

**STATE OF MICHIGAN  
 DEPARTMENT OF MANAGEMENT AND BUDGET  
 OFFICE OF PURCHASING  
 P.O. BOX 30026, LANSING, MI 48909  
 OR  
 530 W. ALLEGAN, LANSING, MI 48933**

June 3, 2002

**CHANGE NOTICE NO. 1  
 TO  
 CONTRACT NO. 071B1001740  
 between  
 THE STATE OF MICHIGAN  
 and**

<b>NAME &amp; ADDRESS OF VENDOR</b>  <b>Enfotech &amp; Consulting, Inc.</b> <b>11 Princess Road, Unit A</b> <b>Lawrenceville, NJ 08648</b>	TELEPHONE Tony Jeng <b>(609) 896-9777</b>
	VENDOR NUMBER/MAIL CODE
	BUYER (517) 241-1647 <b>Irene L. Pena</b>
Contract Administrator: Michael Beaulac <b>Consulting Services for an Electronic Wastewater Discharge Reporting System –          Department of Environmental Quality</b>	
<b>CONTRACT PERIOD: From: August 27, 2001 To: December 31, 2002</b>	
<b>TERMS</b> <p style="text-align: center;">N/A</p>	<b>SHIPMENT</b> <p style="text-align: center;">N/A</p>
<b>F.O.B.</b> <p style="text-align: center;">N/A</p>	<b>SHIPPED FROM</b> <p style="text-align: center;">N/A</p>
<b>MINIMUM DELIVERY REQUIREMENTS</b> <p style="text-align: center;">N/A</p>	

**NATURE OF CHANGE (S):**

Effective immediately this contract is hereby **EXTENDED** through 12/31/02 and **INCREASED** \$876,462.00 to allow for Phase II of this project to be completed. Phase II to be completed in compliance with the attached work statement.

**AUTHORITY/REASON:**

Per agency's request from Lynne Draschel dated 4/30/02 and vendor's approval on 3/18/02 and in accordance with the modification clause

**INCREASE: \$876,462.00**

**TOTAL REVISED ESTIMATED CONTRACT VALUE: \$1,349,042.00**

**Proposal for**  
**NMS & e-DMR Information System**  
**Phase II Project**

**Submitted to**  
**Michigan Department of Environmental Quality**  
**Lansing, Michigan**

Prepared by  
enfoTech & Consulting, Inc.  
Lawrenceville, New Jersey 08648  
(609) 896-9777  
March 18, 2002



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## 1 Project Overview

This proposal is prepared for the Surface Water Quality Division of the Michigan Department of Environmental Quality (MDEQ) to retain enfoTech & Consulting, Inc. (enfoTech) to perform Phase II of the NMS/e-DMR project. The scope of the Phase II project includes:

- Implementation of an Internet-based electronic Discharge Monitoring Reporting System (e-DMR) for the entire state of Michigan
- Enhancement of the NMS version 2.0 to include a Compliance and Enforcement module

### 1.1 Business Objectives to be Achieved by the Phase II Project

The Phase II project is designed to build on the Phase I project success and to expand the NMS system and e-DMR implementation to the entire SWQD division and the Michigan statewide NPDES compliance program. Information management needs from the NPDES compliance program will be addressed in a systematic and comprehensive manner. Specifically, major business requirements are described below:

- The capability to electronically submit both monthly and daily DMRs from a regulated wastewater generating facility to the Department's NMS database
- The ability to generate an output XML file of DMR data compatible with the EPA's Permit Compliance System (PCS) communication protocol.
- An unambiguous and legal alternative for receiving self-monitoring data from the regulated wastewater community.
- Improve accuracy of compliance data by eliminating potential errors that otherwise would be introduced through manual and/or redundant data entry.
- Save the Department administration costs by reducing and better utilizing resources required for encoding and managing paper-based DMR reports.
- Reduce the wastewater discharge facility's compliance costs by offering a streamlined reporting method using readily available computer tools.
- Improve the overall effectiveness of the Department's wastewater discharge program with faster responses for data analyses, compliance assessment, enforcement support, permit review and re-issuance, and other water quality management decision-making.



The deliverables of this project shall include the following:

**a. Implementation of an e-DMR System Statewide:**

1. Finalize the e-DMR functional requirement specifications, business diagrams based on the pilot phase results
2. Develop an XML-based file transfer protocol which will include:
  - Configuring an XML schema from the National e-DMR Core Schema to meet DMR reporting needs for the State of Michigan
  - Develop an XML schema user's guide
3. Deliver an XML-based data entry utility license that will conform to the Michigan e-DMR transmission protocol and the NMS database system
4. Implement an e-DMR system for the entire state of Michigan. Major system functionalities shall include:
  - Automated data screening and validation of daily and monthly monitoring data
  - Database to store system administration data
  - Small application to administer and screen the raw data
  - Method of sending notifications to Permittees
5. Develop a Data Exchange system to integrate the NMS and e-DMR for DMR reporting requirements and DMR results
6. Develop end user documentation and quick reference guides
7. Develop system administration documentation
8. File archiving methodology
9. Utilize PKI infrastructure to provide better system security management
10. Implement an Internet Server Network Load Balanced Server clustering architecture to provide high availability and better system performance of the Server services
11. Implement a database Server Clustering architecture to provide high availability of the Server service and to minimize system downtime



**b. Enhancements to the NMS System version 2.0:**

The NMS version 2.0 will be enhanced to provide additional functions to support compliance and enforcement activities for the SWQD District staff. Major categories of functional enhancements shall include:

1. Review of self monitoring data for compliance
2. Review of reports, submittals, or notifications required by the permit and/or enforcement action(s)
3. Inspection tracking
4. Violation identification and tracking
5. Enforcement action data management
6. Reviewing/tracking/follow-up on SSO/CSO reporting, including annual report development
7. Follow-up on PEAS or complaint calls
8. Part 41
9. Management of un-permitted facilities
10. Document Management module to be expanded to include enforcement action documents

A draft functional description of the required functions is provided by SWQD and is included in Attachment C for reference.

## 2 Project Background

The Surface Water Quality Division issues wastewater discharge permits and receives discharge-monitoring reports (DMRs) that are required by the Michigan Department of Environmental Quality (DEQ) Wastewater Program under the Great Lakes Initiative -- GLI (Part 8. Water Quality-Based Effluent Limit Development for Toxic Substances) July 11, 1997 and by the authority conferred on the DEQ by sections 3104 and 3106 of Act #451 of the Public Acts of 1994, as amended (being sections 324.3104 and 324.3106 of the Michigan Compiled Laws).

The Division receives significant reporting information submitted monthly from approximately 1,200 permitted wastewater facilities. The data is manually entered into the Department's Permit Compliance System (with portions of the data entered into the NPDES Management System (NMS)) database to support compliance, permitting, and environmental planning programs.

The current permit submission process causes significant problems of inefficiency for both the permittee and the state permit program managers. Many of the permittees, especially the medium to large facilities, must perform duplicate data entry to maintain their own database and to satisfy the state/federal permit requirements. Industry rightly claims that this is unnecessarily costly and inefficient. Similarly, all submitted permit data is then re-keyed by either SWQD or contractual staff and then batch uploaded to the US EPA's Permit Compliance System (PCS) to satisfy EPA requirements. Depending on budget constraints and staff priorities, data coding is often backlogged for years.

The Surface Water Quality Division must streamline the efforts of collecting wastewater discharge monitoring data from its regulated facilities. A remedy to this problem has been repeatedly requested by industry. This is a duplication of effort for both the private and public sector that should, and can only, be remedied by the MDEQ. Duplication, in addition to adding business process costs for all parties, further adds to data coding error and related inaccuracies.

The solution to this inefficiency is:

- A comprehensive permit and DMR data management system,
- An electronic process to allow the Division to electronically receive required daily and monthly DMR data from wastewater facilities, and
- A compliance evaluation to detect discharge violations and an enforcement tracking system to manage enforcement.

Currently, the Division has retained enfoTech to develop a computer system called NMS (NPDES Management System) to manage general wastewater facilities, their discharge outfall data, discharge permits and limits, tasks, and DMR data.

The NMS is developed with a SQL Server 2000 database and Visual Studio.NET software for the application system.



Approaches and technologies recommended for this project are detailed in the “Project Recommendations and Approaches” section.



### 3 Project Recommendations and Project Approaches

enfoTech recommends a comprehensive project approach to work with the Division to accomplish the project objectives. We recommend an overall systematic project approach as follows:

1. Build on the success and experience gained from the NMS version 2.0 project and expand the functionality and broader usage of the NMS and e-DMR system to support Division's compliance and enforcement programs
2. Develop specifications for the proposed Compliance & Enforcement Module
3. Perform NMS and e-DMR integration
4. Complete the e-DMR Statewide implementation
5. Document system design and development

There are two major project components planned for the Project as follows:

#### **Project Component #1 (e-DMR Statewide Implementation):**

**Object:** Perform a Statewide e-DMR implementation phase.

**Description:** In general, the e-DMR system will be a secured, Internet-based application using a SQL Server database on a Windows 2000 Advanced Server platform. Wastewater facilities will access the e-DMR server via the secured Internet channel to obtain reporting requirements, to submit DMR reports, to view previous DMR submissions, and DMR processing status. The system will serve as an electronic file cabinet to manage DMR reporting requirements provided from the NMS database, and to receive/store DMR reports submitted by wastewater facilities. Access privileges will be administrated through the use of a PIN, username, and password. All DMR submissions will be verified via PIN authentication with software security to ensure that the content of the data is original, truthful, legitimate, and unaltered. A complete chain-of-custody of all the records will be maintained in the e-DMR server.

After the system integration is completed, DMRs received at the e-DMR Server will be uploaded to the Data Exchange System, and eventually be uploaded to the NMS database to support compliance, permitting, and environmental planning programs. If reporting requirements have been added or changed for any wastewater facility participating in NPDES program, such changes will be recorded in the NMS database and then downloaded to the Data Exchange System to be used by the e-DMR server. The database synchronization will be triggered by the NMS system administrator.

Major tasks planned for the statewide e-DMR implementation phase include the following:

1. Finalize a DMR transmission protocol (XML)
2. Finalize the facility package (i.e., application package) for wastewater facilities to use to participate in the e-DMR program



3. Finalize cosmetic changes on the front-end and revisions for protocol on the enfoTech e-DMR system for Michigan, based on feedback from the pilot phase
4. Integrate the e-DMR with the NMS database for reporting requirements
5. Install the final e-DMR servers to provide database server clustering and web network load balanced clustering features
6. Install enfoTech's e-DMR system for the Statewide e-DMR implementation
7. Document the system
8. Provide user training
9. Create e-DMR system maintenance and support infrastructure (VPN & Terminal Services)

A detailed implementation plan will be provided later in the project document after a project kickoff meeting with MDEQ.

**Project Component #2 (Compliance and Enforcement Module):**

**Object:** Develop a Compliance Evaluation and Enforcement Tracking module in NMS. The goal is to improve the efficiency on tracking compliance and enforcement data, and the effectiveness of the National Pollutant Discharge Elimination System (NPDES) program.

**Description:** The Compliance Evaluation and Enforcement Tracking module is designed for the NMS to comprehensively manage compliance and enforcement activities for the Division. Major categories of functional enhancements shall include:

1. Review of self monitoring data for compliance
2. Review of reports, submittals, or notifications required by the permit and/or enforcement action(s)
3. Inspection tracking
4. Violation identification and tracking
5. Enforcement action data management
6. Reviewing/tracking/follow-up on SSO/CSO reporting, including annual report development
7. Follow-up on PEAS or complaint calls
8. Part 41
9. Management of un-permitted facilities
10. Document Management module to be expanded to include enforcement action documents

A draft functional description of required functions is provided by the SWQD and is included in Attachment C as a reference.



## 4 Proposed System Infrastructure for NMS and e-DMR

enfoTech proposes a state-of-the-art system architecture and infrastructure to support the NMS and e-DMR project. Our recommendations focus on delivering the following main advantages:

- An open system environment for the Division to accept environmental reports directly from wastewater facilities, to transmit data to USEPA, and to provide the information to the general public
- An open system design for both software and hardware to allow the Division to make modifications and add new modules
- An infrastructure for the Division to assure “high availability” of the information Servers
- An infrastructure to allow the Division to preserve current investment and which can “easily scale up” as needs arise (i.e., buy as you need it)

Our recommended proposal is described below.

### 4.1 System Design Concept

The proposed products are N-tiered object-oriented / Web based information management systems developed in the Microsoft windows environment. It supports the SQL Server and other relational databases. The design architecture (Windows DNA 2000, and Microsoft .NET Framework) not only will be able to address the SWQD’s current requirements, but also provides total flexibility for the SWQD to modify the system to meet the changing business requirements of the future. We believe that SWQD’s interests and strategic directions in system architecture matches very well with enfoTech’s technical expertise and system development strategy.

enfoTech is also one of a few companies involved in the early evaluation of the new Microsoft .NET technology. Our technology stewardship is further enhanced by our national authority as the prime consultant for a USEPA/State workgroup that is responsible for developing a national XML schema for the electronic DMR application. enfoTech will continue to commit its resources to embrace the ever changing technology challenges for the benefit of its customers.

The following sections provide basic information to further illustrate the advantages of the open architecture proposed by enfoTech.

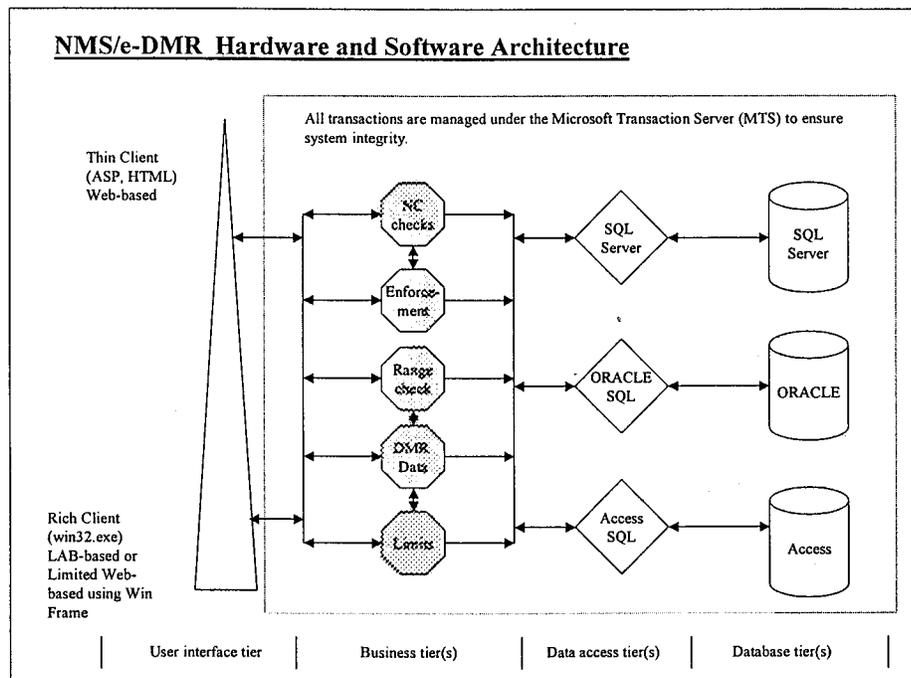
### 4.2 Software Architecture Overview

The NMS and e-DMR systems provide a state-of-the-art system architecture and infrastructure to support the SWQD requirements. Our proposal focuses on delivering the following main advantages:



- An integrated, professional database solution (SQL Server)
- An open system architecture supporting both Windows DNA and Microsoft .NET platforms
- An extensible (Scale-Up / Scale-Out) and “high availability” (Clustering) Server deployments
- An advanced system support infrastructure (VPN/Terminal Services, IP-Video Conferencing)

A general overview of the proposed NMS/e-DMR system architecture is further described below.



The NMS/e-DMR will be an object-oriented component-based system. The end users interact with the system through a user-friendly menu-driven interface. The interface will interact with other system components by passing commands (received from the end users) or messages to various system components until the user requested task is completed and a “task completed” message is returned to the interface seen by the end user. All transactions are managed by the Microsoft Transaction Server (MTS) to ensure that the business databases and integrity are properly maintained.

Only the user interface components are installed at the end user’s computer. The rest of system components are managed at Server Computer(s). The implementation strategy provides many unique advantages over traditional 2-tier client-server based applications. Major advantages are:

- Re-usable business and data-access components which are the key to accommodate changing business requirements in the future,



- Easy to deploy new system changes because all the business, data-access, and the database tiers are Server based
- Easy to customize front-end screens to turn them from LAN-based (rich client) to Internet based (thin client)

To better illustrate this design concept, let us use an example such as “entering DMR data to a SQL Server database”. The NMS system will use the following steps to complete the task:

- Step 1: The user interface receives data entered by the user.
- Step 2: The user interface passes a message to the range check component (MTS) to ensure the data entered falls within the data ranges established for the industrial user.
- Step 3: If the data falls inside the data range, the range component will further pass a message to the NC check component to check for compliance against the permit limits established for the industrial user.
- Step 4: If the data exceeds the limit, a violation record is created in the database after the data is saved in the database (based on the targeted database specified in the NMS system option setup initially done by the Administrator). If the data does not exceed the limit, only the DMR data is saved in the database.
- Step 5: Once all the transactions are completed, the MTS will notify the user through the interface screens. If one of the steps fails during the transaction, the entire transaction is rolled back and the user is notified through the interface screen.

All steps are automatically executed by the NMS in the background and managed under the MTS. Such design concept and system implementation technology provides a complete open system to allow the Division to customize their own new screens and tie the new screens to all the available components provided by the NMS.

### 4.3 Software Tools

Software tools that will be used by the NMS/e-DMR system are shown in the following table:

Services	Software Tools
Web browser	Internet Explorer 5.0 or higher
Web server service	Internet Information Server 5.0 or higher
Transactions	Microsoft Transaction Server (MTS) and SQL Server 2000/Microsoft .NET Framework/Microsoft Visual Studio .NET Transaction Services
Database management	SQL Server 2000 or higher, MS Access
Scripting	Active Server Pages (ASP), ASP.NET, VB.NET, C# and Java Scripting
RAD Tools	Visual Studio 6.0 and Visual Studio .NET
Component creation	Visual Basic 6.0 (COM+ DLL), VB.NET and C#
Web site development	Visual InterDev 6.0 and Visual Studio .NET



The Visual Basic (VB.NET), C# development systems and the 'Visual Studio .NET/ASP.NET' Web development systems are the primary software tools used in the NMS and e-DMR systems.

#### 4.4 Hardware Infrastructure

General hardware requirements for the NMS/e-DMR server and client stations are:

##### 4.4.1 Servers

The proposed Servers environment shall be Windows 2000 advanced servers or Windows .NET Web Servers/Windows .NET Enterprise Servers.

System Database Clustering, Web Network Load Balanced Clustering, and Backup/Recovery plans are recommended to ensure continuous operation of the NMS/e-DMR Server. They are:

1. **System DB Clustering/Web Network Load Balanced Clustering:** The NMS/e-DMR Servers DB clustering/network load balanced architecture will automatically transfer ownership of resources from a failed server to a surviving server. Also the network load balancing mechanism will allow the servers to share resources and scale across multiple servers within a cluster.
2. **System Backup/Recovery:** A separate data backup plan shall be implemented to backup the NMS system, electronic DMR data, and transaction log.

The **recommended** NMS/e-DMR Server infrastructure is as following (Eight Servers & One Disk Array):

- DB Server Cluster (Two-Node Cluster)
  - Two DB Servers
  - One DB Storage Array
- Two MTS/MS .NET Transaction Servers (for Business and Data Tier components)
- One Report Server
- Two e-DMR Web Servers (for Web Network Load Balanced Cluster)
- One Citrix Server (for slow Intranet/Internet client connections)

The **minimum** required NMS/e-DMR Server infrastructure is as following (Five Servers & One Disk Array):

- DB Server Cluster (Two-Node Cluster)
  - Two DB Servers
  - One DB Storage Array
- One MTS/MS .NET Transaction Server (for Business and Data Tier components)
- One Report Server
- One e-DMR Web Server

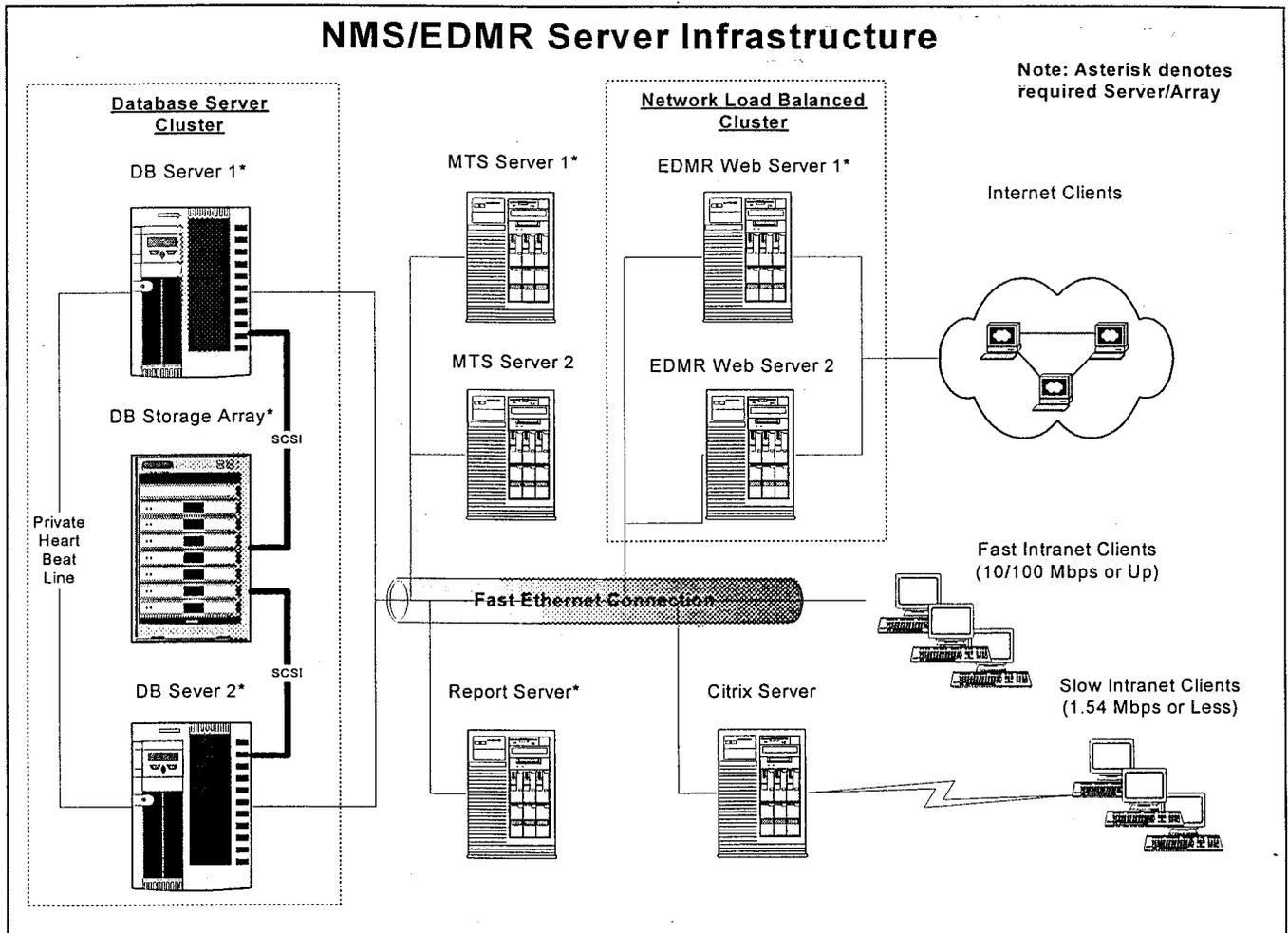
Basic configuration for each Server shall be Pentium III dual processors (expandable to 4-8 processors), which will join with other Servers to provide clustering and network load balancing features for handling anticipated data loading, minimizing downtime, and providing disaster tolerance, as needed.

Each server shall provide a minimum RAM of 1 GB, expandable to 4-8 GB. Each server shall provide 3 of 18 GB SCSI hard disks for internal RAID storage.

The database storage array shall provide a minimum of five (5) 20 GB SCSI hard disks, in this or a comparable configuration, for keeping an estimated 5 years worth of NMS/e-DMR data online.



The following diagram illustrates the recommended NMS/e-DMR Server infrastructure:



#### 4.4.2 Client Station (minimum)

##### For Fast Intranet Clients

1. Windows 2000 professional or up
2. Pentium 400 MHz, 128 MB RAM, 200 MB hard drive space

##### For Slow Intranet Clients (Citrix client – to be considered)

1. Windows 95 (OSR 2 or up), 98, NT (SP 5 or up), or ME
2. Pentium 166 MHz, 32 MB Ram, 100 MB hard drive space

## 5 Project Work Plans

### 5.1 Project Methodology

enfoTech recommends the evolutionary iterative (EI) method for system development. The EI model will provide several benefits to the project as follows:

- Definition of draft Functional Requirement Specifications (FRS)
- End users are actively involved in reviewing and commenting on the system during the development cycle (evolutional circular iteration)
- FRS is continuously updated to reflect design and implementation changes
- End products will have a high degree of match to user expectations

To facilitate the EI development model, enfoTech recommends some site visits during the critical project phases including the system specifications, prototyping discussion, system pre-final, installation, training, and support. Additional site visits might be required based on project needs. Frequency of site visits will be adjusted based on project tasks and the need for a face-to-face meeting. The goal is to complete the project on time, within budget, and to meet user requirements.

For the initial Functional Requirement Specifications development, upon the project kick-off, enfoTech proposes to send certain core members of the project team to conduct site visits and work closely with the MDEQ to develop the system specifications. Objectives of each FRS visit are described below:

1<sup>st</sup> visit – Project orientation, user interviews, review e-DMR pilot project feedback for a statewide e-DMR implementation, and develop requirements for the Compliance & Enforcement module. General system infrastructure requirements and support will also be discussed at the meeting.

2<sup>nd</sup> visit – Review MDEQ comments on the 1<sup>st</sup> draft of the Requirement Specifications document. Discuss a draft implementation schedule and project administration procedures for the implementation phase. Expand the document to include a detailed implementation plan.

