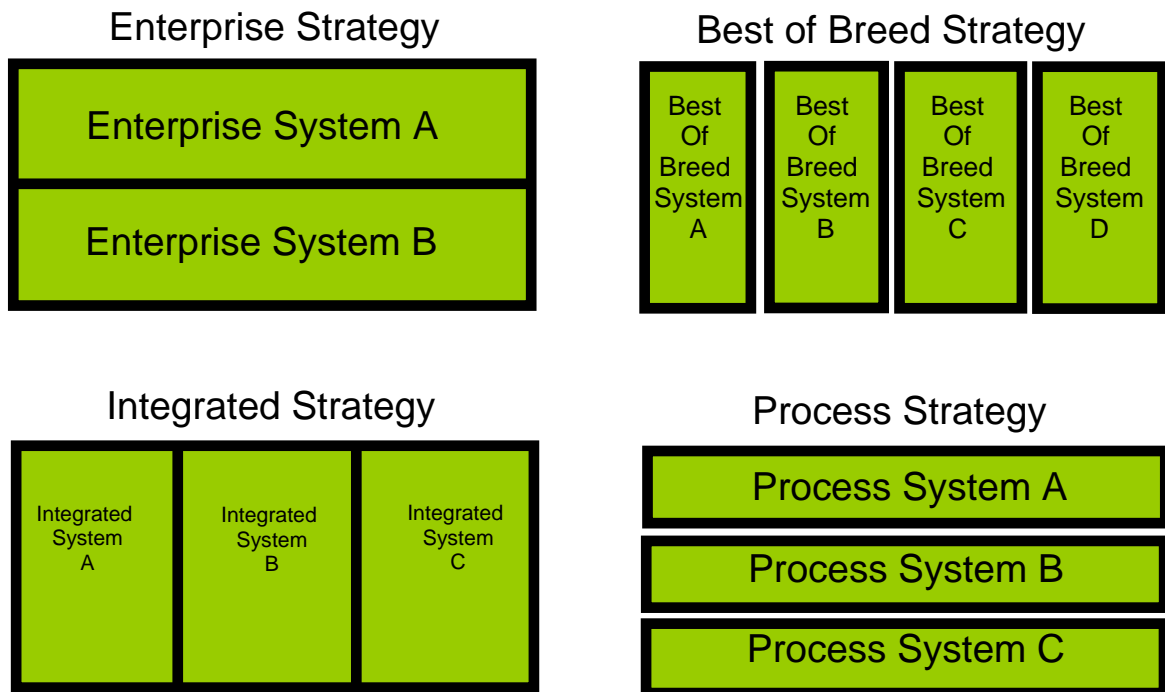
5.4 Strategic Options

Based on the four strategic dimensions there are many possible strategies but it is possible to illustrate the logical possibilities using just four strategic options as follows:

- Option 1, Enterprise Strategy – This strategy would focus effort on a minimum number of enterprise-wide systems with wide ranging functionality. One of the systems implemented would be District-wide Enterprise Resource Planning (ERP) system that would incorporate all financial, administrative and management needs in a fully integrated system.
- Option 2, Best of Breed Strategy – The “Best of Breed Strategy” would be a plan to implement a larger number of systems, each selected as the best system to meet specific needs but at the expense of District-wide integration.
- Option 3, Integrated Strategy – This strategy would focus on integration and implies that systems would be selected not just on their meeting functional needs, as with the best of breed strategy, but also on their ability to integrate with each other. This strategy would include the actual integration of those systems.
- Option 4, Process Strategy – The “Process Strategy”, would focus on the definition of District processes and implementation of systems to directly support and automate the processes. The priority of work would be less on providing system functionality and more on providing cross-District process improvement.

The four strategic options are illustrated in diagram 5.4.1 below.

Diagram 5.4.1 – Strategic Options



The purpose of defining the strategic options was not to select a particular strategy but to help identify the elements that were desirable in the final strategy. It was determined that the “Integrated Strategy” was overall most beneficial while the “Best of Breed Strategy” had compelling characteristics for SCADA development and the “Process Strategy” had

some attraction for the financial and administrative areas. There was little about the “Enterprise Strategy”, which could be considered high cost and high risk, that made it attractive for the District. Based on this approach the plan was developed to provide the desirable characteristics for each element of the strategy.

5.5 Recommended Timing of Projects

The sequence and timing of the projects is a critical factor in the Information Technology Strategic Plan because too fast or too slow a plan will cause the whole program to fail. The District will not be able to withstand a rate of change that is too high. However, if the timetable is not fast enough the departments will develop their own business process improvements, thus continuing the problems of the current situations.

The plan for the projects is affected by their logical dependencies, their priorities, milestones that have to be met, resource and expertise requirements, and other considerations. These are outlined below.

5.5.1 Project Dependencies

Most of the 12 projects can be started independently of the other projects but there are some dependencies for completion of the projects. The major ones are:

- All projects depend on the Infrastructure projects.
- The SCADA system has a specific dependency on upgrades to the wide area network.
- The Financial System and Asset Management and Maintenance System depend upon the process analysis for detail process and functional requirements.
- The Automated Meter Reading project depends upon the Financial System and the Asset Management and Maintenance System.

5.5.2 Priorities

Most of the projects are required urgently but it is impractical to undertake too many projects at the same time. The Infrastructure projects and projects related to GIS and SCADA, should have the highest priorities.

5.5.3 Resource and Expertise Requirements

The 12 projects will require a wide range of expertise so the Information Systems Section’s staff will need to be supplemented with consultants who can provide the experience and expertise required.

