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EPA MAJOR SYSTEMS PROFILES

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EPA SYSTEM PROFILE

BACKGROUND

Since 1974 the Environmental Protection Agency (EPA) has expanded to support additional legislative Acts such as the Clean Water Act, the Toxic Substances Control Act, and the Superfund Act. For each Act the Agency establishes a supporting program office which is responsible for carrying out the functions intended by legislation. In order to carry out these functions the program offices often develop information systems (IS) which are necessary to exercise their responsibilities. Program offices often develop an IS with their own standards considering their specific problem. This can result in the existence of several computing systems that overlap one another in the scope of system functions and the data universe which they operate in. In order to provide better service and coordination to the Agency's program offices, the Program Systems Division is gathering available information on existing and planned ADP systems. This information will be used to plan and support guidance activities with PSD. This EPA System Profile document provides a summary of several existing EPA systems. The intent of this document that is to provide a mechanism for coordinating future development activities and aid in locating information. This document contains profiles for the following systems:

- o Permit Compliance System (PCS)
- o NEEDS Survey (NEEDS)
- o Comprehensive Environmental Response, Compensation & Liability Information System (CERCLIS)
- o Storage of Retrieval of Water Quality Data (STORET)
- o Contract Lab Program/Sample Management Office Systems (includes: SAM, STAT, CCS, MIS-RAS & TIP).

PURPOSE

The purpose of the Profile task is to provide EPA with a high-level profile of major EPA information systems. The Profiles are designed to be effectively used for different user groups including EPA management and technical staff. The Profiles should be broad enough to include all key system points and narrow enough for the person reading the document to determine the following:

- o significant differences between systems profiled
- o purpose the system was developed to support
- o functions the system performs
- o how the system performs its functions
- o kind of support the system and its maintenance staff provide to its users
- o type of system documentation available
- o data domain of the system on a broad scale
- o who the users are
- o what is the status of the system
- o background of the system
- o technical configuration of the system.

This document can be used by system developers to identify the systems they need to interface, provide information about a specific system; and to anyone at EPA who needs to know where specific data is being retained and how to access it.

The document can provide guidance for the development of future information systems in terms of developing standards, identifying weaknesses, improving system performance and user support, as well as how to streamline information system development.

Although this document profiles ten major EPA systems a full examination of the EPA system environment cannot be obtained without further examining other EPA systems. Some recommended systems are:

- o Aerometric Information Retrieval Systems (AIRS)
- o Compliance Data System (CDS)

- o EPAY Payroll System (EPAYS)
- o Facilities Index System (FINDS)
- o Financial Management System (FMS)
- o Grants Information and Control System (GICS)
- o Hazardous Waste Data Management System (HWDMS)
- o Resources Management Information System (RMIS).

METHODOLOGY

One key element of the profile task was to develop an outline for the profile document which would be consistent for each system; would identify the functionality of each system; and would focus on other key attributes such as hardware, software, key files, data base, data domain, communications, interfaces, user training, user correspondence, and documentation. Also included in each profile is a background section which explains how and why the system was developed, and what changes had thus far occurred from the time of system implementation up until the time the system was profiled.

Developing each profile began with an information gathering stage which included interviewing system owners and developers, and reviewing all available documentation including memos, newsletters, user guides, specification documents, and program documentation. Some profiles contain more details than others. The depth and scope of the information resources available varied among the systems profiled. Some systems had extensive resources available while others did not. The inconsistency of the resources is reflected in the profiles.

2.0 PCS SYSTEM PROFILE

PCS	PART OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	STATE AND REGIONAL PERSONNEL INCLUDING ENGINEERS AND MANAGERS	WELD REGIONALLY ON A MONTHLY BASIS	INSPECTION INFORMATION PERMIT COMPLIANCE ACTIVITY	<ul style="list-style-type: none"> • 3 DATA ENTRY METHODS • ONLINE AND BATCH EDITS • RETRIEVAL
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INTERACTIVE QUERY BATCH RETRIEVAL	STANDARD, CUSTOM	RELATIONAL DATA BASE MENU-DRIVEN BATCH	3090/300	CICS COBOL COBOL NATURAL RDBMS III	NOT-LINE SUPPORTED. PROCEDURES EXIST	USER: GENERALIZED RETRIEVAL GUIDE DATA ENTRY, EDIT, AND UPDATE GUIDE INQUIRY GUIDE TECH: MAINTENANCE MANUAL PRODUCTION CONTROL GUIDE DATA DICTIONARY
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PCS PROFILE

OUTLINE

- 1.0 System Overview
- 1.1 System Purpose
- 1.2 System Background
- 2.0 User Environment
- 2.1 User Support
- 2.2 User Training
- 3.0 Technical Overview
- 3.1 Hardware/Software Environment
- 3.2 Subsystem Environments
 - 3.2.1 Data Entry
 - 3.2.2 Data Edits
 - 3.2.3 Updates
 - 3.2.4 Data Retrieval
- 3.3 Data
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- 4.0 System Functions
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- 4.2 System Output
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 - 4.2.2 Reports
- 5.0 System Maintenance
 - 5.1 User Change Control Process
 - 5.1.1 System Enhancements
 - 5.1.2 System Problems
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 - 5.2.1 Change Control System Design
 - 5.2.2 Change Control Documents
 - 5.2.3 Change Control Activity
 - 5.2.4 Change Control Testing
 - 5.2.5 Implementation of Changes
- 6.0 Documentation
 - 6.1 User Documentation
 - 6.2 Technical Documentation
 - 6.3 Data Dictionary

Appendix I Sample System Function Screens
Appendix II Documentation Matrix

PCS PROFILE

1.0 System Overview

1.1 System Purpose

The purpose of the Permit Compliance System (PCS) is to track and monitor over 130,000 industrial and public works facilities in support of the National Pollutant Discharge Elimination System (NPDES). PCS tracks permit information issuance through expiration as well as additional data including : general permit information, government grants issued; appeals and hearing requested by the permittees and facility inspection data.

1.2 System Background

PCS was developed under the Office of Water Enforcement and Permits (OWEP) to support NPDES. The NPDES issues permits to facilities discharging pollutants into our nation's waterways. Each permit limits the amount of pollutants a facility may legally discharge. Actual measurement limits, for pollutants and beneficial elements are specified on a permit. Maximal limits are indicated for acceptable levels of a pollutant. Minimum limits are indicated for the minimal amount of beneficial elements that are required, such as oxygen.

One of the major functions of the NPDES program is to determine which facilities violate permit regulations. Depending upon the severity of the violations, action may be taken by the EPA to insure future compliance. These "enforcement actions" that the EPA issues may appear in many forms. The actions taken become more severe as the violations continue.

Another important aspect of the NPDES program concerns the maintenance of discharge limits on existing permits as a result of new laws requiring stricter regulation. These new laws may require revisions to existing permits, resulting in pollution discharge limits being lowered or raised significantly. The revised permit may contain instructions to build new filtering plants to comply with new regulations. If this is necessary the EPA will set a time schedule with completion date milestones for building new plants. These "compliance schedules" must be met within the time frame specified or enforcement actions will be applied.

Many reports are required by Congress to identify NPDES violators and the accompanying enforcement actions taken by the EPA. Both state and regional EPA employees use PCS as a tool to determine who is violating the Clean Water Act, to what extent,

and what prior action has been taken.

2.0 User Environment

The user community consists of the state and regional employees needing NPDES program information. Each regional office is responsible for their designated states. However, regions may contain interface states, who have developed their own tracking and compliance systems. Interface states must supply required NPDES information to the PCS data base (typically via a batch upload process).

User personnel include data entry operators, engineers, and managers. Engineers enter and access PCS inspection information, and managers monitor PCS for quality control purposes.

Contractors are employed to create and run retrieval requests.

2.1 User Support

A representative users group meets twice a year with Headquarters staff and technical staff to discuss PCS issues. The forum for these user conferences includes discussion of new policy decisions, and present and future enhancements. These conferences are attended on a volunteer basis.

Headquarters maintains a "status" dataset in TSO/SPF. This dataset contains the status of the update runs. Users may determine whether the update is still running or if any problems have occurred by browsing the status dataset. This dataset also contains scheduling information such as dates for future training and implementation dates for major enhancements.

2.2 User Training

Training is conducted by the Headquarters staff on a monthly basis. Generally, between ten and fifteen users need to request training before a training class is scheduled. Headquarters offers a two and a half day beginners seminar and a two day advanced course. Only one of the two courses is offered each month. Training is offered regionally and usually occurs onsite or in the vicinity of the requesting majority.

The PCS training program encompasses all aspects of using PCS however, the following items are not included ; references to PCS User Guides used in the field, a detailed overview of the NPDES application and TSO/SPF training (TSO/SPF is offered by the NCC).

3.0 Technical Overview

3.1 Hardware/Software Environment

The PCS computing environment uses the 3090 IBM mainframe computer at NOPD. This system has been built using COBOL, CICS and Natural utilizing the ADABAS DBMS. The specifics of the PCS environment are detailed in the following sections.

3.2 Subsystem Environments

3.2.1 Data Entry

BATCH - Programs are written in batch COBOL.

PCSADE - Data entry programs written in NATURAL, edit processing handled by CICS COBOL.

PCENTRY - Data entry programs are written in DBASE III.

3.2.2 Data Edits

Data edits are performed during online data entry. Batch edit programs are written in COBOL and online edit programs are written CICS COBOL. Initial screen editing is written in ADABAS/NATURAL.

3.2.3 Updates

All regular updates are performed biweekly in a batch COBOL mode. A "Direct Call" COBOL program is used to apply transactions to the database. DIRECT CALL programs access the database at a lower level than Fourth Generation NATURAL. Lower level meaning "closer" to machine code. This software is more difficult to develop and maintain, but provides more efficient transaction processing.

Valid edits for records which are dependent upon the existence of other related records are performed during online editing and batch update processing. If the necessary records exist the record is added to the data base.

3.2.4 Retrieval

GENERALIZED RETRIEVAL - A series of batch COBOL programs which generate NATURAL code to access database records.

INQUIRY - CICS COBOL and Dynamic Source NATURAL code

are used in conjunction to generate NATURAL queries to the database.

3.3 PCS Data

Information retained in PCS is related to the events surrounding permit compliance activities. Data related to permit issuance and acceptance, site inspections, government grants issuance, scheduling, waste disposal monitoring, enforcement actions, identification of violations, permittee protests and regulations appeals are all part of the PCS data domain.

3.3.1 Data Base

ADABAS is used as the PCS data base. The data residing in the data base is stored in a relational structure and accessed in a hierarchical format.

PCS data base access is possible through the PCS primary key. The primary key or NPID as it is called internally is an identification number which uniquely identifies each facility. The NPID is included as part of the key in every PCS data base record.

The PCS data base contains approximately 8 million records.

3.3.2 Files

PCS uses approximately 8 different files called the Permit Facility, Effluent, Compliance, Inspection, Enforcement, Evidentiary Hearings, Grant and Permit Events.

Permit Facility data contains general facility information such as name, address and classification.

Effluent data includes three levels of data; pipe schedule (identifies currently monitored pipe), parameter limits (identifies pipe parameters being measured), and measurements (records the parameter measurements).

Compliance data tracks schedules for milestone events and scheduling violations.

Inspection data records the inspection date, type and inspector.

Enforcement data identifies actions taken and which violations occurred to provoke enforcement.

Evidentiary Hearings stores data related to permittee protests and regulations appeals.

The Grants file contains records of which publicly owned water treatment plants were issued government grants.

Permit Events data tracks the issuance and acceptance of the permits.

3.4 Hardware

3.4.1 Type

CPU IBM 3090 - 300 (SIERRA SERIES)

3.4.2 Peripherals

The peripherals used for PCS are IBM or IBM compatible personal computers, TTY line by line terminals, IBM 3278 full screen terminals and IBM 3279 full screen color monitor terminals.

The PCs use KERMIT or other compatible software to upload and download data to the mainframe.

TTY terminals have the ability to emulate full screen with protocol conversion software.

3.5 Software

PROGRAMMING
LANGUAGES COBOL (Batch & CICS)
ADABAS/NATURAL (4GL)
DBASE III

3.5.1 Online

Natural is used for the online or screen programs. Screen edit programs for online data are written in CICS COBOL.

3.5.2 Batch

COBOL is used for PCS batch processing programs.

3.5.3 Communications

Users in the field access PCS through a modem or central controller.

4.0 System Functions

4.1 System Input

4.1.1 Data Input

The PCS design provides three methods to enter data ;
1. card image processing, 2. PCSADE and 3. PCENTRY. These
processes are described in the following sections.

1. Card image processing requires users to create 80
character card image data sets and submit them via a batch run.
Once the card is submitted and the batch run activated, the card
image data is edited by PCS and an edit report is generated. The
card image format as depicted below, identifies the record type,
transaction type (add, delete, change) and the data itself.

ie: D-NMD0002323001A9.....861231

The first character 'D' identifies the transaction as a
Delete transaction.

The next two characters '-N' identifies the record type
as a measurement.

The remaining characters represent measurement data.

Card Image processing requires extensive TSO/SPF
knowledge.

2. PCSADE is an on-line, menu driven, full screen
system that allows users to add new records and display existing
records for deletion or change. PCSADE provides online editing
so data is edited as it is entered.

PCSADE offers Add, Change and Delete transactions,
however a Browse or View option is not available. The Change
function does not immediately update the data base, it submits an
update transaction which takes effect when the Batch Update
process is run. PCSADE provides a Help function. The Help
function contains information about how to use PCSADE, it does
not include a list of any acceptable entry codes.

3. PCENTRY allows users to enter data on a PC and
upload the data to the mainframe. This system is menu driven with
full screen access similar to PCSADE.

4.1.2 Updates

Although three ways to enter data exist, there is only one way to apply the transactions to the PCS database, ie... update the database. Due to the high volume of data entered, no data is updated online. All update transactions are processed by a standard Update Job run twice a week.

4.2 System Output

4.2.1 Ad-Hoc Data Retrieval

Once the data has been applied to the database it can be retrieved. Currently there are two ways to retrieve data. They are : Generalized Retrieval and INQUIRY.

Generalized Retrieval is the most widely used PCS tool. This facility allows users to set up batch retrieval statements in a manner similar to the card image data entry. The user submits these statements and receives either a "canned" report or a customized report. The following example conveys how Generalized Retrieval works.

```
ie: 10 STTE = MD
     10 SIC2 = 4952
     20 FAC-NAME
```

The numbers 10,20 identify the commands.

A 10 command indicates selection criteria

A 20 command indicates what is requested to be displayed

The first 10 command requests the state (STTE) of Maryland(MD)

The second 10 command indicates the user requests all sewage treatment plants(internally identified by code 4952)

The 20 command indicates the user requests the Facility name (FAC-NAME) be displayed on the report.

The subsequent report produced would display the names of all the sewage treatment plants in Maryland. Although, widely used because of its tremendous flexibility, Generalized Retrieval has batch limitations similar to the batch data entry method.

The online "INQUIRY" system provides an interactive single query function. Each request must be followed by pressing the 'ENTER' key, after which another request may be made. INQUIRY has two separate modes, Prompt and Command. The Prompt mode is menu driven and the user selects from a series of "canned reports". Examples of "line by line" processing and Prompt and Command modes can be found in Appendix A. The reports produced by the INQUIRY system appear online.

5.0 System Maintenance

5.1 User Change Control Process

The following scenario depicts the process which expedites system changes.

- User reports problem to PCS Headquarters hotline.
- Reported problem is logged on the PCS User Request form.
- Headquarters staff analyzes the problem.
- Headquarters staff determines extent of problem.
- Problem is assigned a priority by Headquarters staff according to effect on overall user community.
- Headquarters management meets with technical management to determine if resolution requires a system enhancement or a software modification.

5.1.1 System Enhancement

System enhancements are defined as system problems or changes which require necessitate research before implementation. First, an analysis of the enhancement is conducted. Once the study is complete and the effects on the system are determined the enhancement request is entered into the Enhancement Library. Included in the library are ; date, description and status of the request.

A representative user group further prioritizes the request and presents it to the technical staff, who initiate the enhancement plan.

When a batch card image data entry enhancement is made all interface states must modify their conversion software to accommodate the change.

5.1.2 System "Problems"

System "problems" are classified as system inadequacies or changes requiring no additional research. (A system problem is less complicated than a system enhancement). Once a modification request is made it is logged into the Problem Library. The problem is assigned to a programmer, who upon resolution of the problem updates the library status of the problem from pending to complete.

5.2 Technical Change Control Process

The mechanics of the technical change control process are the same for system enhancements as they are for software "problems". Both types of approaches require existing software to be modified.

5.2.1 Change Control System Design

PCS incorporates two software environments, development and production thus adhering to standards set by NDPD. The production environment contains the actual software and data the user accesses. Controls have been implemented which restrict production updates outside of the regular update process. The development environment allows software modification and testing to be done on subsets of actual data. This dual system allows software maintenance and modification without interrupting the production system.

5.2.2 Change Control Documents

Documents involved in the change control process are the :

- PCS User Request
- PCS Cobol/Fortran Tracking Form
- PCS Natural Program Tracking Form
- Change/Enhancement Test and Acceptance Form for Natural Programs
- PCS Program Update Log

5.2.3 Change Control Activity

After the software has been changed the programmer is responsible for testing the change.

Once testing is complete the original request form is updated to indicate a resolution for the problem is in effect. Additionally, the software tracking forms and change acceptance forms both online and bound copies are completed. All forms are reviewed by a senior project manager.

5.2.4 Change Control Testing

Testing is performed both by the programmer making the change and Headquarters personnel. The modifications must be tested and cleared by both parties before being passed to the National Computer Center (NCC).

5.2.5 Implementation of Changes

The NCC is responsible for moving a software change from development into production.

6.0 Documentation

PCS User's Guides

GENERALIZED RETRIEVAL

DATA ENTRY, EDIT and UPDATE (PCSADE, PCENTRY, Batch)

INQUIRY

DATA DICTIONARY

Technical Documentation

PCS Maintenance Manual

Production Control Guide

6.1 User Documentation

Users Guides exist for each PCS subsystem. Each guide contains an overview of the PCS data organization, as well as detailed procedures pertaining to accessing the subsystem, such as ; interactive sessions, screen displays, prompts and reports.

Users Guides are currently under revision. Headquarters plans to have these revised documents online sometime in fiscal year 89. Online manuals will benefit the users in that updates to the users guides will be more manageable, and the time consuming and costly process of mailing manuals will be eliminated.

6.2 Program Documentation

Maintenance Manuals - There is an extensive collection of program maintenance documentation on each of the PCS subsystems. These documents contain detailed program descriptions of the subsystem programs. For instance, the PCSADE document describes each data entry screen program (NATURAL) and all of the CICS COBOL editing programs. The description includes a general overview of each program and the input and output formats where appropriate. In addition, program flow diagrams are also contained in these documents.

The PCS project team also keeps a "hard copy" library of every program in the system filed by program name.

Production Control - The Production Control manual is an extensive document detailing the staffs responsibilities. This document contains listings of all update JCL jobs, the most common errors that may be encountered, and the appropriate responses to resolve them.

6.3 Data Dictionary

The PCS data dictionary information includes data element descriptions and formats.