Other site visits and detailed project tasks will be developed during the project kick-off meeting, and communicated to the MDEQ project manager for future project management purposes.

## 5.2 Project Management

enfoTech will comply with project reporting requirements as required by the State of Michigan office of project management.

Our standard project management procedures include:

- Develop a project plan that will outline milestones, tasks, and schedule for project tracking
- Submit to the MDEQ a project plan that will outline major mile stones, work break down structure, and the schedule of each task
- Submit monthly project progress reports to the MDEQ that will outline accomplishments and tasks planned for the following month. Conference calls and net meetings will also be used to communicate with the MDEQ on a regular basis
- Submit monthly fees and expenses to the MDEQ for review and approval

Examples of the enfoTech's monthly reporting are provided in Attachment A.



## 6 enfoTech Capabilities in Implementing the Proposed System

enfoTech is currently the system consultant to SWQD to develop the NMS (version 2.0) and to assist in an e-DMR pilot project for 10 Michigan NPDES facilities. The project has received favorable review by SWQD and is at its final stage of development.

enfoTech has been providing environmental systems and software consulting services to State agencies, municipalities, and the chemical industry since 1992. We have an off-the-shelf e-DMR system that will meet the MDEQ e-DMR system requirements as well as the security requirements from the CROMERRR rules (UPEPA pre-proposed regulations for electronic DMR submissions). In addition, enfoTech has successfully implemented an Internet-based e-DMR system for State of Florida to receive electronic DMR data.

enfoTech's e-DMR system was presented to the EPA CDX/Security action team for discussion during the CROMERRR rule making process. It is recognized that enfoTech's e-DMR system has a close matching in meeting the future CROMERRR requirements.

enfoTech also participates in a "State e-DMR Knowledge Sharing" work group sponsored by the USEPA and 10 States, which Michigan is a part of. The Workgroup's missions are:

- To develop a core XML schema that will be used by the USEPA and adapted by all States to receive monthly summaries and daily DMR data
- To define a set of minimum security requirements for electronic DMR submissions

enfoTech provides technical expertise to the workgroup in XML development and offers implementation experience for the development of a minimum system security for electronic submission. enfoTech will contribute to the work group as follows:

- Develop a draft XML schema for group review
- Revise the draft XML schema based on an analyses of DMR reports from participating States to include additional data elements and structures to support various reporting in different states
- Participate in the Workgroup meetings and provide technical expertise to finalize the XML schema
- Assist the workgroup to formalize the publication of the XML schema as the standard for e-DMR reporting in United States.

enfoTech is staffed with a team of engineers and system developers who are specialized in environmental information systems and NPDES compliance. Not only have we been recognized as a national leader in e-DMR system, but we have also successfully implemented large-scale projects similar to the proposed system required by the MDEQ. enfoTech has essential qualifications, technical expertise, and most importantly, the commitment and dedication to successfully implement the NMS/e-DMR project for MDEQ that will meet the users' requirements.



## 6.1 Technical Expertise

enfoTech's technical strength has been on relational database (SQL) development and Graphic User Interface (GUI) in an object-oriented programming environment. We have a team of experts who are specialized in standard system development tools like Visual Basic, Visual InterDev, Active Server Page (ASP), Microsoft Transaction Server (MTS), SQL Server, etc., in Windows 2000 environment. Our projects have been developed on those industrial standard platforms for expandability and ease of maintenance. enfoTech is also the first company in the nation to implement a working Internet-based electronic DMR system.

enfoTech's strategic directions in the system development environment have been and will continue to be in providing N-tiered client-server computing, object-oriented developing, and Internet-based solutions. We believe that MDEQ's interest and strategic direction in system architecture matches very well with enfoTech's technical expertise and system development strategy.

## 6.2 Regulatory Expertise

Another unique qualification of enfoTech's, that will enable us to provide a successful NMS/e-DMR system for the MDEQ, is its expert knowledge of water regulations and contacts with the EPA and the States on on-going regulatory development. We have a team of engineers who are familiar with 40CFR, abreast with environmental notices published on the Federal Register, and State regulations. The engineering team has established a working relationship with the EPA headquarters, the EPA Regional offices, State Agencies, and local municipalities through various projects on water-related issues in the past.

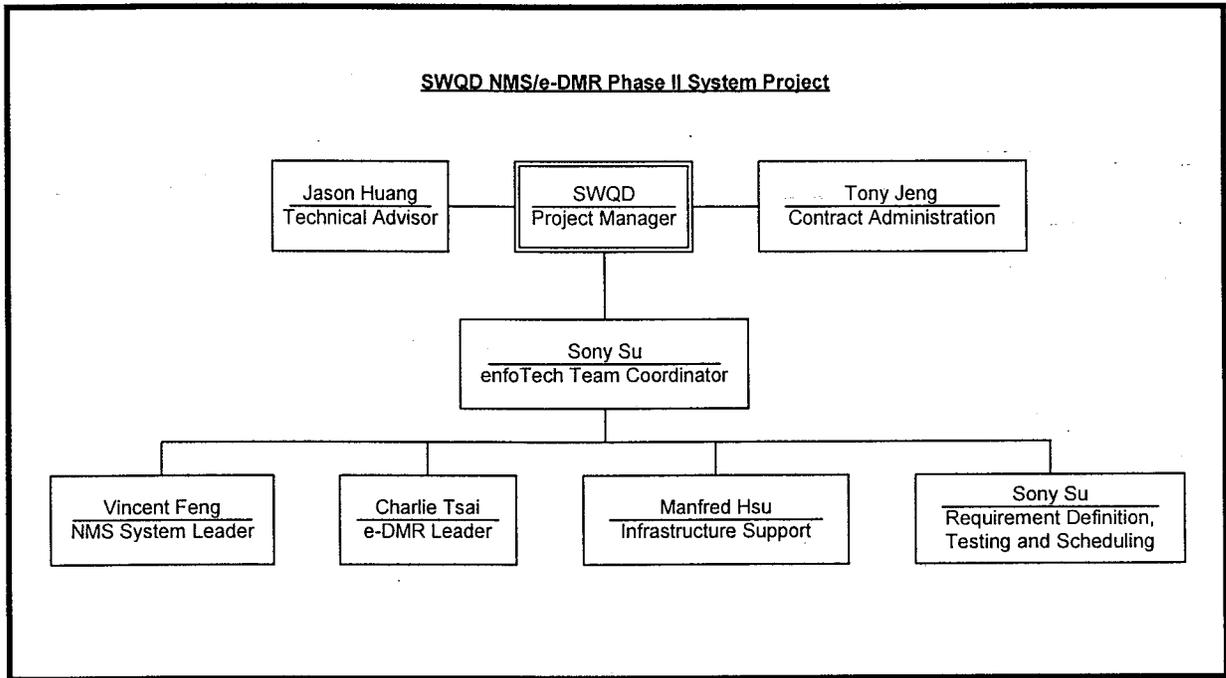
The Engineering team and the System development team work very closely together to ensure that system functions comply with regulatory guidelines. The team objectives are to work closely with the MDEQ and deliver a system to the users that can:

1. Provide accurate information in a timely manner,
2. Provide critical assistance in compliance management
3. Provide system functions to complement MDEQ's overall resource management

## 6.3 enfoTech Project Team (proposed)

Two enfoTech staff members, one senior application consultant and one senior system developer, will be assigned to share the project coordination responsibilities and work closely with the MDEQ. A preliminary proposed project team (major enfoTech personnel only) is illustrated in the following chart:





Mr. Tony Jeng will be responsible for contract administration for the entire project. He will work closely with the SWQD project manager and Mr. Sony Su (enfoTech Project Manager) to ensure that the project is completed on time, within budget, and meet the users' expectations.

Mr. Jason Huang will act as technical advisor to guide the project team for successful system implementation and technology excellence.

Mr. Sony Su will serve as the enfoTech team project manager. He will be responsible for developing the project document outlining major milestones, work break down tasks, and schedule. He will also be tracking the project progress and provide status reports to the SWQD technical coordinator.

Educational backgrounds and project experiences for the key personnel planned for the project are provided below:

**Tony Jeng (Principal Application Consultant)**

**Education:** BS and an MS in Chemical Engineering.

**Experience:** Mr. Jeng has over 20 years of regulatory and environmental engineering experience over a broad spectrum that includes wastewater treatment, drinking water standards, ground water monitoring, air emission calculation, dispersion modeling, hazardous waste treatment and disposal, maximum achievable control technology (MACT), SARA 313, and CERCLA programs. He has held various positions in different engineering capacities at state agencies, chemical manufacturing plants, and pharmaceutical production plants. Mr. Jeng is currently one of the principals of enfoTech & Consulting, Inc.

**Primary responsibility:** Mr. Jeng will be responsible for the contract administration.



**Jason Huang (Principal System Consultant)**

**Education:** BA in Business and an MS in Computer Science

**Experience:** Mr. Huang has over 15 years of experience in enterprise-wide system design, development, and implementation. Mr. Huang has delivered many corporate-wide missions critical application systems for major Future 100 companies to improve operations and save costs. He has held various key system development positions at companies such as Merck, Payne Weber, and Capital City/ABC to implement large-scale projects using SQL Server, ORACLE under Intranet and Internet environment. Mr. Huang is currently one of the principals at enfoTech & Consulting Inc and is providing the strategic direction for the Company in system research and product development.

**Primary responsibility:** Mr. Jason Huang will act as a technical advisor to guide the project team for successful system implementation and technology excellence.

**Sony Su (Senior Application Consultant)**

**Education:** BS in Chemical Engineering.

**Experience:** Mr. Su is very familiar with the regulatory requirements for the NPDES program. He is a project coordinator for the NMS/e-DMR phase 1 project for the State of Michigan. He is intimately involved in design and implementation of the NMS version 2.0 and the Internet-based electronic DMR system (e-DMR).

**Primary responsibility:** Mr. Su and Mr. Feng will share the responsibility of serving as project liaison. Mr. Su will coordinate communications from the MDEQ end-user side for the development of the functional specifications, system prototyping, and system documentation.

**Vincent Feng (Senior System Consultant)**

**Education:** BS in Psychology and Computer Science and an MS in Computer Science.

**Experience:** Mr. Feng is a senior system developer who specializes in N-tiered object oriented system, Java, and Internet-based application development. Mr. Feng has five years of implementation experience on Windows DNA (Distributed internet Application) development. Mr. Feng is currently serving as the system leader on the NMS/e-DMR Phase 1 project for the State of Michigan.

Mr. Feng has participated in the following large-scale projects similar to the proposed system for the MDEQ project.

**Primary responsibility:** Mr. Feng and Mr. Su will share the responsibility of serving as project liaison. Mr. Feng will coordinate communication from the SWQD system side. He will be responsible for the design and development of the proposed system (including scope development and integration approach).

**Jacky Tseng (Senior System Consultant)**

**Education:** BS and MS in Computer Science

**Experience:** Mr. Tseng is a project manager (system) who specializes in N-tiered object oriented system development. Mr. Tseng has five years of implementation experience on Windows DNA (Distributed iNternet Application) development. Mr. Tseng has four years of environmental system implementation experience with major US wastewater treatment plants



ranging from 500 MGD to 80 MGD capacity. Mr. Tseng participated in the NMS phase 1 project.

**Primary responsibility:** Mr. Tseng will provide crucial support and guidance for the system aspect of the project. He will provide guidance on the integration between the NMS and the e-DMR system.

**Charlie Tsai (Senior System Consultant)**

**Education:** BS in Computer Science and MS in Management of Information Systems

**Experience:** Mr. Tsai is a senior System Consultant who specializes in N-tiered object oriented system development. He is the e-DMR product leader, and has been involved in design and implementation of the e-DMR system for Florida DEP and Michigan DEQ. Mr. Tsai has five years of extensive experience in system development and Oracle database. Mr. Tsai is currently the project leader for Michigan e-DMR pilot project.

**Primary responsibility:** Mr. Tsai will provide crucial support on system aspect for the MDEQ project. He will provide guidance on integration between e-DMR and the NMS system.

**Ameer Ali (Application Consultant)**

**Education:** BS in Electrical Engineering and Computer Engineering

**Experience:** Mr. Ali has extensive consulting experience on SQL Server, Java Servlets, ASP and CGI. His strength has been on SQL script development, technical documentation, and presentation. He is also being certified as an XML developer. Mr. Ali is very familiar with the regulatory requirements for the NPDES program. He has participated in the development of e-DMR XML schema supported by a multi-state/USEPA collaboration effort. He has been working with municipalities, states, and major pharmaceutical companies for computer system specifications, testing, and integration.

**Primary Responsibility:** Mr. Ali will provide engineering support to the project.

**Justin Furman (Application Consultant)**

**Education:** BS in Chemical Engineering

**Experience:** Mr. Furman has extensive consulting experience on PACS applications. His strength has been on SQL database, technical documentation, testing, training, and presentation.

**Primary Responsibility:** Mr. Furman will provide engineering support to the project

**Steven Wu (Senior System Consultant)**

**Education:** BS in Physics, MS and PhD in Management of Information Systems

**Experience:** Mr. Wu has over 7 years of consulting experience in system integration, deployment, and hardware/software support. He is one of the original design team members for the PACS system. Mr. Wu has participated in many enterprise-wide system implementations such as the City of Philadelphia, Camden County Municipal Utility, etc. Mr. Wu has certification for MCSE, MCP, CNE, SQL Server 7. He has extensive training and experience on System Life Cycle (SLC) development, including testing, documentation, and audit trail. He has extensive experience on SQL 2000 database as well.



**Primary Responsibility:** Mr. Wu will provide system support to the project

**Maggie Hsueh (System Consultant)**

**Education:** BS and MS in Computer Science

**Experience:** Ms. Hsueh specializes in N-tiered object oriented system development. She is one of the core members of the NMS Phase I development team. She has 4 years of system development and implementation experience in SQL Server database environment. She is also a recognized XML expert.

**Primary Responsibility:** Ms. Hsueh will provide system support to the project

**Cindy Yang (System Consultant)**

**Education:** BS and MS in Computer Science

**Experience:** Ms. Yang specializes in N-tiered object oriented system development. She is one of core members on the NMS/e-DMR phase 1 project. She has 3 years of system development and implementation experience in SQL Server database environment.

**Primary Responsibility:** Ms. Yang will provide system support to the project

**Manfred Hsu (Senior System Consultant)**

**Education:** BS and PhD in Political Science

**Experience:** Mr. Hsu is enfoTech's network administrator responsible for hardware and software installation, maintenance, and security management. He has over 6 years of system networking management and support experience. Mr. Hsu has participated in many e-DMR projects similar to the proposed project.

**Primary Responsibility:** Mr. Hsu will provide system support to the project

## 7 Preliminary Project Schedule

We estimate that the e-DMR statewide implementation will take about 6 months to complete, and the Compliance & Enforcement module for the NMS will take about 5 months to complete. We propose the following draft project schedule:

Project Component	Start Date	Completion Date
1. e-DMR Statewide Implementation	5/1/2002	11/1/2002
2. Compliance & Enforcement Module for NMS	4/1/2002	10/1/2002

All fine-tuning of all NMS and e-DMR projects is expected to complete prior to the close of calendar year 2002.

A detailed project work break down structure will be developed after a functional requirement specification document is developed with the SWQD.

## 8 Project Cost Estimate

### 8.1 Cost Estimate

enfoTech offers competitive pricing for the services proposed for the project. An estimated project cost with breakdowns for each project task is provided below.

<b>Product/Task Description</b>	<b>Cost</b>	<b>Total</b>
<b>1. The e-DMR Project (Statewide Implementation)</b>		
- e-DMR Server license (license fee)	\$150,000	
- XML utility license (annual fee)	\$100,000	
- integrate the EDMR with NMS for Data Exchange	\$50,000	
- finalize implementation guide (Protocol, App. Pack, Imp. Guide)	\$15,000	
- finalize FRS, Business Diagrams based on pilot phase results	\$20,000	
- make changes on the EDMR in accordance with final FRS	\$20,960	
- integration testing	\$15,200	
- documentation (system doc., user guide, & online help)	\$15,200	
- installation	\$10,000	
- training	\$25,000	
- project coordination & traveling expenses	\$30,000	
<b>Subtotal for e-DMR:</b>		<b>\$ 451,360</b>
<b>2. NMS Enhancements (Compliance Evaluation and Enforcement Tracking Module)</b>		
- issue a DB design and FRS	\$ 51,360	
- system development	\$ 129,120	
- report development	\$ 40,320	
- testing	\$ 49,920	
- installation	\$ 6,240	
- documentation & online help	\$ 22,080	
- training	\$ 6,240	
- on-site meetings for 1 FRS, 2 prototypes, 1 final review	\$ 24,960	
- project coordination & traveling expenses	\$ 15,184	
<b>Subtotal for NMS:</b>		<b>\$ 345,424</b>
<b>Total for NMS and e-DMR:</b>		<b>\$ 796,784</b>
<b>3. Contingency (10 %)</b>		<b>\$ 79,678</b>
<b>Grand Total for the Proposed Project:</b>		<b>\$ 876,462</b>



## 8.2 Rate Schedule for Consulting Services

This section provides a fee schedule for consulting services. All rates presented apply to services rendered during the calendar year 2002 and are subject to adjustment on January 1 of each subsequent year.

### 1. HOURLY RATES

Charges for services provided will be in accordance with the following schedule:

<u>Classification</u>	<u>Hourly Rate (\$/hour)</u>
Principal Application Consultant	\$ 180
Principal System Consultant	\$ 180
Senior System QA/QC Consultant	\$ 160
Senior Application Consultant	\$ 150
Senior System Consultant	\$ 150
System QA/QC Consultant	\$ 130
Application Consultant	\$ 120
System Consultant	\$ 120
Business Support	\$ 90

### 2. POLICY ON TRAVEL

Traveling expenses are billed based on actual charges. Time spent on traveling during normal office hours will be charged at 1/4 of the normal hourly rate.

Michigan State traveling expense guidelines will be followed. They include:

- Hotel at actual cost up to \$65 per night.
- Mileage: \$ 0.295 per mile (does not include taxi or rental). Taxi and rental car at actual cost with receipt.
- Meals: Breakfast- \$7.00, Lunch- \$7.25, Dinner- \$16.50, Midnight meal (work after midnight)- \$ 7.25.

## 8.3 Payment Schedule and Payment Terms

The MDEQ will be invoiced each month based on time, material, and expenses incurred on the project. enfoTech's standard payment terms are 30 days net from the invoice date.



# **Attachment A**

**Example Monthly Project Report (Draft)**

**and**

**Example Monthly Activity and Spending Report**



## Attachment A – Example Monthly Project Report (Draft)

Date

Project Director  
 NMS/eDMR  
 Surface Water Quality Division  
 Michigan Department of Environmental Quality  
 P.O. Box 30273  
 Lansing, MI 48909-7773

Subject: Project Activity Report for Period from 04/01/2002 to 4/30/2002 (MDEQ contract number: #####)

Dear Director:

This letter provides highlights of the NMS/e-DMR project for the month of April 2002.

Activity Highlights for April, 2002

A summary description of the project progress for the reporting period is provided here.....  
 An example is shown in the following table:

Milestone or Task Description	Progress Report (Percent Completed)			
	FRS or GDS	Database Design	Screen Dev.	Report Dev.
1. e-DMR Statewide implementation				
(1.a) XML transmission protocol	80 %	-	-	-
(1.b) Specification of enhancements				
2. NMS Compliance and Enforcement Module				
(2.a) Functional Requirement Development	80 %	50 %	20 %	-
(2.b) Develop Permit Limit, DMR Data Entry, and Task Tracking modules	75 %	50 %	20 %	-

In addition, major project highlights and accomplishment will be identified below. For example:

- Project General:
  - MDEQ approved a Project Work Plan submitted by enfoTech.
  - enfoTech conducted 2 site visits and worked with the project team to develop Functional Requirement Specifications (both new and revisions) for the NMS system and e-DMR projects.



Mr. Project Director  
NMS/EDMR Project Report –  
June, 2001  
Page 2 of 3

- Functional Requirement Specifications:
  - e-DMR system
    - Developed draft requirement specifications
    - Completed a draft XML transmission protocol
  - NMS system (compliance and enforcement module)
    - Developed draft system requirement specifications
    - Completed prototype screens
  
- Database Design:
  - Completed draft revision of the NMS database design to support the compliance and enhancement module
  - Completed draft revision of the e-DMR database to support the XML transmission protocol
  
- Tasks Planned for May, 2002

A summary description of the tasks planned for May, 2002 is provided here.....



Mr. Project Director  
 NMS/EDMR Project Report –  
 June, 2001  
 Page 3 of 3

**Spending for this reporting period:**

Description	Cost
1. Professional Service Fees	
2. Expenses (traveling and others)	
Total:	

Supporting documents will be attached. Example of supporting documents are shown below:

**Invoices:**

One invoice (MDEQ-EDMR-001) is enclosed for your approval.

**EDMR Project Account Balance as of April 30, 2002:**

Description	Project Funding	Available Fund as of 04/01/2002	Invoice Amount This Period	Available Fund as of 04/30/2002	Percent Funding Available
e-DMR Statewide Implementation					
NMS Compliance and Enforcement Module					
Total:					

Sincerely,

Tony Jeng

TJ:jh  
 cc: File – MDEQ



# **Attachment B**

## **Overview of the e-DMR System**



## Attachment B: Overview of the e-DMR System

### 1 Overview of the e-DMR System

The EDMR system will be a Web-based application using a SQL Server database on a Windows 2000 platform. Wastewater facilities will access the EDMR server via the Internet. A **Staff and Application Administrator** website will be available for MDEQ access via the Intranet or Internet.

The system will serve as an electronic file cabinet to manage DMR reporting requirements provided from the NMS database, and to receive/store DMR reports submitted by wastewater facilities.

Wastewater facility access privileges will be administered through the use of a PIN, username, and password. All DMR submissions will be verified via PIN authentication with software security to ensure that the content of the data is original, truthful, legitimate, and unaltered. A complete chain-of-custody of all the records will be maintained in the EDMR server.

The system will make available up-to-date reporting requirements from the SWQD Department's centralized data system (NMS), allow wastewater facilities to submit original or revised DMRs, and allow for reviewing previously submitted reports on-line. MDEQ employees will be able to manage wastewater facility account information and monitor the system performance.

DMRs received at the Server will be uploaded to the Data Exchange system for use by the NMS database to support compliance, permitting, and environmental planning programs. If reporting requirements have been added or changed for any wastewater facility participating in the EDMR program, such changes will be recorded in the NMAS database and then downloaded to the Data Exchange System to be used by the EDMR server.

Currently, the EDMR system will not check the data for regulatory compliance or have access to the NMS database.



**In summary, the EDMR system will:**

- Make regulatory reporting requirements available on-line
- Receive secure Electronic DMR submissions of regulatory data from wastewater facilities
- Make the submitted data available to the NMS database
- Provide a searchable database containing regulatory requirements and data

## 2 EDMR System Description

As with regular paper filing cabinets, the EDMR electronic filing cabinet is surrounded by a number of procedures that guarantee that the available information is up-to-date and accurate. Information must be categorized and placed in the correct places. Keys to the locked drawers must be given out to the appropriate people. Some files must pass across a number of desks to get signed off on. This section covers the procedures that keep the EDMR system running and ensure that valid DMR regulatory data is available to everyone using the system.

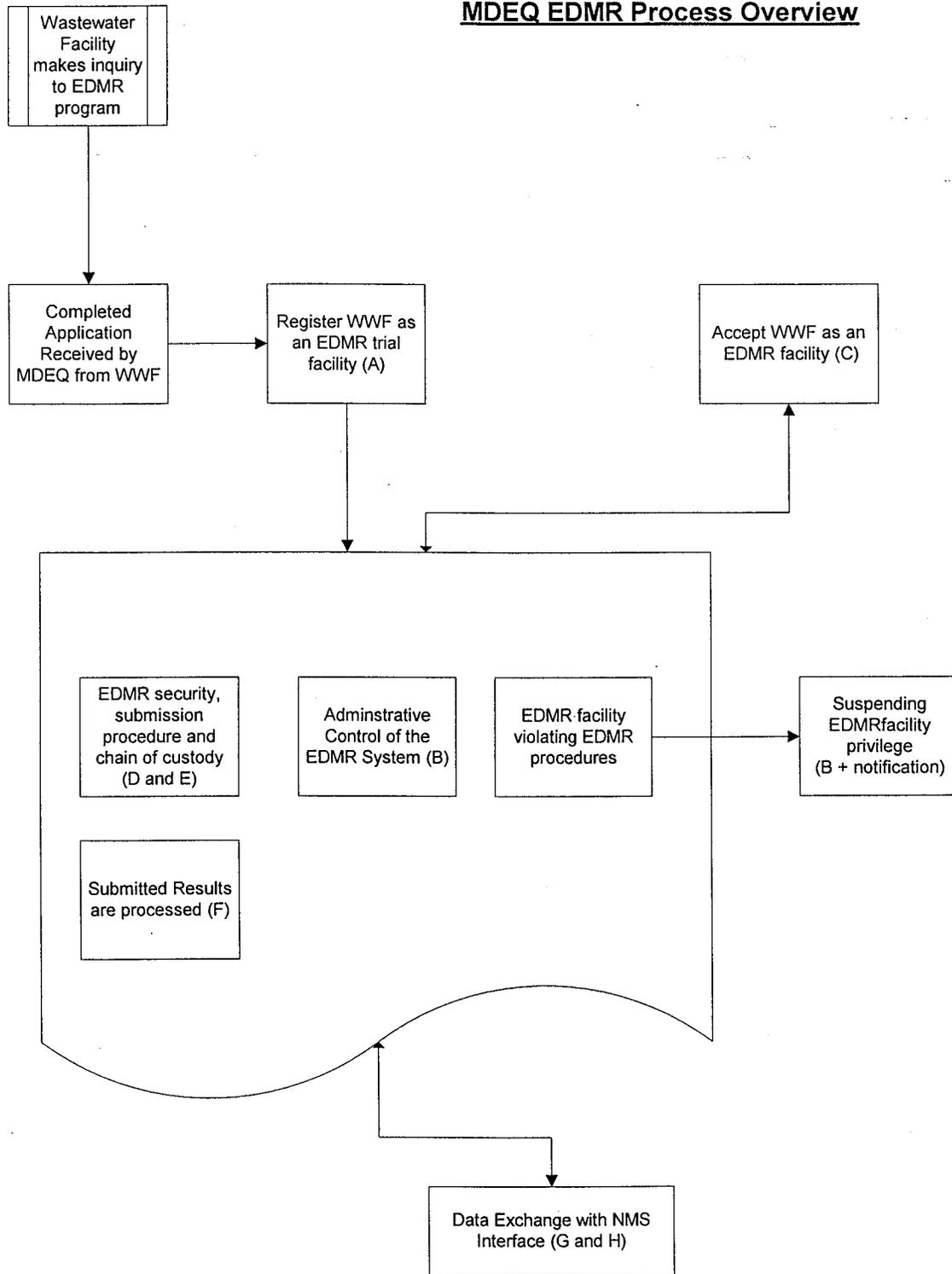
### 2.1 Overview

The block diagram on the following page shows how a number of the major processes of the EDMR system interact with each other. A detailed description of each of the processes shown in the diagram is provided in later sections of the Appendix. The table on the following page lists each of the processes along with the section number:

<b>Process</b>	<b>Section</b>
A. Register WWF facility	3.1.1
B. Administrative Control of the EDMR System	2.2.4
C. Accept WWF as an EDMR facility	3.1.2
D. EDMR security	2.3.2
E. EDMR submission process	3.1.4
F. EDMR processing steps	3.1.5
G. Data Exchange and NMS interface	3.1.3
H. Data Exchange	3.1.3



**MDEQ EDMR Process Overview**



## 2.2 Access to the EDMR System

Three groups of people will have access to the data in the EDMR system. Each group has a different set of access privileges controlled through a separate website.