5.5.4 Other Considerations

Other considerations that affect the timing and sequence of the projects include the needs to:

- Gain support from management.
- Be sensitive to the extra workload that a higher rate of change will impose on the staff and management.
- Modify the culture of the District to accept change more readily.
- Win cooperation from the departments who have already started on information technology projects, and, equally important, not obstruct other departments who wish to develop improved processes before their due time according to the Information Systems Section's plans.
- Change the role of the Information Systems Section.
- Grow the Information Systems Section from an organization that has done little business process improvement work to a fully functioning, efficient and effective information technology force.

5.5.5 Project Timings

It is convenient to consider the program of work to comprise three overlapping Phases. The initial Phase is dominated by establishing best practices and developing an understanding of the required functionality in detail.

The duration of Phase 1 will depend upon the availability of resources in the Information Systems Section, but at this time it is expected to take 12 months.

Phase 1, Preparation, is characterized by:

1. Provision of assistance to projects already underway (GIS and SCADA).
2. Establishment of IT policies and procedures that lay a foundation for the major projects to come.
3. A project that analyzes business processes.
4. Disaster recovery planning.
5. Projects that are not too ambitious in their size, complexity and scope.

Phase 2, Deployment, will get underway as resources are obtained. Phase 2 comprises projects that will be:

1. Greater in size, complexity and scope.
2. Managed and carried out with staff and outside resources.
3. Aimed at major business improvements for the District.

Phase 3 is essentially an integration Phase that brings together the work of the second phase in improved management reporting and performance measurement. It will also be the start of the Electronic Document and Records Management

project that will last well beyond the five-year timescale of this plan. At the end of Phase 3 it should be time to prepare a new Information Technology Strategic Plan.

Taking account of the dependencies, priorities, milestones, resources requirements and other considerations identified above, we recommend the following allocation of projects to the three Phases.

Table 5.5.1 – Project Phases

Phase 1	Phase 2	Phase 3
<i>Preparation</i> 1. Information Technology Policies and Procedures 2. IT and Network Infrastructure 3. Disaster Recovery Planning 4. Process Analysis (FA, AM&M) 5. SCADA (Analysis) 6. CADD and GIS	<i>Deployment</i> 1. Financial Administration 2. Asset Management and Maintenance 3. Automated Meter Reading 4. SCADA (Deployment) 5. CADD and GIS	<i>Integration</i> 1. GIS Portal 2. Electronic Document Management and Records Workflow 3. Performance Management and Reporting 4. SCADA (Integration)

6. REQUIRED RESOURCES

6.1 Recommended Staffing Levels

The capabilities required in the Information Systems Section are defined above in Section 4.4. They show a need for staff to:

- Manage the Department
- Manage the technological infrastructure
- Manage network operations
- Provide a Help Desk (or Service Desk) for users
- Analyze and improve business processes

The current System Administrator already manages the technological infrastructure and the network operations, and staffs the Help Desk as well. The major areas of new work for the Information Systems Section are the analysis and improvement of business processes, the selection of software and the deployment of new systems.

We expect that additional resources will be needed in the Information Systems Section. The resources could be provided as an additional staff member or equivalent contracted resources. The additional resource will work on more than one project at a time and will be supplemented by topic specific consulting resources as necessary.

Depending on the skills of the additional resources, the work on projects will need to be carefully allocated between the existing System Administrator and the additional resource.

6.2 Funding Required

To estimate the funding requirements for the Information Technology Strategic Plan we have made a number of assumptions which include:

1. Costs are estimated only for the additional resources in the Information Systems Section and not for any users who may spend significant proportions of their time on a project. User costs include a limited number of outside training courses.
2. The cost of additional resources in the Information Systems Section is estimated at \$120k per annum based on the estimated cost to recruit a member of staff. If alternative means of providing the resource are used the cost could be higher. The cost of existing staff is not included.

The table below shows the estimated additional capital costs that will be incurred with the Information Technology Strategic Plan.

Table 6.2.1 – Estimated New Capital Costs for the IT Strategic Plan

Project	Total
Infrastructure	\$245,000
Administrative	\$400,000
Operational Applications	\$1,000,000
Process Management	\$145,000
TOTAL	\$1,790,000
Additional Maintenance Cost	\$710,000
Grand Total	\$2,500,000

Based on the above figures the extra capital cost of implementing the Information Technology Business Plan will be \$1.8 million. Maintenance costs at 10% to 20% per year, and other costs, could add about \$710,000 to the cost over five years.

6.3 Benefits

Traditional techniques for determining return on investment have become increasingly irrelevant when measuring the value to an organization of new information systems. Much like the telephone, information systems have become an essential business tool whose impact on the organization is so pervasive that it is almost impossible to measure in purely economic terms. Nonetheless prudence dictates that such systems should be justifiable even if their true value to the organization cannot be fully determined in financial terms.

In determining the benefits of the proposed program of strategic projects the aim has been to provide an overall justification for the program. The benefits justifying the new systems are both tangible and intangible. In reality, the intangible benefits are expected to far outweigh the quantifiable increases in efficiency and productivity that could be used to estimate the financial benefits of the system. While not ignoring the financial savings, the benefit analysis focuses on the non-financial benefits to operational capability that information systems can bring. The reasons for this are:

- it will not be possible to justify the overall program on cost saving grounds, and indeed the realizable savings of each part of the program will, at best, be relatively low
- even where financial savings are possible, there is an element of choice as to whether benefits are realized by improving the quality or quantity of operational capability using the same resources, or by reducing the cost of resources while maintaining quality and grade of service

- the intangible benefits are the greatest source of value to the District particularly because the consequences of not undertaking the program of projects would be to limit the District's ability to achieve its objectives, particularly in the areas of assets, finance, administration and management. The program provides technology enabled growth towards improved business practices while directly influence the District's ability to serve its customers.