Appendix I
System Function Sample Screens

Main Menu Screen

08:17:44

PCS-ADE

10/15/87

MAIN MENU SCREEN

SCREEN ID	SCREEN NAME	SCREEN ID	SCREEN NAME
FAC1	FACILITY DATA SCREEN 1	OFLG	OUTFALL GENERAL DATA
FAC2	FACILITY DATA SCREEN 2	OFLT	OUTFALL TREATMENT TYPE/COMMENTS
FACA	FACILITY ADDRESS	EVIO	EFFLUENT MEASUREMENTS/VIOLATIONS
FACO	OWNER/OPERATOR ADDRESS	CVIO	COMPLIANCE SCHEDULE VIOLATIONS
IMSP	INSPECTIONS	SVIO	SINGLE EVENT VIOLATIONS
CSCH	COMPLIANCE SCHEDULES	PCI1	PRETREATMENT COMP IMSP SCREEN 1
PTRK	PERMIT TRACKING	PCI2	PRETREATMENT COMP IMSP SCREEN 2
EVHR	EVIDENTIARY HEARINGS	PAU1	PRETREATMENT AUDIT SCREEN 1
GRNT	GRANTS	PAU2	PRETREATMENT AUDIT SCREEN 2
LIMS	LIMITS	PAU3	PRETREATMENT AUDIT SCREEN 3
LIMM	LIMIT MODIFICATIONS	PPS1	PRETREATMENT SUMMARY
ENAC	ENFORCEMENT ACTION	TABS	PCS CODE TABLE MODIFICATIONS
EAKS	ENFORCEMENT ACTION KEYS	QUIT	** TERMINATES SESSION **

ENTER SCREEN ID: _____ DO YOU WANT THE CHANGE OPTION (Y/N)? N

PCS-ADE

Facility Owner/Operator Address Screen

PERMIT # _____ TRANS CODE _____ OWNER/OPER ADDRESS SCREEN ID: FACO

----- FACILITY OWNER ADDRESS -----

FACILITY NAME (OMAN) _____
ADDRESS LINE1 (OST1) _____
ADDRESS LINE2 (OST2) _____
CITY (OCTY) _____ STATE (OSTT) _____ ZIP (OZIP) _____
TELEPHONE (OTEL) _____

----- FACILITY OPERATOR ADDRESS -----

FACILITY NAME (EMAN) _____
ADDRESS LINE1 (EST1) _____
ADDRESS LINE2 (EST2) _____
CITY (ECTY) _____ STATE (ESTT) _____ ZIP (EZIP) _____
TELEPHONE (ETEL) _____

ACCEPT? Y/N/M: Y

03/09/87

PCS PC-ENTRY
VERSION 2.01
DATA ENTRY FUNCTION

PANEL E.MENU

SCREEN ID	SCREEN NAME	SCREEN ID	SCREEN NAME
FAC1	FACILITY DATA SCREEN 1	OFLG	OUTFALL GENERAL DATA
FAC2	FACILITY DATA SCREEN 2	OFLT	OUTFALL TREATMENT TYPE/COMMENTS
FACA	FACILITY ADDRESS	EDMR	EFFLUENT DMR PAGE
FACO	OWNER/OPERATOR ADDRESS	EVIO	EFFLUENT MEASUREMENTS/VIOLATIONS
INSP	INSPECTIONS	CVIO	COMPLIANCE SCHEDULE VIOLATIONS
CSCH	COMPLIANCE SCHEDULES	SVIO	SINGLE EVENT VIOLATIONS
PTRK	PERMIT TRACKING	PC11	PRETREATMENT COMP INSP SCREEN 1
EVHR	EVIDENTIARY HEARINGS	PC12	PRETREATMENT COMP INSP SCREEN 2
GRNT	GRANTS	PAU1	PRETREATMENT AUDIT SCREEN 1
LIHS	LIMITS	PAU2	PRETREATMENT AUDIT SCREEN 2
LIHM	LIMIT MODIFICATIONS	PAU3	PRETREATMENT AUDIT SCREEN 3
ENAC	ENFORCEMENT ACTIONS	PPS1	PRETREATMENT SUMMARY
EAKS	ENFORCEMENT ACTIONS KEYS		

ENTER SCREEN ID:

ESC: End Data Entry Function:

INQUIRY REPORT:

FACILITY OVERVIEW REPORT

GENERAL INFORMATION

PERMIT NUMBER: CT0000086 FACILITY NAME: AMERICAN CYANAMIDE COMPANY

ACTIVITY STATUS : ACTIVE ACTIVITY DATE:

MAJOR/MINOR DISCHARGER : MAJOR

TYPE OF OWNERSHIP : PRIVATE

STD INDUSTRIAL CLASS(SIC): PLASTICS MATERIALS AND RESINS

INDUSTRIAL CLASS (INCL) : PRIMARY PRIMARY CATEGORY: PLAST

CITY : WALLINGFORD /T/ STATE : CONNECTICUT

COUNTY: NEW HAVEN REGION: 01 SUB-REGION: 2

RIVER BASIN : NE/PAWCATUCK RIVER REACH:

RECEIVING WATERS: QUINNIPIAC RIV

ENTER A CARRIAGE RETURN TO CONTINUE, OR

ENTER 'SKIP' TO SKIP THE NEXT SECTION -- PERMIT INFORMATION

Appendix II
Documentation Matrix

EEI	SYSTEMS REQUIREMENTS OF THE MOVEMENT	
	●	EEI-1 Mission Needs Analysis
	●	EEI-2 Preliminary Design and Options Analysis
	●	EEI-3 Project Management Plan
	●	EEI-4 System Implementation Plan
	●	EEI-5 Detailed Requirements Document
	●	EEI-6 Software Management Plan
	●	EEI-7 Software Test & Acceptance Plan
	●	EEI-8 Software Preliminary Design Document
	●	EEI-9 Software Detailed Design Document
●	●	EEI-10 Software Maintenance Document
●	●	EEI-11 Software Operations Document
●	●	EEI-12 Software User's Reference Guide
	●	EEI-13 System Integration Test Report

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2.1 NEEDS SYSTEM PROFILE

NEEDS	CLEAN WATER ACT SUPPORTS THE NATIONAL POLLUTANT DISCHARGE SYSTEM	FEDERAL AND STATE GOVERNMENTS, PRIVATE FIRMS, PUBLIC INTEREST GROUPS, AND TRADE ASSOCIATIONS	HELD NATIONWIDE IN 1987	RELATED TO PUBLICLY OWNED WASTE WATER TREATMENT WORKS	<ul style="list-style-type: none"> • DATA ENTRY SCHEMES • EDITS PERFORMED • UPDATES POST EDIT
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SHORT AND GENERAL QUERY	STANDARD AND CUSTOM	EPA INS FILES MENU DRIVEN	IBM 3090	PL1 TIO COBOL ISPF	NOT LINE SUPPORTED PROCEDURES EXIST	USER : U.S. 1988 NEEDS SURVEY USER MANUAL USER'S GUIDE TECH : NONE ON-LINE DATA DICTIONARY
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1.0 System Overview

1.1 System Purpose

The purpose of the Needs Survey, which is technically supported by the Retrieval, Update, and Query System (RUQUS), is to summarize and report to Congress the EPA's biennial assessment of the cost of constructing all publicly-owned waste water treatment works necessary to meet the goals of the Clean Water Act, specifically Sections 205(a) and 516(b)(1).

1.2 Background

Needs Survey analysis began in 1973 in support of the Federal Water Pollution Control Act of 1972. Since 1973, nine Needs Surveys have been performed. The first eight were created without technical support, utilizing the exchange of data entry forms between the states and the EPA contractor. These Surveys entailed a six to twelve month data collection and analysis period. The 1986 Needs Survey was produced utilizing a prototype of RUQUS, which supported the data entry and review functions. During the development of the 1986 Survey the RUQUS query feature was added enabling the remaining development of the Survey to be fully supported by RUQUS. The last Survey was performed in 1988, was fully supported by RUQUS, and enabled users electronic access to the Needs data base.

The 1988 Needs Survey focused on grant-eligible categories of need, rather than the expanded eligibilities under the 1987 Amendments to the Clean Water Act. The major objective of the 1988 Survey was to update the 1986 cost estimates on all municipal wastewater treatment facilities. The documentation criteria were consistent for the 1986 and 1988 Surveys.

The 1987 Amendments to the Clean Water Act included:

- allowance of funding for non-point source and groundwater activities.
- availability of financing through the State Revolving Fund (SRF) in which municipalities may apply for a low interest rate loan or other assistance rather than a traditional construction grant.
- new enforceable requirements for stormwater, toxics and sludge problems.

The 1988 Needs Survey served as the basis for estimating needs of non-compliant facilities in the SRF Report to Congress. In addition to preliminary projections of the SRF program, the

report will provide a construction grant base-line against which future SRF data can be compared.

2.0 User Environment

Needs is used by the federal and state governments, private firms, public interest groups, and trade associations. The states are the source of the data entered in to the Needs data base through RUQUS.

2.1 User Support

User support services were developed based on the fact that a substantial number of RUQUS users will not have TSO experience. User support includes a Hot-Line, On-Line Bulletin Board, user communications, and Needs Survey Workgroup.

The user Hot-Line is available to any user with questions concerning hardware, communication linkage problems and RUQUS software use. The National Computer Center (NCC) may also be contacted regarding questions concerning hardware configurations.

The On-Line Bulletin Board will make available at regular intervals information about Needs Survey activities, meetings, data analysis, and RUQUS system-related information.

The Needs Survey Workgroup serves to disseminate Needs Survey and RUQUS information and as a forum to discuss Needs progress, problems, and enhancements. The Needs Workgroup comprises regional, local, and Headquarters staff, and meets annually.

2.2 User Training

During the spring of 1987, RUQUS training sessions were held at various locations around the country. These training sessions served to introduce state Needs Survey personnel to both the NCC and to the use of RUQUS software. Feedback from these training sessions resulted in further enhancements and refinements to the RUQUS software, which were included in the Version I release of RUQUS in November 1987.

3.0 Technical Overview

3.1 Hardware/Software Environment

RUQUS/Needs resides on an IBM 3090 and is accessible in the IBM TSO environment, utilizing an EPA In-House Software (IHS) system of files instead of a purchased DBMS.

3.2 Subsystem Environment

3.2.1 Data Entry

The data entry portion of RUQUS resides in the TSO environment. Menus and Screens support the entry of Needs Survey data.

3.2.2 Data Edits

Data which are entered via the RUQUS screens are edited by the "Master Edit" process. This process checks for data format and performs a cross-edit of the data relationships.

3.2.3 Updates

Updates are applied to the data base as soon as a record either passes the "Master Edit" process or an operator stores the record in "Interim" status, which allows for later updates to be applied.

3.2.4 Retrieval

Information is retrieved from RUQUS by retrieval screens, reports, or ad hoc query. All retrieval requests are made in the TSO environment. The General Query function is the only query method which operates in line-by-line mode.

3.3 Data

The data which comprises the Needs Survey data base are facility needs, population, flow, effluent, unit process, documentation, and state-related. For data integration purposes, facility compliance records are stored separate from Needs in a shared file.

The Needs Survey reports present and future resident and non-resident year populations for each facility in four specific categories. The categories are:

- Receiving Treatment
- Not Receiving Treatment
- Receiving Collection (sewage)
- Not Receiving Collection.

The populations are reported from a number of sources including Section 208 planning documents, facilities planning documents, and state planning offices that deal with population issues. Population data are essential for calculating EPA cost curve-based estimates for those facilities with a documented problem but insufficient information from which to obtain a cost estimate.

Flow is the total flow from all sources through the treatment plant. Total flow includes residential, commercial, institutional, industrial, and infiltration/inflow; and is measured in millions of gallons per day. Three categories of flow are reported in the Needs Survey and retained in the data base: existing flow (average flow during 12 month period), present design flow (existing plant hydraulic capacity), and future design flow (design year plant hydraulic capacity). The flow data must be consistent with the Needs and population information.

Effluent information is recorded twice: once to record design permit limits and once as a code that summarizes the level of treatment category for the treatment plants. Effluent concentration data are reported for four parameters biological (BOD), suspended solids (SS), ammonia (NH₃), and phosphorous (PHos). All values are reported in milligrams per liter. Effluent data for each parameter are reported in three different categories:

- Existing - recent 12 month averages for Discharge Monitoring Report
- Present Design - current National Pollutant Discharge Elimination System (NPDES) permit limits
- Future Design - future NPDES permit limits if a plant upgrade is planned or more stringent state limits are imposed.

Unit processes refer to the treatment and sludge handling for each treatment facility. Unit process code information is retained in a RUQUS table for the following categories:

- physical/chemical treatment
- biological treatment
- land treatment
- sludge treatment and disposal
- disinfection
- noncentralized collection/treatment
- facility control
- type of facility construction.

Documentation of the findings of Needs Survey is necessary to support the conclusions of the survey. RUQUS provides a variety of documentation data types including:

- Capital Improvement Plan (CIP)

- Infiltration/Inflow (I/I) Analysis
- Sewer System Evaluation Survey (SSES)
- Final Engineer's Estimate
- Cost of Previous Comparable Construction
- Facility Plan
- Plan of Study (POS)
- State Project Priority List
- State-Approved Area Wide or Regional Basin Plan
- Grant Application
- Municipal Compliance Plan (MCP)
- Diagnostic Evaluation
- Administrative Orders
- Court Orders or Consent Decrees
- Sanitary Survey
- State-Approved Local Comprehensive Water and Sewer Plan
- State Certification of Excessive Flow
- State-Approved Municipal Wasteland Allocation.

In order to support the separate needs of the states, RUQuS retains and services all undocumented facilities. State Needs data are stored in the same fashion as are Needs facilities records with the exception of an additional flag indicating the record as state only.

3.3.1 System Data Base

The Needs Survey data base contains cost and technical information on approximately 24,153 wastewater treatment and collection facilities nationwide, including facilities with unmet needs and those for which needs have already been met.

The Needs/RUQuS data base is a single inverted file structure which utilizes In-house Software (IHS).

3.3.2 Files

RUQUS data is stored in a single IHS data base file which contains all the application record types.

3.4 Hardware

3.4.1 Type

RUQUS and the Needs data base are active on the IBM 3090 located at the NCC.

3.4.2 Peripherals

Peripherals selected for RUQUS/Needs are at the discretion of the user, however, peripherals selected must be able to emulate an IBM 3270 or VT-100 and have telecommunications software. An asynchronous modem with 1200 to 2400 baud is also required.

3.5 Software

PL1 is used extensively for RUQUS software.

3.5.1 On-Line

PL1, Assembler, and COBOL are used for RUQUS screens and online programs. The programs are run in the ISPF environment.

3.5.2 Batch

PL1, Assembler, and COBOL are used for RUQUS batch programming needs.

3.5.3 Communications

Any terminal or PC used to access RUQUS must use Crosstalk or an equivalent.

4.0 System Functions

RUQUS is an on-line, full screen software system which provides data input and querying capabilities for the EPA's Needs Survey data base. RUQUS's primary purpose is for use by EPA and the states as a management tool for analyzing and inputting Needs Survey data and generating custom-made reports. Eventually, RUQUS will help link the major Office of Water data bases and will support the management of the State Revolving Loan Program. In order to effectively depict the costs and needs of sites, Needs must have the technical support to allow for the entry, updating and retrieval of all necessary survey data including flow, effluent, liquid, liquid effluent disposal, treatment and sludge

handling unit processes, NPDES number, and compliance. The Needs Survey is also used extensively to assist the Federal Government and the states in programming, planning, policy evaluation, and program evaluation. Private firms, public interest groups, and trade associations use Needs Survey information in marketing, cost estimating, and policy formulation.

RUQUS is composed of ten software components, is menu-driven and user friendly. All components operate in full-screen mode with the exception of the General Query function which operates in line-by-line mode.

4.1 System Input

4.1.1 Data Input

Data are input to the Needs data base via RUQUS entry screens.

4.1.2 Update

A record is updated and applied to the Needs data base once it either passes the edit process ("Master Edit") for screen entry or fails the edit process and the operator stores it as an "Interim" or incomplete record, for update at a later time.

4.2 System Output

4.2.1 Ad Hoc Data Retrieval

Ad hoc retrieval is available via the Short Query and General Query functions.

4.2.2 Reports

RUQUS provides a variety of reports, including standard and custom report generation, via the General Query function. Facility fact sheets (FFS) comprise standard reports and are available as either a two or three page report. The two page report contains all survey data. The three page report contains all survey data plus review record data such as historical screen, comments, and the Review code status.

5.0 System Maintenance

RUQUS is continually updated and changed. The rules and regulations governing the Needs program change frequently. New facilities are constantly being added and some existing facilities deleted. Facilities are constantly under qualification review under the most recent regulations.

5.1 User Change Control Process

5.1.1 System Enhancements

Users report any system enhancement requests to their Needs Survey Regional Representative.

The Needs Survey Workgroup reviews all enhancements submitted, and prioritizes the accepted changes.

Change requests are submitted to technical staff for implementation and users requesting the change are informed that the enhancement will take place. The Bulletin Board is updated to reflect the changes.

5.1.2 System Problems

Users report system problems or bugs to the User Hot-Line.

The Hot-Line operator is responsible for defining the problem from a technical viewpoint and submitting the change request to the technical staff for action.

The status of system problems is reflected on the Bulletin Board.

5.2 Technical Change Control Process

5.2.1 Change Control System Design

A development/test version of software is kept separate from production.

5.2.2 Change Control Documents

A change control log is maintained for system problems and enhancements. The log resides in a TSO data set.

5.2.3 Change Control Activity

Changes to Needs are examined, and approved or rejected by the Needs Workgroup. Needs technical staff modifies the software necessary to facilitate the change(s).

5.2.4 Change Control Testing

The programmer(s) who initiate(s) the software change(s) is/are responsible for unit test. Additional testing takes place by the same group that supports the Hot-Line.

5.2.5 Change Control Implementation

After a the software changes have passed testing and are approved to be moved to production by the system manager, the programmer who made the changes is responsible for moving the software to the production environment.

6.0 Documentation

6.1 User Documentation

U.S. 1988 Needs Survey User Manual

RUQUS User's Guide

The Needs Survey User Manual discusses the Survey application in detail and provides an overview of basic RUQUS functions.

The RUQUS User's Guide, which includes tutorials, discusses indepth the functions and purpose of RUQUS.

6.2 Technical Documentation

No technical documentation exists for RUQUS outside of the commented statements inside the software programs.

6.3 Data Dictionary

A data dictionary is maintained and accessible on-line through the TSO environment. The Needs data base data dictionary was written in IHS.

Appendix I
Sample System Function Screens

----- OMPC BROWSE/UPDATE/REVIEW DIALOGS PRIMARY MENU -----
 OPTION --->

I INFORMATION - Information about the content and operation of these dialogs, including the use of the PF keys

N NEEDS SURVEYS - Update/Review/Browse current and last NEEDS surveys

Q QUERYS - Specific queries, including INTEGRATED DATA ANALYSES

R REACH DATA - Update/Review/Browse reach hydrodynamic parameters

S STANDARDS - Update/Review/Browse waterbody uses and criteria

KEYS PFKEYS - Specify values for PF keys

PFSHOW PFKEYS - Display values for PF keys (PFSHOW OFF to cancel)

 COMMANDS: <END> to go back to the READY prompt

COMMENTS: - The OMPC Dialogs Primary Menu is the overall selection menu to access EPA's various browse/update/review systems

- The Needs Survey Selection Menu is found by entering "N" at the OPTION ---> prompt

HELLO NEEDETTES
Welcome to Version 2 of the Needs Survey RUGUS System

Latest Flashes.....

VERSION 2 IS UP AND RUNNING AS OF TODAY - MARCH 16
NEW SECTION CHIEF HEADS UP NEEDS SURVEY (see below)

*****PRESS END TO PROCEED*****

Below are several items you may be interested in; type 's'
beside the item for more information.

MEMBER	T/R	DATE.TIME	INIT	ALERT TITLE
GOODBYE	0 40	880316.1342	PAI	GOODBYE LIZ AND ELAINE. WELCOME SYLVIA
LASVEGAS	0 34	990316.1000	PAI	NEEDS SURVEY MEETING IN LAS VEGAS
NEWSLTR	0 46	880316.1349	PAI	WATCH OUT FOR NEEDS SURVEY NEWSLETTER
VERSION2	0 24	880315.1727	PAI	VERSION2 IS NOW AVAILABLE
ZZNDSNEW	0 42	880316.1344	PAI	LATEST FLASHES/DIRECTORY OF ALERTS

*****BOTTOM OF DATA*****

COMMANDS: <END> to go on to the Needs Survey Selection Menu

COMMENTS: - The Needs Survey RUGUS Bulletin Board provides helpful
notes to users about problems with the System, information
about future releases of RUGUS, and reminders of Survey
milestones and guidelines

- To review information from this screen, tab down the left-
hand column, type in an <S> beside each member in which you
are interested, and press ENTER.

----- NEEDS SURVEY SELECTION MENU -----
COMMAND ==>

----- 1988 NEEDS SURVEY -----

SECURITY CODE==> XXXXXX

REVIEW/UPDATE/BROWSE USING:

EXISTING A/F NUMBER ==> XXXXXXXXX

SHORT QUERY(NEEDREAD) ==> X

GENERAL QUERY ==> X

SUMMARIZE/ANALYZE USING GENERAL QUERY ==> X

SURVEY STATUS REPORT

==> X

ADD NEW A/F NUMBER

==> XXXXXXXXX

FLAG ALL ERRORS (Y OR N) ==> X

<--- DATA FOR THESE
<--- FOUR FUNCTIONS
<--- CURRENT THROUGH
<--- 680316 AT 2032

SCREEN SEQUENCE (6 OR 9) ==> 9

----- PREVIOUS NEEDS SURVEYS -----

BROWSE USING:

A/F NUMBER

==> XXXXXXXXX

SHORT QUERY(NEEDREAD) ==> X

GENERAL QUERY ==> X

SUMMARIZE/ANALYZE USING GENERAL QUERY ==> X

SURVEY YEAR 1986 ==>

SURVEY YEAR 1984 ==>

=====

COMMANDS: <END> to go back to the ONPC Dialogs Primary Menu
<=X> to go back to the READY prompt
<HELP> to access a help screen

COMMENTS:

- The Needs Survey Selection Menu is used to access any of ten options, depending on the user's preference
- The user must enter an "X" or an A/F Number where specified to access options
- The user has the option of choosing the 6 or 9 screen version of RUGUS, and whether or not to flag all data errors as fatal errors (a.i., they must be fixed before leaving a facility).
- The Review/Update/Browse option can be used to access A/F numbers in three ways: Existing A/F Number, Short Query, and General Query
- All options under the 1988 Needs Survey data base require the user to enter an assigned RUGUS security code
- All facility data on the Fact Sheet Screens are current up to the second; however, when querying (in Short Query or General Query), data queried upon is current up to the most recent update as shown on the upper right portion of this screen

=====

COMMAND ---->

SUMMARY REVIEW

SCROLL ---->

A/P NUMBER: 346812001
 AUTHORITY: CAMDEN COUNTY NUA 0 1

FAC. NAME: CAMDEN COUNTY NUA STP 0
 COUNTY: CAMDEN

CURRENT STATUS: NI 871109.1537 EPA
 PREVIOUS STATUS: NONE

LAST UPDATE ON: 880316 AT 2032

DATE	ELEMENT	OLD VALUE	NEW VALUE	PCT OF
871109.1537	MEDI	152003	159092	104.7
871109.1537	MECI	152003	159092	104.7
871109.1537	MEDV	9821	9800	99.8
871109.1537	MECV	9821	9800	99.8
871109.1537	PFRRT	98810	100193	101.4
871109.1537	PFRRT	382000	388417	101.7
871109.1537	PFRMT	1464	1484	101.4
871109.1537	PFRMT	2402	2442	101.7
871109.1537	PFRRC	86732	87946	101.4
871109.1537	PFRRC	79925	81267	101.7
871109.1537	PFRMC	1464	1484	101.4
871109.1537	PFRMC	2402	2442	101.7
871109.1537	FEXTOT	28.50	28.85	101.2
871109.1537	FFDTOT	57.56	58.29	101.3

=====

COMMANDS: <H> to go to the Historical Review Screen
 <C> to go to the Existing Comments Screen
 <END> to go to the Fact Sheet Data Screens
 <HELP> to access a help screen
 <ABT> to return to the Needs Survey Selection Menu or to go
 on to the next selected facility, aborting the update
 <PR> to go to the Print Information Screen
 <PRS> to use previously stored print information

COMMENTS: - The Summary Review Screen is useful when wanting to quickly
 determine the dates and review status of the most recent
 changes made to a facility

- In the review screen, "old" and "new" data elements are
 displayed along with the % change