### 2.2.1 Wastewater Facility Website

Wastewater facilities participating in the EDMR system can register any of their staff as either “Viewer” or “Certified” for the EDMR system. Certifiers must be the permittee or an authorized representative.

User Type	Account Privileges:
Viewer	Viewing and obtaining reporting requirements. Viewing the status of submitted EDMRs. Viewing submitted data.
Certifier	All viewer privileges. Submit EDMR X.12 files containing regulatory data.

Each account holder will be given a WWF user account logon name and password. Each certifier will also receive a Personal Identification Number. The security procedure for issuing the account information is described in Section 2.3.2, **WWF Account Submission Security**.

User accounts can be created in two ways:

- Using the application administrator website to create anew user account. These accounts can only be used for View privileges.
- Obtaining the information from the NMS. All permittees and authorized representatives in the NMS database system will be sent to the data exchange system. Any updates to this table will be sent to the data exchange system as well. All records received in this manor will be added to the EDMR system and can be activated using the application administrator website. All certifiers must be created in this manner.



### **2.2.2 SWQD Staff Website**

The Staff website will allow all SWQD employees access to most of the data in the EDMR system. This information includes:

- Wastewater facility information and status
- Viewer and Certifier account information
- Reporting Requirements
- Submitted EDMR Data

In general, Staff access will be limited to searching, viewing, and printing the data in the EDMR system. The business process diagram describing SWQD access to the EDMR system functions follows the next section.

Security for this website is controlled using integrated windows security.

### **2.2.3 SWQD Application Administrator Website**

The application administrator website will have all of the functionality of the staff website along with some additional abilities:

- Update the EDMR status of facilities and WWF accounts
- Add new viewer and certifier accounts to the EDMR system
- Assign access rights to the certifier and viewer accounts
- Manage the Data Exchange System
- Change system settings

Security for this website is controlled using integrated windows security. Only specific MDEQ accounts will be allowed to access the system.

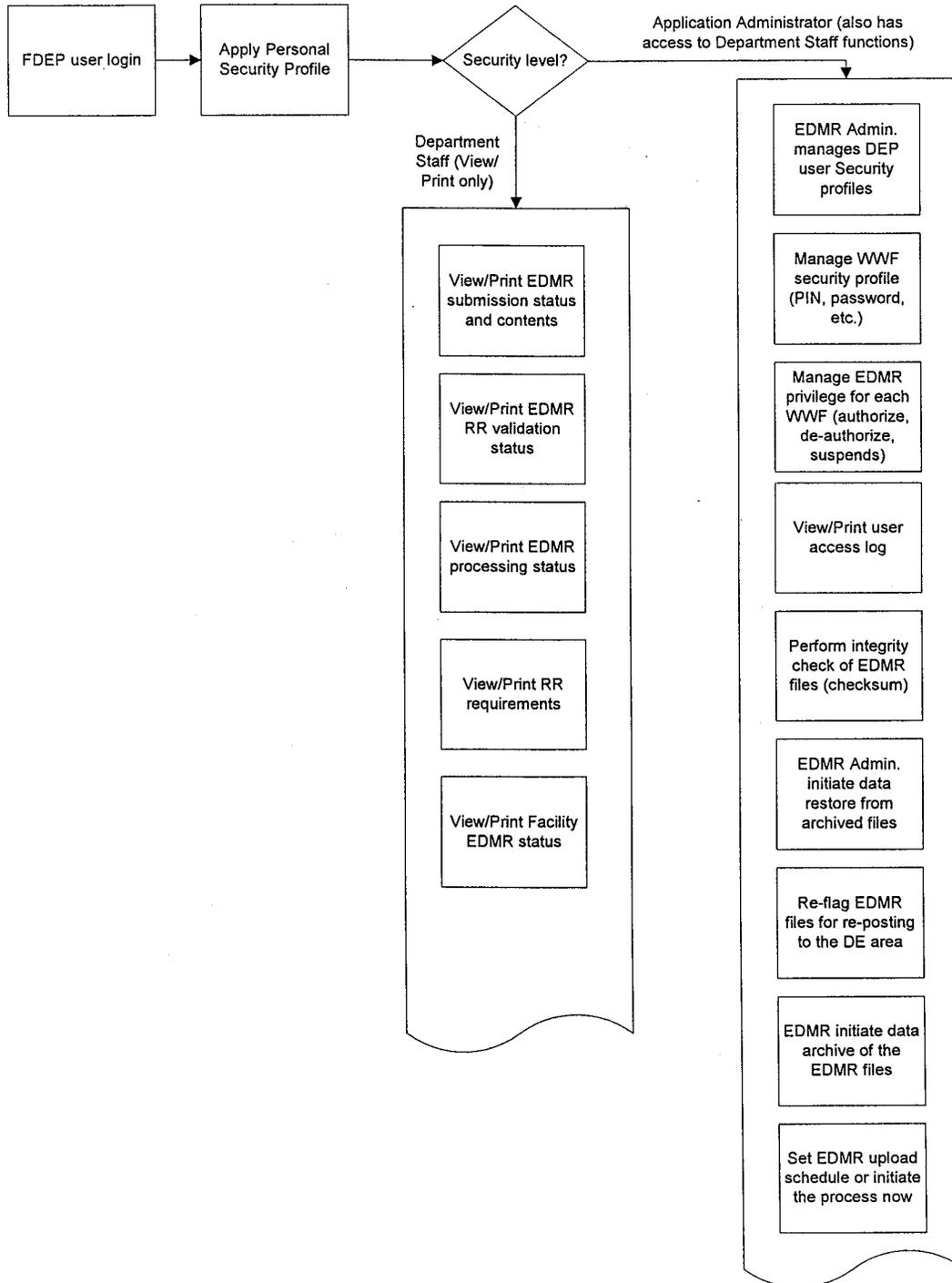
The business process diagram describing access to the EDMR system functions is illustrated in the next section.



2.2.4 MDEQ Website Functionality

**Administrative Control Process (B)**

Additional information about these functions is in the functional specifications.



### **2.3 Example Processes**

Once a facility has been participating in the EDMR system for some time, very little maintenance and involvement will be required by the SWQD. The WWF will continue submitting regulatory data that will automatically be uploaded into the NMS database. All data will be available for review, but not actions will be required by the SWQD.

The initial set up of a WWF will require involvement by a number of SWQD employees to ensure that all required information (Facility information, reporting requirements, and related party roles) are correct in the NMS database. WWF users accounts will be created and the information passed on to the account holders. During the initial trial period, the electronic and paper versions of the DMRs must be checked for accuracy.

#### **2.3.1 Wastewater Facility Participation Procedures:**

- Step 1:** The facility submits an EDMR application to the SWQD. The application contains the terms for participating in the EDMR system. Each certifier must also submit a notarized Electronic Signature Agreement. Please see the registration process diagram described in Section 2.5.2.
- Step 2:** The SWQD reviews and approves the application. District staff validates the reporting requirements stored in NMS. The SWQD established a user account for the facility on the EDMR Server and assigns a PIN to the authorized representative(s). The SWQD issues a notice, or permit modification as appropriate, to the facility about the EDMR account, PIN for authorized representative, and the starting date of the trial period.
- Step 3:** When first accessing the EDMR system, the user will be required to change their password and PIN
- Step 4:** The wastewater discharge facility begins to submit EDMR data. During the trial period, the facility must also submit paper-based DMRs to the SWQD.
- Step 5:** The wastewater discharge facility will query the EDMR process status. If the previous submission was rejected by the SWQD, the facility will fix the problems and submit revisions.

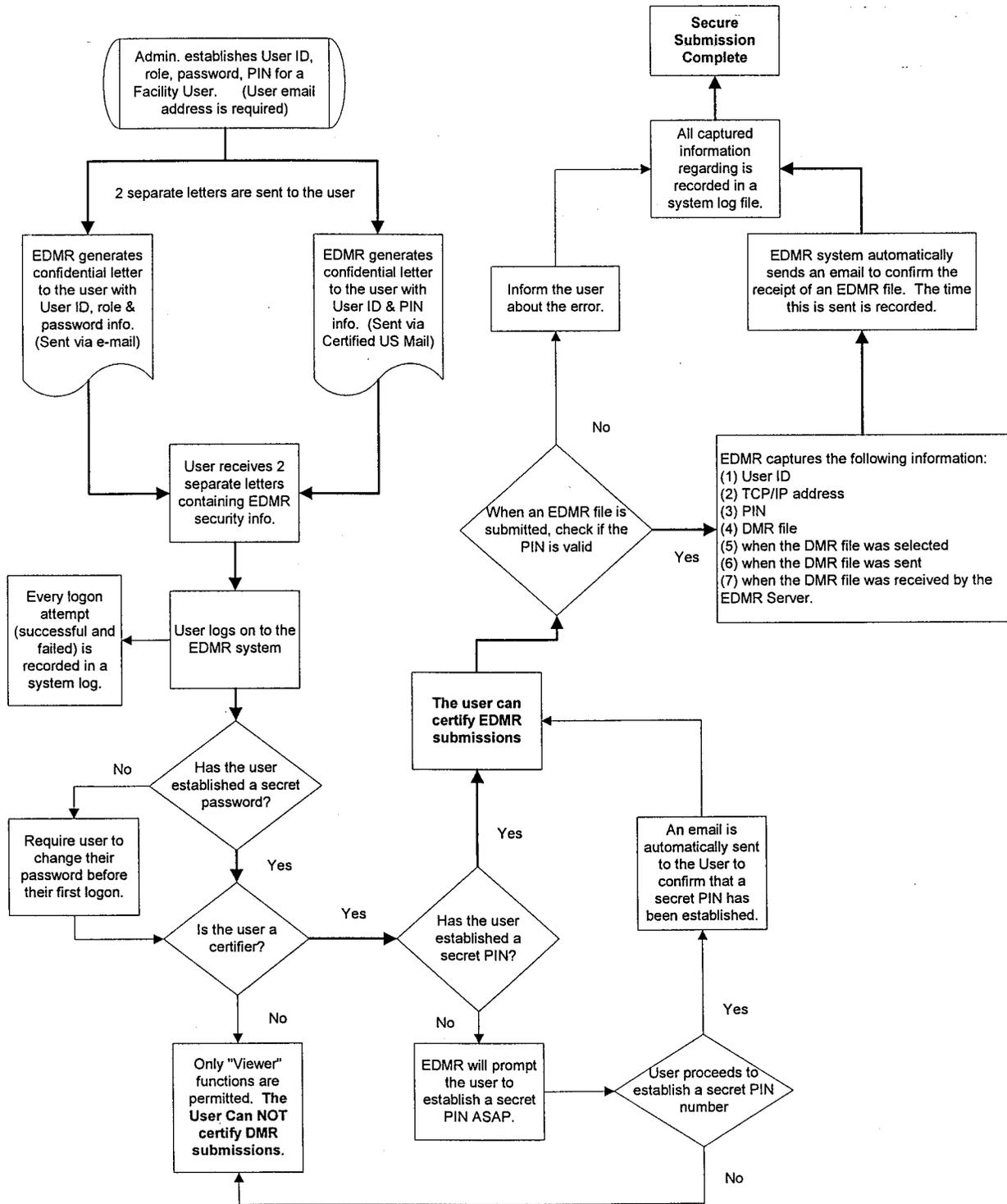
**Step 6:** After three consecutive, successful EDMR submission periods, the SWQD will notify the wastewater discharge facility in writing of the cutover date to switch to electronic reporting. After the cutover date, the facility is not required to submit the paper-based DMRs.

**Step 7:** After the wastewater discharge facility is accepted into the EDMR system, the facility will not receive paper-based DMR forms from the SWQD, unless it specifically requests the form from the SWQD.



2.3.2 WWF Account and Submission Security

**Business Schema for the EDMR System Security (Rev. 5/2001) (D)**



### 2.3.3 Data Flow Example

- Step 1:** Download reporting requirement(s) from the e-DMR server
- Step 2:** Facility prepares DMR data file in accordance with reporting requirements
- Step 3:** Facility logs in to the EDMR server via the Internet
- Step 4:** Facility selects the EDMR file and certifies its contents and submits it to the server.
- Step 5:** The server receives the file, and issues a receipt of confirmation to the facility
- Step 6:** The Server verifies that the data file conforms to the reporting requirements stored in the Server. If it does, the submission is noted as such on the Server for reference. If not, the submission will be noted, as “rejected” and the facility will be notified via e-mail. The facility must cure the problems and submit revisions to the EDMR server.
- Step 7:** SWQD Department staff can access the EDMR server to review submission status, browse DMR reports, and perform general Administrative or SWQD Department Staff functions. **Original EDMR files cannot be altered by any person in any situation.**
- Step 8:** Using the DMR Process Module, the SWQD Administrative staff can specify frequencies for or initiate the DMR data uploading process to send it to the Data Exchange System (which is available to the NMS database). After sending, the DMR reports will be marked as “processed” and will remain in the EDMR server for future chain-of-custody reference.

### **3 SWQD Staff**

The SWQD Staff website is available to individuals with proper privileges granted by the system administrator. This website can be used to access much of the information in the EDMR system, including:

- Summary information and statistics about the EDMR system, including the number of participating facilities and how many EDMRs have been submitted to the system.
- All electronically submitted DMR data.
- Basic facility information, including their regulatory reporting requirements.
- WWF User account and contact information

This website will also be used during the process of checking the electronic DMR data against the paper submission.

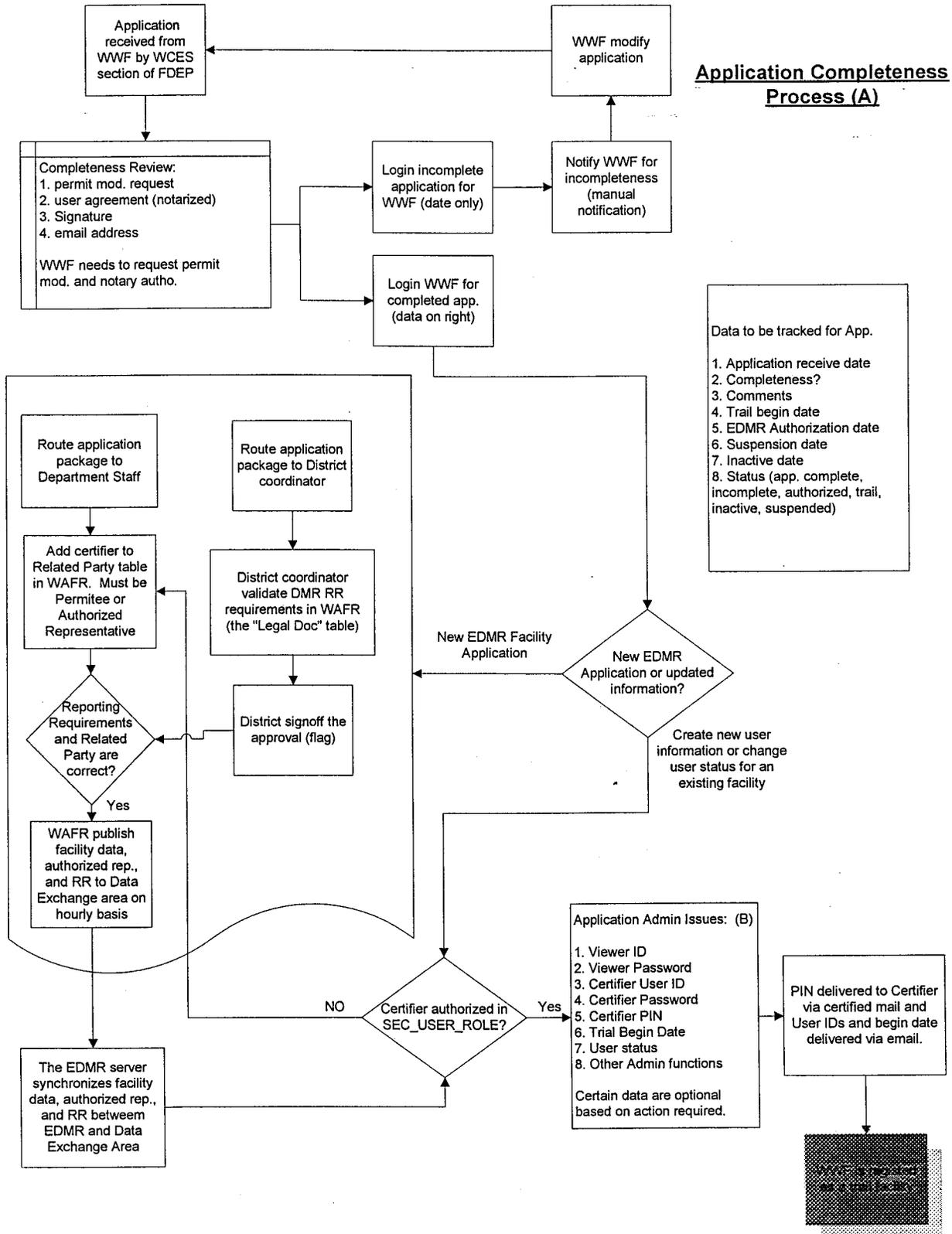
The SWQD staff website is one of three major EDMR websites. The other two are, the SWQD Administrator website, and the WWF website.

#### **3.1 Business Process**

The initial set-up to allow a WWF to participate in the EDMR system will require involvement by a number of SWQD employees to ensure that all required information (Facility information, reporting requirements, and related party roles) are correct in the NMS database. Section 3.1.1 describes this process.

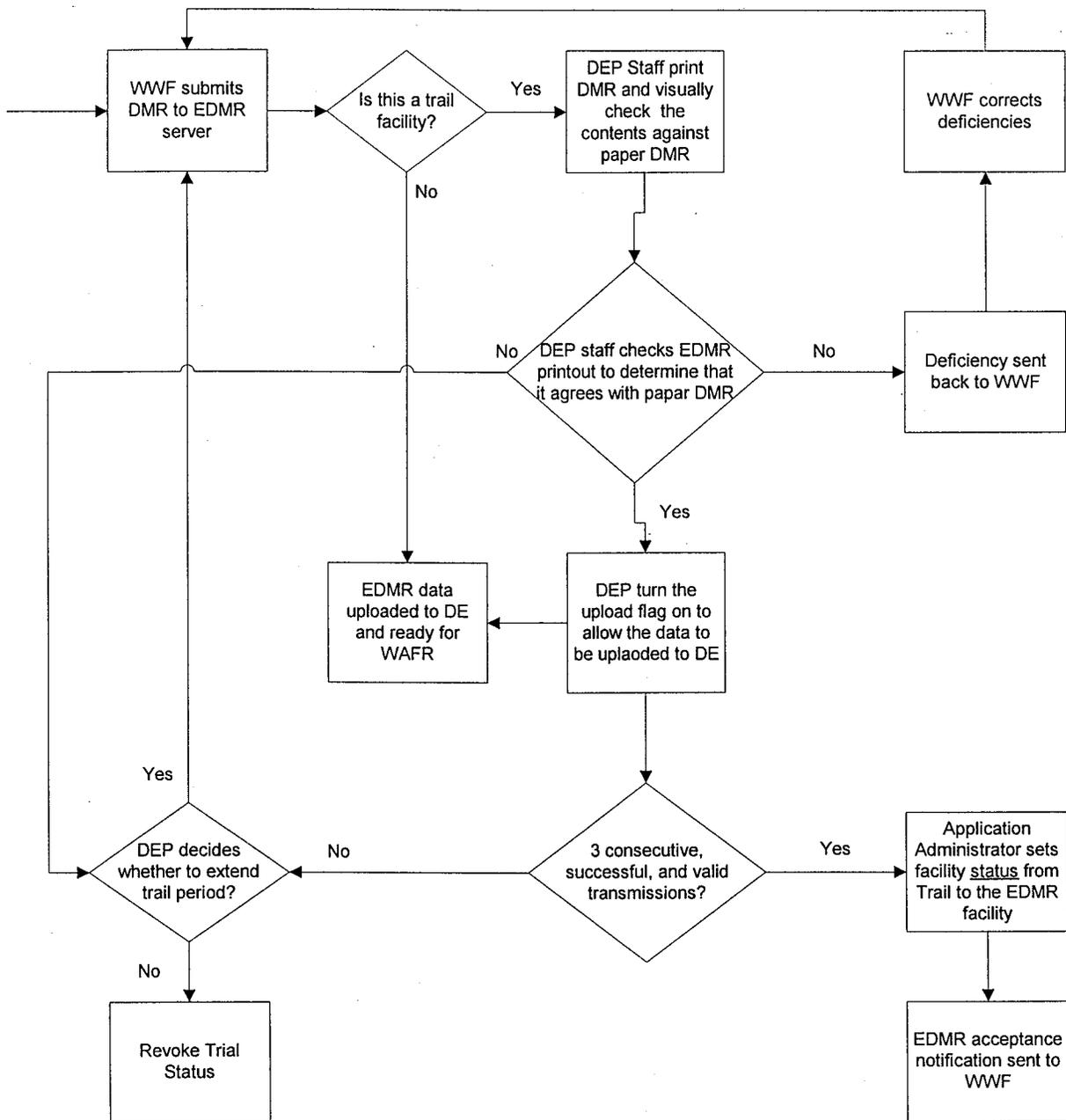
During the initial trial period, the electronic and paper versions of the DMRs must be checked for accuracy. A facility must successfully submit a number of EDMRs before they are fully brought into the EDMR program. Section 3.1.2 describes this process.