6.3.1 Tangible Benefits

Tangible benefits can typically be grouped into four categories:

- Labor Savings – the savings due to expected headcount reduction or overtime avoidance.
- Expense Reductions – the savings in expenses such as inventory or accounts receivable.
- Business Benefit – the gains in revenue from increased sales, customer acquisition or increased customer retention.
- Cost Avoidance – avoidance of some predictable future cost.

Of these four categories it is only labor savings that provides any significant dollar savings to the District. Based on the District's growth projections it is clear that no substantial increase in staff is likely to be needed so cost avoidance will not yield benefit nor will there be significant reduction in expenses or increases in sales.

Although labor savings are difficult to realize, there is tangible value in being able to do more work with the same number of staff. The District is constantly taking on new projects, and new regulations require the District to develop new programs. Automation will help redirect staff resources in order to staff those new projects and support those programs. While it is difficult to quantify potential labor savings, it is clear that it will be a substantial tangible benefit of the Plan.

6.3.2 Intangible Benefits

The District can anticipate reaping the greatest results from the intangible benefits of introducing these new systems. These intangibles, while not quantifiable in financial terms, are a realizable benefit of the systems improvements, chiefly in the areas of effectiveness and efficiencies. For example, the District is embarking on a comprehensive asset management program which will require systems support. Better information providing a greater ability to manage and conduct those projects will have significant value for the District. Intangible benefit will also come from better customer access to information, improved reporting capabilities, performance measurement and tracking functionality, quicker

recovery of information, reduction of duplication of effort, allowing staff to perform higher level value added duties and the integration of SCADA systems which reduces risk.

In fact, there are many sources of intangible benefits that can accrue from the Plan. The sources of intangible benefits that can be attributed to the Plan can be grouped as follows:

- Strategic Advantage – working towards the District’s overall objectives and alignment with the District’s mission
- Performance Incentive Advantage – alignment with performance incentives for which the District is rewarded and avoidance of situations for which the District is penalized.
- Brand, Image and Reputation Advantage – reinforcing, advancing and changing the District’s brand, image and reputation
- Participation Advantage – allowing the District to participate in or provide leadership in industry initiatives.
- Relationship Advantage – enhancement of the relationship with the key stakeholders
- Flexibility Advantage – implementing policy changes faster, implementing process changes less expensively, better addressing customer needs, meeting changing demands (e.g. changing demographics) more quickly, scaling processing activities more easily and more cost effectively
- Organizational Advantage – reinforcing the District’s culture or improving job satisfaction
- Operational Advantage – enabling the District to function more effectively and to standardize processes
- Intellectual Capital Advantage – capturing of implicit knowledge gained by staff in an explicit form, and the perceived value from the capture of that knowledge in a systematic form.

Each of these groups of intangible benefits has value to the District but greatest advantages are strategic, flexibility and operational.

7. IMPLEMENTATION ACTIONS





7.1 Timetable of Work

The timetable for the projects is shown in the Gantt chart below.

Figure 7.1.1 – Timetable for the Information Technology Strategic Plan Projects

PROJECT	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Preparation																				
IT Policies and Procedures	[Cyan]																			
IT and Network Infrastructure	[Green]																			
Disaster Recovery Planning		[Cyan]			[Green]															
Process Analysis	[Cyan]																			
SCADA (Analysis)	[Green]	[Green]	[Green]	[Green]																
CADD and GIS (Analysis)	[Green]																			
2. Deployment																				
Financial Administration		[Cyan]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]								
Asset Manag. and Maint.		[Cyan]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]								
Automated Meter Reading							[Green]	[Green]	[Green]	[Green]	[Green]	[Green]								
SCADA (Deployment)		[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]								
CADD and GIS (Deployment)		[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]								
3. Integration																				
GIS Portal											[Cyan]	[Green]	[Green]	[Green]	[Green]	[Green]				
EDRMS											[Cyan]	[Green]	[Green]	[Green]	[Green]	[Green]				
Performance Management													[Cyan]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
SCADA (Integration)											[Green]	[Green]	[Green]	[Green]	[Green]	[Green]				

Legend

-  Work conducted primarily by SFID IT staff
-  Work requiring significant external consulting support
-  Work requiring some external consulting support
-  Work conducted by SFID IT staff or external resources

7.2 Actions Required

The major actions to be taken are:

1. Decide to adopt this plan and support it with the necessary resources.
2. Continue the information exchange with representatives of all departments until it is appropriate to formally create the Information Technology Advisory Group (ITAG). Thereafter hold meetings with the ITAG monthly.
3. Develop and agree the mission, objectives and performance measures of the Information Systems Section to reflect the role laid out in this plan.
4. Initiate a process to obtain additional resources for the Information Systems Section.

Following these major actions, the program of IT Strategic Plan projects can be initiated by:

1. Appointing a Program Sponsor for the IT Strategic Plan Implementation Program.
2. Appointing a Project Sponsor for each project that falls within Phase 1 of the program.
3. Appointing a Project Manager for each project that falls within Phase 1 of the program.
4. Developing a Project Charter for each project that falls within Phase 1 of the program.
5. Identifying team members for each project that falls within Phase 1 of the program.
6. Conducting a kick-off meeting with each project team.
7. Developing a detailed Project Plan, identifying each of the tasks that will be assigned to team members, for each project that falls within Phase 1 of the program. The project plans should include any necessary administrative procedures for the on-going management and control of each project, in addition to identifying the required resources and skills.
8. Obtaining any necessary resources or training that will be required to execute each Project Plan.
9. Commence execution of each Project Plan.
10. Commence bi-weekly progress reporting against each project plan.

8. CONCLUSION

We expect that the projects detailed within this Information Technology Strategic Plan will make a significant contribution towards achieving the District's strategic objectives. To realize the benefits of the plan it must now be implemented with adequate resources and management support. The resources and support must be sustained across the five years of the plan for the full benefits to be achieved.