=====

COMMAND ***>

HISTORICAL REVIEW

13 26
SCROLL ***> 01

A/P NUMBER: 346012001
AUTHORITY: CAMDEN COUNTY MUA # 1

FAC. NAME: CAMDEN COUNTY MUA STP #
COUNTY: CAMDEN

CURRENT STATUS: HI 871109.1537 EPA
PREVIOUS STATUS: NONE

LAST UPDATE ON: 880316 AT 2032

DATE	ELEMENT	OLD VALUE	NEW VALUE	PCT OF
871109.1537	NECI	152003	159092	104.7
871109.1537	NECV	9821	9800	99.8
871109.1537	NECV	9821	9800	99.8
871109.1537	PPERT	98810	100193	101.4
871109.1537	PPERT	182000	388417	101.7
871109.1537	PPERT	1464	1484	101.4
871109.1537	PPERT	2402	2442	101.7
871109.1537	PPERT	86732	87946	101.4
871109.1537	PPERC	79925	81267	101.7
871109.1537	PPERC	1464	1484	101.4
871109.1537	PPERC	2402	2442	101.7
871109.1537	PPERC	28.50	28.85	101.2
871109.1537	FEXTOT	57.56	58.29	101.3
871109.1537	FFDTOT			
871109.1537	HRCODE: HI			

INITIALS: EPA

=====

COMMANDS: <S> to go to the Summary Review Screen
 <C> to go to the Existing Comments Screen
 <END> to go to the Fact Sheet Data Screens
 <HELP> to access a help screen
 <ABT> to return to the Heads Survey Selection Menu or to go
 on to the next selected facility, aborting the update
 <PI> to go to the Print Information Screen
 <PRS> to use previously stored print information

COMMENTS: - The Historical Review Screen provides a complete historical
 log of all the data changes made to a facility

- In the review screen, "old" and "new" data elements are
 displayed along with the X change

=====

1 1 1
 COMMAND ---> EXISTING
 A/F NUMBER: XXXXXXXX FACILITY NAME: XXXXXXXXXXXXXXXXXXXXXXXX
 STATE COMMENTS CODE: XX INITIALS: XXX DATE.TIME: XXXXX.XXXX
 XX
 XX
 XX
 XX
 XX
 REGIONAL COMMENTS CODE: XX INITIALS: XXX DATE.TIME: XXXXX.XXXX
 XX
 XX
 XX
 XX
 HQ COMMENTS CODE: XX INITIALS: XXX DATE.TIME: XXXXX.XXXX
 XX
 XX
 XX
 XX
 XX

=====
 COMMANDS: <P> to see the comments from a previous update/review cycle
 <N> to see comments from the next update/review cycle
 <R> to go to the Summary/Historical Review Screens
 <END> to go to the Fact Sheet Data Screens
 <HELP> to access a help screen
 <ABT> to go back to the Needs Survey Selection Menu or to the
 next selected facility, aborting the update
 <PR> to go to the Print Information Screen
 <PRS> to use previously stored print information

COMMENTS: - The Existing Comments Screen represents a chronological log
 of the comments made by the State and EPA during the update
 /review process. One Comments Screen exists for each
 update/review cycle
 =====

-----FACILITY NEEDS DATA (SCREEN F)-----
 COMMAND ==>

Next Screen => X
 A/F Number : XXXXXXXX
 Facility Name => XXXXXXXXXXXXXXXXXXXXXXXX
 Authority Name => XXXXXXXXXXXXXXXXXXXXXXXX
 City Name => XXXXXXXXXXXXXXXXXXXXXXXX
 County Name => XXXXXXXXXXXXXXXXXXXXXXXX
 County Number => XXXXX
 Discharges To => XXXXXXXX
 NPDES Number => XXXXXXXX
 Facility Status => X
 Present Nature => X
 Projected Nature => X
 Facility Change => X
 Present Effluent => X
 Future Effluent => X

Grant/Loan Deductions ==> XXXXXXXX ==> XXXXXXXX ==> XXXXXXXX ==> XXXXXXXX

Grant Numbers

: XXXXXXXX
 : XXXXXXXX
 : XXXXXXXX
 : XXXXXXXX
 : XXXXXXXX
 : XXXXXXXX
 : XXXXXXXX
 : XXXXXXXX

EPA NEEDS ESTIMATES (IN THOUSANDS OF DOLLARS)

Category	Design Year	Current	Doc Type
1	==> XXXXXXXX	==> XXXXXXXX	==> XXX
2	==> XXXXXXXX	==> XXXXXXXX	==> XXX
3A	==> XXXXXXXX	==> XXXXXXXX	==> XXX
3B	==> XXXXXXXX	==> XXXXXXXX	==> XXX
4A	==> XXXXXXXX	==> XXXXXXXX	==> XXX
4B	==> XXXXXXXX	==> XXXXXXXX	==> XXX
5	==> XXXXXXXX	==> XXXXXXXX	==> XXX

-----POPULATION DATA (SCREEN P)-----
 COMMAND ==>

Next Screen => X
 A/F Number : XXXXXXXX

	Resident No Coll	Resident Rec Coll	Resident No Trmt	Resident Rec Trmt
Future	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX
Present	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX

	Non-Res No Coll	Non-Res Rec Coll	Non-Res No Trmt	Non-Res Rec Trmt
Future	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX
Present	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX

-----FLOW DATA (SCREEN Q)-----
 COMMAND ==>

Next Screen => X
 A/F Number : XXXXXXXXX

	FLOW (IN MILLIONS OF GALLONS PER DAY)		
	Existing	Present Design	Future Design
Total	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX
Industrial	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX
Residential	: XXXXXXXX	: XXXXXXXX	: XXXXXXXX

(Total flow - Industrial flow = Residential flow)

-----EFFLUENT DATA (SCREEN E)-----
 COMMAND ==>

Next Option => X
 A/F Number : XXXXXXXXX

PLANT EFFLUENT INFORMATION
 Present Future
 ==> X ==> X

-----DISPOSAL OF LIQUID EFFLUENTS-----
 D U C D U C D U C D U C
 ==> X X X ==> X X X ==> X X X ==> X X X

	-----EXISTING-----		-----PRESENT DESIGN-----		-----FUTURE DESIGN-----	
	Influent	Effluent	Influent	Effluent	Influent	Effluent
BOD	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
Sus Sol	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
Phos	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
Ammonia	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
PH	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
Temp	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
D. G.	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
K Deck	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX

Dunn/Brad Numbr
 XXXXXXXXXX
 PlaceCode> XXXX

-----TOXIC CODIS-----
 Existing ==> XXXX ==> XXXI ==> XXXI ==> XXXI
 Projected ==> XXXX ==> XXXI ==> XXXI ==> XXXI

-----UNIT PROCESS DATA (SCREEN U)----- 10W X OF
 COMMAND ==> SCROLL ==> 71

Next Option => X A/F Number : XXXXXXXXX

Facility Status - 7A ==> X
 Mature Present - 7B ==> X
 Mature Projected - 7C ==> X
 Facility Change - 7D ==> X
 Effluent Present - 24A ==> X
 Effluent Future - 24B ==> X

SEL	Treatment Type	Use	Change
	XX	X	X
	XX	X	X
	XX	X	X
	XX	X	X
	XX	X	X
	XX	X	X
	XX	X	X
	XX	X	X
	XX	X	X
	XX	X	X
	XX	X	X

-----MISCELLANEOUS DATA (SCREEN M)-----
 COMMAND ==>

Next Screen => X A/F Number : XXXXXXXXX
 Phased/Segmented & Non-Phased/Non-Segmented Info

Award Status	GICS Num	Proj Cost	Fund Date	P/S	Categories
					1 2 3A
: X	: XXXXXXXXX	: XXXXXXXXX	: XXXXXX	: X	: X : X : X
: X	: XXXXXXXXX	: XXXXXXXXX	: XXXXXX	: X	: X : X : X
: X	: XXXXXXXXX	: XXXXXXXXX	: XXXXXX	: X	: X : X : X

Reach Number	==> XXXXXXXXXX	Reach Miles	==> XXXXXX
1972 Pop Req Coll	==> XXXXXXXXX	Subbasin Number	==> XX
Comment Codes	==> XXXX	Stream Use	==> XXXXXX
92-500/Sub Funding	==> X	Compliance Status	==> X
Congressional District	==> XXXX	Major/Minor Status	==> X
Location Codes	==> XXXX	Compliance Source	==> XXXXX
Facility Latitude	==> XXXXXX	Compliance Dates	==> XXX
Facility Longitude	==> XXXXXX	Compliance	
		Comment ==>	XXXXXXXXXXXXXXXXXXXX

-----DOCUMENTATION DATA (SCREEN D)-----
 COMMAND ==>

Next Option => X
 A/F Number : XXXXXXXXX

Document Title ==> XX
 Author ==> XX
 Date (YYMMDD) ==> XXXXXX

-----COMMENTS-----

==> XX
 ==> XX
 ==> XX
 ==> XX
 ==> XX

-----STATE ESTIMATE DATA (SCREEN S)-----
 COMMAND ==>

Next Screen => X
 A/F Number : XXXXXXXXX

SEPARATE STATE ESTIMATE (IN THOUSANDS OF DOLLARS)

Cat	Design Year	Current	Reason
1 >	XXXXXXXX	XXXXXXXX	XXX
2 >	XXXXXXXX	XXXXXXXX	XXX
3A>	XXXXXXXX	XXXXXXXX	XXX
3B>	XXXXXXXX	XXXXXXXX	XXX
4A>	XXXXXXXX	XXXXXXXX	XXX
4B>	XXXXXXXX	XXXXXXXX	XXX
5 >	XXXXXXXX	XXXXXXXX	XXX

STAL1> XXXXXXXXXXXXXXXXXXXXXXXXXXXX STMO1I> XXXXXX
 STAL2> XXXXXXXXXXXXXXXXXXXXXXXXXXXX STMO2I> XXXXXX
 STAL3> XXXXXXXXXXXXXXXXXXXXXXXXXXXX STMO3I> XXXXXX
 STAL4> XXXXXXXXXXXXXXXXXXXXXXXXXXXX STMO4I> XXXXXX
 STAL5> XXXXXXXXXXXXXXXXXXXXXXXXXXXX STMO5I> XXXXXX

-----ADDITIONAL STATE DATA (SCREEN A)-----
 COMMANDS ==>

Next Screen ==> F A/F Number: 346012001

STAL6 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO6 >	XXXXXX
STAL7 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO7 >	XXXXXX
STAL8 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO8 >	XXXXXX
STAL9 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO9 >	XXXXXX
STAL10 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO10 >	XXXXXX
STAL11 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO11 >	XXXXXX
STAL12 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO12 >	XXXXXX
STAL13 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO13 >	XXXXXX
STAL14 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO14 >	XXXXXX
STAL15 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO15 >	XXXXXX
STAL16 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO16 >	XXXXXX
STAL17 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO17 >	XXXXXX
STAL18 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO18 >	XXXXXX
STAL19 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO19 >	XXXXXX
STAL20 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO20 >	XXXXXX
STAL21 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO21 >	XXXXXX
STAL22 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO22 >	XXXXXX
STAL23 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO23 >	XXXXXX
STAL24 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO24 >	XXXXXX
STAL25 >	XXXXXXXXXXXXXXXXXXXXXXXXXXXX	STNO25 >	XXXXXX

-----POPULATION AND FLOW DATA (SCREEN V)-----
 COMMANDS ==>

Next Screen ==> W
 A/F Number : XXXXXXXXX

				===POPULATION DATA===				
	Resident	Resident	Resident	Resident	Resident	Resident	Resident	
	No Coll	Rec Coll	No Trmt	No Trmt	No Trmt	No Trmt	Rec Trmt	
Future	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	
Present	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	
	Non-Res	Non-Res	Non-Res	Non-Res	Non-Res	Non-Res	Non-Res	
	No Coll	Rec Coll	No Trmt	No Trmt	No Trmt	No Trmt	Rec Trmt	
Future	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	
Present	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	
				===FLOW DATA (MGD)===				
	Existing	Present	Future	Existing	Present	Future	Existing	
		Design	Design		Design	Design		
Total Flow	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	
Industrial Flow	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	==> XXXXXXXX	
Non-Industrial Flow	: XXXXXXXX	: XXXXXXXX	: XXXXXXXX	: XXXXXXXX	: XXXXXXXX	: XXXXXXXX	: XXXXXXXX	

-----DOCUMENTATION AND MISCELLANEOUS DATA (SCREEN W)-----
 COMMAND ==>

Next Screen => X
 A/F Number : XXXXXXXXX

TOXIC	Present	Projected
CODES > XXX > XXX		> XXX > XXX

====DOCUMENTATION DATA====

Document Title ==>
 Author ==>
 Date (YYMMDD) ==>

Comments

```

==> XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
==> XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
==> XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
==> XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
==> XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
  
```

====MISCELLANEOUS DATA====

Reach Number	==> XXXXXXXXXX	Reach Miles	==> XXXXXX
1972 Pop Req Coll	==> XXXXXXXXX	On Reach	==> X
Comment Codes	==> XXXX	Subbasin Number	==> XX
92-500/Sub Funding	==> X	Stream Use	==> XX XX
Congressional District	==> XXXX	Facility Latitude	==> XXXXXX
Location Codes	==> XX	Facility Longitude	==> XXXXXX
Dun & Bradstreet No.	==> XXXXXXXXX	Place Code	==> XXXX

-----EFFLUENT AND UNIT PROCESS DATA (SCREEN X)----- ROW 1 OF
 COMMAND ==> C

Next Screen => S
 A/F Number : XXXXXXXXX

	D U C	D U C	D U C	D U C
	==> X X X	==> X X X	==> X X X	==> X X X

====CONCENTRATIONS DATA (MG/L)====

	EXISTING		PRESENT DESIGN		FUTURE DESIGN	
	Influent	Effluent	Influent	Effluent	Influent	Effluent
BOD	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
Sus Sol	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
Phos	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
Ammonia	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
pH	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
Temp	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
D.O.	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX
K Daon	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX	> XXXXXXXX

====UNIT PROCESS DATA====

SEL	Treatment Type	Use	Change	Pres Effluent	Fut Effluent
	XX	X	X		
	XX	X	X		
	XX	X	X		
	XX	X	X		
	XX	X	X		

.....
 ===== 4 AND 9 SCREEN VERSIONS OF RUGUS - FACT SHEET DATA SCREENS =====

COMMANDS: <R> to go to Summary or Historical Review Screens
 <C> to go to the Existing Comments Screen
 <END> to invoke Master Edit/Cost Estimation

<HELP> to access a help screen
 <ABT> to abort changes to screens without updating
 <I> to request an interim update
 <PR> to go to the Print Information Screen
 <PRS> to use previously stored print information

COMMENTS: - At the "Next Screen =>" prompt, you can enter a screen type to alter the screen sequence. The screen types are: F, P, Q, E, U, M, D, S, and A (V, W, and X exclusive to 6 screen version of RUGUS).

- The Unit Process Data Screen (found on Screens U and X) displays the treatment processes of a facility in tabular form. For this screen, <UP> and <DOWN> commands can be entered to scroll. Also, under "SEL", <I> can be entered to insert a row, or "D" to delete a row.

.....

Key in Criteria
Press The ENTER key

Facility Name > XXXXXXXXXXXXXXXXXXXXXXXX
NPDES Number > XXXXXXXX
City Name > XXXXXXXXXXXXXXXXXXXXXXXX
County Name > XXXXXXXXXXXXXXXXXXXXXXXX
Review Code or Range > XXXXXXXX To > XXXXXXXX
State Abbreviation > XX

COMMANDS: <END> to go back to the Needs Survey Selection Screen
<HELP> to access a help screen

COMMENTS: - The Facility Selection Screen, found only in Short Query (NEEDREAD), is used to select a number of facilities for a Selected Facility Table. The State can enter a combination of the following criteria: Facility Name, NPDES #, City Name, County Name, Review Code, and State Abbrev.

- The Facility Selection Screen is useful when wanting to update or review facilities by county, for instance, or for finding facilities for which you do not know the A/F #.

COMMAND ===>

SELECTED FACILITY TABLE

ROW 1 OF 4
SCROLL ===> 01

OPTIONAL FEATURES:

SELECT ALL ===> X

VALIDATE EN MASSE ===:

A/F NUMBER

FACILITY NAME

AUTHORITY NAME

420002001
S 420017001
420020001
S 420028001
420040001
S 420052001
420056001
420061001
420070001
420071001
420071002
420076001
420079001
420084001
420086001
420086002
420095001
420097001

VALLEY FORGE STP
SOUTH COATESVILLE STP
WEST GOSHEN SEWAGE T P
MALVERN COLLECTION SYSTEM
SPRING CITY BORO TP
EAST WHITELAND COL SYM
OXFORD WMTF
COATESVILLE WMTS
EAST VINCENT SAN SEW FAC
TAYLOR RUN STP & CS
GOOSE CREEK STP & CS
WEST WHITELAND TWP SS
ELVERSON SS & STP
KENNETT TWP SANITARY SEW
LONDON GROVE MUN AUTH
LONDON GROVE MUN. AUTH
HONEYBROOK BORO STP
NORTH COVENTRY STP

PHOENIXVILLE
SOUTH COATESVILLE
WEST CHESTER
MALVERN
SPRING CITY
FRAZER
OXFORD
COATESVILLE
SPRING CITY
WEST CHESTER
WEST CHESTER
EXTON
ELVERSON
KENNETT SQUARE
WEST GROVE
LONDON GROVE
HONEYBROOK
M. COVENTRY

COMMANDS: <UP> to scroll up one screen
<DOWN> to scroll down one screen
<END> to go back to the Facility Selection Screen (if in Short Query) or to the Needs Survey Selection Screen (if in General Query)
<HELP> to access a help screen

COMMENTS: - The Selected Facility Table displays all the facilities selected either through Short Query or General Query
- Although there is no limit to the number of facilities that can be selected, only 20 will be displayed at a time on the screen. Use the scroll commands to go up or down the table
- To select facilities for update or review, tab down the left-hand column and type in an <S> beside each A/F number you wish to see.
- When finished with the facilities selected, you will be returned to the Selected Facility Table. The "S" markers will be converted to "1" to indicate that the facilities have been reviewed.
- Use SELECT ALL to select all of the facilities on a screen for review or update by placing an <X> at the prompt.
- Use VALIDATE EN MASSE to do a mass update of facilities for either all the A/F Numbers selected through placing an "S" in the left column or by selecting all A/F Numbers through SELECT ALL. An Update Validation Screen will appear to update all the A/F Numbers chosen. Only one screen can be mass updated at a time.

DESTINATION ===> XXXX

COPIES ===> XX

BOX/BIN ===> XXXX

=====

COMMANDS: <END> to return to the screen from which the Print Screen was accessed

<HELP> to access a help screen

COMMENTS: - The Print Information Screen is used to enter print specifications for many of the screens in RUGUS. The screens most likely to be printed are:

Facility Fact Sheet Screens
Summary/Historical Review Screens
Existing Comments
Selected Facility Tables
Summary Status Reports

- The following must be keyed in before pressing ENTER:

1. DESTINATION ===> Must be a remote printer at your location or at MCC

2. COPIES ===> Type in the number of copies (01,02,03....etc.)

3. BOX/BIN ===> M + User ID (e.g., MABC)

=====

```

*****
      INS General Query Facility
      ***          ***
      SQFLD
      Release Date: 03/10/88
*****
      X-- NEEDS88

```

Prompting Levels:

```

-----
* Q:  QUICK  -- For the expert      user. *
* N:  NORMAL -- For the experienced user. *
* V:  VERBOSE -- For the beginning user. *
-----

```

Prompting level?

Database Identifier: NEEDS88.

Main menu: You have the following from which to choose

```

X: Exit. Done with SQF for now.
H: Help. Display selection descriptions.
D: Dict. Display the data element dictionary.
C: Crit. Enter or modify data screening criteria.
O: Out. Enter or modify output report specifications.
S: Sort. Enter or modify sorting specifications.
B: Brks. Enter or modify actions at control breaks.
K: Keep. Keep query specifications in a library.
L: Load. Load query specifications from a library.
E: Exec. Execute the query.

```

For help, enter "H" followed by the letter for which you want help.
 Example: For help with selecting the CRITERIA option, enter "HC".

Which would you like?

.....

Selection Crit. You have the following options

X: Exit. Return to the main menu.
N: New. Enter all new data screening specifications.
L: List. Display the screening specifications already present.
E: Edit. Modify the screening specifications for this query.
A: Add. Add additional screening specifications.
H: Help. Display some information about this menu.

For help, enter "H" followed by the letter for which you want help.
Example: For help with selecting NEW criteria, enter "HN".

Which would you like?

.....

Output: You have the following options:

X: Exit. Done specifying the output format.
N: New. Enter all new output specifications.
L: List. Display the output specifications already entered.
E: Edit. Make modifications to the existing output specs.
A: Add. Add new specifications to those already stored.
S: Std. Select one of the standard, fixed-format reports.
U: User. Turn off standard report and let you specify the format.
T: Titl. Enter report title(s).
F: File. Direct report output to a data file.
H: Help. Get further information about this menu.

For help, enter "H" followed by the letter for which you want help.
Example: For help with selecting NEW specifications, enter "HN".

Which would you like?

.....

----- SUMMARY STATUS MENU ----- COMMAND ==>

FROM ==> XXXXXX					TO ==> XXXXXX					SHOW DOLLARS? =
R1>	R2>	R3>	R4>	R5>	R6>	R7>	R8>	R9>	R10>	
CT>	NJ>	DE>	AL>	IL>	AR>	MO>	CO>	AZ>	AK	
MA>	NY>	DC>	FL>	IN>	LA>	IA>	MT>	CA>	ID	
ME>	PR>	MD>	GA>	MI>	OK>	KS>	ND>	GU>	OR	
NH>	VI>	PA>	KY>	MM>	KM>	NE>	SD>	HI>	WA	
RI>		VA>	MS>	OH>	TX>		UT>	NV>		
VT>		WV>	NC>	WI>			WY>	TT>		
			SC>							
			TN>							

SELECT ALL REGIONS ==

=====

COMMANDS: <END> to go back to the Needs Survey Selection Menu
 <HELP> to access a help screen

COMMENTS: - The Summary Status Menu allows you to choose the State and/or EPA Region for which you want to obtain a Survey Status Report.

- Access to Needs information is automatically restricted by the password security system, so you will not be able to access states out of your jurisdiction.

- To select a State, tab down to the state alphabetic code and type in an <X>. Then type in an <X> beside "SHOW DOLLARS?" if you want a report showing Needs dollar amounts. This report will be current to the last system update. displayed on the Needs Survey Selection Menu and on the top of this screen.