### 3.1.1 Facility Application



3.1.2 Acceptance of a Full EDMR Facility

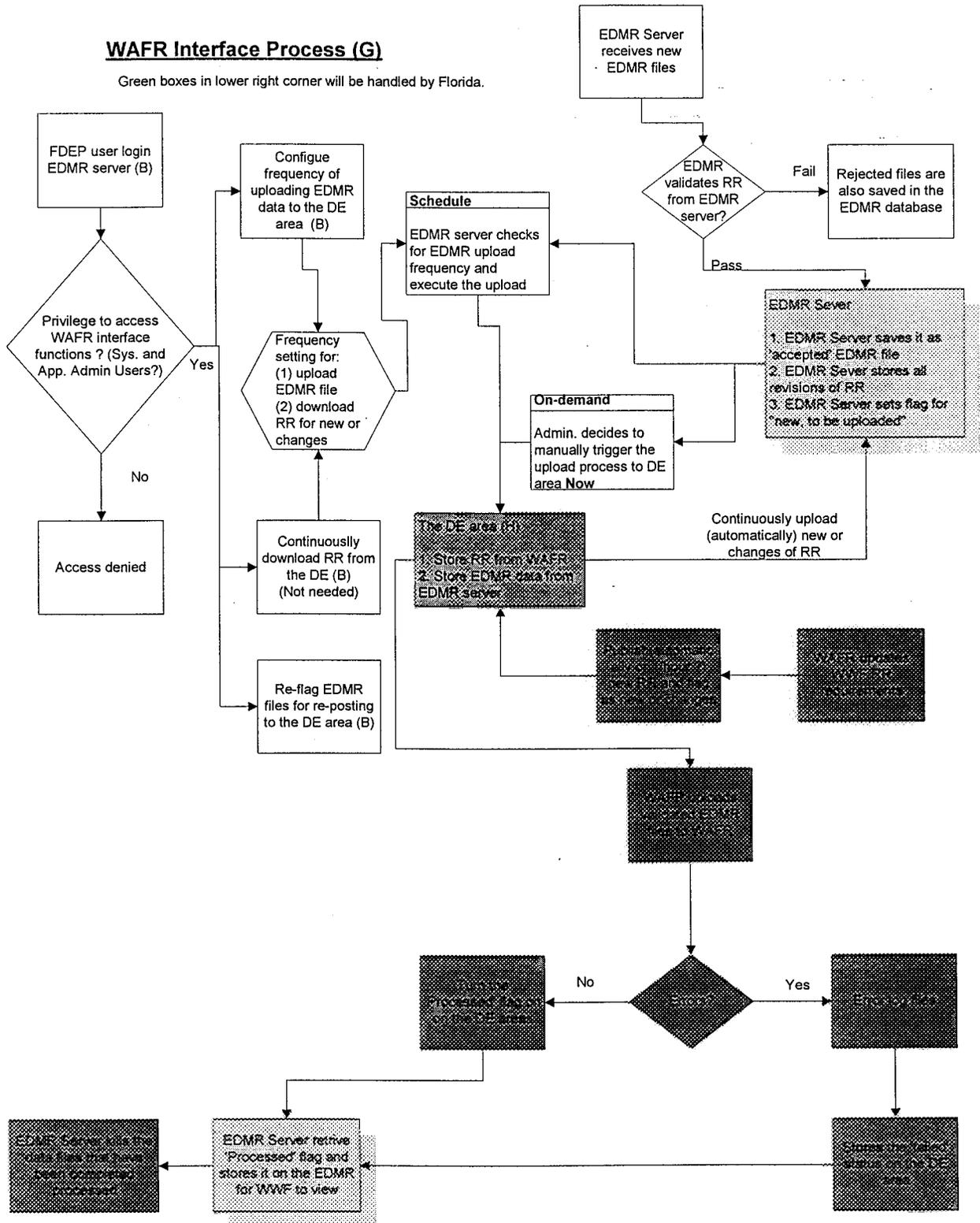
Accept WWF as a EDMR facility (C)



### 3.1.3 Data Exchange Area Interface Process

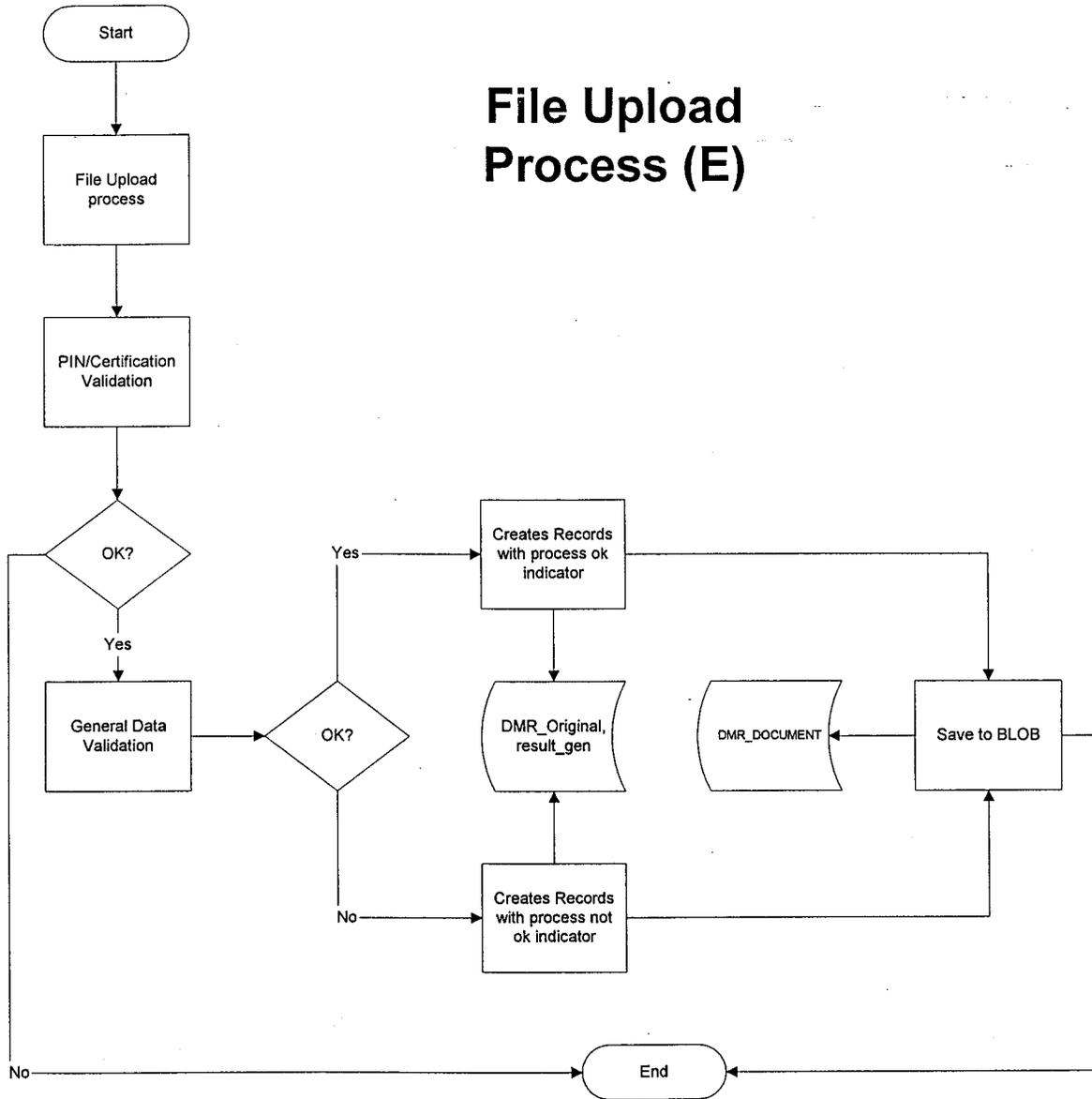
#### WAFR Interface Process (G)

Green boxes in lower right corner will be handled by Florida.



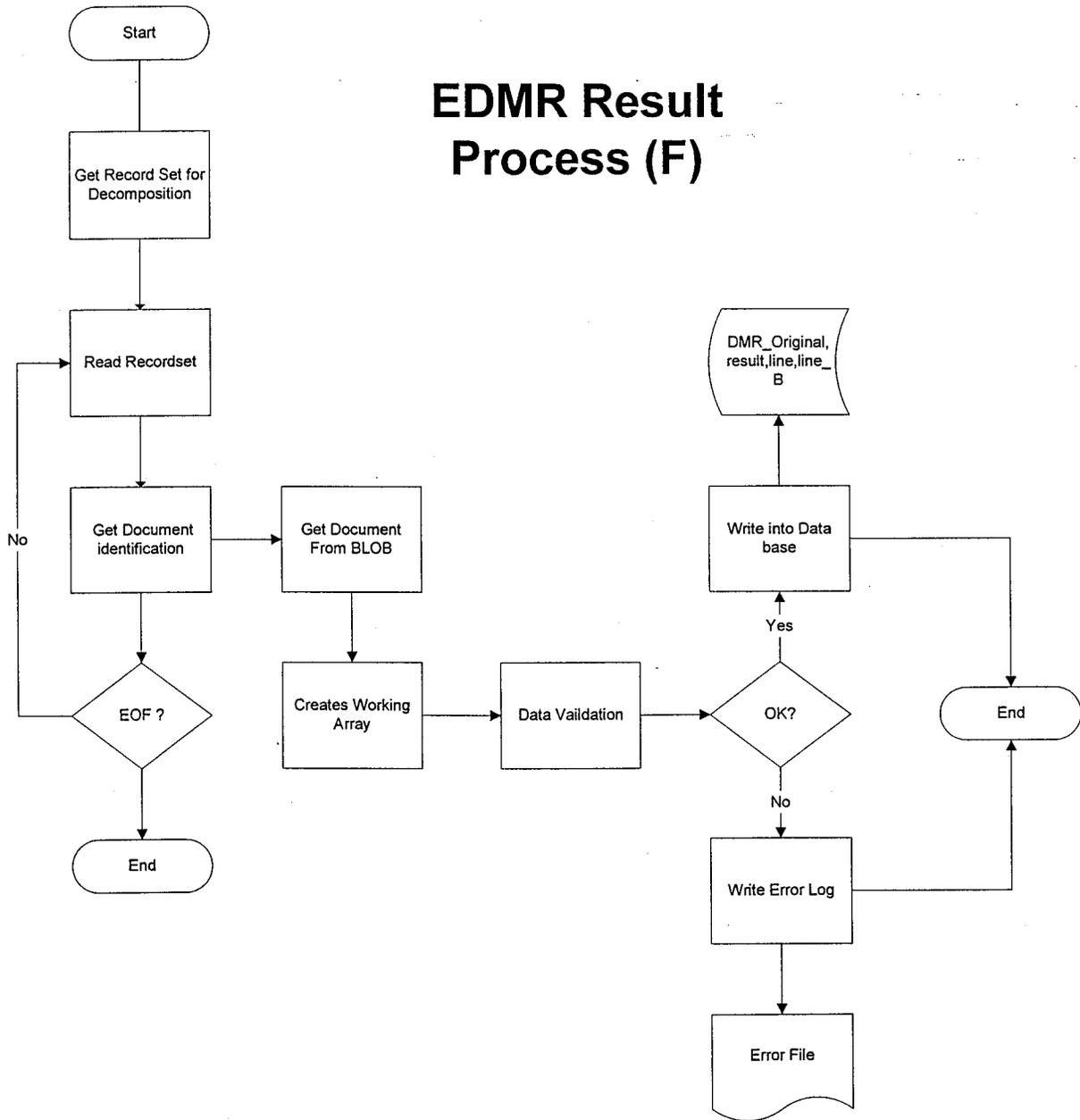
3.1.4 EDMR Submission / Upload XML File

# File Upload Process (E)



3.1.5 Process XML File

# EDMR Result Process (F)



# **Attachment C**

## **Functional Requirement Description of the Compliance and Enforcement Module**



## Attachment C - Functional Requirement Description for the Compliance and Enforcement Module

The division relies on District staff for compliance activities. The district compliance activities consist of the following broad categories:

- a. Review of self monitoring data
- b. Review of reports or notifications required by the permit
- c. Inspection of the facility
- d. Working with un-permitted facilities
- e. Violation identification
- f. Taking enforcement action for noncompliance
- g. Reviewing/tracking/follow-up on SSO/CSO reporting
- h. Follow up on PEAS or complaint calls
- i. Part 41

For compliance issues that cannot be resolved at the district level or where the non-compliance issues deserve a higher level of action, the SWQD's enforcement unit is asked to handle/resolve the issue. The enforcement unit works to resolve the issue using the highest level of enforcement proceedings, which may involve the Attorney General's office.

At times, the division has to report on various aspects of its compliance activities. In order to do this, a statewide system for capturing this data needs to be developed. Currently the division reports on "dashboard" issues to the department managers on a routine basis, and on success in meeting the established Targets/Means/Measures.

### **Part 41:**

#### **Review of Self-monitoring Data (DMR and Daily Information)**

Discharge monitoring report (DMRs) and daily sheets are submitted to the Division's Storm Water/RAP Unit for initial processing. Steps associated with the processing are discussed in another area of this document (see section 2) This unit also does some checking of the DMRS and sends out deficiency (warning) letters if the DMR has non-reported values or it is not submitted. At the end of their processing, they ship the paper DMRs and daily sheets to the appropriate district.

District staff reviews the DMRs for noncompliance with permit limits, missing data, improper calculations, and incomplete or inadequate reporting. The review of DMRs varies for district to district, facility to facility. For example, some districts may review all DMRs each month; other district may only review "major" facility's DMRs on a monthly basis. The availability of this data electronically with the appropriate tools to analyze the data would greatly improve the efficiency of this review, and help in resolving issues of noncompliance more quickly.

Several items that have been identified to include in an electronic system are:

- Track which reporting data have been reviewed by staff
- The ability to pull all monitoring data for a given facility for a given time period



- Forecast reports for SOC to be submitted soon
- Pull up history of SOC by permit/facility
- Tracking compliance of an activity statewide (identified WWSL that need to be retrofitted with lagoon liners, permits with Pollutant Minimization Plans, for example).

Additionally, the following concerns/suggestions have been identified:

- SWQD needs to review the standard permit language to make sure there is a consistent approach as to what needs approval, is approval date the date it was submitted or the date we actually said it was approved, etc.
- Need to have system where one event is driven by another (i.e., within 90 days of completing this, do this).
- Schedules coding should be automatic with use of standard permit language. There also needs to be a system for ad hoc language.

All violations associated with a given facility need to be “tracked”. The status of the violation is needed (on-going, resolved, pending) and whether the violation has been addressed by an enforcement action. See further details below.

### Inspections

District staff conduct inspections of facilities to insure that the permit is being complied with (are samples being collected as specified, are analyses and reporting performed correctly, is record keeping adequate, is the treatment/sampling/lab equipment properly operated and maintained, etc.) and to insure that the permit adequately addresses the wastewater discharges (has the facility identified all it’s wastewaters and outfalls, and identified them correctly). These inspections can be scheduled with the facility, but are often unannounced. DEQ sampling may include effluent, influent, sludge, and/or ambient waters.

Each year the district develops an inspection plan (what facilities to inspect, when to do the inspection, what type of inspection to do). Inspections are also done on an as-needed basis.

Items associated with inspections include:

- Determination of what inspections will be done when (planning, commitments to EPA). Factors include: major, basin year, compliance history, facilities near to another facility, complaints, time since the last inspection. Inspections may be targeted to facilities with particular problems/wastewaters/treatment systems.
- Prior to the inspection, staff reviews information about the facility to determine its compliance history, previous inspection reports, type of wastewater treatment, sample collection and analysis needs, permit requirements, self-reporting, etc.
- Inspections: have a type (CEI, CSI, recon, etc.), date, planned date, follow-up action, date transmittal letter sent.
- Inspection documents exist for different types of inspections, different aspects of an inspection, different types of facilities.
- Need to determine whether inspection results will be captured electronically? At a minimum, we should capture the electronic document. We could also capture more information, such as the actual data.
- IPP inspections have unique data to capture: # of SIU, CIU, enforcement actions, published bad actors, etc. Inspections for FIPP municipalities will require capture of data



to meet EPA and Michigan's requirements. Inspections at MIPP municipalities will only require capture of data to meet Michigan's requirements.

The department has established through Targets/Means/Measure several tracking items related to inspections (whether the facility was "in compliance" at the time of the inspection; if the facility was not in-compliance, then follow-up actions to return the facility to compliance). Each district has its own mechanism to track this information (usually Excel spreadsheets). This data does not go into PCS.

All violations associated with a given facility need to be "tracked". The status of the violation is needed (on-going, resolved, pending) and whether the violation has been addressed by an enforcement action. See further details below.

### Unpermitted Facilities

At times SWQD will become aware of a facility that has not obtained a permit/COC/NOC for its wastewater/storm water discharges. These facilities are subject to inspection, and may be required to submit sampling data and reports to us. They are also subject to compliance/enforcement follow-up actions. The enhanced NMS system needs to be able to handle unpermitted facilities for many functions that are built for permitted facilities (establish schedules, take enforcement action, etc.)

### Violation Identification

NMS needs to identify violations for a facility for those data elements contained in NMS. The following data areas need to be evaluated:

1. schedules of compliance
2. self-monitoring data (both DMR and daily information results)
3. missing self-monitoring data

In addition, staff needs the ability to add violations for a facility for those areas that are not covered in NMS (i.e., violations identified during an inspection)

All violations will have the following data elements:

1. Detection date.the date NMS identified the violation or the date staff entered the violation into NMS
2. Type of violation (self-monitoring, SOC, missing data, other, etc.)
3. The detailed violation (reported 30 mg/l for daily total suspended solids limit was 25 mg/l)
4. Status
  - a. unresolved
  - b. addressed by State enforcement action
  - c. addressed by US EPA enforcement action
  - d. resolved due to no other effluent violations of the same type (i.e., same outfall and same parameter) over a period of time?? or over a specified number of consequent samples with no violations?? Applies only to effluent violations
  - e. resolved but late Applies only to schedules of compliance
  - f. resolved manually.....staff has the ability to set the status to resolved, but it would be flagged as a manual resolution
  - g. etc., etc., etc.



## Enforcement Actions

When a facility is in non-compliance, the district staff uses their discretion to determine the appropriate follow-up. This may consist of doing nothing for a very minor problem, a telephone call, letter, notice letter, site visit, or stronger action. Many items influence the type of action. Surface Water Quality Division's (SWQD's) Enforcement Management System (EMS) document provides some guidance to staff on the appropriate level of follow-up action to a non-compliance situation. Attached is a file named c01intro.doc that describes the EMS.

In addition to the SWQD's EMS, the department's Compliance and Enforcement Policy (attached) needs to be reviewed and followed. This document provides for fair, consistent and timely action on issues of noncompliance. Section 4 of the policy details a number of tracking and measurements that need to come from NMS.

There are a number of actions in response to noncompliance that can be taken. An attached file named c08enftool.doc describes the types of enforcement actions that can be taken. Generally, lower level enforcement actions are handled by district staff (with or without involvement from SWQD's Enforcement Unit). Higher level enforcement actions must be handled through SWQD's Enforcement Unit in consultation with district staff. At times situations will be referred to the Enforcement Unit because lower level enforcement actions have not been successful in returning the facility to compliance. Other times, because of the severe nature of the non-compliance, the matter is referred directly to the Enforcement Unit. The attached files named c09enfprocess.doc and c09tbls.xls describes some of the criteria used to determine the level of enforcement action.

Some items that were discussed as related to an electronic system of compliance include:

- There should be no automatic compliance/enforcement documents generated except for DMR problems noted above (missing data, late reports, etc.).
- Compliance actions have a unique numbering system. Also, in the attached file name c08enftool.doc there is a section that discusses the current numbering system.

Procedures are established for taking away a permit because of compliance problems. These are detailed in Permits Section Procedure #26 – Permit Revocation Procedures

NOTE: Enforcement actions may change monitoring requirements, limits, items to be submitted, or schedules in a permit. In addition, enforcement actions may also establish their own schedules for items to be completed/submitted.

We need the ability to log in enforcement actions (both US EPA and State )and process State enforcement actions in NMS. This will include tracking tasks applicable to enforcement action processing, generating enforcement documents, etc.

When enforcement actions are taken, staff needs the ability to link the enforcement action with the violations that the enforcement action is addressing. These violations are identified in NMS....see violation discussion above.



## Seasonal Discharges

Wastewater stabilization lagoons treat and store wastewater for discharge in the spring and/or fall. This minimizes the effect on water quality.

Current permit language requires the permittee to obtain prior approval for the district supervisor prior to discharging. Certain pre-discharge monitoring is required (to demonstrate the limits have a strong likelihood of being complied with).

Typically the permittee will call to get approval, and supply this discharge and operational data. If the data is acceptable, normally approval will be given. If the discharge at that time is not approved, we want to track that and document the reason.

We want to be able to ask the database: who requested a discharge within a specified time frame, who didn't, etc.

## CSO/SSO Reporting:

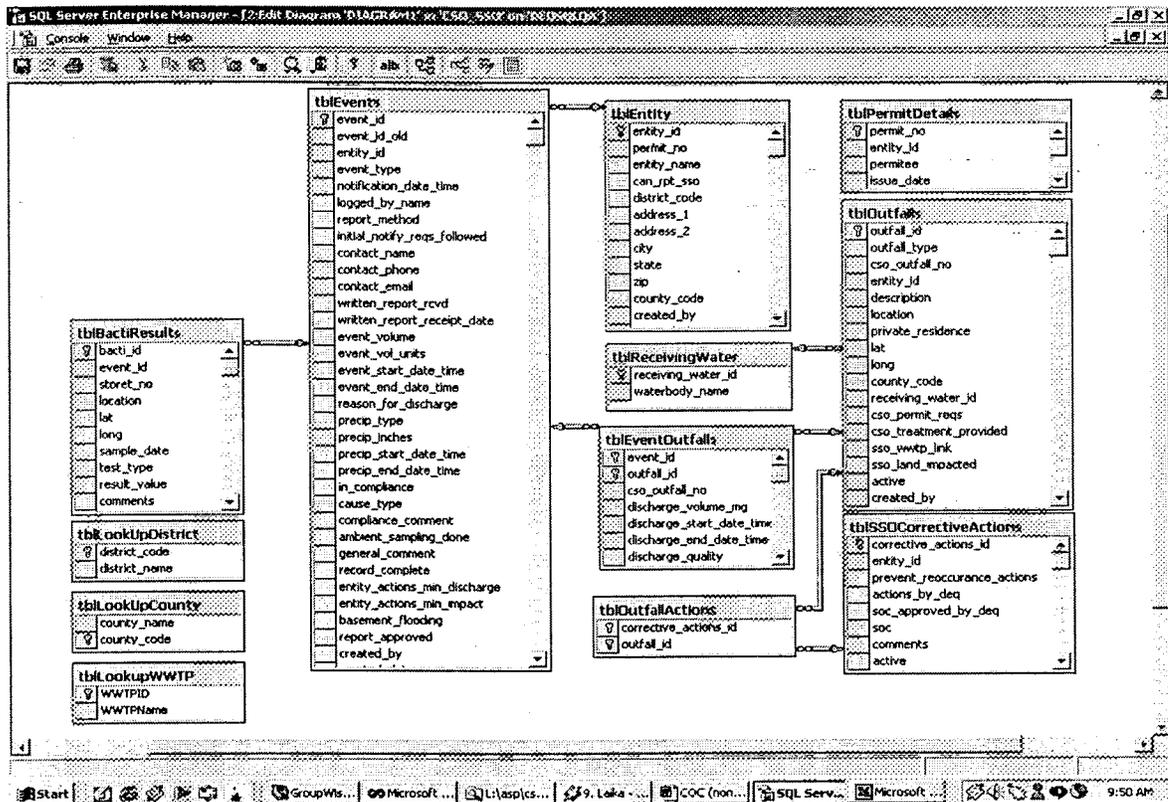
CSO = combined sewer overflow, SSO = sanitary sewer overflow

All discharges from partially or un treated sanitary sewage need to be reported to the DEQ immediately. Additionally a follow-up report is required with specified data. Below is a picture of SWQD's current CSO/SSO database, which is our way of tracking these reports. We want to move this reporting into the NMS database. It will probably require separate CSO Event maintenance windows, and SSO event maintenance windows.

For CSOs, we know which facilities have CSO, and we know the location of the CSOs. This information is in NMS (or is part of the NMS enhancement currently underway). Corrective action programs have been established for all of the CSOs in Michigan. The unknown information related to CSOs is the actual discharge events (when do they start, end, what type of rain or snowmelt occurred, etc.).

For SSOs, we may not know any of the information that we know for CSO (location, responsible party, what caused the SSO, what is being done to correct the problem, etc.).





Attached are other documents that describe the security associated with the CSO/SSO database, and a user's guide.

## PEAS and Complaint Calls

District staffs are responsible for addressing emergencies and complaint calls. Emergencies may include a tanker truck overturning, a break in a sewer line, a fish kill, or a report of oil on a river, for example. These calls generally come directly to staff of the district office, or may come into our Pollution Emergency Alerting System (PEAS) (these are then referred to district staff). District staff then has the responsibility for follow-up. Follow-up action general involves determining the responsible party (if possible) and assuring proper containment and cleanup of the material. This may involve contacting the local fire or police department to determine what is being done and whether assistance is needed, but may also include contracting for the clean-up directly with a qualified contractor. At times staff will need to visit the site.

When a field response is required, staff monitor and/or access environmental impacts from the incident and determine, in conjunction with other agencies, containment/cleanup strategies and adequacy. They may also collect evidence for use in additional negotiations or enforcement actions with the responsible party or parties in the form of field notes, water/soil samples and photographs. Spills or intentional dumping of materials or other violations of state/federal law may generate enforcement actions, schedules and compliance follow-up. These actions may be initiated at the district or Lansing levels.

District staff also get many calls that are not of an emergency nature, and are more often labeled as complaint calls. This may include reports of seasonal fish kills, pollen on a lake that is misidentified, reports of illegal discharges or dumping, for example.

All of these types of emergency and complaint calls are currently logged into the division's PEAS database. We want to move this data into NMS. This would require a new maintenance window. The location tab as currently configured for industrial storm water type facilities would be used. We need to be able to link the incident to an existing NMS facility, or create a facility if the facility is not in NMS. At times the event will not be linked to a facility (such as a fish kill that happens due to natural events).

All violations associated with a given facility need to be "tracked". The status of the violation is needed (on-going, resolved, pending) and whether the violation has been addressed by an enforcement action. See further details below.

The PEAS database is attached, along with a couple related documents.

The following fields are required to save an incident:

- PEAS number
- Call into PEAS?
- Received by
- Received Date
- Received Time
- Complainant or Anonymous
- Complainant Phone (Home) or Phone (Work)
- Alleged Responsible Party or Responsible Party Unknown
- County
- Latitude/Longitude (NEEDS TO BE ADDED)
- Incident Date or Unknown Date/Time
- Incident Observed Date or Ongoing
- Material Released
- Category of Spill/Complaint
- Assigned/Referred To (defaults to unassigned, group level access)

Additional fields may need to be added for contractor costs and staff time and costs. Existing contact names, addresses, telephone numbers, etc. can be consolidated into existing NMS tables with the use of new type codes (e.g., complainant, facility/incident location, NRC/USEPA/USCG/MDA/Other contacts, alleged responsible party, other agency contacts, etc).

If an incident occurred at an existed NMS facility then the incident could be associated with the facility and all it's existing information. If not, then an unpermitted facility could be created (if applicable). If the incident wasn't associated with any particular facility (e.g., oil in a ditch without a known source), then it wouldn't have a facility, just the incident location information.

Any staff member should be allowed to enter a PEAS call but NMS system security would be used to determine who could edit information once it has been entered. This access would normally be limited to the person the incident is assigned to and his/her supervisor. However, there may be situations where several staff need to access to the same incident to enter/edit information (e.g., a large spill requiring many participants).

PEAS incidents may precipitate enforcement action(s) and therefore could result in schedules of compliance and related follow up.



Microsoft Access - [Data Entry : Form] Type a question for help

File Edit View Insert Format Records Tools Window Help

---

## PEAS and Complaint Incident Report

Southeast Michigan District Office, SWQD, MDEQ

Incident Number:  Received by:

Call to PEAS Operator?  Yes  No Date:

Date:  Time:  PECC Number:  Time:

**CSO/RSB**

**COMPLAINANT INFORMATION**

Complainant:  Represents:   Anonymous

Address:   Confidential PEAS Log

City:  State:  Zip:

Phone (Home):  Phone (Work):  Other Phone:

**LOCATION INFORMATION**

Alleged Responsible Party:   Unknown Responsible Party

Alleged Responsible Party Contact:   Alleged Responsible Party Confirmed

Contact Number:

Location:

City:  State:  Zip:

Township:  County:

1/4 of  1/4 of Section:  Township:  Range:  Lake/Stream:

Latitude: (Degrees):  (Minutes):  (Seconds):  N Longitude: (Degrees):  (Minutes):  (Seconds):  W

**INCIDENT DESCRIPTION**

Incident Date:  Time:   Unknown Date/Time Material Released:

Incident Observed Date:  Time:   Ongoing Est. Volume:  Unit:

Record: 14 of 1135

Press to view "Data Entry Form" help document NUM

Data Entry Form (top)



Data Entry Form (bottom)

### Part 41

The SWQD processing applications for construction of public sewer systems and wastewater treatment plants under Part 41 of Michigan Act 451. NPDES permits are processed under Part 31 of Act 451.

We want to track receipt and issuance of Part 41 applications/permits. Additionally, compliance related activities are associated with this process. A facility may construct sewers without getting the appropriate application, or may have installed it incorrectly.