We wish to thank all of the managers, staff and consultants at the District for their contribution to this strategic plan. In particular, we wish to thank Jeanne Deaver, Manager of Administrative Services and Jeff Ehrman, Systems Administrator, for their guidance and the time they have devoted to this Plan.

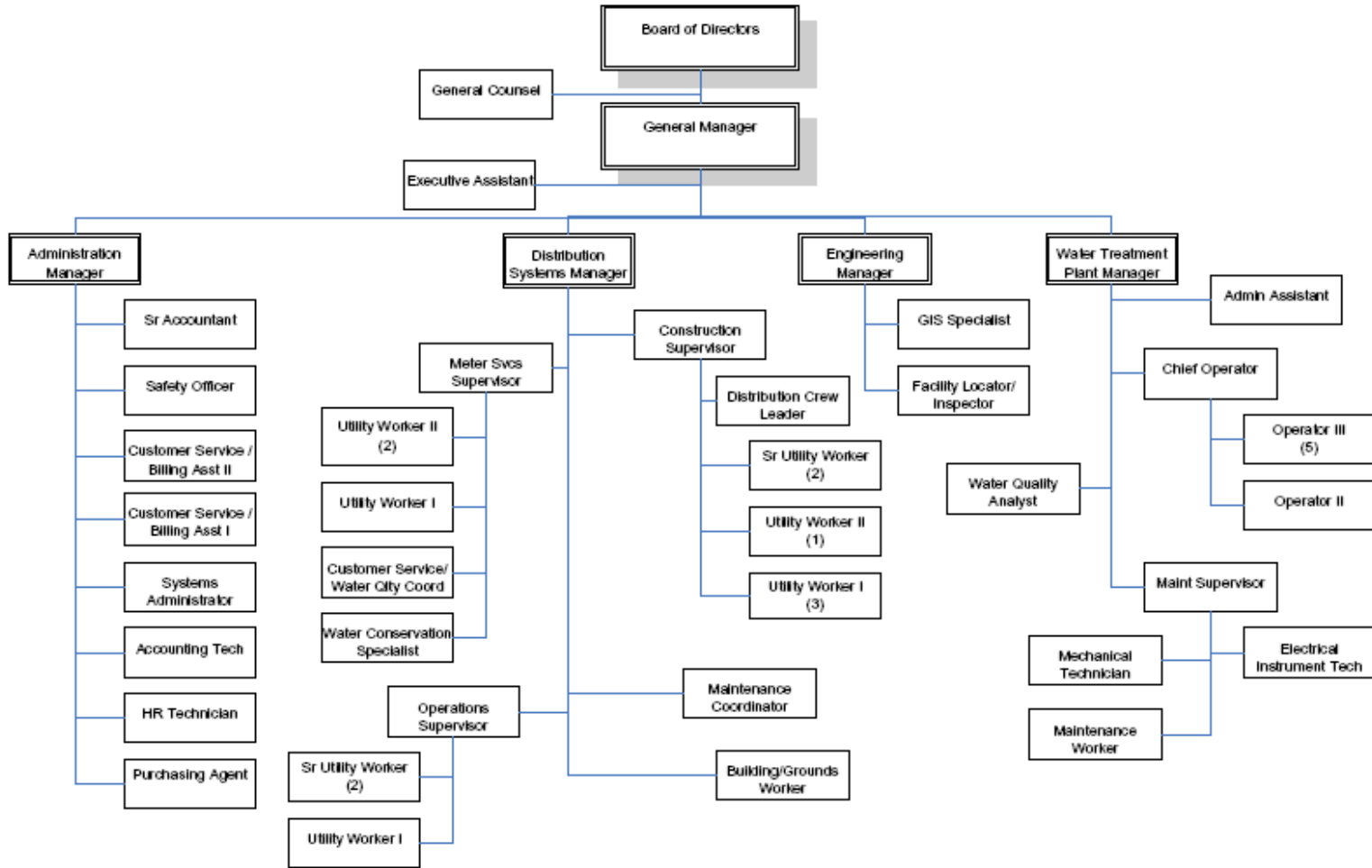
For CGR Management Consultants LLC.

J. K. Kennedy
Principal

J. E. Kennedy
Principal

P. C. Sundaram
Senior Consultant

APPENDIX 1 – CURRENT ORGANIZATION CHART



APPENDIX 2 – PROJECT DEFINITIONS

This appendix provides details of the 12 projects that have been identified as necessary in the Information Technology Strategic Plan.

Infrastructure

1. Information Technology Policies and Procedures
2. IT and Network Infrastructure
3. Disaster Recovery Planning

Administrative Applications

4. Financial Administration
5. Electronic Document and Records Management and Workflow

Operational Applications

6. CADD and GIS
7. GIS Portal
8. Asset Management and Maintenance
9. Automated Meter Reading
10. Water Distribution SCADA

Process Management

11. Process Analysis
12. Performance Management and Reporting

1. INFORMATION TECHNOLOGY POLICIES AND PROCEDURES

Project Title:	Information Technology Policies and Procedures
Project Type:	<input checked="" type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input type="checkbox"/> Process
Departments:	Information Systems and to a lesser extent all departments.
Duration:	6 months
<p>Objectives: To develop the District’s information technology policies, standards, procedures and guidelines as necessary for technology, methodology, documentation, security, ethics, assets, and resources.</p> <p>The creation of information technology policies, standards, procedures and guidelines is an essential step in information technology service management and is considered a best practice.</p>	
<p>Scope of Project: The project will produce in draft the District’s Information Technology Policies and Procedures Manual for use by all managers, project managers, developers, technicians and operators of the District’s information systems. The policies and procedures will be put into practice during the second half of the year, and the draft will be refined and finalized as a result of experience.</p>	
<p>Project Description: The manual will include any existing policies and procedures in use by the District at present. It will add standards where there are none. The manual is expected to have sections that include:</p> <ol style="list-style-type: none"> 1. District Standards 2. Project Standards 3. Security Policies 4. Program Change Management Policies 5. Network Configuration Management Policies 6. Network Operations and Administration Policies 7. Network Usage Policies 8. Help Desk Policies 9. Purchasing Policies <p>To prepare the draft manual it will be important to:</p> <ol style="list-style-type: none"> 1. investigate and document the information technology policies and procedures for technology, methodology, documentation, security, ethics and assets that are already in use at the District 2. use best-practices, industry standards and other sources to develop additional, appropriate policies and procedures. 	