=====

ST ID	PRE-88		UPDATED		REGION		HEADQUARTERS		HQ ACC NEEDS \$
	0	NEEDS \$	0	NEEDS \$	REVIEW/ACCPD		REVIEW/ACCPD		
DE	42	68	0	0	0/	0	0/	0	0
MD	321	866	99	110	0/	0	48/	44	7
PA	1,632	1,713	283	159	0/	0	3/	3	2
VA	420	992	0	0	0/	0	0/	0	0
WV	565	980	107	164	0/	0	13/	13	8
DC	1	245	1	255	0/	0	1/	1	255
R03	2,981	4,864	490	688	0/	0	65/	61	272
TOT	2,981	4,864	490	688	0/	0	65/	61	272

***** BOTTOM OF DATA *****

COMMANDS: <END> to go back to the Summary Status Menu

<UP> to scroll up one screen

<DOWN> to scroll down one screen

<HELP> to access a help screen

<PR> to go to the Print Information Screen

<PRS> to use previously stored print information

COMMENTS: - The Summary Status Report displays information about the number of facilities that have passed through the update/review process of the 1988 Needs Survey as of the date shown in the DATE RANGE, the total Needs dollars inputted thus far by the State, and the total Needs dollars accepted thus far by EPA following their review.

- The Status Report can be printed out at a printer location.

PLEASE VERIFY A/F NO.: XXXXXXXXXX

FACILITY NAME: XXXXXXXXXXXXXXXXXXXX

[illegible]

 COMMANDS: A command is not necessary when using the Update Validation
 and Remarks Screen. However, if the State decides at this
 last stage of an update to abort all the changes made, <ABT>
 can be entered at the COMMAND ==> prompt. Also, <HELP> can
 be entered if the user wants to access a help screen.

used if the user wants to do so.

COMMENTS: - The Update Validation and Remarks Screen requires the user to "sign off" on an update to a facility by doing the following:

- following:
1. validate the A/R number by typing it in at "I/R NO. VALIDATION ==>".
 2. Type in the Review Code (<SH> if the State is happy with the data inputted, or <SI> if the State wants to submit an interim update).
 3. Type in your initials.
 4. Type in specific comments related to the update of the facility. These will help the EPA reviewer to understand changes to the facility.

- By pressing ENTER after typing in the above information, the user will be returned to the Needs Survey Selection Menu or to the next selected facility.

Appendix II
Documentation Matrix

DOCUMENTATION MATRIX

<div> <div>EEI-1</div> <div>MISSION NEEDS ANALYSIS</div> </div>		
	●	EEI-1 Mission Needs Analysis
	●	EEI-2 Preliminary Design and Options Analysis
	●	EEI-3 Project Management Plan
	●	EEI-4 System Implementation Plan
	●	EEI-5 Detailed Requirements Document
	●	EEI-6 Software Management Plan
	●	EEI-7 Software Test & Acceptance Plan
	●	EEI-8 Software Preliminary Design Document
	●	EEI-9 Software Detailed Design Document
	●	EEI-10 Software Maintenance Document
	●	EEI-11 Software Operations Document
●	●	EEI-12 Software User's Reference Guide
	●	EEI-13 System Integration Test Report

2.2 CERCLIS SYSTEM PROFILE

CERCLIS	COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA)	OWNER, SUPERFUND SITE PERSONNEL, HQ STAFF	CONDUCTED AT HQ OR REGIONALLY	SUPERFUND DATA RELATING TO MONITORING CLEANUP SITES	<ul style="list-style-type: none"> • ENTRY VIA UPLOAD & SCREENS • EDITS • IMMEDIATE & WEEKLY UPDATES • RETRIEVAL
---------	--	--	----------------------------------	---	--

2

AVAILABLE VIA S2K	CUSTOM AND STANDARD	SYSTEM 2000 DATA BASE MENU-DRIVEN CENTRAL SYSTEM 10M	2 IBM 3090'S	CICS COBOL COBOL PLE S2K	NOT-LINE SUPPORTED PROCEDURES EXIST	USER: CERCLIS: REGIONAL SYSTEM ADMIN HANDBOOK DATA ENTRY & RETRIEVAL GUIDE NATIONAL REPORTS LIBRARY MASTERPLAN: USER'S GUIDE TECH: CERCLIS: SYSTEM DOCUMENT PROGRAMMERS MANUAL
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EPA MAJOR SYSTEMS PROFILE

OUTLINE

- 1.0 System Overview
- 1.1 System Purpose
- 1.2 System Background
- 2.0 User Environment
- 2.1 User Support
- 2.2 User Training
- 3.0 Technical Overview
- 3.1 Hardware/Software Environment
- 3.2 Subsystem Environments
 - 3.2.1 Data Entry
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 - 3.2.3 Updates
 - 3.2.4 Data Retrieval
- 3.3 Data
 - 3.3.1 System Data Base
 - 3.3.2 Files
- 3.4 Hardware
 - 3.4.1 Type
 - 3.4.2 Peripherals
- 3.5 Software
 - 3.5.1 On-Line
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- 4.0 System Functions
- 4.1 System Input
 - 4.1.1 Data Input
 - 4.1.2 Update

- 4.2 System Output
 - 4.2.1 Ad Hoc Data Retrieval
 - 4.2.2 Reports
- 5.0 System Maintenance
 - 5.1 User Change Control Process
 - 5.1.1 System Enhancements
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 - 5.2.1 Change Control System Design
 - 5.2.2 Change Control Documents
 - 5.2.3 Change Control Activity
 - 5.2.4 Change Control Testing
 - 5.2.5 Change Control Implementation
- 6.0 Documentation
 - 6.1 User Documentation
 - 6.2 Technical Documentation
 - 6.3 Data Dictionary

1.0 System Overview

1.1 System Purpose

The purpose of the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) is to provide tracking, scheduling, and financial management services to regional sites in support of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). CERCLIS is a tool which helps a region or site to meet Superfund program management and reporting needs. The data maintained in CERCLIS include regional site information which is available through a regional area network called WasteLAN and through direct linkup to the mainframe. Other site-related information includes financial information such as budget allowances, administrative data such as targets and accomplishments, event tracking, site information, and enforcement activities.

1.2 System Background

CERCLIS was developed by the Office of Solid Waste Emergency Response (OSWER) to support the Superfund program. Superfund provides a mechanism to track and clean up hazardous waste sites located throughout the ten national regions. Each region's activities are tracked through CERCLIS and are monitored both regionally and by headquarters.

Originally, CERCLIS was planned as a site inventory application. However, CERCLIS was expanded to accommodate other non-site specific and site-related functions, previously available through systems external to CERCLIS. CERCLIS expanded to maintain all necessary functions for operation under one integrated system, the "new" CERCLIS. The systems made obsolete by this expansion are the Removal Tracking System (RTS), Removal-Remedial Financial System (RRFS), and the Case Management System (CMS). CERCLIS integrated the Superfund Comprehensive Accomplishments Plan (SCAP) into the "new" system as well. Therefore, CERCLIS is currently a full functioning system supporting all activities necessary for the collection and reporting of an integrated Superfund program with project management information.

To date, CERCLIS has been implemented in all ten regions. Two regions are currently utilizing the WasteLAN, while the remaining regions plan to link up to the regional area network shortly. Those regions and users not accessing CERCLIS via WasteLAN are currently accessing CERCLIS directly on the mainframe.

CERCLIS is currently in the production stage of its life cycle. During the development stage, CERCLIS was piloted at designated regions to provide a real world environment for system testing. During the pilot, CERCLIS was modified to correct problems and enhance performance. Currently, additional computing resources and mirror image copies of the data base are used to

alleviate slow response time and accommodate user community needs.

Headquarters has access to the CERHELP section of CERCLIS and is responsible for maintaining non-site specific data and CERCLIS reference tables. regional users have access to the entire CERCLIS system, including CERHELP.

2.0 User Environment

The user community consists of Headquarters staff, the Army Corps of Engineers and the regional site staff which includes an Information Management Coordinator (IMC), Data Administrator (DA), Data Base Administrator (DBA), and Data Handler (DH). Headquarters accesses the data contained in the CERHELP data base and updates the code files and tables contained in CERHELP. The Army Corps of Engineers is integrated with CERCLIS at some sites and take on the functions of site personnel since they are contracted through the EPA to perform cleanup activities.

Each region should have an IMC, DA, DBA, and DH. The IMC is responsible for the Superfund program and systems management activities and will coordinate with the Environmental Services and Management divisions where necessary. The DA is responsible for directly maintaining and managing CERCLIS. The DA also conducts QA/QC activities, generates and designs reports, performs CERCLIS queries, maintains the regional CERCLIS data element dictionary, maintains the documentation library, and coordinates and conducts regional training. DBA functions are more technical than the DA and include the development and maintenance of regional CERCLIS software, user support, and data quality control support. Data Handlers (DHs) enter data through CERCLIS data entry screens (CICS or WasteLAN).

Contract personnel are sometimes employed to perform some technical and data entry tasks.

2.1 User Support

The CERCLIS user group or CERCLIS Management Council (CMC) as it is now called includes ten regional representatives and ten representatives from Headquarters. The CMC meets twice a year to discuss CERCLIS concerns and issues. The CMC is organized into four work groups which meet at least four times a year and include regional and Headquarters staff (IMC, DA, DBA). The four areas supported by the work groups are: Technical Enhancement; Report Development; Support, Training, and User Documentation; and Data Usage and Quality Improvement. The work groups support the CMC and the CMC reports to, coordinates with, and supports the Management Advisory Council (MAC). The CMC submits proposed work plans, analyses of issues, and problem notifications to the MAC.

The Technical Enhancement Work Group identifies, analyzes, and plans the activities needed to improve the system's

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hardware, software, and telecommunications capabilities.

The Report Development Work Group identifies needs for new or upgraded standard reports, designs report layouts, and proposes report development priorities.

The Support, Training, and User Documentation Work Group identifies, analyzes and plans the activities needed to improve user support services, training materials and strategies, and user documentation.

The Data Usage and Quality Improvement Work Group identifies the needs and planning activities necessary for the promotion of CERCLIS usage. This group ensures that the quality of all CERCLIS data is maintained at an acceptable level, is standard across user groups, and includes region specific data elements.

CERCLIS news is included in two dedicated publications: the CERCLIS Progress Report, published biweekly and the CERCLIS Connection, published monthly. The CERCLIS Progress Report contains information regarding development activities, training, documentation, regional implementation status, highlights of selected CERCLIS areas, CERCLIS idiosyncrasies, key milestones, and meetings. The CERCLIS Connection contains update information, discussions of target CERCLIS areas, regional report information, practical applications for data handling, new CERCLIS information, summaries of proposed and actual changes, Hot Line information and upcoming system enhancements. These publications are distributed to the regional Information Management Coordinator (IMC).

2.2 User Training

Initial regional training is conducted by Headquarters either at Headquarters or at the requesting region. Any subsequent training is the responsibility of the regions and is conducted at a regionally specified location. Initial regional training includes classroom presentations on the CERCLIS data base schema, system documentation and user manuals, demonstration of event and enforcement activity screens and a session where live data are entered. Personnel targeted for training range from senior management to data entry support staff.

The following courses are available upon demand:

- Introduction to the Enforcement Program
- CERCLIS Report Writer
- Genius and Interactive S2K.

Courses available through the CERCLIS training program are Headquarters courses such as:

- Superfund Overview
- CERCLIS/WasteLAN Orientation
- CERCLIS Data Quality Issues
- Using a SAS interface to S2K for CERCLIS Reporting and Customized CERCLIS Reporting.

And regional courses such as:

- Case Budget CERCLIS
- Removal OSC and FMS Reconciliation Procedures
- RPM/OSC CERCLIS
- FMS Reconciliation
- CERHELP.

In fiscal year '89, training materials will be standardized and upgraded. A Central Training Library will be established and the CERCLIS Hot Line will be expanded to serve as a mechanism for users to request training.

3.0 Technical Overview

3.1 Hardware/Software Environment

The CERCLIS computing environment uses two IBM 3090 computers, versions 200 and 300. The version 200 is available for data entry via CICS screens and the version 300 is a single user machine dedicated to data base retrievals only.

WasteLAN is a regional area network providing applications written in dBASE III and access to system software such as Timeline and Teleplan.

3.2 Subsystem Environment

3.2.1 Data Entry

CERCLIS supports two forms of data entry. Programs written in CICS COBOL provide screens on the central computer. Programs written in dBASE III provide screens for the WasteLAN users.

3.2.2 Data Edits

Screen data are edited as they are submitted, therefore the edit programs are written in the same languages as the entry

screens; CICS COBOL and dBASE III. Batch uploads and downloads of data directly to the mainframe are generally written in COBOL PLEX. Batch uploads require the creation of a transaction file which is edited prior to the application of updates to the data base. The submitting region is notified of rejections and correct transactions which are applied to the data base after passing the edit process.

3.2.3 Updates

Data entered on-line are applied to the data base immediately after validation. FMS batch updates occur weekly. Other batch updates occur as needed.

3.2.4 Retrieval

Data may be retrieved from CERCLIS via on-line query or via report. Queries to the CERCLIS data base on the mainframe are implemented with S2K, the System 2000 4GL. Queries to the regional base are implemented in dBASE III (documentation mentioned CLOUT as a possibility for this feature). Reports are written in dBASE III for WasteLAN and are written in COBOL PLEX on the mainframe reports. Some report duplications exist between the two CERCLIS environments, however the regional reports are customized to reflect regional concerns only, while the mainframe reports employ a national perspective.

3.3 Data

Information retrieval in CERCLIS is related to the events surrounding Superfund site cleanup removal activities, enforcement activity, financial activity, budget and control activity and non-site specific activities. Regional data are also included. Data related to non-site specific incident (NSI) activities reside in the CERHELP data base. Incident and enforcement activities are part of the data domain.

Data are maintained regionally through WasteLAN and centrally at the CERCLIS mainframe. Regional data are uploaded to the mainframe on a weekly basis to permit regional integration into the national base.

NSI data are not related to a site specific incident. They include: Targets and Accomplishments such as, SCAP/SPMS; Target/Measure setting and tracking, and non-site specific (NSS) accomplishments reporting. IMC staff enters, updates, and maintains all WasteLAN NSI data.

Budget and Control and Advice of Allowance are functions of Superfund program management and include items like SCAP budget development and control, and tracking of the Advice of Allowance process. These data are maintained by Headquarters and provided to regions for viewing purposes only.

Financial data may or may not be site specific and are part of the CERCLIS data base. Site-specific financial data include obligation data, amount, operable unit and events. Non-site specific financial data encompass all of the site-specific data except operable unit and events.

Enforcement data include enforcement activity, planned and actual milestone dates, scheduled and achieved milestone dates, compliances statutes, actions required, remedies achieved, negotiations, judicial actions, and litigation results.

Site-specific data are all data involved in the investigation, assessment, inspection, removal, etc of Superfund sites. Site-specific data include pre-remedial, remedial and removal. Pre-remedial data are related to the initial investigative phase of site cleanup. These activities include site-initialization, preliminary assessment, site inspections, expanded site inspections, list site inspections, and site hazard ranking processing (NPL listing). Remedial data contain information related to tracking fund financial remedial projects. This includes activities surrounding site project completion, forward planning, Community Relations, Corps of Engineers design, technical assistance, and topographical mapping. Removal data contains information related to tracking removals such as removal action milestones and financial data.

3.3.1 Data Base

System 2000 is used as the CERCLIS mainframe data base. The CERCLIS data base has related data bases called CERHELP and CERTRAN. CERHELP contains non-site specific (NSS) data which are maintained by Headquarters, and CERTRAN which is an audit trail type of data base which contains records of all data base transactions and who made them. System 2000 is a hierarchical data base design.

dBASE III is used as the WasteLAN regional data base system. All the data available in the WasteLAN base are regional specific only. dBASE III is a relational data base architecture.

The CERCLIS mainframe base contains regional data that is uploaded from the regions approximately every week. The central base contains Enforcement information and the other side contains data related to the events, sub-events, financial matters, and chemicals used during site cleanup.

3.3.2 Files

Files documented for use in CERCLIS are transaction files which are used in the upload and download process. These files are temporary and are used as an intermediate cache to hold the data

until it can be stripped or integrated into the data base.

3.4 Hardware

3.4.1 Type

CERCLIS mainframe uses an IBM 3090/200 and an IBM 3090/300. WastELAN uses IBM or IBM compatible personal computers.

3.4.2 Peripherals

The peripherals used in addition to the PCs are the 3270 connector board, full screen color monitors, and associated printers. Associated printers include the high speed printer in RTP and the local site dependent printers.

3.5 Software

CERCLIS mainframe programming languages include:

- CICS COBOL
- PLEX COBOL
- Genius
- S2K Natural Language
- SAS

CERCLIS/WASTELAN programming languages include:

- dBASE III or equivalent
- CLOUT

3.5.1 On-Line

CICS COBOL is used for on-line CERCLIS mainframe screens and screen edits. dBASE III is used for on-line WastELAN screens and screen edits.

3.5.2 Batch

COBOL PLEX is used for batch processes on the CERCLIS mainframe and dBASE III is used on WastELAN.

3.5.3 Communications

Personal computers on the WastELAN utilize Crosstalk and Carbon Copy to support their communication needs to the CERCLIS mainframe.

4.0 System Functions

4.1 System Input

4.1.1 Data Input

Data are input into CERCLIS and WasteLAN through several different mechanisms: 1) FMS data download, 2) WasteLAN upload to CERCLIS, 3) CERCLIS data screens, 4) WasteLAN data entry screens, and 5) CERHELP screens and CERHELP batch upload and download.

1) FMS data are copied from FMS into CERCLIS. These data are usually copied every Thursday, however the two weeks prior to the close of a quarter and after the close of a quarter, daily updates can be run at the Regions' request. The copy procedure takes place in batch mode.

Once the data are in CERCLIS the regional WasteLAN downloads the FMS central data to the respective regional LAN. The data are then integrated into the WasteLAN data base. Reports are generated which document all FMS activities. The WasteLAN Menu permits access to the Download FMS Data option.

2) WasteLAN Upload to CERCLIS occurs approximately every week. Regional WasteLAN data are uploaded to the mainframe upon request from the IMC. The CERHELP and CERCLIS data may be loaded separately or together. The upload process generates reports which verify data integrity. These reports are: WasteLAN Upload Report, which prints the keys of all records contained in the upload and Generate Audit Report, which lists the records that were not accepted into CERCLIS.

3) CERCLIS data entry screens on the mainframe are a completely separate set of screens from those on WasteLAN. Once WasteLAN is implemented in every region these screens will become obsolete. The screens have the option to Change, Delete, and View and are accessed through a menu. The CERCLIS data entry supports the same functional areas that WasteLAN supports: Pre-Remedial, Remedial, Removal, Enforcement, and Financial. Data entry screens are designed to be user-friendly.

4) WasteLAN data entry screens are designed to be user friendly. The screen design is color-coded, and display windows are used for messages and help information such as a list of valid entry codes. One of the beneficial features of WasteLAN screens is the operator's ability to display a window which contains a list of acceptable codes, tab to the appropriate code, and have the system enter the selected code automatically. National Core data elements are highlighted with an asterisk (*) to differentiate between National and regional data. The RETURN key must be pressed to enter data at the end of each field. At the end of the screen the operator can store the data or re-edit the screen. Status lines are displayed at the bottom of every screen. The types of screens available are menu screens, summary screens, and data screens. Once the screens have been accessed the user can choose Next screen; Prior screen; to Edit, Update, Add, Delete, or Exit

the screen without applying an update.

5) CERHELP data are updated by Headquarters and the Regions. Access to regional CERHELP data is made possible through the WastELAN CERHELP Maintenance Menu. This screen enables the operator to Insert, Edit, and Delete Headquarters defined codes in WastELAN. The screen allows NSI, Target/Accomplishments, Budget Type, and Advice of Allowance codes to be updated.

The updated CERHELP data are uploaded to mainframe CERCLIS usually every week. Once the upload process is run the current version of mainframe CERHELP is available to be downloaded for integration into the WastELAN CERHELP base. These processes are available through the Upload WastELAN Menu. CERHELP data are accessible to both Headquarters and regional personnel.

4.1.2 Updates

Batch loads require additional edit checks and steps in order to integrate the file data into the receiving data base. Updates made through mainframe CERCLIS data entry screens are applied immediately to the CERCLIS data base after passing the edit checks. WastELAN data entry screens work in the same manner except they update the regional base.

4.2 System Output

4.2.1 Ad Hoc Data Retrieval

Ad hoc retrievals are used to select information from the mainframe CERCLIS data base and regional CERCLIS data base. Information retrieved from the mainframe CERCLIS is from the mirror image data base which resides on the IBM 3090/300. The information on this machine is typically one day behind actual data. Retrievals are requested via the S2K natural language interface, which is accessed through the corresponding option on the CERCLIS Retrieval Screen.

WastELAN ad hoc retrieval is available for all systems as is CERCLIS mainframe ad hoc retrieval. The systems represented are Pre-Remedial, Removal, Enforcement, Remedial, and Financial (a financial system exists as part of each other system category in addition to a separate system). Retrieval is available through the WastELAN Reports option, using dBASE III.

4.2.2 Reports

Ad hoc and standard CERCLIS reports exist on the mainframe and on WastELAN.

Ad hoc reports are also a CERCLIS/WastELAN feature. Ad hoc reports can be created in a variety of formats. These include Gantt Charts, data dumps, matrix, and Critical path.

There are currently approximately standard 150 reports on the mainframe, some of which are duplicates of regional reports. Reports on the mainframe integrate data from all the regions and are often added as a request from the regional users. Regional reports on the mainframe are usually reports which require a great deal of number crunching and can be run faster on the mainframe than on a PC. When a region requests a mainframe report the report is printed at the computer site in Research Triangle Park (RTP) or routed to the local printer. If it is necessary the site staff can federal express a report to the requesting Region. When a local report is requested it is printed at the local printer, which is connected to the requesting site.

In order to efficiently utilize CERCLIS reporting capabilities, report usage and issuance are monitored by the Report Development Work Group. If a report has not been requested for a while it will be targeted for investigation. If no future need for the report is discovered it will be removed from the Report Menu and the system. Regions are responsible for keeping track of their own reports.

Reports are supported by Report Library which contains a sample page from each report accompanied by documentation explaining the purpose of the report and describing its format.