Attached is an excel spreadsheet that is currently used to capture tracking information. But we need to enhance some of these features. Below is a preliminary list of data we would like to track and pull from NMS:

- track application processing from receipt to issuance of a permit
- built in the ability to put holds on the processing based on incomplete applications.
- link the application to a facility in NMS (please note that NMS will have all of our facilities, even those municipalities that are tributary to another's WWTP)
- the ability to add multiple comments on an application

- Capture the consulting firms and local health departments (may reuse these in other applications). Drop down menus or search menus for consultants, municipalities, counties, districts, etc.
- In the future, applications might end up being submitted on-line. If so, information submitted in the online application should be automatically entered in the database.
- Links to and ability to generate approval letters, comment letters, checklists, and digital copies of blueprints. (Similar to what NMS does now for permit letters)
- Ability to generate all checklists needed for review of a project.
- Ability to track Construction Certification Statements (CCS's) and generate reports and form letters to municipalities on incomplete CCS's.
- Ability to search the database for permits.
- Unified permit numbering system to restart each annual year and ability for revised "X" or reissued "R" permit numbers along with ability to deny permits
- Tracking time needed to review permit application - time between responses from consultants.
- Ability for WMD (Waste Management Division) to use the database for WMD Part 41 permit tracking? Separation of reports between WMD and SWQD if this is done.
- Links to SSO's and CSO's?
- Ability to list permits by municipality, consultant, year, or fiscal year, or some combination.
- Projects within the district/municipality must not have the same project name?
- Contact information for the consultants and municipalities
- Information contained on the permit application sections 7-17 including links to any other applicable permits (NOC, LWMD, SESC) and contamination sites.
- Ability for public or consultants/municipalities to view some of this information online to check on status of permit?

Some of the "dashboard" reporting features include:

# in process or pending

#of new applications received

# of applications denied

#of permits issued

# of permit decision made on time

# of permit decision made past due

# of permit applications backlogged (as of 9/30/##)

# in process/pending not backlogged (as of 9/30/##)



STATE OF MICHIGAN  
 DEPARTMENT OF MANAGEMENT AND BUDGET  
 OFFICE OF PURCHASING  
 P.O. BOX 30026, LANSING, MI 48909  
 OR  
 530 W. ALLEGAN, LANSING, MI 48933

September 7, 2001

NOTICE  
 TO  
 CONTRACT NO. 071B1001740  
 between  
 THE STATE OF MICHIGAN  
 and

NAME & ADDRESS OF VENDOR  <b>Enfotech &amp; Consulting, Inc.</b> <b>11 Princess Road, Unit A</b> <b>Lawrenceville, NJ 08648</b>	TELEPHONE Tony Jeng <b>(609) 896-9777</b>
	VENDOR NUMBER/MAIL CODE
	BUYER (517) 241-1647 <b>Irene L. Pena</b>
Contract Administrator: Michael Beaulac <b>Consulting Services for an Electronic Wastewater Discharge Reporting System –          Department of Environmental Quality</b>	
CONTRACT PERIOD: From: <b>August 27, 2001</b> To: <b>March 27, 2002</b>	
TERMS <p style="text-align: center;">N/A</p>	SHIPMENT <p style="text-align: center;">N/A</p>
F.O.B. <p style="text-align: center;">N/A</p>	SHIPPED FROM <p style="text-align: center;">N/A</p>
MINIMUM DELIVERY REQUIREMENTS <p style="text-align: center;">N/A</p>	

The terms and conditions of this Contract are those of this Contract Agreement and the vendor's quote dated **May 23, 2001**. In the event of any conflicts between the specifications, terms and conditions indicated by the State and those indicated by the vendor, those of the State take precedence.

Estimated Contract Value: \$472,580.00

**STATE OF MICHIGAN  
 DEPARTMENT OF MANAGEMENT AND BUDGET  
 OFFICE OF PURCHASING  
 P.O. BOX 30026, LANSING, MI 48909  
 OR  
 530 W. ALLEGAN, LANSING, MI 48933**

**CONTRACT NO. 071B1001740  
 between  
 THE STATE OF MICHIGAN  
 and**

NAME & ADDRESS OF VENDOR  <p style="text-align: center;"><b>Enfotech &amp; Consulting, Inc.          11 Princess Road, Unit A          Lawrenceville, NJ 08648</b></p>	TELEPHONE (609)896-9777 <b>Tony Jeng</b> <hr/> VENDOR NUMBER/MAIL CODE <hr/> BUYER (517) 241-1647 <b>Irene L. Pena</b>
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MINIMUM DELIVERY REQUIREMENTS <p style="text-align: center;">N/A</p>	
MISCELLANEOUS INFORMATION: <b>The terms and conditions of this Contract are those of this Contract Agreement and the vendor's quote dated <u>May 23, 2001</u>. In the event of any conflicts between the specifications, terms and conditions indicated by the State and those indicated by the vendor, those of the State take precedence.</b>  <b>Estimated Contract Value: \$472,580.00</b>	

**THIS IS NOT AN ORDER: A Purchase Order Form will be issued only as the requirements of the State Departments are submitted to the Office of Purchasing. Orders for delivery may be issued directly by the State Departments through the issuance of a Purchase Order Form.**

**All terms and conditions of the invitation to bid are made a part hereof.**

<b>FOR THE VENDOR:</b>  _____ Firm Name _____ Authorized Agent Signature _____ Authorized Agent (Print or Type)	<b>FOR THE STATE:</b>  _____ Signature <b>Irene L. Pena, Buyer</b> _____ Name <b>Technology &amp; Professional Services Division</b> _____ Title
--	---



**OFFICE OF PURCHASING  
STATE OF MICHIGAN**

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**DEFINITION OF TERMS**

<b>TERMS</b>	<b>DEFINITIONS</b>
<b>Contract</b>	A binding agreement entered into by the State of Michigan resulting from a vendor's proposal; see also "Blanket Purchase Order."
<b>Contractor</b>	The successful vendor who is awarded a Contract.
<b>DMB</b>	Michigan Department of Management and Budget
<b>RFP</b>	Request For Proposal - A term used by the State to solicit proposals for services such as consulting. Typically used when the requesting agency requires vendor assistance in identifying an acceptable manner of solving a problem.
<b>INVITATION TO BID</b>	Invitation to Bid - A generic form used by the Office of Purchasing to solicit quotations for services or commodities. The Invitation to Bid serves as the document for transmitting the RFP to interested potential vendors.
<b>Successful Vendor</b>	The vendor(s) awarded a Contract as a result of a solicitation.
<b>State</b>	The State of Michigan  For Purposes of Indemnification as set forth in section I-J, State means the State of Michigan, its departments, divisions, agencies, offices, commissions, officers, employees and agents.
<b>Blanket Purchase Order</b>	Alternate term for "Contract" used in the State's Computer system (Michigan Automated Information Network [MAIN])
<b>Expiration</b>	Except where specifically provided for in the Contract, the ending and termination of the contractual duties and obligations of the parties to the Contract pursuant to a mutually agreed upon date.
<b>Cancellation</b>	Ending all rights and obligations of the State and Contractor, except for any rights and obligations that are due and owing.
<b>Work Product</b>	Work Product means any data compilations, reports, and any other media, materials, or other objects or works of authorship created or produced by the Contractor as a result of and in furtherance of performing the services required by this Contract.



**SECTION I  
CONTRACTUAL SERVICES TERMS AND CONDITIONS**

**I-A PURPOSE**

The purpose of this Contract (CONTRACT) is to obtain the products and services necessary to complete the implementation of a system to allow for the electronic submittal of daily and monthly wastewater Discharge Monitoring Reports (DMRs) in lieu of the current paper submissions via the US mail for the Michigan Department of Environmental Quality.

This Contract is the following type:

- Lump sum/fixed price Contract

**I-B TERM OF CONTRACT**

The State of Michigan is not liable for any cost incurred by any vendor prior to signing of a Contract by all parties. The activities (be sure to spell out activity) in the proposed Contract cover the period 8/27/01 through 3/27/02. The State fiscal year is October 1st through September 30th. The prospective Contractor should realize that payments in any given fiscal year are contingent upon enactment of legislative appropriations.

**I-C ISSUING OFFICE**

This CONTRACT is issued by the State of Michigan, Department of Management and Budget (DMB), Office of Purchasing, hereafter known as the Office of Purchasing, for the State of Michigan, Department of Environmental Quality. Where actions are a combination of those of the Office of Purchasing and the Department of Environmental Quality, the authority will be known as the State.

**The Office of Purchasing is the sole point of contact in the State with regard to all procurement and contractual matters relating to the services described herein.** The Office of Purchasing is the only office authorized to change, modify, amend, alter, clarify, etc., the prices, specifications, terms, and conditions of this Contract and any Contract(s) awarded as a result of this Request. The OFFICE OF PURCHASING will remain the SOLE POINT OF CONTACT throughout the procurement process, until such time as the Director of Purchasing shall direct otherwise in writing. See Paragraph II-C below. All communications concerning this procurement must be addressed to:



**Irene Pena, Buyer**

Technology and Professional Services Division  
 DMB, Office of Purchasing  
 2nd Floor, Mason Building  
 P.O. Box 30026  
 Lansing, MI 48909  
[Penai1@state.mi.us](mailto:Penai1@state.mi.us)  
 (517) 241-1647

**I-D CONTRACT ADMINISTRATOR**

Upon receipt at the Office of Purchasing of the properly executed Contract Agreement, it is anticipated that the Director of Purchasing will direct that the person named below or any other person so designated be authorized to administer the Contract on a day-to-day basis during the term of the Contract. However, administration of this Contract implies no authority to change, modify, clarify, amend, or otherwise alter the prices, terms, conditions, and specifications herein. That authority is retained by the Office of Purchasing. The Contract Administrator for this project is:

**Michael Beulac, Information Technology Manager**  
**Surface Water Quality Division**  
**Michigan Department of Environmental Quality**  
**P. O. Box 30273**  
**Lansing, MI 48909-7773**  
[beulacm@state.mi.us](mailto:beulacm@state.mi.us)  
**(517) 241-7808**

**I-E COST LIABILITY**

The State of Michigan assumes no responsibility or liability for costs incurred by the Contractor prior to the signing of this Contract agreement. Total liability of the State is limited to the terms and conditions herein.

**I-F CONTRACTOR RESPONSIBILITIES**

The Contractor will be required to assume responsibility for all contractual activities offered in their proposal whether or not that Contractor performs them. Further, the State will consider the Prime Contractor to be the sole point of contact with regard to contractual matters, including but not limited to payment of any and all costs resulting from the Contract. If any part of the work is to be subcontracted, the contractor must notify the state and identify the subcontractor(s), including firm name and address, contact person, complete description of work to be subcontracted, and descriptive information concerning subcontractor's organizational abilities. The State reserves the right to approve subcontractors for this project and to require the Contractor to replace subcontractors found to be unacceptable. The Contractor is totally responsible for adherence by the subcontractor to all provisions of the Contract.



**I-G NEWS RELEASES**

News releases pertaining to this document or the services, study, data, or project to which it relates will not be made without prior written State approval, and then only in accordance with the explicit written instructions from the State. No results of the program are to be released without prior approval of the State and then only to persons designated.

**I-H DISCLOSURE**

All information in a vendor’s proposal and the resulting Contract is subject to the provisions of the Freedom of Information Act, 1976 Public Act No. 442, as amended, MCL 15.231, *et seq.*

**I-I ACCOUNTING RECORDS**

The Contractor will be required to maintain all pertinent financial and accounting records and evidence pertaining to the Contract in accordance with generally accepted principles of accounting and other procedures specified by the State of Michigan. Financial and accounting records shall be made available, upon request, to the State of Michigan, its designees, or the Michigan Auditor General at any time during the Contract period and any extension thereof, and for three (3) years from the expiration date and final payment on the Contract or extension thereof.

**I-J INDEMNIFICATION**

A. General Indemnification

Upon receipt of written notice, as required herein, the CONTRACTOR shall indemnify, defend and hold harmless the State, its departments, divisions, agencies, sections, commissions, officers, employees and agents from and against all losses, liabilities, penalties, fines, damages and claims (including taxes), and all related costs and expenses (including reasonable attorneys’ fees and disbursements and costs of investigation, litigation, settlement, judgments, interest and penalties), arising from or in connection with any of the following:

- (1) any claim, demand, action, citation or legal proceeding against the State, its departments, divisions, agencies, sections, commissions, officers, employees and agents for any negligence or wrongful acts arising out of or resulting from (1) the services and products provided or (2) performance of the work, duties, responsibilities, actions or omissions of the CONTRACTOR or any of its subcontractors under this CONTRACT;
- (2) any claim, demand, action, citation or legal proceeding against the State, its departments, divisions, agencies, sections, commissions, officers, employees and agents arising out of or resulting from a material breach by the CONTRACTOR of any representation or warranty made by the CONTRACTOR in the CONTRACT;



- (3) any claim, demand, action, citation or legal proceeding against the State, its departments, divisions, agencies, sections, commissions, officers, employees and agents arising out of or related to occurrences that the CONTRACTOR is required to insure against as provided for in this CONTRACT;
- (4) any claim, demand, action, citation or legal proceeding against the State, its departments divisions, agencies, sections, commissions, officers, employees and agents arising out of or resulting from the death or bodily injury of any person, or the damage, loss or destruction of any real or tangible personal property, in connection with the performance of services by the CONTRACTOR, by any of its subcontractors, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable; provided, however, that this indemnification obligation shall not apply to the extent, if any, that such death, bodily injury or property damage is caused by the negligence or reckless or intentional wrongful conduct of the State;
- (5) any claim, demand, action, citation or legal proceeding against the State, its departments, divisions, agencies, sections, commissions, officers, employees and agents which results from an act or omission of the CONTRACTOR or any of its subcontractors in its or their capacity as an employer of a person.

**B. Patent/Copyright Infringement Indemnification**

The CONTRACTOR shall indemnify, defend and hold harmless the State, its departments, divisions, agencies, sections, commissions, officers, employees and agents from and against all losses, liabilities, penalties, fines, damages (including taxes), and all related costs and expenses (including reasonable attorneys' fees and disbursements and costs of investigation, litigation, settlement, judgments, interest and penalties) incurred in connection with any action or proceeding threatened or brought against the State by a third party to the extent that such action or proceeding is based on a claim that any piece of equipment, software, commodity or service supplied by the CONTRACTOR or its subcontractors, or the operation of such equipment, software, commodity or service, infringes any United States or foreign patent, copyright, trade secret or other proprietary right of any person or entity, which right is enforceable under the laws of the United States. In addition, should the equipment, software, commodity, or service, or the operation thereof, become or in the Contractor's opinion be likely to become the subject of a claim of infringement, the CONTRACTOR shall at the Contractor's sole expense (I) procure for the State the right to continue using the equipment, software, commodity or service or, if such option is not reasonably available to the CONTRACTOR, (ii) replace or modify the same with equipment, software, commodity or service of equivalent function and performance so that it becomes non-infringing, or, if such option is not reasonably available to CONTRACTOR, (iii) accept its return by the State with appropriate credits to the State against the Contractor's charges and reimburse the State for any losses or costs incurred as a consequence of the State ceasing its use and returning it.



C. Indemnification Obligation Not Limited

In any and all claims against the State of Michigan, its departments, divisions, agencies, sections, commissions, officers, employees and agents, by any employee of the CONTRACTOR or any of its subcontractors, the indemnification obligation under the CONTRACT shall not be limited in any way by the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any of its subcontractors under worker's disability compensation acts, disability benefit acts or other employee benefit acts. This indemnification clause is intended to be comprehensive. Any overlap in subclauses, or the fact that greater specificity is provided as to some categories of risk, is not intended to limit the scope of indemnification under any other subclauses.

D. Continuation of Indemnification Obligation

The duty to indemnify will continue in full force and effect notwithstanding the expiration or early termination of the contract with respect to any claims based on facts or conditions which occurred prior to termination.

**I-K NON INFRINGEMENT/COMPLIANCE WITH LAWS**

The Contractor warrants that in performing the services called for by this Contract it will not violate any applicable law, rule, or regulation, any contracts with third parties, or any intellectual rights of any third party, including but not limited to, any United States patent, trademark, copyright, or trade secret.

**I-L WARRANTIES AND REPRESENTATIONS**

The Contract will contain customary representations and warranties by the Contractor, including, without limitation, the following:

1. The Contractor will perform all services in accordance with high professional standards in the industry;
2. The Contractor will use adequate numbers of qualified individuals with suitable training, education, experience and skill to perform the services;
3. The Contractor will use its best efforts to use efficiently any resources or services necessary to provide the services that are separately chargeable to the State;
4. The Contractor will use its best efforts to perform the services in the most cost effective manner consistent with the required level of quality and performance;
5. The Contractor will perform the services in a manner that does not infringe the proprietary rights of any third party;
6. The Contractor will perform the services in a manner that complies with all applicable laws and regulations;



7. The Contractor has duly authorized the execution, delivery and performance of the Contract;
8. The Contractor has not provided any gifts, payments or other inducements to any officer, employee or agent of the State;
9. The Contractor will maintain all equipment and software for which it has maintenance responsibilities in good operating condition and will undertake all repairs and preventive maintenance in accordance with applicable manufacturer's recommendations;
10. The Contractor will use its best efforts to ensure that no viruses or similar items are coded or introduced into the systems used to provide the services;
11. The Contractor will not insert or activate any disabling code into the systems used to provide the services without the State's prior written approval;
12. A ninety (90) day warranty on all purchased and developed software, data conversion programs, and data and customization to the product performed by the contractor.

**I-M TIME IS OF THE ESSENCE**

The Contractor agrees that time is of the essence in the performance of the Contractor's obligations under this Contract.

**I-N STAFFING OBLIGATIONS**

The State reserves the right to approve the Contractor's assignment of Key Personnel to this project and to recommend reassignment of personnel deemed unsatisfactory by the State.

The Contractor shall not remove or reassign, without the State's prior written approval any of the Key Personnel until such time as the Key Personnel have completed all of their planned and assigned responsibilities in connection with performance of the Contractor's obligations under this Contract. The Contractor agrees that the continuity of Key Personnel is critical and agrees to the continuity of Key Personnel. Removal of Key Personnel without the written consent of the State may be considered by the State to be a material breach of this Contract. The prohibition against removal or reassignment shall not apply where Key Personnel must be replaced for reasons beyond the reasonable control of the Contractor including but not limited to illness, disability, resignation or termination of the Key Personnel's employment.

**I-O WORK PRODUCT AND OWNERSHIP**

1. Work Products shall be considered works made by the Contractor for hire by the State and shall belong exclusively to the State and its designees, unless specifically provided otherwise by mutual agreement of the Contractor and the State. If by operation of law any of the Work Product, including all related intellectual property rights, is not owned in its entirety by the State automatically upon creation thereof, the Contractor agrees to assign, and



hereby assigns to the State and its designees the ownership of such Work Product, including all related intellectual property rights. The Contractor agrees to provide, at no additional charge, any assistance and to execute any action reasonably required for the State to perfect its intellectual property rights with respect to the aforementioned Work Product.

2. Notwithstanding any provision of this Contract to the contrary, any preexisting work or materials including, but not limited to, any routines, libraries, tools, methodologies, processes or technologies (collectively, the “Development Tools”) created, adapted or used by the Contractor in its business generally, including any all associated intellectual property rights, shall be and remain the sole property of the Contractor, and the State shall have no interest in or claim to such preexisting work, materials or Development Tools, except as necessary to exercise its rights in the Work Product. Such rights belonging to the State shall include, but not be limited to, the right to use, execute, reproduce, display, perform and distribute copies of and prepare derivative works based upon the Work Product, and the right to authorize others to do any of the foregoing, irrespective of the existence therein of preexisting work, materials and Development Tools, except as specifically limited herein.
3. The Contractor and its subcontractors shall be free to use and employ their general skills, knowledge and expertise, and to use, disclose, and employ any generalized ideas, concepts, knowledge, methods, techniques or skills gained or learned during the course of performing the services under this Contract, so long as the Contractor or its subcontractors acquire and apply such information without disclosure of any confidential or proprietary information of the State, and without any unauthorized use or disclosure of any Work Product resulting from this Contract.

**I-P CONFIDENTIALITY OF DATA AND INFORMATION**

1. All financial, statistical, personnel, technical and other data and information relating to the State’s operation which are designated confidential by the State and made available to the Contractor in order to carry out this Contract, or which become available to the Contractor in carrying out this Contract, shall be protected by the Contractor from unauthorized use and disclosure through the observance of the same or more effective procedural requirements as are applicable to the State. The identification of all such confidential data and information as well as the State’s procedural requirements for protection of such data and information from unauthorized use and disclosure shall be provided by the State in writing to the Contractor. If the methods and procedures employed by the Contractor for the protection of the Contractor’s data and information are deemed by the State to be adequate for the protection of the State’s confidential information, such methods and procedures may be used, with the written consent of the State, to carry out the intent of this section.
2. The Contractor shall not be required under the provisions of this section to keep confidential, (1) information generally available to the public, (2) information released by the State generally, or to the Contractor without restriction, (3) information independently developed or acquired by the Contractor or its



personnel without reliance in any way on otherwise protected information of the State. Notwithstanding the foregoing restrictions, the Contractor and its personnel may use and disclose any information which it is otherwise required by law to disclose, but in each case only after the State has been so notified, and has had the opportunity, if possible, to obtain reasonable protection for such information in connection with such disclosure.

**I-Q REMEDIES FOR BREACH OF CONFIDENTIALITY**

The Contractor acknowledges that a breach of its confidentiality obligations as set forth in section I-P of this Contract, shall be considered a material breach of the Contract. Furthermore the Contractor acknowledges that in the event of such a breach the State shall be irreparably harmed. Accordingly, if a court should find that the Contractor has breached or attempted to breach any such obligations, the Contractor will not oppose the entry of an appropriate order restraining it from any further breaches or attempted or threatened breaches. This remedy shall be in addition to and not in limitation of any other remedy or damages provided by law.

**I-R CONTRACTOR'S LIABILITY INSURANCE**

The Contractor shall purchase and maintain such insurance as will protect him/her from claims set forth below which may arise out of or result from the Contractor's operations under the Contract (Purchase Order), whether such operations be by himself/herself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- (1) Claims under workers' disability compensation, disability benefit and other similar employee benefit act. A non-resident Contractor shall have insurance for benefits payable under Michigan's Workers' Disability Compensation Law for any employee resident of and hired in Michigan; and as respects any other employee protected by workers' disability compensation laws of any other State the Contractor shall have insurance or participate in a mandatory State fund to cover the benefits payable to any such employee.
- (2) Claims for damages because of bodily injury, occupational sickness or disease, or death of his/her employees.
- (3) Claims for damages because of bodily injury, sickness or disease, or death of any person other than his/her employees, subject to limits of liability of not less than \$300,000.00 each occurrence and, when applicable \$1,000,000.00 annual aggregate, for non-automobile hazards and as required by law for automobile hazards.
- (4) Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom, subject to a limit of liability of not less than \$100,000.00 each occurrence for non-automobile hazards and as required by law for automobile hazards.



- (5) Insurance for Subparagraphs (3) and (4) non-automobile hazards on a combined single limit of liability basis shall not be less than \$300,000.00 each occurrence and when applicable, \$1,000,000.00 annual aggregate.

The insurance shall be written for not less than any limits of liability herein specified or required by law, whichever is greater, and shall include contractual liability insurance as applicable to the Contractor's obligations under the Indemnification clause of the Contract (Purchase Order).

**BEFORE STARTING WORK THE CONTRACTOR'S INSURANCE AGENCY MUST FURNISH TO THE DIRECTOR OF THE OFFICE OF PURCHASING, ORIGINAL CERTIFICATE(S) OF INSURANCE VERIFYING LIABILITY COVERAGE. THE CONTRACT OR PURCHASE ORDER NO. MUST BE SHOWN ON THE CERTIFICATE OF INSURANCE TO ASSURE CORRECT FILING.** These Certificates shall contain a provision that coverage's afforded under the policies will not be canceled until at least fifteen days prior written notice bearing the Contract Number or Purchase Order Number has been given to the Director of Purchasing.

**I-S NOTICE AND RIGHT TO CURE**

In the event of a curable breach by the Contractor, the State shall provide the Contractor written notice of the breach and a time period to cure said breach described in the notice. This section requiring notice and an opportunity to cure shall not be applicable in the event of successive or repeated breaches of the same nature or if the State determines in its sole discretion that the breach poses a serious and imminent threat to the health or safety of any person or the imminent loss, damage or destruction of any real or tangible personal property.

**I-T CANCELLATION**

The State may cancel this Contract without further liability or penalty to the State, its departments, divisions, agencies, offices, commissions, officers, agents and employees for any of the following reasons:

1. Material Breach by the Contractor. In the event that the Contractor breaches any of its material duties or obligations under the Contract, which are either not capable of or subject to being cured, or are not cured within the time period specified in the written notice of breach provided by the State, or pose a serious and imminent threat to the health and safety of any person, or the imminent loss, damage or destruction of any real or tangible personal property, the State may, having provided written notice of cancellation to the Contractor, cancel this Contract in whole or in part, for cause, as of the date specified in the notice of cancellation.

In the event that this Contract is cancelled for cause, in addition to any legal remedies otherwise available to the State by law or equity, the Contractor shall be responsible for all costs incurred by the State in canceling the Contract, including but not limited to, State administrative costs, attorneys fees and court costs, and



any additional costs the State may incur to procure the services required by this Contract from other sources. All excess procurement costs and damages shall not be considered by the parties to be consequential, indirect or incidental, and shall not be excluded by any other terms otherwise included in the Contract.

In the event the State chooses to partially cancel this Contract for cause charges payable under this Contract will be equitably adjusted to reflect those services that are cancelled.

In the event this Contract is cancelled for cause pursuant to this section, and it is therefore determined, for any reason, that the Contractor was not in breach of contract pursuant to the provisions of this section, that cancellation for cause shall be deemed to have been a cancellation for convenience, effective as of the same date, and the rights and obligations of the parties shall be limited to that otherwise provided in the Contract for a cancellation for convenience.

2. Cancellation For Convenience By the State. The State may cancel this Contract for its convenience, in whole or part, if the State determines that such a cancellation is in the State's best interest. Reasons for such cancellation shall be left to the sole discretion of the State and may include, but not necessarily be limited to (a) the State no longer needs the services or products specified in the Contract, (b) relocation of office, program changes, changes in laws, rules, or regulations make implementation of the Contract services no longer practical or feasible, and (c) unacceptable prices for additional services requested by the State. The State may cancel the Contract for its convenience, in whole or in part, by giving the Contractor written notice 30 days prior to the date of cancellation. If the State chooses to cancel this Contract in part, the charges payable under this Contract shall be equitably adjusted to reflect those services that are cancelled.
  