Benefits and Results:

This project will compile a document of information technology policies, standards, procedures and guidelines. The document will provide essential information for all parties involved in the management, selection, acquisition, development, implementation, operation and maintenance of information systems at the District. This document will contribute to the success of all subsequent projects because it provides a framework of agreed best practices that will reduce risks and guide progress.

Predecessors:

None.

2. INFORMATION TECHNOLOGY NETWORK INFRASTRUCTURE

Project Title:	Information Technology Network Infrastructure
Project Type:	<input checked="" type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input type="checkbox"/> Process
Departments:	Information Systems and to a lesser extent all departments.
Duration:	6 months
<p>Objectives: To upgrade the network backbone, intermediate switching and wide area communications to provide a reliable high-bandwidth network platform to all District staff.</p> <p>A secure, high-performance, “always-on” network is the foundation for new information systems and is a requirement for implementation of new software.</p>	
<p>Scope of Project: The scope of the project involves the upgrade and replacement of certain network switches and routers to improve the capacity and throughput of the network. The project will implement voice over IP technologies in order to take advantage of the capacity provided by the high speed network and allow the integration and unification of voice, data and fax communications.</p>	
<p>Project Description: Currently there exists no formal Datacenter at the District, though there is one full rack of servers and as much associated support equipment. The servers are not in a secure area. There are improvements needed with upgrading the communication lines to support the future SCADA initiatives.</p> <p>The project will manage the overall improvement of the District’s computer infrastructure that will support the new applications being brought in. The existing backbone switch will be replaced and certain other switches and routers replaced to provide a greater capacity on the network. A number of wide area connections will be upgraded in terms of bandwidth. It should also be noted that the Systems Administrator is continuing to work on elements of infrastructure upgrades such as the implementation of VOIP technology.</p>	
<p>Benefits and Results: This project will enhance the existing network to create a secure, high performance, “always-on” environment for new information systems. This improvement will allow staff to gain the maximum benefit from new systems as well as ensuring security and increasing availability of information.</p>	
<p>Predecessors: There are no predecessor projects.</p>	

3. DISASTER RECOVERY PLANNING

Project Title:	Disaster Recovery Planning (DRP)
Project Type:	<input checked="" type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input type="checkbox"/> Process
Departments:	Information Systems and to a lesser extent all departments.
Duration:	9 months
<p>Objectives: The objective is to prepare and test a plan to minimize the chances of a disaster occurring, to ensure the effect of a disaster on the District is minimized and that the District can recover as quickly as possible from a disaster if one occurs, so that it continues to support the computer and communications based business processes.</p> <p>It is a fundamental responsibility of the District to develop and maintain a plan that will allow the recovery of electronic information in the event of a disaster.</p>	
<p>Scope of Project: The project will be limited to planning for the critical information systems at the District. It will assess the major risks and their business impacts, develop and document a cost-effective strategy and plan to minimize the effect of, and recover from, the loss of hardware, software, data, staff, facilities and third-party consultants and vendors. It will be necessary to prioritize the business applications, and estimate recovery time objectives for each business process and each department, so all departments will be involved in the project.</p>	
<p>Project Description: The project will have four main phases, the first two of which will be done in the first year:</p> <ol style="list-style-type: none"> 1. Assess the major risks and business impacts 2. Develop and document the plan and strategy 3. Implement the back-up and recovery provisions 4. Test and validate the recovery procedures. <p>It will require considerable time from Information Systems staff to document current backup and rebuild procedures in detail.</p> <p>The project will include:</p> <ol style="list-style-type: none"> 1. Develop the plan for the project 2. Perform a Risk Assessment and Business Impact Analysis 3. Determine Computer Back-Up and Recovery Strategy 4. Determine Communications Back-Up and Recovery Strategy 5. Determine Office Back-Up and Recovery Strategy 6. Draft the Information Technology Disaster Recovery Plan. 	
<p>Benefits and Results: This project will produce a plan that will allow the recovery of all electronic information</p>	

in the event of a disaster. The importance of both developing and testing the plan cannot be overstated. The process of developing the plan will inevitably identify numerous changes that should be made to existing systems to ensure the Districts ability to recover them in the future.

Predecessors:

This is a Foundation Project. There are no predecessors. A previous Security Audit has identified numerous issues relating to disaster recovery.