Some of the report applications which CERCLIS supports are:

- SCAP, SPMS & SPR Planning and Evaluation Reports.
- Site Summary which provides a site history and current status.
- Planned vs. Actual which compares actual progress to planned progress.
- Project Schedule which provides a list of action items for next quarter.
- Delayed-Event which provides a listing of which activities the site has fallen behind on.
- Tickler which provides a listing of items requiring immediate action.

5.0 System Maintenance

A change control process is in effect for three types of situations which are classified as follows:

- Tier 1 requests which the project manager makes an immediate decision. Tier 1 requests are considered emergency situations.

- Tier 2 requests which go through the project manager, however the request is not expedited until it has gone through the formal change procedure outlined in 5.1.
- Tier 3 requests go through the formal change procedure and require a detailed evaluation by the EPA. The final decision is made by the CMC.

5.1

User Change Control Process

- 1) System "problems" represent the Tier 1 and Tier 2 situations and are usually identified when a user calls the CERCLIS Hot Line or submits a CERCLIS Change Request Form. The process to accommodate Tier 1 requests follows:

The Hot Line operator or technical staff member re-creates the problem, performs an analysis to determine the cause/source of the problem, and documents the problem in the CERCLIS Change Control Log.

The problem is presented to the project manager, who decides whether or not to implement the change request.

If the problem is to be corrected the technical staff are notified and the problem corrected.

The outcome of the Change Request is documented and distributed to relative parties.

The Change Request Log is updated.

All changes submitted via the Hot Line are published in the CERCLIS connection.

- 2) Tier 2 change requests are processed in the following manner:
 - The problem is identified and a Change Request Form is submitted to Headquarters.
 - The request is presented to the progress forum where an analysis and recommendation is prepared.
 - A decision about the request is made, documented, and distributed to appropriate parties.

- A summary of the decision is sent to the MAC.
- The change is implemented as indicated by the outcome of the decision.

3) System enhancements require users to submit Change Request Forms to their CMC representatives.

An open window for CERCLIS enhancements is activated every quarter with plans to activate biyearly in the future.

The submitted enhancements are reviewed by the Technical Enhancement Work Group who perform a cost/benefits analysis for each request.

The results of the analysis are submitted to the MAC who makes the final decision as to which enhancements will be implemented.

Once a decision is reached the MAC sends out notifications, which indicate the status of the enhancement, to all users who submitted requests.

5.1.1 System Enhancement

System enhancements or Tier 3 change requests are defined as unsolicited changes to the system which affect original design or processes. The mechanics of the enhancement process are documented in section 5.1. Approved enhancements are planned and initiated by the Technical Enhancement Work Group. System enhancements are BETA tested.

5.1.2 System "Problems"

System "problems" comprise Tier 1 and Tier 2 requests and are defined as system inadequacies which impede the intended function of the system. A problem is logged by the Hot Line operator or project manager and then assigned to the technical staff for resolution. Once the problem is corrected the log is updated.

5.2 Technical Change Control Process

The mechanics of the technical change control process are the same for system enhancements and system "problems." Both require existing software to be modified and tested.

5.2.1 Change Control System Design

CERCLIS currently resides in the development environment, however, plans to accommodate test/development and production environments separately are in effect. The existence

of a dual system environment allows software maintenance and modification without interrupting the production system. No information has been provided regarding the type of data available for the development environment.

5.2.2 Change Control Documents

Documents involved in the change control process are:

- CERCLIS Change Request Log
- CERCLIS Connection Publication
- CERCLIS User Change Request
- Programmer's Maintenance Manual.

5.2.3 Change Control Activity

After the software has been changed the programmer(s) is responsible for testing the change.

5.2.4 Change Control Testing

CERCLIS is not implemented in the production environment therefore current software released is part of the system test.

Formal methods for interfacing to the NCC regarding changes to the production environment have yet to be defined.

5.2.5 Implementation of Changes

The NCC is responsible for moving a software change from development into production.

6.0 Documentation

The following list comprises the documentation discovered for CERCLIS:

User Documentation

CERCLIS : Regional System Administration Handbook
 CERCLIS Data Element Dictionary
 CERCLIS Data Entry and Retrieval Guide
 CERCLIS National Reports Library

WasteLAN : User's Guide to the WasteLAN Pre-Remedial System
 User's Guide to the WasteLAN Remedial System
 User's Guide to the WasteLAN Removal System
 User's Guide to the WasteLAN Enforcement System
 User's Guide to the WasteLAN CERHELP System

Technical Documentation

CERCLIS System Documentation CERCLIS Programmer's Manual

6.1 User Documentation

User's guides exist for each WasteLAN system and a General Data Entry and Retrieval Guide for CERCLIS. Each guide contains an overview of the CERCLIS or WasteLAN system as well as detailed procedures explaining access to each subsystem including: interactive sessions (query, ad hoc retrievals), screen displays, prompts, and reports.

User's guides for mainframe CERCLIS are maintained by the Support, Training, and User Documentation Work Group which reports to the CMC.

WasteLAN documentation is maintained by the Data Administrator (DA), who is also responsible for the regional documentation library. The DA issues regional documentation updates.

6.2 Program Documentation

Technical documentation for CERCLIS is maintained by contractor personnel. Program documentation is included in the CERCLIS Programmer's Maintenance Manual. The manual contains information regarding program structure, subroutines, common elements, security, help processing, error messages, update logging, rollback, and abend processing. The manual also lists CICS, COBOL, and S2K programming standards. Each program is documented by transaction id, program id, mapset, map, functions, language, source, program type, sample screen or output, and psuedocode.

The CERCLIS System Documentation manual contains general documentation or CERCLIS functions/features such as: VSAM files, implementation plan, CICS registration, system overview, program change control, change control procedure, logs, operations and test plan.

6.3 Data Dictionary

The CERCLIS Data Element Dictionary (DED) was originally implemented in BASIS on the IBM 3090 mainframe. Although BASIS provided users with an on-line search and reporting capability it was difficult to maintain and use. Therefore, a switch to dBASE III DED occurred. Currently, the DED is maintained in dBASE III and copied to floppy diskette for site distribution.

Appendix I
Sample System Function Screens

LAN MENU

Relational Report Writer
Timeline
dBase III Plus
Exit the LAN
MultiMate
Lotus

LOGIN

Name:
Password:

Wasteland

The WasteLAN

MAIN MENU

- 1) PRE-REMEDIAL
- 2) REMEDIAL
- 3) REMOVAL
- 4) ENFORCEMENT
- 5) GENERIC EVENTS
- 6) REPORTS
- 7) CERHELP SYSTEM

ENTER SELECTION (1-7) or X to Exit:

SITE INITIALIZATION

SITE INFORMATION - SITE 00000

Screen 1 of 4

FMS ID Number: * [REDACTED] EPA Site [REDACTED]
 Name: * [REDACTED]
 Street: * [REDACTED]
 City: * [REDACTED] State [REDACTED]
 County: * [REDACTED] Zip Code [REDACTED]
 Owner Indicator: * [REDACTED] Fed. Facility Indicator [REDACTED]
 Category: * [REDACTED] No Further Action [REDACTED]
 NPL Status Indicator: * [REDACTED] Incident Type [REDACTED]
 Latitude: * [REDACTED] Longitude: [REDACTED]

FF=FEDERAL
 ST=STATE
 CO=COUNTY
 DI=DISTRICT
 IL=INDIAN LAND
 MX=MIXED
 OR=OTHER
 UN=UNKNOWN

DISCOVERY

Discovery Date: * [REDACTED] Reported By Name: [REDACTED]
 Agency: [REDACTED] Phone Number: [REDACTED]

REFERRAL

TO: [REDACTED] Date: [REDACTED]

[N]ext, [P]revious, [E]dit, [A]dd, or [C]ontinue: []
 (F)orward screen, (E)dit or (L)eave without adding: ()

REMEDIAL PROGRAM

EVENT MENU

- | | |
|------------------------|------------------------------|
| 1) SITE SELECTION | 7) DESIGN ASSISTANCE |
| 2) FORWARD PLANNING | 8) REMEDIAL ACTION |
| 3) RI/FS TRACKING | 9) COMMUNITY RELATIONS |
| 4) RECORD OF DECISION | 10) OPERATIONS & MAINTENANCE |
| 5) WORK PLAN | 11) NPL DELETION |
| 6) REMEDIAL DESIGN | 12) GENERIC EVENTS |
| 13) MANAGEMENT REPORTS | |

ENTER SELECTION (1-13) or (M)enu:

Appendix II
Documentation Matrix

DOCUMENTATION MATRIX

TOOL	SYSTEMS ENGINEERING INVOLVEMENT	
	●	EEI-1 Mission Needs Analysis
●	●	EEI-2 Preliminary Design and Options Analysis
	●	EEI-3 Project Management Plan
	●	EEI-4 System Implementation Plan
	●	EEI-5 Detailed Requirements Document
●	●	EEI-6 Software Management Plan
●	●	EEI-7 Software Test & Acceptance Plan
	●	EEI-8 Software Preliminary Design Document
	●	EEI-9 Software Detailed Design Document
●	●	EEI-10 Software Maintenance Document
	●	EEI-11 Software Operations Document
●	●	EEI-12 Software User's Reference Guide
	●	EEI-13 System Integration Test Report

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2.3 FRDS-II SYSTEM PROFILE

FRDS-II	SAFE DRINKING WATER ACT OF 1974	ODW, REGIONAL AND STATE PROGRAM USERS	OFFERED REGIONALLY	EVENTS SURROUNDING MONITORING AND ENFORCEMENT OF PROGRAM	<ul style="list-style-type: none"> • DATA FILE UPLOAD • EDITS PERFORMED • UPDATED
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CUSTOM REPORTS VIA S2K	STANDARD	MENU-DRIVEN BATCH S2K DATABASE	IBM 3090/300	S2K TSO COBOL PLEN CROSSTALK	NOT-LINE SUPPORTED PROCEDURES EXIST USER : DATA ENTRY INSTRUCTIONS INTERACTIVE RETRIEVAL USER'S GUIDE DATA DICTIONARY
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EPA MAJOR SYSTEMS PROFILE

OUTLINE

- 1.0 **System Overview**
 - 1.1 **System Purpose**
 - 1.2 **System Background**
- 2.0 **User Environment**
 - 2.1 **User Support**
 - 2.2 **User Training**
- 3.0 **Technical Overview**
 - 3.1 **Hardware/Software Environment**
 - 3.2 **Subsystem Environments**
 - 3.2.1 **Data Entry**
 - 3.2.2 **Data Edits**
 - 3.2.3 **Updates**
 - 3.2.4 **Data Retrieval**
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 - 3.3.1 **System Data Base**
 - 3.3.2 **Files**
 - 3.4 **Hardware**
 - 3.4.1 **Type**
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 - 3.5.3 **Communications**
- 4.0 **System Functions**
 - 4.1 **System Input**
 - 4.1.1 **Data Input**
 - 4.1.2 **Update**
 - 4.2 **System Output**

- 4.2.1 Ad Hoc Data Retrieval
- 4.2.2 Reports
- 5.0 System Maintenance
- 5.1 User Change Control Process
- 5.1.1 System Enhancements
- 5.1.2 System Problems
- 5.2 Technical Change Control Process
- 6.0 Documentation
- 6.1 User Documentation
- 6.2 Data Dictionary

1.0 System Overview

1.1. System Purpose

The purpose of version II of the Federal Reporting Data System (FRDS) is to provide oversight information services in support of the Drinking Water Program which monitors compliance with the Safe Drinking Water Act of 1974. FRDS-II provides compliance information for 220,000 water supply sites. These data include violations, regulations, and status of hearings and exemptions.

FRDS-II provides interactive services to EPA headquarters, regional, and state personnel which allows searching through files of FRDS-II and retrieving the information available for each Public Water System (PWS).

1.2 System Background

Three versions of FRDS have been produced over the last 10 years, FRDS, FRDS vs 1.5, and FRDS-II. The development of each version has been the result of changes in the reporting requirements of primacy agents (Agencies of State government who have jurisdiction over public water sources) to the EPA Office of Drinking Water (ODW).

The original FRDS became operational in fiscal year 1977 and was designed to accommodate the needs of the Federal oversight activities of the Public Water Supply Supervision (PWSS) program. The summary data stored in FRDS were collected on an annual basis and submitted to the EPA National Computer Center (NCC), where they were loaded into the System 2000 (S2K) data base residing on EPA's UNIVAC 1108 computer system.

The annual collection and entry of FRDS summary data continued unchanged during fiscal years 1978 through 1984. The original design produced a new data base for each fiscal year. During the fiscal period between 1978 and 1984 the FRDS system environment migrated from the UNIVAC 1108 to the IBM 370, also located in the NCC.

During the fiscal year 1985 the ODW issued guidance requiring primacy agencies to modify the frequency of their data submissions from an annual to a quarterly basis. In order to accommodate the new guidance as quickly as possible FRDS vs 1.5 was developed as an interim solution. FRDS vs 1.5 combined the most recently submitted quarterly summary data with the summary data submitted over the prior three quarters and generated a data base from these combined summary data. The FRDS vs 1.5 data base contained four quarters of summary data. Although FRDS 1.5 enabled the submission of quarterly summary data, it was deficient in conducting effective oversight for periods of over 12 months.

Also during 1985, the EPA revised the Federal reporting requirements for the Public Water Supervision (PWS) program and created the Water Supply Guidance V-2, Public Water Supervision Revised Reporting Requirements (RRR) document. This document identified the present and future information needs envisioned by the Public Water Supply Supervision (PWSS) program. As a result, FRDS-II has been designed to meet the needs of RRR, and increase the flexibility of FRDS to meet new requirements. FRDS-II will accommodate four main modifications which include Data Base Integration, Non-Compliance Tracking, Historical Data Retention, and the Storage of State Discretionary Data.

FRDS-II integrates all the historical data into one data base, which is accessed and organized by the water supply site indicator. The redesign effort includes a data base redesign and development of software to support the FRDS-II design. Some of the code from the original FRDS was reused in FRDS-II.

Prior to development, an outline for the FRDS-II capabilities baseline was submitted to the user community for comments and suggestions. FRDS-II is currently in the development phase of its life cycle, although the FRDS-II baseline is now readily available.

2.0 User Environment

The FRDS user population includes EPA Headquarters ODW, FRDS-II Data Base Administrator (DBA), FRDS-II Production Control and User Assistance, state, and regional program users, including regional branch chiefs.

The FRDS-II DBA and Production Control personnel perform data base maintenance functions such as updating, backup, recovery, archiving, and reloading.

2.1 User Support

FRDS-II like the original system relies upon user correspondence through surveys and the FRDS Hot-line to accommodate the user's needs. User messages and notices are provided on-line immediately after signing on to FRDS-II.

2.2 User Training

FRDS-II user training is organized similarly to FRDS. Training classes are held regionally and encompass an overview of the entire Drinking Water Program as part of the training agenda.

3.0 Technical overview

3.1 Hardware/Software Environment

FRDS-II is developed on an IBM 3090 mainframe utilizing the System 2000 data base (S2K), VS COBOL Programming language extension (PLEX) and operates under IBM TSO.

3.2 Subsystem Environment

3.2.1 Data Entry

After the States complete the FRDS-II Data Capture Forms and create the Data Transfer File from the capture forms they submit the Transfer File to the regions who in turn submit the data to the FRDS-II database. The States and regions can dictate their own procedures and select their own tools, for carrying out these functions. The FRDS-II data entry processing and supporting software language is typically unique to each region.

Eventually, a PC-based data entry will be implemented using PC-based software.

3.2.2 Data Edits

Extensive data edits are performed on FRDS-II data prior to entry to the data base. Specific edits are documented in the Federal Reporting Data System (FRDS-II) Data Entry Instructions manual. The types of edits performed include data item values and ranges, mandatory values, element existence, and cross-editing. Specific edits have been defined for each Data Transfer File record type and for the data elements comprising each record type.

3.2.3 Updates

The type of software used to support submission of the Data Transfer File to the FRDS-II data base is at the discretion of each region.

3.2.4 Retrieval

Data retrieved from FRDS-II takes place via ad hoc or online requests initiated from the FRDS-II Retrieval System. Queries are supported by the S2K language.

Information retrieved in FRDS-II pertains to the events surrounding the monitoring and enforcement of the Drinking Water Program, such as violations made by water suppliers, state enforcement activities, and exemptions made from water regulations.

Three kinds of water suppliers are included in FRDS-II. They are: community sites (60,000); non-community sites such as factories, schools, and hotels (140,000); and 20,000 non-community non-transient water suppliers, such as consecutive water suppliers who supply water to the public water suppliers who service the public sector.

Eight categories of data related to Public Water Suppliers (PWS) are maintained in the FRDS-II data base:

- 1) Summary data including identification and statistical summary information for each PWS.
- 2) Inventory data including source information, source treatments, address information, service areas, geographic areas, and historical information.
- 3) Violation data including information pertaining to a PWS's noncompliance with EPA and/or primary standards.
- 4) Variance, exemption, and other data including information pertaining to primary agency exceptions to a PWS's normal standards and turbidity waiver information.
- 5) Enforcement action data including information pertaining to legal actions taken against a PWS.
- 6) Noncompliance profiles.
- 7) State discretionary data.
- 8) On-site visit data.

FRDS-II data are maintained on the IBM 370 computer at the NCC with the states submitting data quarterly to the regions for entry into FRDS-II.

FRDS-II data are available for public viewing.

3.3.1 System Data Base

The current FRDS-II data base structure is the result of design modifications over time to support changes in reporting requirements. The first modification to the data base resulted in the FRDS 1.5 version which consisted of 10 data bases with a total of 2.5 billion characters. The current version of the database for FRDS-II combines the last eight fiscal year databases with the most current PWS information. When the data base integration took place a "Matching Algorithm" was used to insure a correct match between the different PWSs. Nonmatching PWSs were flagged as "historical" records. The FRDS-II data base is implemented in System 2000.

3.3.2 Files

FRDS-II documentation indicated three primary files used by the system, these are the Data Transfer File, Command Files, and the Locate Data Files. Other files were not described.

Data Transfer File is 80 characters long, supports multiple record types, and provides a standard format for the submission of quarterly FRDS updates. The format for the Data Transfer File is the EPA preferred format for use by States when they submit updates.

Command Files are used intermittently throughout FRDS to expedite user requests.

Locate Data Files serve as a temporary storage cache for data selected from a user search request. Up to 11 Locate Data Files may be created during on user session without being overwritten. The contents of these files are retained until the user signs off of FRDS-II. They are typically used as input data to further output processing, such as reports.

3.4 Hardware

3.4.1 Type

FRDS-II system is implemented on the IBM 3090/300 located in Research Triangle Park (RTP) at the NCC.

3.4.2 Peripherals

Use of FRDS-II requires an approved interactive terminal or PC with a telephone connection to NCC. This linkup requires either an external or internal modem.

3.5 Software

TSO, S2K natural language, and COBOL PLEX. Crosstalk or other approved communication software is necessary for users accessing FRDS-II from a PC.

3.5.1 On-line

S2K natural language.

3.5.2 Batch

FRDS-II batch applications are supported by COBOL PLEX.

3.5.3 Communications

In order to access FRDS-II the user must have an approved interactive terminal or a PC with a telephone connection to NCC. Access to FRDS-II varies with geographical location. Access is available through Tymnet and multiplexers for those users located in Washington, D.C. and Research Triangle Park.

Users may access FRDS-II from personal computers with Crosstalk.

Users with a minimum of 4800 baud, can access FRDS-II full screen mode, anything less incurs intolerably slow response time.

4.0 System Functions

Access to FRDS-II capabilities is provided by the Function Menu which is the first menu displayed after user sign-on and includes the FRDS-II/Interactive option, which permits entry to the FRDS-II Main Menu. The FRDS-II Main Menu has eight options: Terminate, Assisted Preparation of a System 2000 Locate Statement, Re-display Broadcast Messages, Retrieve PWSs whose IDs are stored in an external file, Obtain Geographic Information for a specified city or county, Reprocess Retrieval data via Post-retrieval Output Options, System 2000 Self Contained Facility, Formulate one or more S2K locate clauses and generate a batch report. These options are discussed in more detail in the succeeding sections.

4.1 System Input

4.1.1 Data Input

The procedures involved in entering FRDS-II data are two-fold. Initially, data are entered on FRDS-II Data Capture Forms. These forms are intended for data collection only, not for data entry into the FRDS-II data base. The forms provide a mechanism for organizing FRDS data so that the next step, data transfer to the FRDS-II data base, is simplified.

There are eight different FRDS-II Data Capture Forms (Forms A-G and a Record Deletion Form). A brief description of each Form (A-G) follows:

- o Form A is used to document the facility name and address for a PWS, the characteristics of the PWS, and any additional address information such as owner address or related facility addresses.
- o Form B serves to record the data that characterizes a water source utilized by a PWS, that identify treatment objectives, and processes that are applied to a unique source of water used by a PWS.
- o Form C records data which identify geographic areas or jurisdictions served by a PWS, characteristics of the geographic area, and data related to on-site visits, by the EPA, made to a PWS.
- o Form D records data which characterize a violation of a primary drinking water regulation issued to a PWS by either a State or Federal agency.
- o Form E records data which characterize an enforcement action taken against a PWS by a State or a Federal agency.
- o Form F records data which characterize a variance or exemption that is pending for, or has been granted to, a PWS and characterizes a schedule of events and/or actions that are related to a variance or exemption that is either pending or has been granted to a PWS.
- o Form G is used to enter data that characterizes a specific set of values defined at the discretion of the State.

The FRDS-II Data Transfer File format includes a record definition for each type of Data Capture Form. The Transfer File format is the only format which allows Revised Reporting Requirement (RRR) data to be entered in the FRDS-II data base. The EPA prefers that the States use this format to input their data. States that do not yet have the capability to use the FRDS-II format have the option of using FRDS version 1.5 format to enter data. However, if this alternative is selected no RRR data can be entered via the FRDS version 1.5 format. Eventually, FRDS-II Data Transfer File format will be the only acceptable format in which to enter FRDS-II data to the data base.

The States submit FRDS-II data to their respective regional offices each quarter. The mechanism which the States use to transport the data is arranged by the region. Regardless of the mechanism selected the data must arrive in an approved FRDS format.

After the States submit their FRDS data, the regions are responsible for entering the quarterly data into FRDS. The method selected for this activity is up to the regions.