3. Non-Appropriation. In the event that funds to enable the State to effect continued payment under this Contract are not appropriated or otherwise made available. The Contractor acknowledges that, if this Contract extends for several fiscal years, continuation of this Contract is subject to appropriation or availability of funds for this project. If funds are not appropriated or otherwise made available, the State shall have the right to cancel this Contract at the end of the last period for which funds have been appropriated or otherwise made available by giving written notice of cancellation to the Contractor. The State shall give the Contractor written notice of such non-appropriation or unavailability within 30 days after it receives notice of such non-appropriation or unavailability.
  
4. Criminal Conviction. In the event the Contractor, an officer of the Contractor, or an owner of a 25% or greater share of the Contractor, is convicted of a criminal offense incident to the application for or performance of a State, public or private Contract or subcontract; or convicted of a criminal offense including but not limited to any of the following: embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, attempting to influence a public employee to breach the ethical conduct standards for State of Michigan employees; convicted under State or federal antitrust statutes; or convicted of any



other criminal offense which in the sole discretion of the State, reflects upon the Contractor's business integrity.

5. Approval(s) Rescinded. In the event any final administrative or judicial decision or adjudication disapproves a previously approved request for purchase of personal services pursuant to Constitution 1963, Article 11, section 5, and Civil Service Rule 4-6. Cancellation may be in whole or in part and may be immediate as of the date of the written notice to the Contractor or may be effective as of the date stated in such written notice.

**I-U RIGHTS AND OBLIGATIONS UPON CANCELLATION**

1. If the Contract is canceled by the State for any reason, the Contractor shall, (a) stop all work as specified in the notice of cancellation, (b) take any action that may be necessary, or that the State may direct, for preservation and protection of Work Product or other property derived or resulting from the Contract that may be in the Contractor's possession, (c) return all materials and property provided directly or indirectly to the Contractor by any entity, agent or employee of the State, (d) transfer title and deliver to the State, unless otherwise directed by the Contract Administrator or his or her designee, all Work Product resulting from the Contract, and (e) take any action to mitigate and limit any potential damages, or requests for Contractor adjustment or cancellation settlement costs, to the maximum practical extent, including, but not limited to, canceling or limiting as otherwise applicable, those subcontracts, and outstanding orders for material and supplies resulting from the canceled Contract.
  
2. In the event the State cancels this Contract prior to its expiration for its own convenience, the State shall pay the Contractor for all charges due for services provided prior to the date of cancellation and if applicable as a separate item of payment pursuant to the Contract, for partially completed Work Product, on a percentage of completion basis. In the event of a cancellation for cause, or any other reason under the Contract, the State will pay, if applicable, as a separate item of payment pursuant to the Contract, for all partially completed Work Products, to the extent that the State requires the Contractor to submit to the State any such deliverables, and for all charges due under the Contract for any cancelled services provided by the Contractor prior to the cancellation date. All completed or partially completed Work Product prepared by the Contractor pursuant to this Contract shall, at the option of the State, become the State's property, and the Contractor shall be entitled to receive just and fair compensation for such Work Product. Regardless of the basis for the cancellation, the State shall not be obligated to pay, or otherwise compensate, the Contractor for any lost expected future profits, costs or expenses incurred with respect to Services not actually performed for the State.
  
3. If any such cancellation by the State is for cause, the State shall have the right to set-off against any amounts due the Contractor, the amount of any damages for which the Contractor is liable to the State under this Contract or pursuant to law and equity.



4. Upon a good faith cancellation, the State shall have the right to assume, at its option, any and all subcontracts and agreements for services and materials provided under this Contract, and may further pursue completion of the Work Product under this Contract by replacement contract or otherwise as the State may in its sole judgment deem expedient.

**I-V EXCUSABLE FAILURE**

1. Neither party shall be liable for any default or delay in the performance of its obligations under the Contract if and to the extent such default or delay is caused, directly or indirectly, by: fire, flood, earthquake, elements of nature or acts of God; riots, civil disorders, rebellions or revolutions in any country; the failure of the other party to perform its material responsibilities under the Contract (either itself or through another contractor); injunctions (provided the injunction was not issued as a result of any fault or negligence of the party seeking to have its default or delay excused); or any other cause beyond the reasonable control of such party; provided the non-performing party and its subcontractors are without fault in causing such default or delay, and such default or delay could not have been prevented by reasonable precautions and cannot reasonably be circumvented by the non-performing party through the use of alternate sources, workaround plans or other means, including disaster recovery plans. In such event, the non-performing party will be excused from any further performance or observance of the obligation(s) so affected for as long as such circumstances prevail and such party continues to use its best efforts to recommence performance or observance whenever and to whatever extent possible without delay provided such party promptly notifies the other party in writing of the inception of the excusable failure occurrence, and also of its abatement or cessation.
  
2. If any of the above enumerated circumstances substantially prevent, hinder, or delay performance of the services necessary for the performance of the State's functions for more than 14 consecutive days, and the State determines that performance is not likely to be resumed within a period of time that is satisfactory to the State in its reasonable discretion, then at the State's option: (a) the State may procure the affected services from an alternate source, and the State shall not be liable for payments for the unperformed services under the Contract for so long as the delay in performance shall continue; (b) the State may cancel any portions of the Contract so affected and the charges payable thereunder shall be equitably adjusted to reflect those services canceled; or (c) the Contract will be canceled without liability of the State to the Contractor as of the date specified by the State in a written notice of cancellation to the Contractor. The Contractor will not have the right to any additional payments from the State as a result of any excusable failure occurrence or to payments for services not rendered as a result of the excusable failure condition. Defaults or delays in performance by the Contractor which are caused by acts or omissions of its subcontractors will not relieve the Contractor of its obligations under the Contract except to the extent that a subcontractor is itself subject to any excusable failure condition described above and the Contractor cannot reasonably circumvent the effect of the subcontractor's default or delay in performance through the use of alternate sources, workaround plans or other means.



**I-W ASSIGNMENT**

The Contractor shall not have the right to assign this Contract or to assign or delegate any of its duties or obligations under this Contract to any other party (whether by operation of law or otherwise), without the prior written consent of the State. Any purported assignment in violation of this section shall be null and void. Further, the Contractor may not assign the right to receive money due under the Contract without the prior written consent of the State Purchasing Director.

**I-X DELEGATION**

The Contractor shall not delegate any duties or obligations under this Contract to a subcontractor other than a subcontractor named in the bid unless the State Purchasing Director has given written consent to the delegation.

**I-Y NON-DISCRIMINATION CLAUSE**

In the performance of any Contract or purchase order resulting herefrom, the vendor agrees not to discriminate against any employee or applicant for employment, with respect to their hire, tenure, terms, conditions or privileges of employment, or any matter directly or indirectly related to employment, because of race, color, religion, national origin, ancestry, age, sex, height, weight, marital status, physical or mental disability unrelated to the individual's ability to perform the duties of the particular job or position. The vendor further agrees that every subcontract entered into for the performance of any Contract or purchase order resulting herefrom will contain a provision requiring non-discrimination in employment, as herein specified, binding upon each subcontractor. This covenant is required pursuant to the Elliot Larsen Civil Rights Act, 1976 Public Act 453, as amended, MCL 37.2101, *et seq.* and the Persons with Disabilities Civil Rights Act, 1976 Public Act 220, as amended, MCL 37.1101, *et seq.* and any breach thereof may be regarded as a material breach of the Contract or purchase order.

**I-Z MODIFICATION OF SERVICE**

The Director of Purchasing reserves the right to modify this service during the course of this Contract. Such modification may include adding or deleting tasks that this service shall encompass and/or any other modifications deemed necessary.

This CONTRACT may not be revised, modified, amended, extended, or augmented, except by a writing executed by the parties hereto, and any breach or default by a party shall not be waived or released other than in writing signed by the other party.

The State reserves the right to request from time to time, any changes to the requirements and specifications of the Contract and the work to be performed by the Contractor under the Contract. The Contractor shall provide a change order process and all requisite forms. The State reserves the right to negotiate the process during contract negotiation. At a minimum, the State would like the Contractor to provide a detailed outline of all work to be done, including tasks necessary to accomplish the deliverables, timeframes, listing of key personnel assigned, estimated hours for each individual per task, and a complete and detailed cost justification.



1. Within five (5) business days of receipt of a request by the State for any such change, or such other period of time as to which the parties may agree mutually in writing, the Contractor shall submit to the State a proposal describing any changes in products, services, timing of delivery, assignment of personnel, and the like, and any associated price adjustment. The price adjustment shall be based on a good faith determination and calculation by the Contractor of the additional cost to the Contractor in implementing the change request less any savings realized by the Contractor as a result of implementing the change request. The Contractor's proposal shall describe in reasonable detail the basis for the Contractor's proposed price adjustment, including the estimated number of hours by task by labor category required to implement the change request.
  
2. If the State accepts the Contractor's proposal, it will issue a change notice and the Contractor will implement the change request described therein. The Contractor will not implement any change request until a change notice has been issued validly. The Contractor shall not be entitled to any compensation for implementing any change request or change notice except as provided explicitly in an approved change notice.
  
3. If the State does not accept the Contractor's proposal, the State may:
  - a) withdraw its change request; or
  - b) modify its change request, in which case the procedures set forth above will apply to the modified change request.

If the State requests or directs the Contractor to perform any activities that are outside the scope of the Contractor's responsibilities under the Contract ("New Work"), the Contractor must notify the State promptly, and before commencing performance of the requested activities, that it believes the requested activities are New Work. If the Contractor fails to so notify the State prior to commencing performance of the requested activities, any such activities performed before notice is given by the Contractor shall be conclusively considered to be In-scope Services, not New Work.

If the State requests or directs the Contractor to perform any services or functions that are consistent with and similar to the services being provided by the Contractor under the Contract, but which the Contractor reasonably and in good faith believes are not included within the scope of the Contractor's responsibilities and charges as set forth in the Contract, then prior to performing such services or function, the Contractor shall promptly notify the State in writing that it considers the services or function to be an "Additional Service" for which the Contractor should receive additional compensation. If the Contractor does not so notify the State, the Contractor shall have no right to claim thereafter that it is entitled to additional compensation for performing such services or functions. If the Contractor does so notify the State, then such a service or function shall be governed by the change request procedure set forth in the preceding paragraph.

IN THE EVENT PRICES ARE NOT ACCEPTABLE TO THE STATE, THE CONTRACT SHALL BE SUBJECT TO COMPETITIVE BIDDING BASED UPON THE NEW SPECIFICATIONS.

**I-AA NOTICES**



Any notice given to a party under this Contract must be written and shall be deemed effective, if addressed to such party as addressed below upon (i) delivery, if hand delivered; (ii) receipt of a confirmed transmission by facsimile if a copy of the notice is sent by another means specified in this section; (iii) the third (3rd) Business Day after being sent by U.S. mail, postage pre-paid, return receipt requested; or (iv) the next Business Day after being sent by a nationally recognized overnight express courier with a reliable tracking system.

For the Contractor:

For the State: *Irene Pena; DMB Office of Purchasing; P.O. Box 30026; Lansing, MI 48909*

Either party may change its address where notices are to be sent giving written notice in accordance with this section.

**I-BB ENTIRE AGREEMENT**

The contents of this document, the State of Michigan’s Invitation to Bid and the vendor's proposal will become contractual obligations, if a Contract ensues. Failure of the successful vendor to accept these obligations may result in cancellation of the award.

This Contract document shall represent the entire agreement between the parties and supersedes all proposals or other prior agreements, oral or written, and all other communications between the parties relating to this subject.

**I-CC NO WAIVER OF DEFAULT**

The failure of a party to insist upon strict adherence to any term of this CONTRACT agreement shall not be considered a waiver or deprive the party of the right thereafter to insist upon strict adherence to that term, or any other term, of the Contract.

**I-DD SEVERABILITY**

Each provision of the Contract shall be deemed to be severable from all other provisions of the Contract and, if one or more of the provisions of the Contract shall be declared invalid, the remaining provisions of the Contract shall remain in full force and effect.

**I-EE HEADINGS**

Captions and headings used in the Contract are for information and organization purposes. Captions and headings, including inaccurate references, do not, in any way, define or limit the requirements or terms and conditions of this Contract.



**I-FF RELATIONSHIP OF THE PARTIES**

The relationship between the State and the Contractor is that of client and independent Contractor. No agent, employee, or servant of the Contractor or any of its subcontractors shall be or shall be deemed to be an employee, agent, or servant of the State for any reason. The Contractor will be solely and entirely responsible for its acts and the acts of its agents, employees, servants and subcontractors during the performance of this Contract.

**I-GG UNFAIR LABOR PRACTICES**

Pursuant to 1980 Public Act 278, as amended, MCL 423.231, et seq, the State shall not award a Contract or subcontract to an employer whose name appears in the current register of employers failing to correct an unfair labor practice compiled pursuant to section 2 of the Act. This information is compiled by the United States National Labor Relations Board.

A Contractor of the State, in relation to the Contract, shall not enter into a Contract with a subcontractor, manufacturer, or supplier whose name appears in this register. Pursuant to section 4 of 1980 Public Act 278, MCL 423.324, the State may void any Contract if, subsequent to award of the Contract, the name of the Contractor as an employer, or the name of the subcontractor, manufacturer or supplier of the Contractor appears in the register.

**I-HH SURVIVOR**

Any provisions of the Contract that impose continuing obligations on the parties including, but not limited to the Contractor's indemnity and other obligations shall survive the expiration or cancellation of this Contract for any reason.

**I-II GOVERNING LAW**

This Contract shall in all respects be governed by, and construed in accordance with, the laws of the State of Michigan. Any dispute arising herein shall be resolved in the State of Michigan.

**I-JJ YEAR 2000 SOFTWARE COMPLIANCE**

The vendor warrants that all software for which the vendor either sells or licenses to the State of Michigan and used by the State prior to, during or after the calendar year 2000, includes or shall include, at no added cost to the State, design and performance so the State shall not experience software abnormality and/or the generation of incorrect results from the software, due to date oriented processing, in the operation of the business of the State of Michigan.

The software design, to insure year 2000 compatibility, shall include, but is not limited to: data structures (databases, data files, etc.) that provide 4-digit date century; stored data that contain date century recognition, including, but not limited to, data stored in databases and hardware device internal system dates; calculations and program logic



(e.g., sort algorithms, calendar generation, event recognition, and all processing actions that use or produce date values) that accommodates same century and multi-century formulas and date values; interfaces that supply data to and receive data from other systems or organizations that prevent non-compliant dates and data from entering any State system; user interfaces (i.e., screens, reports, etc.) that accurately show 4 digit years; and assurance that the year 2000 shall be correctly treated as a leap year within all calculation and calendar logic.

**I-KK CONTRACT DISTRIBUTION**

The Office of Purchasing shall retain the sole right of Contract distribution to all State agencies and local units of government unless other arrangements are authorized by the Office of Purchasing.

**I-LL STATEWIDE CONTRACTS**

If the contract is for the use of more than one agency and if the goods or services provided under the contract do not meet the form, function and utility required by an agency, that agency may, subject to state purchasing policies, procure the goods or services from another source.

**I-MM ADHERANCE TO PM METHODOLOGY STANDARD**

The State has adopted a standard, documented Project Management Methodology (PMM) for use on all Information Technology (IT) based projects. This policy is referenced in the document titled “Project Management Methodology” – DMB Administrative Guide Procedure 1380.02 issued June 2000. Vendors may obtain a copy of this procedure by contacting the DMB Office of Information Technology Solutions. The State of Michigan Project Management Methodology can be obtained from the DMB Office of Project Management’s website at <http://www.state.mi.us/cio/opm>.

The contractor shall use the State’s PMM to manage State of Michigan Information Technology (IT) based projects. The requesting agency will provide the applicable documentation and internal agency processes for the methodology. If the vendor requires training on the methodology, those costs shall be the responsibility of the vendor, unless otherwise stated.

**I-NN STOP WORK**

1. The State may, at any time, by written stop work order to the Contractor, require that the Contractor stop all, or any part, of the work called for by this Contract for a period of up to 90 days after the stop work order is delivered to the Contractor, and for any further period to which the parties may agree. The stop work order shall be specifically identified as such and shall indicate that it is issued under this section. Upon receipt of the stop work order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the stop work order during the period of work stoppage. Within the period of the stop work order, the State shall either:
  - a) Cancel the stop work order; or



- b) Cancel the work covered by the stop work order as provided in the cancellation section of this Contract.
  
- 2. If a stop work order issued under this section is canceled or the period of the stop work order or any extension thereof expires, the Contractor shall resume work. The State shall make an equitable adjustment in the delivery schedule, the contract price, or both, and the Contract shall be modified, in writing, accordingly, if:
  - a) The stop work order results in an increase in the time required for, or in the Contractor's costs properly allocable to the performance of any part of this Contract; and
  - b) The Contractor asserts its right to an equitable adjustment within 30 days after the end of the period of work stoppage; provided, that if the State decides the facts justify the action, the State may receive and act upon a proposal submitted at any time before final payment under this Contract.
  
- 3. If the stop work order is not canceled and the work covered by the stop work order is canceled for reasons other than material breach, the State shall allow reasonable costs resulting from the stop work order in arriving at the cancellation settlement.
  
- 4. If a stop work order is not canceled and the work covered by the stop work order is canceled for material breach, the State shall not allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop work order.
  
- 5. An appropriate equitable adjustment may be made in any related contract of the Contractor that provides for adjustment and is affected by any stop work order under this section. The State shall not be liable to the Contractor for loss of profits because of a stop work order issued under this section.

**I-OO PERFORMANCE AND RELIABILITY EVALUATION (PARE)**

When the State requires that a performance and reliability evaluation (PARE) is to be performed, the standard of performance for the PARE will be closely monitored during the acceptance period.

In the event that the PARE is for components only, all references to systems (processors) should be changed to components.

The Performance and Reliability Evaluation will consist of two phases.

A. PHASE I

The first phase shall be comprised of a specification compliance review of the equipment listed on the ordering documents. Such equipment shall be checked for total compliance with all required specifications of the RFQ and resulting Contract. In the event that the State determines that any component or feature of the delivered equipment or software does not comply with the mandatory specifications of the RFQ



and Contract, the State shall so notify the Contractor, allowing 14 calendar days for rectification by the Contractor. Should the Contractor be unable to rectify the deficiency, the State reserves the right to cancel the ordering document. Should the equipment and software pass the specification conformance review, the equipment shall enter Phase II of the PARE.

**B. PHASE II**

**(1) Determination of System Readiness**

a. Prior to the PARE, a committee of three persons will be formed to evaluate the system's performance on a daily basis. The committee will consist of one Contractor representative and two State personnel.

b. The PARE will begin on the installation dates when the Contractor certifies that the equipment is ready for use by the State.

**(2) During the PARE:**

All rerun times resulting from equipment failure and preventive maintenance shall be excluded from the performance hours.

a. All reconfiguration and reload time shall be excluded from the performance hours.

b. If files are destroyed as a result of a problem with Contractor equipment and must be rebuilt, the time required to rebuild the files will be considered "down-time" for the system.

c. If the Contractor requests access to failed equipment and the State refuses, then such maintenance will be deferred to a mutually agreeable time and the intervening time will not count against the PARE.

d. A functional benchmark demonstration will be run for the PARE Committee to confirm that the installed system is capable of performing the same functions that were demonstrated. This run must be completed to the satisfaction of the PARE Committee.

**C. STANDARD OF PERFORMANCE**

a. The performance period (a period of thirty consecutive calendar days) shall commence on the installation date, at which time the operational control becomes the responsibility of the State. It is not required that one thirty day period expire in order for another performance period to begin.

b. If each component operates at an average level of effectiveness of 95 percent or more for a period of 30 consecutive days from the commencement date of the performance period, it shall be deemed to have met the State's standard of performance period. The State shall notify the



Contractor in writing of the successful completion of the performance period. The average effectiveness level is a percentage figure determined by dividing the total operational use time by the total operational use time plus associated down-time. In addition, the equipment shall operate in substantial conformance with the Contractor's published specifications applicable to such equipment on the date of this Agreement. Equipment added by amendment to this contract shall operate in conformance with the Contractor's published specifications applicable to such equipment at the time of such amendment.

c. During the successful performance period, all rerun time resulting from equipment failure and preventive maintenance time shall be excluded from the performance period hours. All reconfigurations and reload time shall be excluded from the performance hours. Equipment failure down-time shall be measured by those intervals during the performance period between the time that the Contractor is notified of equipment failure and the time that the equipment is returned to the State in operating condition.

d. During the successful performance period, a minimum of 80 hours of operational use time on each component will be required as a basis for computation of the average effectiveness level. However, in computing the effectiveness level, the actual number of operational use hours shall be used when in excess of the minimum stated above.

e. No more than one hour will accrue to the performance hours during any one wall clock hour.

f. Equipment shall not be accepted by the State and no charges will be paid by the State until the standard of performance is met.

g. When a system involves on-line machines which are remote to the basic installation, the required effectiveness level shall apply separately to each component in the system.

h. Promptly upon successful completion of the performance period, the State shall notify the Contractor in writing of acceptance of the equipment and authorize the monthly payments to begin on the first day of the successful performance period.

i. If successful completion of the performance period is not attained within 90 days of the installation date, the State shall have the option of terminating the Contract, or continuing the performance tests. The State's option to terminate the contract shall remain in effect until such time as a successful completion of the performance period is attained. The Contractor shall be liable for all outbound preparation and shipping costs for contracted items returned under this clause.

j. The PARE will be complete when the equipment has met the required effectiveness level for the prescribed time period.



**SECTION II**  
**WORK STATEMENT**

**II-A BACKGROUND/PROBLEM STATEMENT**

The Department of Environmental Quality is committed to implementing a system to allow for the electronic submittal of daily and monthly wastewater Discharge Monitoring Reports (DMRs) in lieu of the current process of paper submissions via the US mail. A DMR is required through authority conferred by the US Environmental Protection Agency (EPA) on the MI DEQ by sections 3104 and 3106 of Act #451 of Public Acts of 1994, as amended (being sections 324.3104 and 324.3106 of the Michigan Compiled Laws). All DMRs submitted by wastewater facilities to the states are later submitted by the states to EPA's NPDES permitting program called Permit Compliance System (PCS).

**II-B OBJECTIVES**

General:

This Contract is to provide a system project for the implementation of an information management system to manage permit, monitoring, and compliance information required under the National Pollution Discharge Elimination System (NPDES).

Specific:

- The capability to electronically submit both monthly and daily DMRs from a regulated wastewater generating facility to the Department's NMS database.
- The ability to generate an output XML file of DMR data compatible with EPA's Permit Compliance System (PCS) communication protocol.
- An unambiguous and legal alternative for receiving self-monitoring data from the regulated wastewater community.
- Improve accuracy of compliance data by eliminating potential errors that otherwise would be introduced through manual and/or redundant data entry.
- Save the Department administration costs by reducing and better utilizing resources required for encoding and managing paper-based DMR reports.
- Reduce the wastewater discharge facility's compliance costs by offering a streamlined reporting method using readily available computer tools.
- Improve the overall effectiveness of the Department's wastewater discharge program with faster responses for data analysis, compliance assessment, enforcement support, permit review and re-issuance, and other water quality management decision-making.

**II-C TASKS**

The following is a preliminary analysis of the major tasks involved for developing the end product of this project. Include any additional steps, sub tasks or elements deemed necessary to permit the development of alternative approaches or the application of proprietary analytical techniques the Contractor provided within their proposal response.

Please refer to attached vendor proposal.



**II-D PROJECT CONTROL AND REPORTS**

1. Project Control

- a. The Contractor will carry out this project under the direction and control of the Department of Environmental Quality.
- b. Although there will be continuous liaison with the Contractor team, the client agency's project director will meet **weekly** as a minimum, with the Contractor's project manager for the purpose of reviewing progress and providing necessary guidance to the Contractor in solving problems which arise.
- c. The Contractor will submit brief written **bi-weekly** summaries of progress which outline the work accomplished during the reporting period; work to be accomplished during the subsequent reporting period; problems, real or anticipated, which should be brought to the attention of the client agency's project director; and notification of any significant deviation from previously agreed-upon work plans. A copy of this report will be forwarded to the named buyer in the Office of Purchasing.
- d. Within five (5) working days of the award of the Contract, the Contractor will submit to the Department of Environmental Quality project director for final approval a work plan. This final implementation plan must be in agreement with section IV-C subsection 2 of the Invitation to Bid, as proposed by the vendor and accepted by the State for Contract, and must include the following:
  - (1) The Contractor's project organizational structure.
  - (2) The Contractor's staffing table with names and title of personnel assigned to the project. This must be in agreement with staffing of accepted proposal. Necessary substitutions due to change of employment status and other unforeseen circumstances may only be made with prior approval of the State.
  - (3) The project breakdown showing sub-projects, activities and tasks, and resources required and allocated to each.
  - (4) The time-phased plan in the form of a graphic display, showing each event, task, and decision point in your work plan.

2. Reports

This portion of the CONTRACT should be specific as to the content, frequency, and number of copies of each report required. If the project has included the development of a computerized system, documentation requirements as provided for in current DMB standards must be followed (as regards computerized systems only).

**II-E PRICE PROPOSAL**



All prices/rates quoted in vendor's response to the Invitation to Bid and included within this CONTRACT, will be firm for the duration of the Contract. No price changes will be permitted.

**II-F CONTRACT PAYMENT**

The specific payment schedule for this CONTRACT will be mutually agreed upon by the State and the Contractor(s). The schedule should show payment amount and should reflect actual work done by the payment dates, less any penalty cost charges accrued by those dates. As a general policy statements shall be forwarded to the designated representative by the 15th day of the following month.

**Proposal for**  
**NMS & e-DMR Information System**

**Submitted to**  
**Michigan Department of Environmental Quality**  
**Surface Water Quality Division**  
**Lansing, Michigan**

Prepared by  
enfoTech & Consulting Inc.  
Lawrenceville, New Jersey 08648  
(609) 896-9777  
May 23, 2001



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## 1. Project Overview

This proposal is prepared for the Surface Water Quality Division of the Michigan Department of Environmental Quality (MDEQ) to retain enfoTech & Consulting Inc. (enfoTech) to perform a system project for the implementation of an information management system to manage permit, monitoring, and compliance information required under the National Pollution Discharge Elimination System (NPDES).