4. FINANCIAL ADMINISTRATION

Project Title:	Financial Administration
Project Type:	<input checked="" type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input type="checkbox"/> Process
Departments:	Finance, Operations, and to a lesser extent Maintenance and others
Duration:	24 months
<p>Objectives: To improve customer service by improving the efficiency of exchanging information into and out of the financial and customer information systems, including areas such as Accounting, HR, Payroll, Cost Reporting and Purchasing. Integrating work order systems and financial reporting tools linked to the Asset Management and GIS systems.</p> <p>The existing financial system is inflexible and outdated and requires replacement.</p>	
<p>Scope of Project: The project will replace the current aging Datastream Billing System with a browser based system capable of more efficient:</p> <ul style="list-style-type: none"> ▪ Accounting / Invoicing ▪ Purchase Order Requests. ▪ Customer Work Order Tracking ▪ Payroll ▪ Cost Reporting ▪ Purchasing ▪ Customer Information Tracking ▪ Inventory/Asset Management 	
<p>Project Description: The current Datastream system has very limited data reporting and analysis functions. It is also over 10 years old and running on a legacy Unix HP9000 system. The project will migrate this accounting/HR/inventory tracking system to a more modern system capable of integrating with the Districts other future systems, including the GIS Portal, Work Order systems (if separate) and Asset Management and Maintenance.</p> <p>In order to create reports, much double data entry is occurring and various ‘work around’ methods to provide management with the reports they desire.</p>	
<p>Benefits and Results: This project will put into operation a new financial administration system. The benefits from this system will be widespread and will have a positive impact on customers, finance and administration staff, managers and, at some level, all District staff.</p>	
<p>Predecessors: Process Project - Due to the extensive replacement and addition of administrative system capability, it will important to ensure that the Process Project be conducted first to define</p>	

what processes the systems will be supporting and automating.

5. ELECTRONIC DOCUMENT AND RECORDS MANAGEMENT AND WORKFLOW

Project Title:	Electronic Document and Records Management and Workflow
Project Type:	<input checked="" type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input type="checkbox"/> Process
Departments:	All
Duration:	24 months
<p>Objectives:</p> <p>To implement an electronic document and records management system that will provide seamless access to documents for all network users.</p> <p>The District does not have an efficient and secure means for storing and retrieving electronic documents or electronic District records. The ability to manage electronic documents effectively is a requirement for all modern organizations.</p>	
<p>Scope of Project:</p> <p>The EDRMS Project will implement a package based, enterprise class software solution for electronic document management. The project will involve the definition of requirements, selection of software, design and configuration of the system and all implementation activities. Data conversion of paper documents to electronic forms is not included within the scope of the project but should be undertaken by individual departments as needed. The system will include a records management module that will allow retention to be applied to electronic documents. A District wide records retention schedule should be developed as part of the project.</p> <p>The system should also provide workflow capabilities that will support the movement of documents within a process.</p>	
<p>Project Description:</p> <p>An electronic document management system that will store and retrieve MS Office files, drawings and other design and construction documents in a timely manner is needed. The system will need to include workflow, a tickler system, be suitable for internal use as well as use by external engineering and construction firms, and provide management reports. Engineering currently has an estimated 200,000 drawings in the central records management system. The system should be a District-wide system.</p> <p>An electronic document management system that will store and retrieve external consultant reports and internal planning documents so that they can be easily located through a search function. Certain documents, such as water quality reports that are public information, should be available to the community through the District’s website.</p> <p>A centralized repository is required for all previous communication materials from annual reports to newsletters to Board minutes, agenda and supporting documents. Associated staff reports and external consultant reports referenced in specific board agenda items should be linked for ease of retrieval.</p>	

Field staff need to retrieve information such as “as-built” drawings, permits, inspection checklists, and maintenance or compliance histories. An electronic document management system that will store and retrieve documents, with workflow and a tickler system would be helpful. The system should be a District-wide system if possible.

Benefits and Results:

This project will put into operation a new electronic document and records management system. The benefits of this system will be in the ability of all staff to securely, store and retrieve electronic documents and records in an efficient and effective manner. This system will provide needed support and automation for many administrative, financial and operational processes at the District.

Predecessors:

Upgrade the Infrastructure.

6. CADD AND GIS

Project Title:	CADD AND GIS
Project Type:	<input checked="" type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input type="checkbox"/> Process
Departments:	Engineering
Duration:	30 months
<p>Objectives: To co-ordinate the existing Geographical Information System (GIS) and Computer Aided Design and Drafting (CADD) software so that all District data can be fitted into a single architecture and infrastructure.</p> <p>Because the District needs to manage assets that are of an engineering nature and are distributed across a somewhat wide area, both CADD and GIS are required to manage the information related to these assets.</p>	
<p>Scope of Project: The CADD to GIS Conversion project will formalize the project currently underway with Dexter Wilson, migrating the CADD maps to the GIS system, and providing a foundation for having a GIS / Asset Management portal. The project will also address the process issues of how to manage the retrieval and update of maps by mobile teams.</p>	
<p>Project Description: Data needs to be migrated from MicroStation to ESRI GIS (this migration is currently being undertaken by an external consultant). The goal is to have all Easements, Quit Claims and Encroachments, Projects, Documents and Assets identified on each parcel on the map. This will lay the foundation for asset management and preventative maintenance systems to be linked to the mapping data. As part of this project standards will need to be developed for a mapping index system.</p>	
<p>Benefits and Results: This project will build upon work already conducted by the District to develop an integrated GIS and CADD platform that will manage data related to the Districts physical assets. This system will provide needed support for engineering, construction, operational and maintenance activities.</p>	
<p>Predecessors: None</p>	

7. GIS PORTAL

Project Title:	GIS Portal
Project Type:	<input checked="" type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input type="checkbox"/> Process
Departments:	All
Duration:	24 months
<p>Objectives: To implement an enterprise wide map interface that allows all users to quickly access maps, equipment, parcel boundaries and other data from an easy to use interface, that will track inventory and maintenance providing one place for viewing the District’s assets.</p> <p>Because information on the District’s assets is used by many staff a GIS Portal is needed to make this informational available without the cost and complexity of deploying full CADD and GIS environments to those users.</p>	
<p>Scope of Project: The project will involve the selection and implementation of a web based Portal that allows access to maps, inventory and other data using only an Internet browser. The data from the CADD system will be updated, as will information from the future asset management systems and work order systems.</p>	
<p>Project Description: The GIS Portal will leverage the District’s large volume of drawings, maps and inventory information so that staff can easily access up to date information via a map interface.</p>	
<p>Benefits and Results: This project will implement a browser based GIS Portal that will allow staff to quickly review data within the CADD and GIS environment but without special training or skills in GIS and CADD. The project will make spatial information available to all staff which will support decision making at all levels.</p>	
<p>Predecessors: CADD TO GIS Conversion. The CADD to GIS Conversion project will need to be completed in order to bring data up to date and in a format that can be presented to a future asset management system/GIS Portal.</p>	