4.1.2 Updates

The Data Transfer File is the mechanism for permitting updates to the FRDS-II data base. The file is created at the State level and submitted to the regions on any medium they select (tape, diskette...etc.) Batch data updates are submitted to the FRDS-II system every quarter. Each Data Transfer record should contain the appropriate data value along with the Section Id, Data Address Qualifiers (to identify activity for an individual data item), Action Code (indicates activity such as update, deletion), Component Number, and Batch Date.

4.2 System Output

4.2.1 Ad Hoc Data Retrieval

FRDS-II data are retrieved using a variety of features available on the FRDS-II Main Menu. The following FRDS-II Main Menu options provide retrieval capability:

- o Function "A" - Assisted (Prompted) Query.
- o Function "E" - Retrieve FWSs Whose Ids are in an External File.
- o Function "G" - Obtain Geographic Information for a specified City or County.
- o Function "S" - Enter the System 2000 Self-contained Facility (Natural Language).
- o Function "X" - Formulate Non-prompted Retrieval Selection Clauses.
- o Function "Z" - Formulate Non-prompted Retrieval Selection Clauses.

Function "A" - Assisted Query refers to the "Assisted" or prompted preparation of an S2K Locate statement which is used to search the data base and to retrieve selected data. Function "A" provides general retrieval capabilities and is intended to serve as a supplement to the more powerful "X" and "Z" functions.

Function "A" provides assistance for novice and intermediate users. The prompts for novice users are more informative where the intermediate user receives more streamlined prompts. The user selects the search domain from the following five general data categories, PWS Inventory Characteristics, Violation Characteristics, Enforcement Characteristics, Variance/Exemption Characteristics, and Data Base Administrator Characteristics.

Function "E" - Retrieve PWSs Whose Ids are in an External File enables the user to examine a previously created file containing selected PWS IDs.

Function "G" - Obtain Geographic Information for a Specified City or County enables the user to retrieve geographic information about a city or county such as latitude, longitude, and Hydro-Id.

Function "S" - Enters the user into the S2K Natural Language environment.

Functions "X" and "Z" are both user-defined queries which allow users to enter their own formulated data selection criteria statement in S2K. Function "X" provides the user with the ability to select and temporarily store as many as 11 different locate data files which can be used for later output processing. Function "Z" offers a non-prompted user-defined facility to generate standard batch jobs routed to a remote high-speed printer. It produces one or more standard reports from the data selection criteria. Function "Z" differs from Function "X" in that retrievals for "Z" occur at the time of batch job execution as opposed to online. Similar to Function "X," Function "Z" is a non-prompted S2K locate statement facility allowing up to 11 different search criteria to be performed during one session.

4.2.2 Reports

Both ad hoc and standard reports are available on the FRDS-II Post-Retrieval Processing Options Menu, which is displayed whenever Function 'P' is selected from the FRDS-II Main Menu. Typically reports will be generated for a select group of data extracted from a user defined S2K Locate clause, this clause is typically printed on the bottom to the first report page. Some of the report options are not currently available, however, these options are expected to be operational at a later time. The following reports are listed on the menu:

- o FRDS01 - Public Water System Comprehensive is a summary report of the comprehensive PWS inventory.
- o FRDS03 - Public Water System Area and Source Area is a detailed report of facilities and populations served by PWS sources.

- FRDS07 - Facilities and Population Served by Primary Water Supply Source is a detailed report of PWS plant location, service area, and sources data.
- FRDS17 - Enforcement Actions Summary by Population (not available)
- FRDS18 - Enforcement Actions Summary by Population (not available).
- FRDS19 - Violation Summary by Population is a summary report separately calculating the number of violations by population category and the number of systems in violation by population category for FRDS19A and FRDS19B respectively.
- FRDS20 - Violation Summary by Primary Water Supply Source is a summary report calculating violations by PWS source.
- FRDS21 - Variance and Exemption Summary by Population (not available).
- FRDS22 - Variance and Exemption Summary by Primary Water Supply Source (not available).
- FRDS23 - Public Water Supply System Violation and Source Data (not available).
- FRDS24 - Public Water Supply System Summary and Violation Data is a detailed report of PWS plant location and violation summary data including violation duration in months.
- FRDS31 - PWS Months in Violation is a summary report calculating the months in violation for select PWSs. This summarization is performed for various categories of PWSs and their violations. Two elementary statistics - number of PWSs and their population served - are provided.
- FRDS35 - Annual Data Evaluation will generate a list of PWS Ids to be used as input other FRDS-II reports. The entire population of PWS Ids may be extracted or a selected subgroup may be specified. PWS subgroups are specified by sample size. Sample sizes may be organized by State or applied to the entire population.
- FRDS36 - Informal Enforcement Actions (not available).

- o FRDS17 - Multiple Year Violations (not available).

Other Post-Retrieval Menu options include:

- o Option 'C' - Create a File for SAS (not available).
- o Option 'F' - Frequency distribution - Frequency Distribution of Data Report, generates a distribution report which may displayed at a terminal or printed on an off-line, high speed printer. The report provides a frequency distribution table of unique code value occurrences for a specified data element based upon the currently selected PWS(s). The report always lists the unique code values and the total number of occurrences. The frequency distribution may optionally be sorted by occurrence - from most to fewest.
- o Option 'G' - Graphs and Maps (not available).
 - Graph 1 , Number of PWSs by Administrative Region.
 - Graph 2, Percentage of PWSs by Administrative Region.
 - Graph 3, Number of PWSs by Population.
 - Graph 4, Percentage of PWSs by Population.
 - Graph 5, Number of Violations by County.
 - Graph 6, Location of PWSs.
- o Option 'I' - Invoke IDRS/CERCLIS - IDRS Region Map, IDRS United States Map, Report For Crosswalk One, Reports for Crosswalks Two through Five (not available).
- o Option 'K' - Counts or Sums of PWS Elements - Count/Summation of Data Report (not available).
- o Option 'L' - List in Standard Screen Format Reports for Suboption Screens allows the user to list information for previously selected PWSs. The user may optionally sort the selected PWSs or browse through the output in an on-line mode. The reports may be displayed one at a time or a terminal or the entire set of selected PWSs may be printed off-line on a high speed printer.

- o Option 'M' - Map of PWS by State, Region, or United States - PWS State Map, PWS Region Map, PWS U.S. Map (not available).
- o Option 'O' - Quicklook Report Generator permits the user to design and print a custom report.
- o Option 'T' - Totals of PWS Information Totals of Inventory Summary and Totals Violation Summary Report (not available).

5.0

System Maintenance

Although FRDS-II is currently under development the change control process from FRDS is still in effect. The process accommodates three types of change situations.

- 1) Software bugs, where the project manager makes an immediate decision about the change.
- 2) Minor Enhancements.
- 3) Major Enhancements or addition of new system functions.

2) and 3) are handled in the same way by the change control process.

5.1

User Change Control Process

- 1) System bugs are reported to the FRDS Hot-line.

The Hot-line operator documents the problem.

The reported bug is prioritized.

The problem/bug is submitted to technical staff for resolution.

- 2) System enhancements are treated in the same way for minor requests as well as the addition of new functions.

The enhancement request is prioritized, and the lead contact group and steering committee review the available resources and perform a cost/benefit analysis.

The steering committee evaluates the analysis and makes a decision to either enact or disallow the change.

5.1.1 System Enhancement

System enhancements are minor or major unsolicited system changes which affect intended design or processes. The mechanics of the enhancement process are illustrated in section 5.1.

5.1.2 System "Problems"

System "problems," also called bugs, are defined as system inadequacies which impede the intended function of the system. A problem is logged by the Hot-line operator and assigned to the technical staff for resolution.

5.2 Technical Change Control Process

The mechanics of the technical change control process are the same for system enhancements and system "problems," both require existing software to be modified.

6.0 Documentation

6.1 User Documentation

- o Federal Reporting Data System Interactive Retrieval System User's Guide
- o Federal Reporting Data System Data Entry Instructions

6.2 Data Dictionary

- o Federal Reporting Data System Data Element Dictionary
 - Section VI, List of Acceptable Code Values and Associated Descriptions
 - Section VIII, Glossary of Technical and Drinking Water Programmatic Terms

Appendix I
Data Capture Forms

PWS 10
3 months

ACTION CODE

BATCH DATE

1 1 1 1 1

SYSTEM ADDRESS

21

Diagram illustrating a 12-bit data bus structure with labels for various fields:

- SYSTEM NAME (bits 11-0)
- ADDRESS LINE 1 (bits 11-0)
- ADDRESS LINE 2 (bits 11-0)
- CITY (bits 11-0)
- STATE (bits 11-0)
- ZIP CODE (bits 11-0)
- AREA CODE (bits 11-0)
- NUMBER (bits 11-0)

PUBLIC WATER SYSTEM CHARACTERISTICS

A 2

PWS TYPE ☐ C = COMMUNITY ☐ R = NON-COMMUNITY
 ACTIVITY FLAG ☐ A = ACTIVE ☐ I = INACTIVE
 SYSTEM OPEN ☐ TR ☐ MS
 DEACTIVATION DATE ☐ TR ☐ MS
 INITIAL POPULATION SERVED ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10
 PERCENT SURFACE ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10
 PERCENT GASBOR ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10
 PERCENT PLUMBING SURFACE ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10
 PERCENT PLUMBING GASBOR ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10
 = 100%
 OWNER TYPE ☐ C = COMMUNITY ☐ R = NON-COMMUNITY
 REGULATORY ENTITY ☐ A = ACTIVE ☐ I = INACTIVE
 INITIAL SERVICE CONNECTIONS ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10
 NON-COMMUNITY LEADERS ☐ MS ☐ TR ☐ MS ☐ TR ☐ MS ☐ TR
 MS ☐ TR ☐ MS ☐ TR ☐ MS ☐ TR

OTHER ADDRESS(ES)

83

ADDRESS

TYPE

ADDRESS NAME

ADDRESS LINE 1

ADDRESS LINE 2

CITY

STATE

NO CODE

ZIP

Effective Date: 08/15/88

Figure 14
Release Number: 9.05

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PUBLIC WATER SUPPLY
DATA CAPTURE FORM B

ACTION CODE

BATCH DATE

PWS 10

Stoff **in Gegenwart**

SOURCE / ENTITY DATA

[illegible]

TREATMENT DATA

[illegible]

SOURCE / ENTITY DATA

[illegible]

TREATMENT DATA

		TREATMENT DATA		
		TREATMENT OBJECTIVE	TREATMENT PROCESS	
8	2	1111	1111	
		1111	1111	
		1111	1111	
		1111	1111	
		1111	1111	

Effective Date: 08/15/88

Figure 16
Release Number: 005

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PUBLIC WATER SYSTEM
DATA CAPTURE FORM C

PWS ID
STATE ID NUMBER
CITY

ACTION CODE

BATCH DATE
MO DAY YR

GEOGRAPHIC AREAS SERVED

C1

CASE	ADMIN REGION	ADMIN DISTRICT	FEDERAL CONGRESSIONAL DISTRICT	STATE COUNTY	FIPS COUNTY	CITY	WATER DELIVERY

C2

SERVICE AREAS

SERV ID	TYPICAL	PRIMARY SERVICE PLAN

C3

ON-SITE VISITS

VISIT ID	VISIT DATE MO DAY YR	VISIT BY NAME

Effective Date: 08/15/88

Figure 17
Release Number: 0.05

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EPA

PUBLIC WATER SYSTEM DATA CAPTURE FORM D

PWS ID
STATE 3 NUMBER
C1101

ACTION CODE
1

BATCH DATE
MO DAY YR
1 1 88

01

VIOATION DATA

VOLATION ID
C1101

CONTAMINANT
C1102

VOLATION TYPE
C1103

COMPLIANCE PERIOD BEGIN
MO DAY YR
C1104

COMPLIANCE PERIOD END
MO DAY YR
C1105

OR

COMPLIANCE PERIOD DURATION
C1106

AWAIRENESS DATE
MO DAY YR
C1107

MONITORING AND REPORTING VIOLATIONS

MAX SAMPLES REQUIRED
C1108

MAX SAMPLES TAKEN
C1109

OR

VIOLATION
C1110

OR

VIOLATION
C1111

MAXIMUM CONTAMINANT LEVEL VIOLATIONS

ANALYSIS METHOD
C1112

ANALYSIS RESULT
C1113

WCL VIOLATION
C1114

01

VIOATION DATA

VOLATION ID
C1101

CONTAMINANT
C1102

VOLATION TYPE
C1103

COMPLIANCE PERIOD BEGIN
MO DAY YR
C1104

COMPLIANCE PERIOD END
MO DAY YR
C1105

OR

COMPLIANCE PERIOD DURATION
C1106

AWAIRENESS DATE
MO DAY YR
C1107

MONITORING AND REPORTING VIOLATIONS

MAX SAMPLES REQUIRED
C1108

MAX SAMPLES TAKEN
C1109

OR

VIOLATION
C1110

OR

VIOLATION
C1111

MAXIMUM CONTAMINANT LEVEL VIOLATIONS

ANALYSIS METHOD
C1112

ANALYSIS RESULT
C1113

WCL VIOLATION
C1114



EPA

PUBLIC WATER SYSTEM DATA CAPTURE FORM E

STATE PWS ID
C126

ACTION CODE

BATCH DATE

MO DAY YR

E 1

ENFORCEMENT ID
PV
C126

FOLLOWUP
ACTION
C126

ENFORCEMENT DATE
MO DAY YR +

ASSOCIATED VIOLATION RANGE
MO BEGIN DAY YR
MO END DAY YR

OR

ASSOCIATED VIOLATION IDS
VIOLATION ID 1 PV
VIOLATION ID 2 PV
VIOLATION ID 3 PV
VIOLATION ID 4 PV

OR

ASSOCIATED VIOLATION CONTAMINANT GROUPS
COMPLIANCE PERIOD BEGIN DATE MO DAY YR
TYPE CONTAMINANT
COMPLIANCE PERIOD BEGIN DATE MO DAY YR
TYPE CONTAMINANT
COMPLIANCE PERIOD BEGIN DATE MO DAY YR
TYPE CONTAMINANT

E 1

ENFORCEMENT ID
PV
C126

FOLLOWUP
ACTION
C126

ENFORCEMENT DATE
MO DAY YR +

ASSOCIATED VIOLATION RANGE
MO BEGIN DAY YR
MO END DAY YR

OR

ASSOCIATED VIOLATION IDS
VIOLATION ID 1 PV
VIOLATION ID 2 PV
VIOLATION ID 3 PV
VIOLATION ID 4 PV

OR

ASSOCIATED VIOLATION CONTAMINANT GROUPS
COMPLIANCE PERIOD BEGIN DATE MO DAY YR
TYPE CONTAMINANT
COMPLIANCE PERIOD BEGIN DATE MO DAY YR
TYPE CONTAMINANT
COMPLIANCE PERIOD BEGIN DATE MO DAY YR
TYPE CONTAMINANT

(Use Form)

Effective Date: 08/15/88

Figure 19
Release Number: 9.05

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**PUBLIC WATER SYSTEM
DATA CAPTURE FORM G**

ACTION CODE

BATCH DATE

1111

STATE DISCRETIONARY DATA

[illegible]

STATE DISCRETIONARY DATA

		STATE DISCRETIONARY DATA	
G1	100 ID	STATE DISCRETIONARY DATA NAME	
	CASE#	STATE DISCRETIONARY VALUE	
	CASE#	QUANTITY	DATE DAY YR CASE#

STATE DISCRETIONARY DATA

[illegible]

STATE DISCRETIONARY DATA

<div> <div> <div>G1</div> </div> <div> <div>300</div> <div>0</div> </div> </div>		STATE DISCRETIONARY GAS NAME	
CASE#		STATE DISCRETIONARY VALUE	
		QUANTITY	<div> <div>00</div> <div>00</div> <div>00</div> </div>
CASE#			CASE#

Elm Street

Effective Date: 08/15/88

Figure 21

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Appendix II
Sample Reports

FEDERAL REPORTING DATA SYSTEM - FROS-11
FACILITIES AND POPULATION SERVED BY PRIMARY WATER SUPPLY SOURCE
USER TITLE

01/29/88
FROS97

EPA REGION III
STATE: PENNSYLVANIA

PRINCIPAL: Y

C01

C01

	SURFACE (000)		GROUND (000)		SURFACE (000)		GROUND (000)		PURCHASED (000)		TOTAL (000)	
	FACILITIES POPULATION	FACILITIES POPULATION	FACILITIES POPULATION	FACILITIES POPULATION	FACILITIES POPULATION	FACILITIES POPULATION	FACILITIES POPULATION	FACILITIES POPULATION	FACILITIES POPULATION	FACILITIES POPULATION	FACILITIES POPULATION	FACILITIES POPULATION
100 & UNDER	12	1	708	40	13	1	6	0	0	0	019	50
NUMBER	12	1	708	40	13	1	6	0	0	0	019	50
PERCENTAGE	.5	.0	31.7	.5	.5	.0	.2	.0	.0	.0	32.9	.5
101-500	40	11	470	157	43	13	5	1	1	1	750	101
NUMBER	40	11	470	157	43	13	5	1	1	1	750	101
PERCENTAGE	1.6	.1	27.0	1.5	1.7	.1	.2	.0	.0	.0	30.5	1.0
501-1,000	51	41	165	125	29	24	5	4	4	4	250	194
NUMBER	51	41	165	125	29	24	5	4	4	4	250	194
PERCENTAGE	2.1	.4	6.6	1.2	1.2	.2	.2	.0	.0	.0	10.1	1.9
1,001-2,500	77	131	120	203	39	71	7	13	13	13	243	410
NUMBER	77	131	120	203	39	71	7	13	13	13	243	410
PERCENTAGE	3.1	1.3	4.0	2.0	1.6	.7	.3	.1	.1	.1	9.8	4.1
2,501-3,300	29	66	10	50	11	32	0	0	0	0	54	170
NUMBER	29	66	10	50	11	32	0	0	0	0	54	170
PERCENTAGE	1.2	.9	.7	.5	.4	.3	.0	.0	.0	.0	2.3	1.7
3,301-5,000	33	143	54	210	9	39	4	22	22	22	106	421
NUMBER	33	143	54	210	9	39	4	22	22	22	106	421
PERCENTAGE	1.3	1.4	2.3	2.1	.4	.4	.2	.2	.2	.2	4.3	4.2
5,001-10,000	50	300	49	359	7	47	3	20	20	20	109	400
NUMBER	50	300	49	359	7	47	3	20	20	20	109	400
PERCENTAGE	2.0	3.7	2.0	3.5	.3	.5	.1	.2	.2	.2	4.4	7.1
10,001-30,000	71	1,073	26	451	15	323	0	0	0	0	112	2,441
NUMBER	71	1,073	26	451	15	323	0	0	0	0	112	2,441
PERCENTAGE	2.9	10.4	1.0	4.4	.6	3.2	.0	.0	.0	.0	4.8	24.1
30,001-70,000	11	405	0	0	0	0	0	0	0	0	11	405
NUMBER	11	405	0	0	0	0	0	0	0	0	11	405
PERCENTAGE	.4	6.5	.0	.0	.0	.0	.0	.0	.0	.0	.4	6.1
70,001-100,000	4	354	0	0	0	0	0	0	0	0	4	354
NUMBER	4	354	0	0	0	0	0	0	0	0	4	354
PERCENTAGE	.2	3.5	.0	.0	.0	.0	.0	.0	.0	.0	.2	3.5
OVER 100,000	16	4,504	0	0	0	0	0	0	0	0	16	4,504
NUMBER	16	4,504	0	0	0	0	0	0	0	0	16	4,504
PERCENTAGE	.6	44.1	.0	.0	.0	.0	.0	.0	.0	.0	.6	44.1
TOTALS	394	7,991	1,094	1,610	166	549	32	60	60	60	2,406	10,210
NUMBER	394	7,991	1,094	1,610	166	549	32	60	60	60	2,406	10,210
PERCENTAGE	10.0	70.3	76.2	15.0	6.7	5.4	1.3	.6	.6	.6	10.0	10.0

COUNT OF C101
(FMS 103)

SUM OF C117
(FMS-RETAIL-POP-SERVED)
DIVIDED BY 1000

PERCENTAGES MAY NOT ADD TO TOTAL DUE TO ROUNDING.