Project objectives include:

- The capability to electronically submit both monthly and daily DMRs from a regulated wastewater generating facility to the Department's NMS database
- The ability to generate an output XML file of DMR data compatible with EPA's Permit Compliance System (PCS) communication protocol.
- An unambiguous and legal alternative for receiving self-monitoring data from the regulated wastewater community.
- Improve accuracy of compliance data by eliminating potential errors that otherwise would be introduced through manual and/or redundant data entry.
- Save the Department administration costs by reducing and better utilizing resources required for encoding and managing paper-based DMR reports.
- Reduce the wastewater discharge facility's compliance costs by offering a streamlined reporting method using readily available computer tools.
- Improve the overall effectiveness of the Department's wastewater discharge program with faster responses for data analyses, compliance assessment, enforcement support, permit review and re-issuance, and other water quality management decision-making.

The deliverables of this project shall include the following:

**a. Enhancements to the NMS System:**

- Migrate the NMS database from SQL Server 7.0 to SQL Server 2000, and the application system tool from Power Builder to Microsoft Visual Basic
- Add the tables necessary to store the daily monitoring data as supplied by the Permittee

- Add the tables and screens to create and maintain monitoring requirement data and automate the creation of permit
- Allow for single entry point parameters and limits
- Develop the core NMS system using Windows 2000 DNA architecture
- Implement a database Server Clustering architecture to provide high availability of the Server service and to minimize system downtime

**b. Create the e-DMR System Including:**

- Development of a File transfer protocol
- Automated data screening and validation of daily monitoring data
- Routines to read the monthly data from daily and calculated source data
- Database to store system administration data
- Small application to administer and screen the raw data
- Method of sending notifications to Permittees
- Provide a data entry utility for use by the Permittee
- Development of end user documentation and quick reference guides
- Development of system administration documentation
- File archiving methodology
- Utilize PKI infrastructure to provide better system security management
- Implement a Internet Server Network Load Balanced Server clustering architecture to provide high availability and better system performance of Server services

## 2. Project Background

The Surface Water Quality Division issues wastewater discharge permits and receives discharge-monitoring reports (DMRs) that are required by the Michigan Department of Environmental Quality (DEQ) Wastewater Program under the Great Lakes Initiative -- GLI (Part 8. Water Quality-Based Effluent Limit Development for Toxic Substances) July 11, 1997 and by authority conferred on the DEQ by sections 3104 and 3106 of Act #451 of Public Acts of 1994, as amended (being sections 324.3104 and 324.3106 of the Michigan Compiled Laws).

The Division receives significant reporting information submitted monthly from approximately 1,200 permitted wastewater facilities. The data is manually entered into the Department's Permit Compliance System (with portions of the data entered into the NPDES Management System (NMS)) database to support compliance, permitting, and environmental planning programs.

The current permit submission process causes significant inefficiency problems for both the permittee and the state permit program managers. Many of the permittees, especially the medium to large facilities, must perform duplicative data entry to maintain their own database and to satisfy the state/federal permit requirements. Industry rightly claims that this is needlessly costly and inefficient. Similarly, all submitted permit data is then re-keyed by either SWQD or contractual staff and then batch uploaded to the US EPA's Permit Compliance System (PCS) to satisfy EPA requirements. Depending on budget constraints and staff priorities, data coding is often backlogged for years.

The Surface Water Quality Division must streamline the efforts of collecting wastewater discharge monitoring data from its regulated facilities. A remedy to this problem has been repeatedly requested by industry. This is a duplication of effort for both the private and public sector that should, and can only, be remedied by the MDEQ. Duplication, in addition to adding business process costs for all parties, further adds to data coding error and related inaccuracies.

The solution to this inefficiency is:

- A comprehensive permit and DMR data management system,
- An electronic process to allow the Division to electronically receive required daily and monthly DMR data from wastewater facilities, and
- A compliance evaluation to detect discharge violations and an enforcement tracking system to manage enforcement.

Currently, the Division has developed an in-house computer system called NMS (NPDES Management System) to manage general wastewater facilities, and their discharge outfall data. The NMS is developed with SQL Server 7.0 database and Power Builder software for the application system.

Approaches and technologies recommended for this project are detailed in the "Project Recommendations and Approaches" section.



### 3. Project Recommendations and Project Approaches

EnfoTech recommends a comprehensive project approach to work with the Division to accomplish the project objectives. We recommend an overall systematic project approach as follows:

1. Revise and develop requirement specifications and system documentation for the existing NMS system
2. Develop specifications for the proposed new modules
3. Complete NMS database enhancements
4. Perform NMS migration and enhancements, develop proposed new modules, and prepare for the e-DMR pilot stage at the same time
5. Migrate the NMS to SQL Server 2000, Visual Basic, and Windows 2000 environment
6. Complete e-DMR pilot stage
7. Complete e-DMR State-wide implementation
8. Document system design and development

There are five major project components planned for the Project as follows:

#### **Project Component #1 (NMS migration and enhancements):**

**Object:** (1) Migrate NMS to SQL Server 2000 and Microsoft latest Visual Basic, and (2) development of group 1 and 2 enhancements (see description below for details). The goal is to bring the existing NMS to technological and performance standards that will be ready to incorporate additional modules required for the e-DMR project stage.

**Description:** The NMS database will be migrated to the SQL Server 2000 platform under Windows 2000 advanced server operating system. The existing Power Builder application system will also be replaced with an application system developed in Visual Basic. Existing functionality will be preserved, if not enhanced. Additional functionalities that have been identified for inclusion in the Group 1 & 2 enhancement list are:

1. Township Names: When Town/Range is selected, and based on this selection, one or more townships shall be available to the user (similar to the County/Responsible District relationship).
2. Supplication Contact: When multiple supplications are logged into the NMS, the contact name on the supplication window shall automatically refresh after each entry.

3. **Assigning Tasks:** The user shall be able to assign tasks directly from the Task Explorer.
4. **Hydrologic Code:** The hydrologic code at the facility level shall automatically refresh on the facility location tab.
5. **New Facility:** When creating a new version of a facility (needed if facility information needs correction), NMS shall allow creation of the new facility even if a mixing zone is already in place for one of the facility's outfalls.
6. **Addresses:** When an address is being changed, the system shall inform the user of all places the address is being used and that it is being changed in all such locations. When saving an address change, the system shall notify the user that the save has been completed.
7. **Facility Name and Address:** The facility location name and address that shows up on the facility tab of the permits window shall be reflective of the facility location information entered in the NMS. Name label changes shall match the type of label selected.
8. **Terminations:** Users shall be able to directly close out terminations.
9. **Supplications:** Users shall be able to directly withdraw supplications that have been entered in error.
10. **Location Information:** The ability to copy parts of address information or location information and establish it under a new ID shall be added as a capability.
11. **Application Wizard:** An application wizard shall be developed for entering information for the first time.
12. **Field Updates:** Coloring for required vs. non-required fields shall be updated to reflect current requirements.
13. **Unused Fields:** Fields that are not functional at this time shall be grayed out.
14. **Outfalls and Monitoring Points:** The system shall be made consistent for adding and accessing outfalls and monitoring points.
15. **Monitoring Point Wastewaters:** The method for adding wastewaters at the monitoring point needs to be reviewed for possible revision.

16. Codes: Users shall be given the capability to sort hydrologic codes and segments codes based on their needs.
17. Monitoring Point Window: The description field on the monitoring point window shall be expanded from 20 characters to 60 characters.
18. Permit Fields: The outfall screen and monitoring points screen permit fields shall be discussed for modification. The means to link back to the permit needs to be more easily understood. At a minimum, these should be made required fields.
19. Supplication Explorer: The supplication explorer function shall be modified to work appropriately and consistently.
20. Information Check: The NMS shall be modified to require that the minimum information is entered prior to entering an issued date, saving, or closing a record. Tie this into the task – issue permit.
21. SU History Table: The change reason code column in the SU History Table shall be modified to update correctly.
22. PCS Upload Function: This function shall be modified to operate correctly.
23. Second Address: The user shall be able to add a second address without having to right click and select “Add”.
24. Request Log In: The system shall be modified to allow users in one workgroup to log in requests that are to be processed by another workgroup.
25. Windows Convention: Navigational tools throughout need some work - consistency on accessing areas within NMS

Item # 22 (PCS Upload Function) is desired for uploading the DMR data from NMS to the Permit Compliance System (PCS) maintained by USEPA. This function will be provided to MDEQ in a form of exporting DMR data from NMS to a XML data format. It was understood that the EPA is working on IDEF and CDX projects to receive DMR data electronically from the States, and XML is the primary method used for data transfer.

**Project Component #2 (Permit Limit, DMR Data Entry, Task Tracking):**

**Object:** (1) Develop Permit Limit, DMR Data Entry module, and Task Tracking modules in NMS. The goal is to incorporate certain basic features in NMS so that it is ready for receiving electronic DMRs from wastewater facilities.

**Description:** The NMS system will be enhanced to include 3 new modules. They are: Permit Limit, DMR Data Entry, and Task Tracking modules.

The permit-limit module will be used to manage discharge limits contained in the wastewater facility's permits. Features for permit revision, interim limits, and seasonal limits will be incorporated in the design. The permit-limit database will be integrated with the e-DMR system to provide the necessary DMR reporting requirements for wastewater facilities to report their monitoring data.

The DMR Data Entry module will be used by the Division staff as a secondary method to manually enter DMR data into the NMS. This feature is needed to enter historical and on-going DMR data before the e-DMR system is fully implemented.

The task-tracking module is intended to help the Division track the progress of applications; they include applications, requests, submittals, renewal, certificate of coverage, general, NOC, ELO, SRD, venting groundwater, review, and issuance.

**Project Component #3 (Compliance and Enforcement):**

**Object:** Develop a Compliance Evaluation and Enforcement Tracking module in NMS. The goal is to improve the efficiency on tracking compliance and enforcement data, and the effectiveness of the National Pollutant Discharge Elimination System (NPDES) program.

**Description:** The Compliance Evaluation and Enforcement Tracking module is designed for the NMS to automatically detect discharge violations upon DMR data is deposited in the NMS, either through e-DMR or manual data entry.

The compliance evaluation will include checking the DMR data for discharge violations, DMR no submission or late submission violations, and significant noncompliance (SNC) violations. The enforcement tracking feature will help the MDEQ to issue notices of noncompliance (NOV), track enforcement activities, and responses.

**Project Component #4 (e-DMR pilot):**

**Object:** Perform an e-DMR pilot stage for 10 wastewater facilities to submit DMR data electronically to the MDEQ. The goal is to test the e-DMR system in preparation for a Statewide implementation.

**Description:** The e-DMR pilot stage is designed for the Division to work with a few selected wastewater facilities to test electronic DMR submissions. An “off-the-shelf” e-DMR system offered by enfoTech will be used during the pilot stage.

In general, the e-DMR system will be a secured Internet-based application using a SQL Server database on a Windows 2000 Advanced Server platform. Wastewater facilities will access the e-DMR server via the secured Internet channel to obtain reporting requirements, to submit DMR reports, to view previous DMR submissions, and DMR processing status. The system will serve as an electronic file cabinet to manage DMR reporting requirements provided from the NMS database, and to receive/store DMR reports submitted by wastewater facilities. Access privileges will be administrated through the use of a PIN, username, and password. All DMR submissions will be verified via PIN authentication with software security to ensure that the content of the data is original, truthful, legitimate, and unaltered. A complete chain-of-custody of all the records will be maintained in the e-DMR server.

During the pilot stage, the integration between the e-DMR system and the NMS database will not be implemented. Integration of the two systems will be completed in the Statewide implementation stage (Project Component #5).

After the system integration is completed, DMRs received at the e-DMR Server will be uploaded to the Data Exchange System, and eventually be uploaded to the NMS database to support compliance, permitting, and environmental planning programs. If reporting requirements have been added or changed for any wastewater facility participating in NPDES program, such changes will be recorded in the NMS database and then downloaded to the Data Exchange System to be used by the e-DMR server. The database synchronization will be triggered by the NMS system administrator.

Major tasks planned for the e-DMR pilot stage include the following:

1. Develop a transmission protocol (X.12 or XML)
2. Develop a draft facility package (i.e., application package) for wastewater facilities to use to participate in the e-DMR program
3. Perform cosmetic changes on front-end and revision for protocol on the enfoTech e-DMR system to be ready for pilot testing in Michigan
4. Populate reporting requirements in the e-DMR system for 10 wastewater facilities participating in the pilot

5. Install enfoTech e-DMR system for pilot testing
6. Assist the Division to conduct the e-DMR pilot
7. Complete a report for the e-DMR pilot stage

**Project Component #5 (e-DMR Statewide Implementation):**

**Object:** Perform a Statewide e-DMR implementation stage.

**Description:** Major tasks planned for the Statewide e-DMR implementation stage include the following:

1. Finalize the transmission protocol (X.12 or XML)
2. Finalize the facility package (i.e., application package) for wastewater facilities to use to participate in the e-DMR program
3. Finalize cosmetic changes on front-end and revision for protocol on the enfoTech e-DMR system to be ready for pilot testing in Michigan
4. Integrate e-DMR with NMS database for reporting requirements
5. Install the final e-DMR servers to provide database server clustering and web network load balanced clustering features
6. Install enfoTech e-DMR system for the State-wide e-DMR implementation
7. Document the system
8. Provide user training
9. Create e-DMR system maintenance and support infrastructure (VPN & Terminal Services)

Detailed implementation plan will be provided later in the project document after a project kickoff meeting with MDEQ.

## 4. Proposed System Infrastructure for NMS and e-DMR

EnfoTech proposes a state-of-the-art system architecture and infrastructure to support the NMS and e-DMR project. Our recommendations focus on delivering the following main advantages:

- An open system environment for the Division to accept environmental reports directly from wastewater facilities, to transmit data to USEPA, and to provide the information to general public
- An open system design for both software and hardware to allow the Division to make modifications and add new modules
- An infrastructure for the Division to assure “high availability” of the information Servers
- An infrastructure to allow the Division to preserve current investment and can “easily scale up” as needs arise (i.e., buy as you need it)

Our recommended proposal is described below.

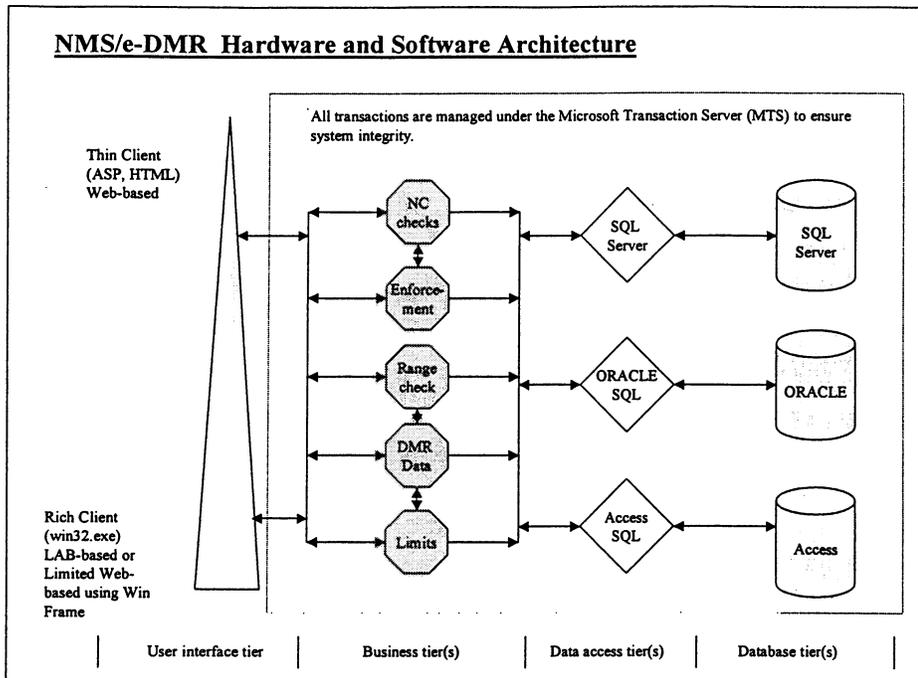
### (4.1) System Design Concept

The proposed system, NMS/e-DMR, is an N-tiered object-oriented information management system developed in a Microsoft windows environment. It supports the SQL Server relational database. The design architecture (Windows DNA 2000) will be able to address the Division’s current requirements, but also provides total flexibility for the Division to modify the system to meet changing business requirements in the future.

The following paragraphs provide basic information to further illustrate the advantages of the open architecture proposed by enfoTech.

### (4.2) Software Architecture Overview

The following diagram presents an overview of the N-tiered object oriented software architecture.



The NMS/e-DMR will be an object-oriented component-based system. The end users interact with the system through a user-friendly menu-driven interface. The interface will interact with other system components by passing commands (received from the end users) or messages to various system components until the user requested task is completed and a “task completed” message is returned to the interface seen by the end user. All transactions are managed by the Microsoft Transaction Server (MTS) to ensure that the business databases and integrity are properly maintained.

Only the user interface components are installed at the end user’s computer. The rest of system components are managed at Server Computer(s). The implementation strategy provides many unique advantages over traditional 2-tier client-server based applications. Major advantages are:

- Re-usable business and data-access components which are the key to accommodate changing business requirements in the future,
- Easy to deploy new system changes because all the business, data-access, and the database tiers are Server based
- Easy to customize front-end screens to turn them from LAN-based (rich client) to Internet based (thin client)

To better illustrate this design concept, let us use an example such as “entering DMR data to a SQL Server database”. NMS system will follow the following steps to complete the task:

- Step 1: The user interface receives data entered by the user.
- Step 2: The user interface passes a message to the range check component (MTS) to ensure the data entered falls within the data ranges established for the industrial user.
- Step 3: If the data falls inside the data range, the range component will further pass a message to the NC check component to check for compliance against the permit limits established for the industrial user.
- Step 4: If the data exceeds the limit, a violation record is created in the database after the data is saved in the database (based on the targeted database specified in the NMS system option setup initially done by the Administrator). If the data does not exceed the limit, only the DMR data is saved in the database.
- Step 5: Once all the transactions are completed, MTS will notify the user through the interface screens. If one of the steps fails during the entire transaction, the entire transaction is rolled back and the user is notified through the interface screen.

All steps are automatically executed by NMS in the background and managed under the MTS. Such design concept and system implementation technology provides a complete open system to allow the Division to customize their own new screens and tie the new screens to all the available components provided by the NMS.

### **(4.3) Software Tools**

Software tools that will be used by the NMS/e-DMR system are shown in the following table:

<b>Services</b>	<b>Software Tools</b>
Web browser	Internet Explorer 5.0 or higher
Web server service	Internet Information Server 5.0 or higher
Transactions	Microsoft Transaction Server (MTS)
Database management	SQL Server 2000
Scripting	Active Server Pages, server-side Visual Basic Scripting Edition (VBScript), client-side Jscript
RAD Tools	Visual Studio 6.0 or latest
Component creation	Visual Basic 6.0, Visual C++ 6.0 or latest
Web site development	Visual InterDev 6.0 or latest

**Visual Basic** development system and **Visual InterDev** Web development system are the primary software tools used in the NMS/e-DMR system.

#### **(4.4) Hardware Infrastructure**

General hardware requirements for the NMS/e-DMR server and client stations are:

##### **(4.4.1) Servers**

The proposed Servers environment shall be Windows 2000 advanced servers.

System Database Clustering, Web Network Load Balanced Clustering, and Backup/Recovery plans are recommended to ensure continuous operation of the NMS/e-DMR Server. They are:

1. **System DB Clustering/Web Network Load Balanced Clustering:** The NMS/e-DMR Servers DB clustering/network load balanced architecture will automatically transfer ownership of resources from a failed server to a surviving server. Also the network load balancing mechanism will allow the servers to share resources and scale across multiple servers within a cluster.
2. **System Backup/Recovery:** A separate data backup plan shall be implemented to backup the NMS system, electronic DMR data, and transaction log.

The **recommended** NMS/e-DMR Server infrastructure is as following (Eight Servers & One Disk Array):

- DB Server Cluster
  - Two DB Servers
  - One DB Storage Array
- Two MTS Servers (for Business and Data Tier components)
- One Report Server
- Two e-DMR Web Servers (for Network Load Balance)
- One Citrix Server (for slow Intranet/Internet client connections)

The **minimum** required NMS/e-DMR Server infrastructure is as following (Five Servers & One Disk Array):

- DB Server Cluster
  - Two DB Servers
  - One DB Storage Array
- One MTS Server
- One Report Server
- One e-DMR Web Server

Basic configuration for each Server shall be Pentium III dual processors (expandable to 4-8 processors), which will join with other Servers to provide clustering and network load balancing features for handling anticipated data loading, minimizing downtime, and providing disaster tolerance, as needed.

Each server shall provide a minimum RAM of 1 GB, expandable to 4-8 GB. Each server shall provide 3 of 18 GB SCSI hard disks for internal RAID storage.

The database storage array shall provide a minimum of five (5) 20 GB SCSI hard disks, in this or a comparable configuration, for keeping an estimated of 5 years worth of NMS/e-DMR data online.

### **Technical Considerations to Support the Recommended Server Configuration**

Today's distributed Intranet/Internet world drives the need for unprecedented levels of **server-based** computing. Enterprises and Service Providers have found that many of their network infrastructure and Web applications work best on **dedicated servers**. This has driven the need for powerful and easy scalable server architecture to address the dynamic server requirements resulting from changing business requirements.

The proposed NMS/e-DMR server infrastructure provides five (5) major areas of server service as follows:

1. DB Cluster Services
2. MTS Server Services
3. Report Server Services
4. Citrix Thin Client Server Services
5. Web Network Load Balancing Services

### **DB Cluster Services**

Using Windows 2000 Advanced Server, Cluster service lets you combine two servers to work together as a server cluster to minimize the downtime for “mission-critical” applications and to ensure that information resources remain available to clients. Server clusters enable NMS/e-DMR users and administrators to access certain resources of the servers, or *nodes*, as a single system (Virtual Server) rather than as separate computers.

### **MTS Server Services**

Microsoft Transaction Server (MTS) combines the features of a TP monitor and an object request broker into an easy-to-use package. NMS/e-DMR system developers will use MTS to deploy scalable server applications built from ActiveX components, focusing on solving business problems instead of on the programming application infrastructure. MTS delivers the "plumbing" features, including transactions, scalability services, connection management, and point-and-click administration; that eventually provides the developers with the easiest way to build and deploy scalable server applications.

### **Report Server Services**

Traditional 2-tiered File Server based reporting infrastructure can only serve limited and small concurrent users without beginning to see a negative impact to system performance and network traffic. For the NMS/e-DMR system, a dedicated report server (or report server farm) would be desirable to guarantee satisfactory reporting performance for general users and to provide a robust ad-hoc reporting mechanism for powerful users.

### **Thin Client Server Services**

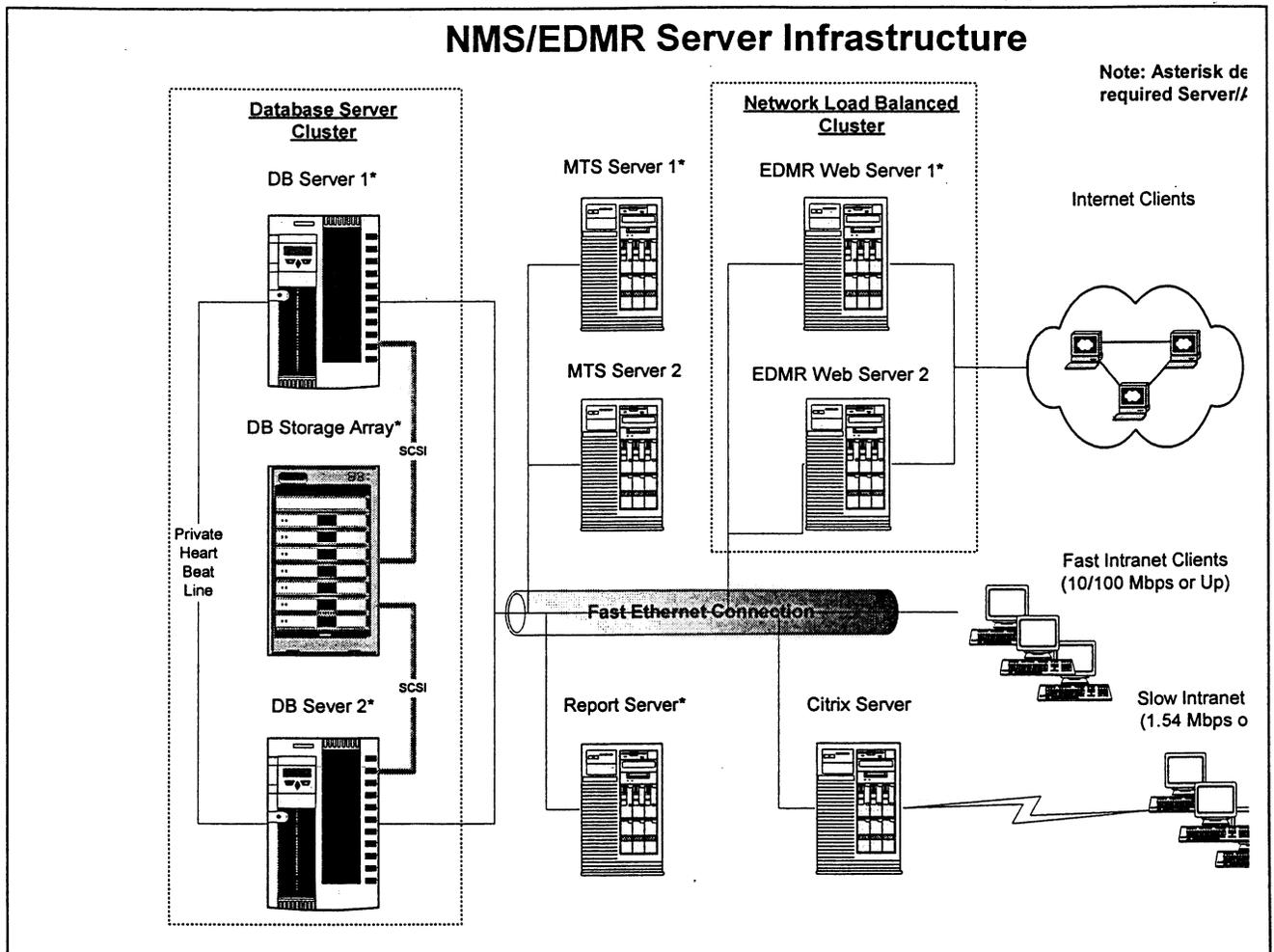
Citrix MetaFrame for Windows 2000 Servers promises a rapid deployment of the NMS/e-DMR system across the slow communication link (1.54 Mbps or less) over the Intranet (or Internet). It provides a viable option to deliver a client/server-based system to remote users without investing significant cost to upgrade infrastructure.