8. ASSET MANAGEMENT AND MAINTENANCE

Project Title:	Asset Management And Maintenance
Project Type:	<input checked="" type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input type="checkbox"/> Process
Departments:	Maintenance, Engineering
Duration:	12 months
<p>Objectives: To provide a system that tracks the details and maintenance needs of all the inventory of the District, and to enable the creation of preventative maintenance schedules. This information will be linked to the GIS system to provide visual interaction with data.</p> <p>The district does not have a system in place to track asset and maintenance related information. The lack of such a system causes great inefficiency for staff responsible for maintaining existing assets.</p>	
<p>Scope of Project: This computer based system will track all the various inventory items of the District, and track maintenance and repairs as well as schedules. The system will generate all the required information needed for staff to conduct the maintenance, and all the information currently being collected in Word documents will be transferred to this system. The system will also integrate with the GIS system for visual information retrieval.</p>	
<p>Project Description: Currently the District has no asset or maintenance management system. Limited information is being captured in Datastream. The project will involve capturing and loading in all the District inventory information, the creation of the maintenance schedules/schedules of work, the linkage to the financial/billing system to track inventory and costs, and the linkage to the GIS system to provide staff access to the asset information visually. Due to the close tie between asset management/maintenance and the work orders, the system will include a Service/Work Order Workflow component to initiate and track job orders.</p> <p>The project will include the ability to interact and exchange/update materials data through mobile devices for workers in the field to simplify and improve efficiency of data exchange. The system will cover the inventory and tracking needs of Distributions Systems, Construction and Maintenance, Maintenance Coordination, Meter Reading/Customer Service and Valve system and Maintenance Operations. The project will also replace the temporary system used at the Plant.</p> <p>The implementation of the Asset Management system will also provide the vehicle to capture much of the knowledge about systems that will be lost due to personnel changes over the next 5 years.</p>	
<p>Benefits and Results: This project will put into operation an asset management and maintenance system. The</p>	

system will provide an efficient means for determining and directing the required maintenance for existing assets. This will include tracking the cost of maintenance in order to determine an economic replacement schedule.

Predecessors:

The project will implement the recommendations of the Process Project.

9. AUTOMATED METER READING

Project Title:	Automated Meter Reading
Project Type:	<input type="checkbox"/> Enterprise <input checked="" type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input type="checkbox"/> Process
Departments:	Distribution Systems
Duration:	12 months
Objectives:	<p>To implement a system that will allow automated reading of customer water meters.</p> <p>Automated meter reading is required to eliminate the cost and errors associated with manual meter reading.</p>
Scope of Project:	<p>The project will implement the central technology framework necessary to collect the data from water meters that are capable of providing the data automatically and therefore do not require a manual reading. The project does not include the fitting or installation of automated water meters at customer premises. That work will be conducted as part of a separate meter replacement program which will be conducted over many years.</p>
Project Description:	<p>Automated meter reading reduces the cost of labor required to manually read water meters and improves the accuracy of billed usage. There are numerous technologies available to accomplish the meter reading. This project will implement the data collection infrastructure required to collect and analyze the data and prepare it for billing.</p>
Benefits and Results:	<p>This project will put into operation a centralized capability for collecting and processing meter reading information received from automated water meters. The project will reduce the cost of reading meters but will also reduce errors and provide the ability to implement addition types of tariffs or usage charges.</p>
Predecessors:	Asset Management And Maintenance System

10. SCADA

Project Title:	SCADA
Project Type:	<input type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input checked="" type="checkbox"/> Best of Breed <input type="checkbox"/> Process
Departments:	Distribution Systems, Water Treatment
Duration:	42 months
Objectives:	<p>The water distribution Supervisory Control and Data Acquisition (SCADA) system will provide the ability to measure, control and automate aspects of the water distribution system.</p> <p>SCADA is required in order to efficiently collect status information, implement automation and effect control on the water distribution system. This system will improve the operation of the water distribution system.</p>
Scope of Project:	<p>The District currently has a SCADA system at the filtration plant but does not have SCADA for the water distribution system. SCADA is an important tool for management of this type of infrastructure. In addition, SCADA can reduce operating costs for management of the infrastructure.</p>
Project Description:	<p>The cost of SCADA can be high and so a careful analysis of control, measurement and automation objectives will be needed to ensure that the greatest value is delivered using a reasonable budget. The system will be an extension of the work already completed at the water treatment plant where SCADA is already operating.</p>
Benefits and Results:	<p>This system will expand on the SCADA system currently in place for water treatment to encompass the water distribution network. The benefits include improved operation of the water distribution networks, reduced operating costs and reduced operational risk.</p>
Predecessors:	None.