LOCATE STATEMENT:
LOCATE(16) C100 MH C3 EQ PA AND MK C103 EQ CAC1

02/01/88
FROD19A
EPA REGION III
STATE: PENNSYLVANIA

C81

PRINACT: Y C85

C82

FEDERAL REPORTING DATA SYSTEM - FROD-II
VIOLATION SUMMARY BY POPULATION
USER TITLE

PAGE 1

		NUMBER OF VIOLATIONS BY POPULATION CATEGORY										OVER	
		100 A	101-	501-	1,001-	2,501-	5,001-	10,001-	25,001-	50,001-	75,001-	100,000	OVER
		UNDER	500	1,000	2,500	5,000	10,000	25,000	50,000	75,000	100,000	100,000	TOTAL

VIOLATION TYPE/CONTAMINANT

SINGLE SAMPLE MCL

TURBIDITY
ARSENIC
BARIUM
CADMIUM
CHROMIUM
FLUORIDE
LEAD
MERCURY
NITRATE
SELENIUM
SILVER
SODIUM
LINDANE
METHOXYCHLOR
TOXAPHENE
2, 4-D
2, 4, 5-TP SILVER
BACTERIOLOGICAL

SUB TOTAL

AVERAGE MCL

TURBIDITY

THM

BACTERIOLOGICAL

GROSS ALPHA PARTICLE ACTIV

SUB TOTAL

REGULAR SAMPLING

TURBIDITY

ARSENIC

BARIUM

CADMIUM

CHROMIUM

COUNT OF NUMBER
OF VIOLATIONS OF
THIS TYPE

LOCATE STATEMENT:
LOCATE(0) C100 M1 C3 EQ PA AND MK C103 EQ CAC1

FEDERAL REPORTING DATA SYSTEM - FROD-11
SYSTEMS IN VIOLATION-SUMMARY BY POPULATION
USER TITLE

02/01/88

FROD11B

SPA REGION III

STATE: PENNSYLVANIA

C01

PRINACY: Y

C08

C03

NUMBER OF SYSTEMS IN VIOLATION BY POPULATION CATEGORY

100 4 101- 501- 1,001- 2,501- 3,301- 5,001- 10,001- 25,001- OVER

UNDER 500 1,000 2,500 3,300 5,000 10,000 25,000 50,000 100,000 100,000 TOTAL

VIOLATION TYPE/CONTAMINANT

SINGLE SAMPLE MCL

TURBIDITY
ARSENIC
BARIUM
CAIOTIUM
CHROMIUM
FLUORIDE
LEAD
MERCURY
NITRATE
SELENIUM
SILVER
ENDRIN
LINDANE
METHOXYCHLOR
TOLUAPHENE
2, 4-D
2, 4, 6-TP SILVEX
BACTERIOLOGICAL

SUB TOTAL

AVERAGE MCL
TURBIDITY
TTHM
BACTERIOLOGICAL
GROSS ALPHA PARTICLE ACTIV

SUB TOTAL

REGULAR SAMPLING
TURBIDITY
ARSENIC
BARIUM
CAIOTIUM
CHROMIUM

COUNT OF SYSTEMS
WITH THIS VIOLATION

LOCATE STATEMENT:
LOCATE(0) C100 M0 C3 S0 PA AND MK C103 EQ CAC1

FEDERAL REPORTING DATA SYSTEM - FR03-11
VIOLATION SUMMARY BY POPULATION
USER TITLE

02/01/86

FR0319A

EPA REGION III

STATE: PENNSYLVANIA

PRINCIPAL: Y ← C05

PAGE 2

C01
C02
VIOLATION TYPE/CONTAMINANT

NUMBER OF VIOLATIONS BY POPULATION CATEGORY

	100 & UNDER	101-500	501-1,000	1,001-2,500	2,501-5,000	5,001-10,000	10,001-25,000	25,001-50,000	50,001-75,000	75,001-100,000	OVER 100,000	TOTAL
1	1	4	36	2	33	7	16	7	1	10	1	
2	21	1									2	
3			2								1	
4											1	
5	3	2	3		1	2	1				12	
6	41	1	14		2						1	
7	1		2								1	
8	2										1	
9	1		1		1						1	
10	1		1								1	
11	1		1								1	
12	1		1								1	
13	1		1								1	
14	1		1								1	
15	1		1								1	
16	1		1								1	
17	1		1								1	
18	1		1								1	
19	1		1								1	
20	1		1								1	
21	1		1								1	
22	1		1								1	
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114	1		1								1	
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116	1		1								1	
117	1		1								1	
118	1		1								1	
119	1		1								1	
120	1		1								1	

SINGLE SAMPLE MEL

TURBIDITY

ARSENIC

BARIUM

CADMIUM

CHROMIUM

FLUORIDE

LEAD

MERCURY

NITRATE

SELENIUM

SILVER

ZINC

LITHIUM

METHOXYCHLOR

TOXAPHENE

2, 4-D

2, 4, 5-TP SILVER

BACTERIOLOGICAL

GROSS ALPHA PARTICLE ACTIV

SUB TOTAL

AVERAGE MEL

TURBIDITY

TTHM

BACTERIOLOGICAL

GROSS ALPHA PARTICLE ACTIV

SUB TOTAL

REGULAR SAMPLING

TURBIDITY

ARSENIC

BARIUM

CADMIUM

CHROMIUM

COUNT OF NUMBER
OF VIOLATIONS OF
THIS TYPELOCATE STATEMENT:
LOCATE STATEMENT: C100 MH C3 EQ PA AND MK C103 EQ CAC AND MK C1135 EQ 671

FEDERAL REPORTING DATA SYSTEM - FRDS-II
VIOLATION SUMMARY BY PRIMARY WATER SUPPLY SOURCE
USER TITLE

PAGE 2

02/01/88
FRD920
EPA REGION III
STATE: PENNSYLVANIA
C01
C03
C05
PRIMARY: Y

VIOLATION TYPE/CONTAMINANT	NUMBER OF VIOLATIONS/SYSTEMS BY PRIMARY SOURCE				TOTAL VIO/SYS
	SURFACE VIO/SYS	GROUND VIO/SYS	SURFACE VIO/SYS	GROUND VIO/SYS	
SINGLE SAMPLE MCL	130/	44	14/	1	146/
TURBIDITY		2/			2/
ARSENIC		1/			1/
BARIUM		33/			33/
CADMIUM		5/			5/
CHROMIUM		4/			4/
FLUORIDE		11/			11/
LEAD		12/			12/
MERCURY		282/			282/
NITRATE		6/			6/
NITRATES		3/			3/
SELENIUM		2/			2/
SILVER		10/			10/
ENDRIN		4/			4/
LINDANE		3/			3/
METHOXYCHLOR		4/			4/
TOXAPHENE		1/			1/
2, 4-D		4/			4/
2, 4, 5-TP SILVER		9/			9/
BACTERIOLOGICAL		75			75
SUB TOTAL	201/	328/	17/	3	547/
AVERAGE MCL	923/	127/	11/	1	1,061/
TURBIDITY	4/	1,730/	93/	50	2,106/
ITM	271/	7/			278/
BACTERIOLOGICAL					
GROSS ALPHA PARTICLE ACTIV					
SUB TOTAL	1,190/	1,846/	104/	51	3,170/
REGULAR SAMPLING					
TURBIDITY	1,639/	197/	20/	11	1,866/
ARSENIC	234/	825/	3/	3	1,062/
BARIUM	233/	810/	3/	3	1,053/
CADMIUM	234/	810/	10/	10	1,063/
CHROMIUM	236/	820/	3/	3	1,066/

COUNT OF C1103
(VIO-CONTAMINANT)

LOCATE STATEMENT:
LOCATE(0) C100 IN C3 EQ PA AND IN C103 EQ CAC:

FEDERAL REPORTING DATA SYSTEM - FROS-11

01/29/88
FR0324

USER TITLE
SORTED BY REGION, STATE, PH# 10

CO1 CO3

[illegible][illegible]

CUNYINGHAM VALLEY NURSING C

10908061
BUCKINGHAM, WALTER
PO BOX 447
BUCKINGHAM
PA 18912
(215) 590-7101

BUCKINGHAM (215) 598-7101

PA1090005 CHALFONT BOROUGH WATER DEPT
181 NORTH MAIN STREET
CHALFONT (215) 822-0991
PA 18914

CHALFORD
PA 18914
(215) 622-0991

Page 5-32

LOCATE STATEMENT;
LOCATE(10) C100 M01 C3 EQ PA AND HK C103 EQ CAC;

560935

EVS ID: PA7220029

PHARMACY STATE, PA

END PAGE: 03

SYSTEM NAME: PINE MANOR MOBILEHOME PARK

NAME: M. M. MOBILE HOME PARK

NAME: H E N MOBILE HOME PARK
SYSTEM NAME : PINE MAJOR MOBILEHOME PARK
SYSTEM ADDRESS: 3057 E HARRISBURG PIKE
MIDDLETON

PHONE: (717) 944-9520

GRANT ELIGIBLE	STATUS	PLANT TYPE	OWNER TYPE

MOY 16163000

4. INDICATES PRIMARY SERVICE AREA

ID	MAJOR CATEGORY
01	RESIDENTIAL
02	OTHER

SUBCATEGORIES

VISITORS **HOME**

ACTIVE INDICATOR :
POPULATION SERVED :
REGULATE BY :
SURFACE % :

A	INITIAL DATE	12/13/68
144	NUMBER OF SERVICES:	41
5	LAST SURVEY DATE	
	GROUP %	

BEGIN DATE	1	06/01/77	DEACTIVATION DATE:	1
SEASON START	1		SEASON END	1
LAST UPDATE DATE:	1	07/26/85	PRIMARY SOURCE	1
PLG SURFACE X	1		PLG GROUND X	1

EXPERIMENTAL AREA SERVED: NONE

SOURCE AND/OR ENTRY POINT INFORMATION:
(EPT)

SELLER ID	TREATMENTS: ID	OBJECTIVE	PROCESS
	01	F0031.5	- NULL

CODE	AVAIL	LATITUDE	LONGITUDE
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
14	14	14	14
15	15	15	15
16	16	16	16
17	17	17	17
18	18	18	18
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92	92	92	92
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99	99	99	99
100	100	100	100

TO HAVE

100 7734 HELI

2

01 0001.5 - FULL -

Page 5-43.1

FEDERAL REPORTING DATA SYSTEM - FRDS-II
ANNUAL DATA EVALUATION REPORT

02/03/89
PRDS35

USER TITLE
SORTED BY REGION, STATE, PMS ID

EPA REGION: 03 PRIMARY STATE: PA PMS ID: PA722029
OWNER NAME: M & M MOBILE HOME PARK SYSTEM NAME: PINE MANOR MOBILEHOME PARK

VARIANCE OR EXEMPTION				ENFORCEMENTS		RELATED VIOL	
CONTAMINANT	MODIFIED NCL	VAR/EXMP CODE	VAR/EXMP ID	LEGAL STATUS	DATE	ID	
ID				ID			
				ID	12/09/87	0001014	0001014
				FP	04/28/88	0005221	0005221
				06	02/02/87	0704520	
				06	03/04/87	0709004	
				07	06/03/86	0604950	
				07	04/28/84	0409491	
				1A	04/28/86	0609492	
				06	11/04/84	0619074	
				FX	04/08/85	0504617	
				FX	11/22/85	0506931	

IF 01/19/81 0110475
IE 07/19/81 0140724

EFFECTIVE DATE 2/27/89 RELEASE NUMBER 0.95

Page 5-43.2

PMSID FILE NAME USED:
CONFRO3.0890203.1174939.PMS103

02/03/89
FRO335

FEDERAL REPORTING DATA SYSTEM - FRO3-11
ANNUAL DATA EVALUATION REPORT

USER TITLE
SORTED BY REGION, STATE, PMS ID

PAGE 25

EPA REGION: 03 PRIMACY STATE: PA PRIMACY: Y PMS ID: PA7220029

OWNER NAME: N & M MOBILE HOME PARK

SYSTEM NAME: PINE MANOR MOBILEHOME PARK

				VIOLATIONS				VIOLATIONS			
				CONT	BEGIN	AWARE	SHP				
ID	TY	DATE	OUR	ID	TY	DATE	OUR	ANALYTICAL	SHR	ANALYTICAL	VIO
								RESULT	TKN	RESULT	IO
3000	03	11/01/87	001	4000	04	01/01/88	003		000		00000221
4000	04	10/01/86	003	4000	04	01/01/87	003		000		07090004
4000	04	10/01/85	003	4000	04	01/01/86	003		000		06090001
3000	03	03/01/84	001	4000	04	07/01/86	003		000		06190074
4000	04	10/01/84	003	4000	04	01/01/85	003		000		08000031
4000	04	04/01/85	003	3000	02	06/01/88	001		000		08000000
2110	03	06/24/82	036	1045	03	06/24/82	036		000		08344002
2010	03	06/24/82	036	1050	03	06/24/82	036		000		08344004
2015	03	06/24/82	036	2020	03	06/24/82	036		000		08344006
1025	03	06/24/82	036	2105	03	06/24/82	036		000		08344009
1030	03	06/24/82	036	2005	03	06/24/82	036		000		08344021
1035	03	06/24/82	036	1040	03	06/24/82	036		000		08344033
1005	03	06/24/82	036	1010	03	06/24/82	036		000		08344075
1015	03	06/24/82	036	1020	03	06/24/82	036		000		08344077
3000	03	07/01/85	001	4000	02	10/03/83	012		000		08344079
4020	03	01/01/83	012	4000	04	01/01/84	003		000		04000000
4000	02	02/00/84	012	4000	04	04/01/84	003		000		04134020
3000	03	10/01/80	003	3000	03	06/01/81	003		000		04201033
								29.00000000			01400724

PMS10 FILE NAME USED:
CONFRO3.0890203.1174939.PMS103

Appendix III
Documentation Matrix

DOCUMENTATION MATRIX

PROJECT		PROJECT
	●	EEI-1 Mission Needs Analysis
	●	EEI-2 Preliminary Design and Options Analysis
	●	EEI-3 Project Management Plan
	●	EEI-4 System Implementation Plan
	●	EEI-5 Detailed Requirements Document
	●	EEI-6 Software Management Plan
	●	EEI-7 Software Test & Acceptance Plan
	●	EEI-8 Software Preliminary Design Document
	●	EEI-9 Software Detailed Design Document
	●	EEI-10 Software Maintenance Document
	●	EEI-11 Software Operations Document
●	●	EEI-12 Software User's Reference Guide
	●	EEI-13 System Integration Test Report

2.4 STORET SYSTEM PROFILE

STORET UNDER THE OFFICE OF WATER	FEDERAL WATER POLLUTION CONTROL ACT AMENDMENT OF 1972	FEDERAL, REGIONAL, STATES LOCAL OR CONTRACT SUBSCRIBERS	CONDUCTED AT HEADQUARTERS ANNUALLY OR AS-NEEDED	WATER QUALITY, STATION AND PARAMETRIC	<ul style="list-style-type: none"> • CARD IMAGE ENTRY • PARAMETER CODE DRIVEN EDITS
--	---	---	--	--	---

AVAILABLE VIA TSO	AVAILABLE VIA TSO	BATCH MENU-DRIVEN DATA FILES	IBM 3090	PLI SAS MVLBUR CIBOL TSPP FORTRAN TSO	NOT-LINE SUPPORTED PROCEDURES EXIST	USER: STORET USERS GUIDES STORED/DIOS FIELD SURVEY FLOW FILE USER'S HANDBOOK SEMINAR GUIDE TECH: LIBRARY OF SOFTWARE HELP DATA SETS
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EPA MAJOR SYSTEMS PROFILE

OUTLINE

- 1.0 System Overview
- 1.1 System Purpose
- 1.2 System Background
- 2.0 User Environment
- 2.1 User Support
- 2.2 User Training
- 3.0 Technical Overview
- 3.1 Hardware/Software Environment
- 3.2 Subsystem Environments
 - 3.2.1 Data Entry
 - 3.2.2 Data Edits
 - 3.2.3 Updates
 - 3.2.4 Data Retrieval
- 3.3 Data
 - 3.3.1 System Data Base
 - 3.3.2 Files
- 3.4 Hardware
 - 3.4.1 Type
 - 3.4.2 Peripherals
- 3.5 Software
 - 3.5.1 On-line
 - 3.5.2 Batch
 - 3.5.3 Communications
- 4.0 System Functions
- 4.1 System Input
 - 4.1.1 Data Input
 - 4.1.2 Update

- 4.2 **System Output**
- 4.2.1 **Ad Hoc Data Retrieval**
- 4.2.2 **Reports**
- 5.0 **System Maintenance**
- 5.1 **User Change Control Process**
- 5.1.1 **System Enhancements**
- 5.1.2 **System Problems**
- 5.2 **Technical Change Control Process**
- 5.2.1 **Change Control System Design**
- 5.2.2 **Change Control Documents**
- 5.2.3 **Change Control Activity**
- 5.2.4 **Change Control Testing**
- 5.2.5 **Change Control Implementation**
- 6.0 **Documentation**
- 6.1 **User Documentation**
- 6.2 **Technical Documentation**

1.0 System Overview

1.1 Purpose

The purpose of the Storage and Retrieval System (STORET) is to serve as a repository and analysis tool for Federally, locally, and state supplied data relating to the quality of national water ways, in support of the Federal Water Pollution Control Act Amendment of 1972 (PL 92-500). Titles I-IV of PL 92-500 require STORET to perform and support the following provisions:

- Title I, Research and Related Programs

Title I requires the establishment of an operative national water quality surveillance system, the rendering of technical services and the collection and dissemination of water quality data. Title I is the justification for the establishment of STORET.

- Title II, Grants for Construction of Treatment Plans

STORET provides quantitative data used for stream waste load capacities and incipient overloading projections to support the development and implementation of waste treatment management plans and practices.

- Title III, Standards and Enforcements

A substantial portion of STORET's report programs help states to trace their progress of water quality improvement and enforcement efforts.

- Title IV, Permits and Licenses

STORET data identify sources of effluent violations and can be analyzed to assure compliance with the legal limit of allowable discharges.

1.2 Background

Public Law 92-500 is the current program for the prevention, reduction, and elimination of water pollution. PL 92-500 built upon and improved the water pollution control program initiated by Congress in 1948 and amended periodically in the 1950's and 1960's. PL 92-500 requires the collection and dissemination of basic water quality data by EPA in cooperation with other Federal departments and agencies and with public or private institutions and organizations. STORET is the computer-based mechanism which enables agencies, to comply with 92-500.

The activities which influenced the development of STORET as a fully functioning computer system began as early as 1960. Prior to the development of STORET, water quality data were collected by local, state, and Federal agencies without computer support. Information was not shared throughout the user community and retrievals were costly to produce. Data retrieved from the agencies were not in a standard format that could be easily accessed by any agency. Therefore, a basic concept for the storage and retrieval of water quality data was introduced in August of 1961 by the Basic Data Branch, Division of Water Supply and Pollution Control of the U.S. Public Health Service.

Initially, STORET data, representing 140 sample locations, were formatted and stored on the Public Health Service Honeywell computer in 1964. STORET processing on the Honeywell was limited to computer operator initiated batch jobs run from the main computer site. All data entered in STORET have to be mailed to the computer site. However, as the number of sampling locations expanded and as the jurisdiction for pollution control moved from the Public Health Service to the Department of Interior's Federal Water Pollution Control Administration, the need and opportunity arose to switch STORET from the Honeywell to the IBM system maintained by the Department of the Interior.

The 1968 switch to the IBM computer enabled users to communicate with STORET from the regional offices via a medium-speed card reading terminal. Further enhancements occurred to accommodate growth. These included improved retrieval capabilities, and the addition of municipal waste, fish kill, and contract awards files.

2.0 User Environment

Any Federal, interstate, state, or local agency, and contractors employed thereof, can subscribe to STORET for a fee. A payment plan between the subscribing agency and the EPA must be established prior to the connection of STORET service. EPA typically reimburses the state subscriber a prearranged allotment allowance. Any amount of computer resources used beyond the allotment amount is the responsibility of the subscriber. Subscribers pay for STORET access by either paying the EPA directly or paying the company who provides the computer time-sharing services.

The U.S. Geological Survey, the U.S. Forest Service, the U.S. Army Corps of Engineers, the Bureau of Reclamation, the National Academy of Sciences, the National Oceanic Atmospheric Administration, and the Tennessee Valley Authority all utilize STORET's data.

The primary STORET user at an agency is an experienced Water Quality Analyst. In order to accurately formulate retrieval requests and analyze STORET output a high degree of technical and water quality knowledge is necessary.

2.1 User Support

The Data Processing and User Assistance Branch, Monitoring and Data Support Division (MDSB) of EPA's Office of Water and Hazardous Materials is responsible for providing operational and assistance support to STORET users. User support for STORET subscribers is provided in the following ways:

A STORET Interagency Panel was established in 1974 to recommend policies, priorities, and approaches to be followed in managing STORET. In addition to representatives from EPA's Offices of Water and Hazardous Materials, Planning and Management and Research and Development the panel is comprised of selected regions and states, the Council on Environmental Quality, the Office of Management and Budget, and other Federal agencies including; the U.S. Geological Survey, the National Academy of Sciences, and the National Oceanic Atmospheric Administration. The panel meets twice yearly to provide members the opportunity to review current activities and future plans.

Annual STORET user meetings provide users with an opportunity to discuss and exchange ideas on their uses of STORET. The meeting covers presentations on current status, planned future capabilities and methods for improved system efficiency, and cost effectiveness.

STORET has a representative in each of the ten regions. Each regional STORET representative is responsible for establishing and implementing STORET policies for all users within the region. The regional STORET representative is also responsible for providing assistance to new users. User Representatives meet annually with Headquarters to discuss STORET problems, enhancements, and progress. User's report problems and programming changes to their regional representative.

General user support is provided by Headquarters staff. This support includes a STORET Hot Line, which is available from eight a.m. to five p.m. weekdays EST, and questions to Headquarters staff via time-sharing STORET terminals.

A quarterly periodical called STOR ET cetera keeps users abreast of current enhancements.

STORET provides a mechanism for users to contact one another by maintaining an accessible data set list of all users, their addresses, and phone numbers as well as the data each user site enters into STORET. The list can be requested by a JCL runstream.

2.2 User Training

Headquarters offers Beginning and Advanced courses. Beginning training, which assumes the user is inexperienced with

TSO, covers storage and retrieval techniques and access to on-line data sets. Advanced training, which requires six months of STORET experience and completion of the Beginning course, covers advanced retrieval techniques, machine readable output options, related internal logic of STORET, and sophisticated TSO usage.

Training is provided by Headquarters on an annual or as needed basis. An attendance requirement of 12 to 24 attendees is necessary for a class to be scheduled, with the exception of situations where training is crucial to the agency's program. Scheduling and class training information is available on one of STORET's HELP data sets.

3.0 Technical Overview

3.1 Hardware/Software Environment

STORET resides on an IBM 3090 mainframe utilizing a custom file system designed by EPA staff.

3.2 Subsystem Environment

3.2.1 Data Entry

The STORET data entry system is based upon card image entry through the TSO environment. Card image data sets are bundled with canned JCL streams to perform the entry function. Each user is responsible for entering their own data. Once the data entry job stream is run the input data is written to a transaction file, which is later read and edited as part of the weekly update process.

An enhancement effort to add an interactive menu-based user interface is currently in progress. The STORET menu-based system exists in TSO utilizing ISPF dialogue and PL1.

3.2.2 Data Edits

The STORET data editing process is driven by parameter codes. STORET card image records used for data entry contain parameter codes which indicate what kinds of edits the data record should activate.

For the most commonly used parameter codes each value on the card is checked against a pre-established high/low range. Values which exist outside the range are rejected unless otherwise specified by an override code.

Individual agencies can customize edits by supplying their own high/low ranges and edit checks on the parameter card.

Data edits for the on-line portion of STORET are two phased. A format edit is performed with the data on the screen(s) and a cross-edit is performed offline and applied to the

transaction file created by screen entry.

3.2.3 Updates

Updates are applied to the STORET files on a weekly basis. All updates must pass through the corresponding edit process before being added to the system.

3.2.4 Retrieval

Data retrieved from STORET take place via ad hoc requests through TSO. The requests are activated through JCL runstreams that can be bundled with pre-established STORET functions and SAS commands. This feature allows the user the capability to alter and customize output.

Retrieval is available through the STORET screen system.