### **Web Network Load Balancing Services**

The Web Network Load Balancing is an important consideration for any Web-based application. The proposed Server architecture allows the MDEQ to monitor the network loading and add additional Servers as needs arise in the future. That is to “buy it when it’s needed”.

The proposed architecture will allow the MDEQ to combine up to 32 servers running Windows 2000 Advanced Server into a single, load-balanced cluster.

The following diagram illustrates the NMS/e-DMR Server infrastructure:



**(4.4.2) Client Stations**

Minimum hardware requirements for a client station is as follows:

For Fast Intranet Clients (SWQD users)

1. Windows 2000 professional or up
2. Pentium 300 MHz, 128 MB RAM, 200 MB hard drive space

For Slow Intranet Clients (Citrix client, and SWQD users)

1. Windows 95 (OSR 2 or up), 98, NT (SP 5 or up), or ME
2. Pentium 166 MHz, 32 MB Ram, 100 MB hard drive space

For Wastewater Facilities

Internet Explorer or Netscape

## 5. Project Work Plans

### (5.1) Project Methodology

EnfoTech recommends the evolutionary iterative (EI) method for system development. The EI model will provide several benefits to the project as follows:

- Definition of a draft Functional Requirement Specifications (FRS)
- End users are actively involved in reviewing and commenting on the system during the development cycle (evolutional iteration)
- FRS is continuously updated to reflect design and implementation changes
- End products will have a high degree of match to user expectations

To facilitate the EI development model, enfoTech recommends some site visits during the critical project phases including the system specifications, prototyping discussion, system pre-final, installation, training, and support. Additional site visits might be required based on project needs. Frequency of site visits will be adjusted based on project tasks and the need for a face-to-face meeting. The goal is to complete the project on time, within budget, and meet user requirements.

For the initial Functional Requirement Specifications (FRS) development, upon the project kick-off, enfoTech proposes to send certain core members of the project team to conduct site visits and work closely with the MDEQ to develop the system specifications. EnfoTech recognizes certain technical considerations from MDEQ and will include them in the FRS development effort. Those technical considerations include:

- Modifications to the NMS/e-DMR data elements, where appropriate, in order to accommodate the U.S. EPA's Facility Profiler project soon to be initiated by Michigan in summer, 2001
- Evaluation of JetForms for applicability to the e-DMR phase of the project

Objectives of each FRS visit are described below:

1<sup>st</sup> visit – Project orientation, user interview, develop/revise existing system specifications, review of enfoTech existing systems (e-DMR), develop requirements for new modules (i.e., Permit Limit, DMR Data Entry, Task Tracking, and Compliance Evaluation). The meeting will also discuss general system infrastructure requirements and support.

2<sup>nd</sup> visit – Review MDEQ comments on the 1<sup>st</sup> draft of Needs Assessment document. Discuss a draft implementation schedule and project administration procedure for implementation phase. Expand the document to include a detailed implementation plan.



Other site visits and detailed project tasks will be developed during the project kick-off meeting, and communicated to MDEQ project manager for future project management purpose.

## **(5.2) Project Management**

EnfoTech will comply with project reporting requirements as required by the State of Michigan office of project management.

Our standard project management procedures include:

- Develop a project plan that will outline milestones, tasks, and schedule for project tracking
- Submit to MDEQ a project plan that will outline major mile stones, work break down structure, and schedule of each task
- Submit monthly project progress reports to the MDEQ that will outline accomplishments and tasks planned for the following month. Conference call and net meeting will also be used to communicate with MDEQ on regular basis
- Submit monthly fees and expenses to MDEQ for review and approval

Examples of the enfoTech's monthly reporting are provided in Attachment A.

## 6. Special Considerations

### **(6.1) System Security Implementation and Management**

Security is an integral part of any application design. In simple terms, security is all about who gets to use the application, how they will gain access, what portions are permitted, and the level of access right is granted. For the NMS/e-DMR system, the application security options will include Windows 2000 Authenticated Mode and Local Managed Mode (NMS/e-DMR authentication).

For “Authenticated Mode”, the user’s rights will be tightly integrated with the Windows 2000 security. For “Local Managed Mode”, user’s rights will be managed by the NMS/e-DMR system security. EnfoTech will work closely with Michigan State Administrators to implement a proper security scheme that will meet the Security Standards approved by the State.

To further illustrate the proposed application security model, we have provided a general description of various components available from the Security model. They are:

#### **(6.1.1) User Accounts and Groups Management:**

For Windows 2000 Authenticated Mode, NMS/e-DMR system works closely with Active Directory that provides the store for all domain security policy and account information. The Active Directory, which provides replication and availability of account information to multiple Domain Controllers, is available for remote administration. For Local Managed Mode, the NMS/e-DMR system will provide a repository for saving user accounts and groups information.

##### ***User Accounts***

User accounts are the keys to Application security. Every user has a user account consisting of a name, password, and other logon parameters.

##### ***Groups***

A user group is a set of users who have identical application rights. Putting user accounts into groups simplifies user access administration. User groups also make it easier to grant multiple users access to a designated network resource.

#### **(6.1.2) Application Security Object Model:**

The NMS/e-DMR system will deliver a well-defined security object hierarchy that will implement Access Control List (ACL) and provides the ability to manage the user/group rights and permissions. Every NMS/e-DMR object has a unique security descriptor that includes an ACL. An ACL is a list of entries that grant or deny specific access rights to individuals or groups. The NMS/e-DMR



system object-based security model lets administrators grant access rights to a user or group that will govern who can access a specific object, a group of properties, or an individual property of an object.

**(6.1.3) User/Group Rights, Policies and Permissions Management**

NMS/e-DMR security system will provide security control interface of the rights granted to individual user accounts and user groups. It also specifies restrictions such as password expiration, lockout duration and the permissions apply to specific securable resource objects, such as services, directories, and files.

**(6.1.4) NMS/e-DMR Distributed Security Services**

NMS/e-DMR Distributed Security Services integrate mature Internet standards for authentication while at the same time introducing new public/private-key security technology. The NMS/e-DMR system security architecture is specifically designed to incorporate new security technology in the form of protocols, cryptographic service providers, and third-party authentication technology.

**(6.2) Detection and Elimination of Computer Virus**

EnfoTech will integrate the virus protection plans developed by the State into the NMS/e-DMR Servers to provide protection against virus infection.

**(6.3) System Backup and Recovery**

EnfoTech will work with the DEQ to integrate the NMS/e-DMR System with the standard system back up and restore and disaster recovery procedures implemented by the State.

## 7. EnfoTech Capabilities in Implementing the Proposed System

EnfoTech has been providing environmental systems and software consulting services to State agencies, municipalities, and the chemical industry since 1992. We have an off-the-shelf e-DMR system that will meet MDEQ e-DMR system requirements as well as the security requirements from the CROMERR rules (UPEPA pre-proposed regulations for electronic DMR submissions). In addition, enfoTech has successfully implemented an Internet-based e-DMR system for State of Florida to receive electronic DMR data. The scope of submissions include:

- Monthly DMR summary data (EPA form 3320-1)
- Daily DMR results
- Groundwater monitoring data

EnfoTech's e-DMR system was presented to EPA CDX/Security action team for discussion during the CROMERR rule making process. It is recognized that enfoTech's e-DMR system has a close matching in meeting the future CROMEER requirements.

EnfoTech also participates in a "State e-DMR Knowledge Sharing" work group sponsored by USEPA and 10 States, which Michigan is a part of. The Workgroup's missions are:

- To develop a core XML schema that will be used by the USEPA and adapted by all States to receive monthly summaries and daily DMR data
- To define a set of minimum security requirements for electronic DMR submissions

EnfoTech provides technical expertise to the workgroup in XML development and offers the implementation experience for the development of a minimum system security for electronic submission. EnfoTech will contribute the work to the work group as follows:

- Develop a draft XML schema for group review
- Revise the draft XML schema based on analyses of DMR reports from participating States to include additional data elements and structures to support various reporting in different states
- Participate in the Workgroup meetings and provide technical expertise to finalize the XML schema
- Assist the workgroup to formalize the publication of the XML schema as the standard for e-DMR reporting in United States.

EnfoTech is staffed with a team of engineers and system developers who are specialized in environmental information systems and NPDES compliance. Not only have we been recognized as a national leader in e-DMR system, but we have also

successfully implemented large-scale projects similar to the proposed system required by the MDEQ. EnfoTech has essential qualifications, technical expertise, and most importantly, the commitment and dedication to successfully implement the NMS/e-DMR project for MDEQ that will meet the users' requirements.

### **(7.1) Technical Expertise**

EnfoTech's technical strength has been on relational database (SQL) development and Graphic User Interface (GUI) in an object-oriented programming environment. We have a team of experts who are specialized in standard system development tools like Visual Basic, Visual InterDev, Active Server Page (ASP), Microsoft Transaction Server (MTS), SQL Server, ORACLE, etc., in Windows 2000 environment. Our projects have been developed on those industrial standard platforms for expandability and ease of maintenance. EnfoTech is also the first company in the nation to implement a working Internet-based electronic DMR system.

EnfoTech's strategic directions in system development environment have been and will continue to be in providing N-tiered client-server computing, object-oriented developing, and Internet-based solutions. We believe that MDEQ's interest and strategic direction in system architecture matches very well with enfoTech's technical expertise and system development strategy.

### **(7.2) Regulatory Expertise**

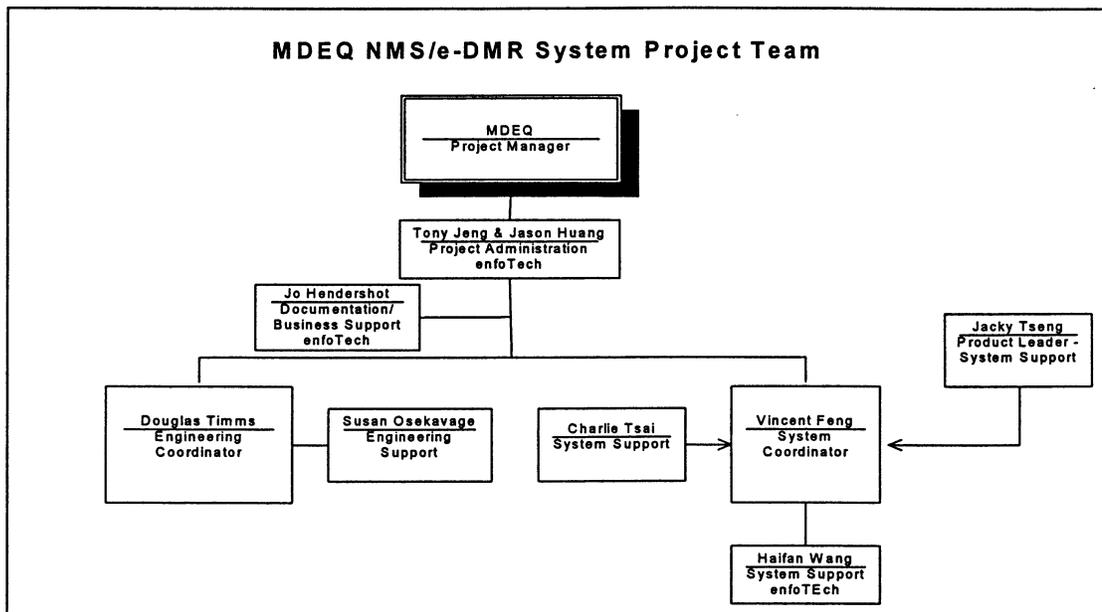
Another unique qualification of enfoTech's, that will enable us to provide a successful NMS/e-DMR system for the MDEQ, is its expert knowledge in water regulations and contacts with the EPA and State on on-going regulatory development. We have a team of engineers who are familiar with 40CFR, abreast with environmental notices published on the Federal Register, and State regulations. The engineering team has established a working relationship with the EPA headquarters, the EPA Regional offices, State Agencies, and local municipalities through various projects on water-related issues in the past.

The Engineering team and the System development team work very closely together to ensure that system functions comply with regulatory guidelines. The team objectives are to work closely with the MDEQ and deliver a system to the users that can:

1. Provide accurate information in a timely manner,
2. Provide critical assistance in compliance management
3. Provide system functions to complement MDEQ's overall resource management

**(7.3) enfoTech Project Team (proposed)**

Two enfoTech staff members, one senior application consultant and one senior system developer, will be assigned to share the project coordinator responsibilities and work closely with the MDEQ. A preliminary proposed project team (enfoTech personnel only) is illustrated in the following chart:



Educational background and project experience for key personnel planned for the project is provided below:

**Tony Jeng (Principal Application Consultant)**

**Education:** BS and MS in Chemical Engineering.

**Experience:** Mr. Jeng has over 20 years of regulatory and environmental engineering experience over a broad spectrum that includes wastewater treatment, drinking water standards, ground water monitoring, air emission calculation, dispersion modeling, hazardous waste treatment and disposal, maximum achievable control technology (MACT), SARA 313, and CERCLA programs. He has held various positions in different engineering capacities at state agencies, chemical manufacturing plants, and pharmaceutical production plants. Mr. Jeng is currently one of the principals of enfoTech & Consulting Inc.

Mr. Jeng has participated in the following large-scale projects, similar to the proposed system for the MDEQ project.

- Florida Department of Environmental Protection – served as the project administrator to provide regulatory guidance on system design and serve as the quality assurance officer for the project.



- City of Phoenix – served as the project administrator, overseeing each phase of the system implementation.
- City of Toronto, Canada – served as the project administrator, overseeing each phase of the system implementation. Provided technical guidance in developing system customization specifications, system testing, data conversion, and user training.

**Primary responsibility:** Mr. Jeng and Mr. Huang together will provide the overall project administration effort from enfoTech.

### **Jason Huang (Principal System Consultant)**

**Education:** BA in Business and MS in Computer Science

**Experience:** Mr. Huang has over 15 years of experience in enterprise-wide system design, development, and implementation. Mr. Huang has delivered many corporate-wide missions critical application systems for major Future 100 companies to improve operations and save costs. He has held various key system development positions at companies such as Merck, Payne Weber, and Capital City/ABC to implement large-scale projects using SQL Server, ORACLE under Intranet and Internet environment. Mr. Huang is currently one of principals at enfoTech & Consulting Inc and is providing the strategic direction for the Company in system research and product development.

Mr. Huang has participated in the following large-scale projects similar to the proposed system for the MDEQ project.

- Florida Department of Environmental Protection – shared the project administrator responsibility with Mr. Jeng. Provided technical guidance on system implementation to the project and served as the quality assurance officer for the project.
- City of Phoenix – shared the project administrator responsibility with Mr. Jeng. Overseeing the development of a pretreatment system. Serving as the technical advisor to the system development group for successful implementation. Acting as the quality assurance officer for the project.
- City of Toronto, Canada – Provided technical guidance in developing system customization specifications, customization modules, and implementation strategy.

**Primary responsibility:** Mr. Huang and Mr. Jeng together will provide the overall project administration effort from enfoTech.

**Douglas Timms (Senior Application Consultant)**

**Education:** BS in Chemical Engineering.

**Experience:** Mr. Timms is very familiar with the regulatory requirements for the NPDES program. He is a project manager (engineering) and has been involved in design and implementation of the Internet-based electronic DMR system (e-DMR), pretreatment (PACS), and DMR reporting (WDMS) systems. He has been working with municipalities and states for the past 3 years and has assumed the roll of project coordinator for e-DMR and PACS implementations at many facilities throughout the nation.

Mr. Timms has participated in the following large-scale projects similar to the proposed system for the MDEQ project.

- Florida DEP – Provided project engineering support to the project.
- City of Phoenix – Provided the coordination function to the project. Developed system customization specifications, performed system testing, and completed data conversions; he has also provided user training, system documentation, and technical support.
- City of Toronto, Canada – developed system customization specifications, performed system testing, provided user training, and technical support.

**Primary responsibility:** Mr. Timms and Mr. Feng will share the responsibility of serving as project liaison. Mr. Timms will coordinate communications from the MDEQ end-user side for the development of the functional specifications, system prototyping, and system documentation.

**Vincent Feng (Senior System Consultant)**

**Education:** BS in Psychology and Computer Science. MS in Computer Science.

**Experience:** Mr. Feng is a senior system developer who specializes in N-tiered object oriented system, Java, and Internet-based application development. Mr. Feng has five years of implementation experience on Windows DNA (Distributed internet Application) development.

Mr. Feng has participated in the following large-scale projects similar to the proposed system for the MDEQ project.

- Florida Department of Environmental Protection – provided object component development support to the project. Developed a DMR submission utility to allow wastewater facilities to prepare DMR in Excel file and convert to the required submission format.

- City of Phoenix –provided technical support in system optimization and performance tuning.

**Primary responsibility:** Mr. Feng and Mr. Timms will share the responsibility of serving as project liaison. Mr. Feng will coordinate communication from the MDEQ system side. He will be responsible for the design and development of the proposed system (including scoping and integration approach).

**Susan Osekavage (Application Consultant)**

**Education:** BS in Chemical Engineering.

**Experience:** Ms Osekavage is very familiar with the regulatory requirements for the NPDES program. She has been involved in the design, implementation, and testing of enfoTech's pretreatment software (PACS), enfoTech's Clean Air Information Management System (CAIMS), and DMR reporting (WDMS) systems. She has been working with municipalities, states, and major pharmaceutical companies for the past 3 years providing training and technical support, and installation services for enfoTech's products.

**Primary responsibility:** Ms. Osekavage will provide engineering support to the project.

**Jacky Tseng (Senior System Consultant)**

**Education:** BS and MS in Computer Science

**Experience:** Mr. Tseng is a project manager (system) who specializes in N-tiered object oriented system development. He is the PACS 2000 product leader (system), and has been involved in design and implementation of the system architecture for the core PACS system. Mr. Tseng has five years of implementation experience on Windows DNA (Distributed iNternet Application) development. Mr. Tseng has four years of environmental system implementation experience with US major wastewater treatment plants ranging from 500 MGD to 80 MGD capacity.

Mr. Tseng has participated in the following large-scale projects similar to the proposed system for the MDEQ project.

- Florida Department of Environmental Protection - installed e-DMR, provided user training and technical support.
- City of Phoenix – implemented a pretreatment system, lead the system customization efforts, assist in specification development, and provided technical support.
- City of Toronto, Canada – provided system support to the system implementation, and assisted in user training, and technical support.

**Primary responsibility:** Mr. Tseng will provide crucial support and guidance for the system aspect of the MDEQ project. He will provide guidance on the integration between the NMS and the e-DMR system.

**Charlie Tsai (Senior System Consultant)**

**Education:** BS in Computer Science and MS in Management of Information Systems

**Experience:** Mr. Tsai is a senior system developer who specializes in N-tiered object oriented system development. He is the e-DMR product leader (system), and has been involved in design and implementation of the system architecture for the Florida DEP e-DMR system. Mr. Tsai has four years of client/server and Internet-based system development experience.

Mr. Tsai has participated in the following large-scale projects similar to the proposed system for the MDEQ project.

- Florida Department of Environmental Protection – provided system leadership in design, development, and installation of the e-DMR system at FDEP.
- City of Toronto, Canada – provided system coordination functions to implement PACS at Toronto. Implemented LIMS EDI. Provided technical guidance to Toronto to develop object components for a citywide data-warehousing project. Provided system DBA training to users.

**Primary responsibility:** Mr. Tsai will provide crucial support on system aspect for the MDEQ project. He will provide guidance on integration between e-DMR and the NMS system.

**Haifan Wang (Senior System Consultant)**

**Education:** BS and MS in Computer Science

**Experience:** Ms. Wang is a senior system developer who specializes in N-tiered object oriented system development. She is one of core members on the e-DMR and PACS 2000 development team. She is very familiar with e-DMR design and system architecture. Ms. Wang has ten years of client/server database development and Internet-based system implementation experience.

Ms. Wang has participated in the following large-scale projects similar to the proposed pretreatment system for the MDEQ project.

- Florida Department of Environmental Protection – provided development support to web class components, ORACLE database access, and data/business tier components.

- City of Phoenix – developed customized modules, core business functions for the PACS system.

**Primary responsibility:** Ms. Wang will provide system support for the MDEQ project.

EnfoTech project coordinators are fully supported by all professionals from both the engineering and system departments to perform work on this project.

## 8. Preliminary Project Schedule

The general work break down structure has been prepared with a preliminary schedule that shows the project planning. We anticipate that the entire project shall be completed in 12 months, and fully implemented in 18 months. Please see Attachment B.



## 9. Project Cost Estimate

### (9.1) Cost Estimate

EnfoTech offers competitive pricing for the services proposed for the project. An estimated project cost with breakdown for each project task is provided below.

Product/Task Description	Cost	Total
<b>1. NMS Phase</b>		
<b>(1.a) Migrate NMS to VB plus group 1 &amp; group 2 enhancements</b>		
- revise existing system specifications & develop specifications for new modules	\$31,360	
- develop a prototype	\$34,080	
- complete the coding cycle	\$62,240	
- reporting (15 reports)	\$18,720	
- data migration	\$12,480	
- installation	\$6,240	
- testing	\$18,720	
- documentation & online help	\$18,720	
- training	\$8,320	
<b>Subtotal (1.a)</b>		<b>\$ 210,880</b>
<b>(1.b) Develop Permit Limit, DMR Entry &amp; Task Tracking modules</b>		
- issue a DB design and FRS	\$18,880	
- develop a prototype	\$17,920	
- complete the coding cycle	\$38,240	
- reporting (5 reports)	\$7,680	
- installation	\$6,240	
- testing	\$18,720	
- documentation (system doc., user guide, & online help)	\$18,720	
- training	\$8,320	
<b>Subtotal (1.b)</b>		<b>\$ 134,720</b>
<b>(1.c) Project coordination &amp; Traveling Expenses</b>	\$36,300	
<b>Subtotal (1.c)</b>		<b>\$ 36,300</b>
<b>(1.d) Compliance Evaluation and Enforcement Tracking</b>		
- issue a DB design and FRS	\$18,080	
- develop a prototype	\$14,560	
- complete the coding cycle	\$26,720	
- reporting (10 reports)	\$15,360	
- installation	\$6,240	
- testing	\$12,480	
- documentation & online help	\$12,480	
- training	\$4,160	
- project coordination & traveling expenses	\$15,000	
<b>Subtotal (1.d)</b>		<b>\$ 125,080</b>

Product/Task Description	Cost	Total
<b>2. The e-DMR Phase</b>		
<b>(2.a) Pilot Stage</b>		
- develop a transmission protocol	\$7,680	
- develop a draft facility package (application package)	\$4,320	
- develop e-DMR cosmetic changes required for MDEQ	\$7,520	
- customize e-DMR (cosmetic front-end & revision for protocol)	\$20,000	
- populate e-DMR with Reporting Requirements for 10 facilities	\$5,520	
- installation	\$7,500	
- assist MDEQ to conduct e-DMR pilot	\$8,640	
- training	\$7,500	
- prepare a final report for the pilot stage	\$10,000	
- project coordination & traveling expenses	\$12,000	
<b>Subtotal (2.a)</b>		<b>\$ 90,680</b>
<b>(2.b) State-wide implementation Stage</b>		
- e-DMR Server license (license fee)	\$150,000	
- X.12 utility license (annual fee)	\$100,000	
- integrate the e-DMR with NMS for Data Exchange	\$50,000	
- finalize implementation guide (Protocol, App. Pack, Imp. Guide)	\$15,000	
- finalize FRS, Business Diagrams based on pilot stage results	\$20,000	
- make changes on the e-DMR in accordance with final FRS	\$20,960	
- integration testing	\$15,200	
- documentation (system doc., user guide, & online help)	\$15,200	
- installation	\$10,000	
- training	\$25,000	
- project coordination & traveling expenses	\$30,000	
<b>Subtotal (2.b)</b>		<b>\$ 451,360</b>
<b>Grand Total Section 1 and 2:</b>		<b>\$ 1,049,020</b>

## Hardware Costs (Preliminary Estimate)

Hardware Description	Cost (USD)
<b>Servers to host the NMS and e-DMR Project</b>	
- 2 clustered database servers, 2 network load balanced servers, - 1 report server, 2 business/data tier MTS servers	\$100,000
- 1 storage array	\$10,000
- optional 1 Citrix server for fast application access from District offices via T1 or modem lines (slow Intranet connections)	\$10,000
<b>Grand Total:</b>	<b>\$ 120,000</b>

Costs for other supporting software such as Windows 2000 Advanced Server, SQL Server 2000 Enterprise, Citrix Metaframe Server, Report Server, BizTalk are extra and are not included here.

### (9.2) Rate Schedule for Consulting Services

This section provides a fee schedule for consulting services. All rates presented apply to services rendered during the calendar year 2001 and are subject to adjustment on January 1 of each subsequent year.

#### 1. HOURLY RATES

Charges for services provided will be in accordance with the following schedule:

<u>Classification</u>	<u>Hourly Rate (\$/hour)</u>
Principal Application Consultant	\$ 180
Principal System Consultant	\$ 180
Senior System QA/QC Consultant	\$ 160
Senior Application Consultant	\$ 150
Senior System Consultant	\$ 150
System QA/QC Consultant	\$ 130
Application Consultant	\$ 120
System Consultant	\$ 120
Business Support	\$ 90

2. **POLICY ON TRAVEL**

Traveling expenses are billed based on actual charges. Time spent on traveling during normal office hours will be charged at 1/4 of the normal hourly rate.

**(9.3) Payment Schedule and Payment Terms**

MDEQ will be invoiced each month based on time, material, and expenses incurred on the project. EnfoTech standard payment term is 30 days net from the invoice date.