11. PROCESS ANALYSIS

Project Title:	Process Analysis
Project Type:	<input type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input checked="" type="checkbox"/> Process
Departments:	All
Duration:	12 months
<p>Objectives: The objectives are three-fold:</p> <ol style="list-style-type: none"> a. To identify inconsistencies, illogical workflows and duplicate work in the District’s major processes so that some benefits can be obtained quickly. b. To prepare the ground for the Process Improvement projects, such as Billing, Work Orders, Asset Management, CADD/GIS. Financial Reporting, Purchasing, and for the security and disaster recovery systems. c. To build a body of knowledge about the District’s processes so that future decisions about applications to be implemented later in the program can be made quickly in an informed manner. <p>The intent is to analyze the District’s underlying processes in order to understand what information systems solutions would support those processes and not just the specific needs of each department, section or processing unit. Once the current processes are defined, there will be an opportunity to improve upon them to enhance productivity and to cure any gaps prior to automation. The work is also considered essential for the development of new disaster recovery, document management, billing, asset management, financial analysis and cost and labor reporting, CADD/GIS systems, and more.</p>	
<p>Scope of Project: Processes that involve more than one department at the District will be analyzed and documented in accordance with the District’s standards. Recommendations for process improvements are expected to result from the analyses. Processes that will be analyzed in the first year, subject to agreement with the relevant departments, include:</p> <ul style="list-style-type: none"> ▪ Work Order Process/Application for Service ▪ Purchase Order Process ▪ Billing and Customer Information Process ▪ Asset Management and Maintenance Process ▪ Reporting and Information Sharing Processes ▪ Process of Updating CADD/GIS ▪ Knowledge Capture and Review Process <p>All of the projects address areas in which inter-departmental information transfer needs substantial improvement, and should directly improve efficiency and customer service, which are two of the goals of the District.</p>	

Workflows within the same department will be excluded due to the lower level of complexity. This project may recommend business process improvement but will not include implementing the recommendations.

Project Description:

This work will fill in the information about the District’s business that the Information Technology function is missing and it will provide knowledge necessary for future decisions. It will directly interface with and assist the preparation of the disaster recovery plans.

Subject matter experts (SMEs) from each department involved with each process will participate in group discussions to analyze the workflows, inputs and outputs from the process beginnings to the ends. If an analysis reveals that a process could be improved a recommendation will be made to the Information Technology Advisory Group for any cross departmental improvements.

We anticipate that logical analysis of the process workflows will reveal some issues that need resolution. For example, we suspect that based on current set of conversations with staff, that improvements to the work order process, purchase order process and process of updating CADD will be found.

Benefits and Results:

The project will result in a detailed understanding of current District processes as well as implemented improvements to those processes. The project will produce documentation of the processes that will be used during systems implementation projects. The benefits of this project will be improved process efficiency and reduced risk on the systems implementation projects. Improved processes have the potential to provide significant increases in customer service and staff efficiency.

Predecessors:

There are no predecessors.

12. PERFORMANCE MANAGEMENT AND REPORTING

Project Title:	Performance Management and Reporting
Project Type:	<input type="checkbox"/> Enterprise <input type="checkbox"/> Integrated <input type="checkbox"/> Best of Breed <input checked="" type="checkbox"/> Process
Departments:	All
Duration:	24 months
Objectives:	<p>To implement tools that can access data held in enterprise systems and report on defined performance measures. The project would also provide tools that allow ad-hoc reporting of various types of financial and operational data.</p> <p>This project will provide the ability to monitor and measure performance for identified key performance indicators. Performance management is the basis for continuous improvement.</p>
Scope of Project:	<p>The scope of the project is limited to management reporting and the development of performance metrics. Other forms of reporting such as financial reporting is excluded, however, the reporting tools that allow ad-hoc querying of financial data are included within the scope of this project.</p>
Project Description:	<p>This project fall into the last phase of the strategic plan because it relies upon the data collected in enterprise systems that will be implemented in earlier phases of the strategy. There are several approaches to this project that could be taken depending on the extent to which a performance management “dashboard” is deemed desirable. Certainly reporting tools will be needed to provide management reports and reporting on performance measures.</p>
Benefits and Results:	<p>This project will put into operation a performance management and reporting system that will provide management will key metrics about the current performance at the District. This system will provide management with the tools to make management decisions regarding the appropriate allocation of resources and necessary changes in policy, process or organization.</p>
Predecessors:	<p>The project will adhere to standards defined by the Standards project. Data will be accessed from the Financial Administration and Asset Management and Maintenance systems. Reports could be automated into the Electronic Document and Records Management system.</p>

APPENDIX 3 - GLOSSARY

This appendix provides a glossary of terms that are used in this report.

Alert	A notification that a system event has occurred that requires urgent attention by a computer operations specialist. This is usually an automated function of a network and can be used to page systems staff.
Application	A software program or group of programs designed to provide functionality for end users.
Client/Server	A systems architecture whereby the processing of an application is shared between a central computer (the “server”) and a local workstation (the “client”). Client/server has become a standard due to the improved user interface over older technologies and the flexibility it affords in system design.
E-mail	Electronic mail - a form of electronic data interchange, oriented towards transfer of individual message or transactions.
GIS	Geographical Information System - a computerized system that allows a map to be displayed and manipulated on screen. The system usually allows information to be overlaid on the map so that the spatial relationship between objects can be seen.
Intranet	The use of Internet technologies (i.e. a desktop browser and web page publishing software) within the confines of an organization’s private network. The purpose is to share information within the organization. The advantage of the intranet is that no special software is required on the user’s workstation.
ITAG	The Information Technology Advisory Group – a group intended to provide District-wide governance of information technology issues. The group consists of the heads of each department and, optionally, the General Manager.
LAN	Local Area Network – A network of computers connected within a limited geographical area, usually within a building or campus.
Thin Client	In a client/server technology, a thin client is one where little or none of the required processing is carried out on the client workstation such that the workstation handles only the presentation tasks. Internet applications are considered to be thin client because the client workstation runs only a browser to operate the system. Newer technologies (such as Citrix or terminal servers) enable systems that would otherwise be heavy on client processing to provide a thin client solution.
WAN	Wide Area Network – A network of computers connected across a wide geographical area, usually from a few kilometers to thousands of miles.
Workflow	A means of automating the transfer of electronic information between individuals. An e-mail system is a common method of transporting the work but workflow provides additional facilities to define routes, link messages and prepare structured forms.