3.3 Data

STORET data are primarily used as a decision making tool for the water quality manager. Other ways STORET data are used include:

- To fulfill PL 92-500 305 (b) reporting requirements.
- Update state and areawide water quality plans.
- Provide background information for research studies.
- Summarize compliance with standards and criteria.
- Access the availability of data on priority pollutants.
- Evaluate the effectiveness of the water pollution control program.
- Check NPDES permit compliance.

Users enter their own data in STORET and are responsible for the quality of the data which they enter. Data contained in STORET are available to all of the users, are often historical, and are related to quality of water, identification of waste treatment plants, pollution-related fish kills, and progress of government grants awarded to sewage treatment plants.

Water quality data, which comprises the bulk of data in STORET, include station and parametric data. Station data identify where a sample is taken from; and the date, time, and depth of the sample. The number of stations have increased from 150 in 1964 to approximately 200,000 in 1976. Station data include such elements

as unique station identifier, station location longitude/latitude, station state and county codes, station's political location, station's hydrological location, and major/minor river basins which the station is close to. Parametric data identify the parameter measured and the result of the measurement. Each time a measurement is taken it is classified as an observation. STORET presently serves as a repository for over 100 million observations with approximately 1800 unique water quality parameters. Eighty percent of all sample observations pertain to 200 of these parameters.

Municipal waste treatment plant data are another component of STORET data. An inventory of municipal waste plants is crucial to the execution of pollution abatement and control programs at all levels of government. These data are used for the preparation of basin plans, annual budgets, annual reports; to perform periodic assessments of the effectiveness of control/abatement measures and to monitor the degrees of compliance with standards. Privately and publicly owned municipal waste facilities are accounted for in STORET.

Fish kill data are entered into STORET whenever water pollution is determined to be the cause of a fish kill incident. Fish kill data include tissue sample analysis, water sample analysis, and site location. Data in STORET for pollution-related fish kills date back to the 1960's.

Contract awards data help interested parties to track the progress of thousands of contracts awarded to municipalities for sewage facilities construction, gather statistics on the nature of award and quantify trends in contract award activity. Contract awards data date back to 1952.

Discrepancies in the STORET data have been known to occur when two or more differing interpretations have been submitted for the same body of water.

3.3.1 System Data Base

There is no commercial DBMS used for STORET. Instead, a file system was developed to accommodate the information. These files are discussed below.

3.3.2 Files

STORET data are stored in a number of main data files designed in-house by EPA staff.

These include:

- Water Quality file which contains station and parametric data.

- Waste Facility file which contains an inventory of municipal and industrial waste treatment plants.
- Fish Kill file which contains information related to pollution-related fish kills.
- Contract Awards file which tracks the progress of government grants awarded to sewage treatment plants.

A series of HELP data sets or files are a component of STORET which exist for user support functions.

3.4 Hardware

3.4.1 Type

IBM 3090

3.4.2 Peripherals

All STORET users are responsible for providing their own computer peripherals and supplies. Sixty-one percent of all STORET users access the system from a PC, while the remaining user population accesses the system via line-by-line terminals.

3.5 Software

PL1, SAS, WYLBUR, COBOL

3.5.1 On-line

PL1 and TSPF dialogue support the STORET menu-based system.

3.5.2 Batch

Batch software used for STORET include SAS, COBOL, PL1, FORTRAN, and WYLBUR.

3.5.3 Communications

Communications take place via remote dialup to STORET using 1200 baud modems. A switch to 2400 buad is planned to accommodate more users using the screen-based STORET system vs. the TSO line-by-line STORET system.

4.0 System Functions

STORET functions are available via line-by-line and through an on-line menu system. The ability to enter, retrieve, and analyze STORET data in line-by-line mode is supported by a collection of related software and software elements, which are

activated by control cards. The menu-based system is supported by a second set of software and will eventually replace line-by-line mode once all of the users are technically compatible.

4.1 System Input

4.1.1 Data Input

State, local, and Federal agencies enter data into STORET via the TSO environment command language. In order to submit the data to the system they must be entered into a data set in card image format with additional parameters to indicate type of edits to be performed on the data. The data set contains the data referenced by the JCL runstream which creates the data transaction file used in the edit process.

4.1.2 Updates

User's edits are not immediately applied to the system. They must wait for the weekly update process to run prior to retrieving their updates.

4.2 System Output

Output from STORET exists in a variety of forms to serve a variety of purposes. These include:

- Listings of sampling station information.
- Statistical summaries of parametric data.
- Graphical plots of variations in parametric values over time or along a waterway.
- Location maps which show sample station locations.
- Summaries of parametric values which violate standards.
- Various maps, such as contour, area-shaded, or trend, which show variations in parametric values over a geographical area.
- Linear regression plots and statistical calculations depicting relationships amongst variables.
- Cards containing station codes and parametric data.
- Disk, magnetic tape, cards, or microfilm containing STORET data.

Users can route their job output to their own printers

or a remote printer. If the central printer at the National Computer Center (NCC) is selected, the output will be mailed to the requesting user.

4.2.1 Ad Hoc Data Retrieval

Ad Hoc data retrieved are available via TSO environment command language.

4.2.2 Reports

Ad Hoc and standard reports are requested through TSO command language. STORET reports come in many forms; these include graphs, plots, statistical summaries...etc. STORET reports generally support modeling and analysis applications. Users can customize reports to support their analytical needs. For instance, the minimum and maximum allowable ranges for sample data can be set for a report at the time the report is requested, allowing the analyst to exclude nonessential sample data.

5.0 System Maintenance

5.1 User Change Control

5.1.1 System Enhancements

Users submit programming changes to their regional STORET representative, who presents the request to STORET Headquarters staff.

The STORET technical staff reviews the request for further action. If approved the request is issued to the appropriate programming staff.

5.1.2 System Problems

System problems are reported to the STORET Hot Line, where the Hot Line operator reports the problem to STORET technical staff for rectification.

5.2 Technical Change Control Process

5.2.1 Change Control System Design

STORET uses the same data base for modifications and production. Software which is currently being modified is retained separately from software in production.

5.2.2 Change Control Documents

No formal change control documents exist to support the change control process. However, with the addition of the on-line system the process may be formalized if demand permits.

5.2.3 Change Control Activity

Software files are modified for enhancements and problems.

5.2.4 Change Control Testing

The programmer(s) implementing the software changes is responsible for testing the modifications.

5.2.5 Change Control Implementation

Once the software modifications are tested, the new software is moved to production.

6.0 Documentation

STORET User's Guides

STORET/BIOS Field Survey Data Base User's Guide

STORET Flow File User's Guide

STORET User's Handbook

STORET Seminar Guide

Technical Documentation

A library of program documentation is available.

STORET HELP Data Sets

A series of HELP data sets are available to all users.

6.1 User Documentation

STORET provides users with documentation concerning each main data file, overall STORET functions, and execution of specific programs. The documentation is offered in manuals as well as through the TSO environment (HELP data sets).

6.2 Program Documentation

The STORET technical documentation is contained in the STORET library. The library documents the software and includes a program overview, purpose, preliminary notes, files accessed, and structure for each software program.

1970's.

This documentation was last revised sometime in the

6.3

Data Dictionary

No data dictionary exists for STORET.

Appendix I
Sample System Function Screens

No STORET screen samples are available.

Appendix II
Documentation Matrix

DOCUMENTATION MATRIX

SECRET	SYSTEMS REQUIRING OIRM INVOLVEMENT	
	●	EEI-1 Mission Needs Analysis
	●	EEI-2 Preliminary Design and Options Analysis
	●	EEI-3 Project Management Plan
	●	EEI-4 System Implementation Plan
	●	EEI-5 Detailed Requirements Document
	●	EEI-6 Software Management Plan
	●	EEI-7 Software Test & Acceptance Plan
	●	EEI-8 Software Preliminary Design Document
	●	EEI-9 Software Detailed Design Document
●	●	EEI-10 Software Maintenance Document
	●	EEI-11 Software Operations Document
●	●	EEI-12 Software User's Reference Guide
	●	EEI-13 System Integration Test Report

2.5 CLP/SNO SYSTEM PROFILE

CLP/SMD SMD	SUPERFUND	SMD PERSONNEL	AS NEEDED AT SMD	SUPPORTS SCHEDULING, ALLOCATION AND MONITORING	• SCREEN INPUT
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AVAILABLE VIA FOCUS	STANDARD CUSTOM VIA FOCUS	MENU-DRIVEN FOCUS DBMS	2 IBM 4381'S IBM 3090	TSO FOCUS CLIST SAS FOCUS FIDEL	PROCEDURES EXIST	USER: USER MANUAL TECH: MAINTENANCE MANUAL OPERATION MANUAL DATA DICTIONARY
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CLP/SMO STAT	SUPERFUND	SMO PERSONNEL	AS NEEDED AT SMO	REPRESENTS 30% OF CLP SITES	<ul style="list-style-type: none"> • FILE UPLOAD • PERIODIC UPDATES
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STANDARD SAS/FSP PROCEDURES	CUSTOM	SAS FILES	2 IBM 4381'S IBM 3090	TSO SAS	PROCEDURES EXIST	USER: USER MANUAL TECH: MAINTENANCE MANUAL OPERATION MANUAL DATA DICTIONARY
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CLP/SMD CCS	SUPERFUND	SMD PERSONNEL	AS NEEDED AT SMD	CCS INSPECTION RESULTS SAMPLE EVALUATION CRITERIA	<ul style="list-style-type: none"> • ENTRY VIA SCREEN & FILE UPLOAD • UPDATED NIGHTLY
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AVAILABLE VIA SAS COMMANDS	PRODUCED ROUTINELY	SAS FILES MENU-DRIVEN	2 IBM 4381'S IBM 3090	FSP SAS CLIST	PROCEDURES EXIST	USER: USER MANUAL TECH: TEST PLAN MAINTENANCE MANUAL OPERATION MANUAL INTEGRATION TEST REPORT DESIGN DOCUMENT DATA DICTIONARY
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CLP/SMO MIS-BAS	SUPERFUND	SMO PERSONNEL	AS NEEDED AT SMO	RELATED TO PAYMENT OF LAB SAMPLE ANALYSES	<ul style="list-style-type: none"> • SCREEN INPUT • DATA EDITS • UPDATED MONTHLY
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AVAILABLE VIA AD HOC MENU	BATCH	MENU-DRIVEN SAS FILES	2 IBM 4301'S IBM 3090	TSO SAS CLIST	PROCEDURES EXIST	USER: USER MANUAL TECH: MAINTENANCE MANUAL OPERATION MANUAL DATA DICTIONARY
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CLP/SMO TIP	SUPERFUND	SMO PERSONNEL	AS NEEDED AT SMO	RELATED TO INVOICE PAYMENTS	<ul style="list-style-type: none"> • SCREEN INPUT • UPLOAD FROM DISKETTE • DATA EDITS • UPDATES IMMEDIATE
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AVAILABLE VIA SAS & FOCUS COMMANDS	STANDARD	MENU-DRIVEN FOCUS FILES	2 IBM 4381'S IBM 3090	SAS/SHARE SAS FOCUS	PROCEDURES EXIST	USER: USER MANUAL TECH: MAINTENANCE MANUAL DATA DICTIONARY
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EPA MAJOR SYSTEMS PROFILE

OUTLINE

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1.0 System Overview

1.1 System Purpose

The purpose of the Contract Lab Program (CLP) is to provide state-of-the-art chemical analytical services of known quality on a high volume, cost-effective basis in support of the Environmental Protection Agency's (EPA) Superfund effort, originally under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and presently under the 1986 Superfund Amendments and Reauthorization Act (SARA). The contractor-operated Sample Management Office (SMO) provides management, operations, and administrative support to the CLP. The primary objective of SMO is to facilitate optimal use of program analytical resources. SMO activities fall into the following areas:

- 1) sample scheduling and tracking
- 2) Contract Compliance screening
- 3) maintenance of CLP records and subcontracting
- 4) laboratory invoice processing
- 5) procurement/IFB development and statement of work production
- 6) management reporting
- 7) coordinating CLP meetings and conferences
- 8) National Program Office (NPO) management, technical and administrative support.

SMO routinely receives Regional analytical requests; coordinates and schedules sample analyses; tracks sample shipments and analyses, receives and checks data for completeness and compliance; processes laboratory invoices; and maintains a repository of sampling records and program data. In response to client requests for nonroutine types of analyses, SMO subcontracts for Special Analytical Services, scheduling and tracking for these efforts as outlined above. SMO maintains a comprehensive data base of CLP services, performance, and utilization in order to generate a variety of management and user reports. In order to support these functions five automated systems were developed, the systems that were developed are; the Scheduling, Allocation and Monitoring (SAM) system, the Statistical data base (STAT) system, the Contract Compliance System (CCS), the Management Information System Routine for Analytical Services (MIS/RAS), and the Tracking and Invoice Payment (TIP) system. Each of these five systems will be discussed in the following sections.

The purpose of the SAM system is to provide EPA with management reports used to assess how successfully EPA regions predicted their CLP needs (Superfund and nonsuperfund). On occasions when capacity is short of projected use, SAM can be used to determine how close region's came to requesting its assigned sample allocations, and whether or not each region shipped what was scheduled. SAM captures the following information:

- Each region's organic and inorganic sample projections, and assigned allocations if required by month.
- Site and project specific regional weekly requests for CLP support.
- Sample weekly shipment information for each assignment.
- Reporting, regional, and program-wide projections and scheduling performance when capacity exceeds demand (allocations are not required).
- Reporting information for nonsuperfund projections and performance separate from Superfund.
- Utilizing select data for other Sample Management Office (SMO) operations, such as QC frequency for invoice processing.
- Expanding the type of data captured and the reporting capabilities in response to EPA's ad hoc requests.

The purpose of the STAT system is to provide a statistically valid sampling of chemical analysis results from Superfund investigations conducted through the Routine Analytical Service (RAS) programs of the CLP. STAT provides both occurrence and concentration data for aqueous and soil samples. The data base has been used to provide information to many program offices within EPA, and to other federal and state agencies; data retrievals are provided on a customized basis.

The main goals of CCS are to make a payment recommendation to EPA for the analytical services provided by the laboratory and to encourage good laboratory performance through the implementation of technical contractual terms in support of the EPA's right to inspection.

The purpose of Management Information System/Routine Analytical Services (MIS/RAS) is to provide the reporting capabilities which enable CLP management to monitor activity within the program. MIS/RAS supports reporting for financial, lab performance, and lab utilization.

The purpose of the Sample Tracking and Invoice Processing (TIP) system is to correctly compute the amounts payable to laboratories based upon the terms of each contract. According to the terms of the contract, laboratories may incur cost adjustments. The factors examined in determining cost adjustments include data turnaround (amount of time taken by the laboratory to analyze a sample and send a data package to Viar/SMO), quality control sample data results, and holding time criteria. TIP supports the payment recommendation function of CCS by calculating the sample due dates.

1.2 System Background

The backgrounds of the five systems which support CLP through the SMO are discussed in the following paragraphs.

SAM was developed in 1985 by Viar for the U.S. Environmental Protection Agency's CLP at a time when EPA needed to allocate limited laboratory capacity to EPA regions with extensive hazardous waste sampling demands.

STAT was created by Viar in 1983/84 in response to an EPA request for data on compound occurrence at Superfund sites for taxation studies required by CERCLA. The 1983 version of STAT was statistically modeled on the computer records of Routine Analytical Services (RAS) which had been provided by the CLP up to January 1984. Thirty percent of the sites serviced were selected as were nine percent of the samples analyzed. Sites were stratified according to National Priority List (NPL) status. Nineteen percent of the 354 randomly selected sites were on the NPL at the time. Up to 6 organic and 4 inorganic samples, or 12 organic and 8 inorganic samples were selected from each site using a systematic selection method, depending on the number of sampling episodes (cases) which had been done for the site. Subsequently, the system has been revised to include randomly selected samples derived from RAS information up through 1986.

CCS was developed in 1985 by Viar for the EPA's CLP in response to EPA regional concerns about the quality of data being provided by contract laboratories. CCS was designed to rapidly determine the contractual compliance and completeness of data submitted to EPA under the RAS programs of CERCLA.

MIS/RAS is a computerized case and contract summary system designed to meet the management information needs of the EPA's CLP program. MIS/RAS was developed in July 1982 to capture, maintain, process, and report CLP information relating to laboratory performance, adherence to contract requirements, and financial and utilization data.

TIP was developed in 1982 for the EPA's CLP. TIP forms the basis of Viar's recommendation to EPA for laboratory payment, to labs which analyze samples from sites deemed potentially dangerous by the EPA. TIP tracks the collection, contract schedules, cost, and payment of individual samples. TIP has been

in production for six years. Originally, TIP provided support for uploading management information and then expanded to support tracking and invoice payment functions. Each time payment procedures are modified TIP must be enhanced to include the additional procedure.

2.0 User Environment

Users of the five CLP/SMO systems are typically SMO personnel only. These users are located at the contractor site.

2.1 User Support

The SMO systems' user support activities are of an informal nature. User feedback is supplied to the systems staff on a daily basis. The SMO system users and system manager are located within the same office area.

2.2 User Training

User training for all SMO systems is performed informally on an as-needed basis.

3.0 Technical Overview

3.1 Hardware/Software Environment

SMO computer systems are supported by the NCC IBM 3090, Cincinnati IBM 4381 model R23, and the WIC IBM 4381. The NCC 3090 is the central node in a series of logical mainframes (LMF). All SMO production computing is on the Cincinnati IBM 4381. The WIC IBM 4381 is used as a communications vehicle to the NCC's 3090.

3.2 Subsystem Environments

3.2.1 Data Entry

The SAM data entry function resides in the TSO environment utilizing FOCUS to generate the screens. Menus and screens support the entry of SAM data.

STAT acquires new data from PC-based file uploads to the mainframe via a batch SAS program which runs in the TSO environment.

CCS data entry processing is carried out by screen data entry or uploading of data diskettes from PCs. Both forms of entry are supported by SAS programs which reside in the TSO environment. Screen programs are further supported by CLIST.

MIS/RAS data are entered through on-line data entry screens. These screens reside in the TSO environment and are further supported by CLIST.

TIP data are entered through on-line data entry screens, which reside in the TSO environment and are supported by CLIST, and through the uploading of data diskettes.

3.2.2 Data Edits

No specific information concerning SAM or STAT data edits has been provided.

CCS data are edited after they have been submitted to the system. Due to the limitations of SAS/PSP software, no on-screen error checking is performed. Two types of edit processes occur, one for each data entry method: upload from diskette and on-line entry. The kinds of edits for uploaded data include:

- Record format (key fields, record type).
- Valid number of data records per header record.
- Checks for illegal characters in data variables.
- Correct information (such as case, lab and

contract).

- Valid data groupings, for example fractional sets.

The types of edits performed on the data files are quite extensive. In summary, the data edits encompass checks on illegal field values, range checks, time sequences, missing information from fields and screens, and illegal field combinations.

MIS/RAS checks for the validity of known fields such as case number and the sample dollar count as well as others. Samples with erroneous fields are rejected and must be resubmitted.

TIP data edits check for value, format, and existence of required fields. Cross-edits are performed across the TIP, MIS/RAS, and CCS systems.

3.2.3 Updates

Updates to the SAM data base occur at the time the screen update takes place via FOCUS programs. Users may also select to update the Sample Tracking data base which interfaces to SAM and contains some of the same data elements. Users may elect to update the data base after the data entry or update process when the system prompts for update of the Sample Tracking data base.

STAT data uploaded from the PC-based data entry system are stored in a temporary file. Periodically as the process of accumulating data for the complete population of samples progresses, the contents of this file are added to the main STAT data base.

In order for STAT to maintain the statistical validity of its data base, the data base must be updated at the end of each year with a sample of that year's RAS work. By updating the data base, the fixed percentage of sites and samples included in the data base is maintained as the universe of sites and samples expands. During this process comparisons to the MIS/RAS data base are necessary for items such as new sites, ratio of NPL to non-NPL sites, and new cases.

CCS data is updated nightly. The update procedure consists of the following four steps:

- 1) Post daily transactions to a master data set and backup of all daily data entry files.
- 2) Compare the CCS data base against the TIP data base so that the unscreened samples may be identified, scheduled for screening, and added to the CCS sample file.

- 3) Evaluate CCS results and produce payment recommendation. The recommendations are stored in the sample file. The TIP system will retrieve payment recommendations from CCS during its daily update process.
- 4) Refresh the individual data entry files from the master file.
- 5) Produce an extract of CCS information for the CARD system managed by the USEPA EMSL/Las Vegas. This file contains all CCS data processed in the last week. The file is produced each Wednesday.

MIS/RAS updates are performed on a monthly basis and contain all reconciled data entry activity for one month.

TIP updates occur nightly. Uploaded diskettes are applied immediately to CCS and are applied to TIP during the nightly update process.

3.2.4 Data Retrieval

The Ad Hoc option allows the user to inquire on the SAM data elements by building FOCUS report generator requests on the screen. To perform data inquiry functions on the data base using the Ad Hoc menu, the user must be familiar with the FOCUS report generator command syntax and data element names. The user is recommended to read the "Report Generator" section of the FOCUS User's Manual. The manual will instruct the user on formatting custom reports, creating summary reports, and performing simple inquiries to the SAM data base.

STAT provides no special data inquiry facilities. For interactive query standard SAS/FSP procedures can be used, or custom batch programs written to extract and print the desired data.

CCS provides menu-driven data entry screens for each phase of the CCS process where information must be input into the system or modified to allow data entry without extensive training requirements. The data entry environment exists in TSO and utilizes ISPF, SAS/FSP, and SAS Basics.

MIS/RAS data entry is facilitated by the use of data entry screens which enable entry operators to specify whether data should be added, changed, or deleted from the master file. The MIS/RAS data entry environment exists in TSO and is supported by ISPF, SAS and CLIST.

In general, TIP provides no special data inquiry facilities. Standard SAS/FSP procedures are used with menus constructed with ISPP. The Cost Allocation subsystem of TIP, which is written in FOCUS, provides a set of interactive query screens.

3.3

Data

SAM data support the scheduling allocation and monitoring system. SAM data comprise all elements related to sample projections, allocations, regional requests for CLP support, which includes identification of the requesting organization, preferred laboratory and month of allocation, sample shipment information such as: estimated ship date and total sample quantity per shipment, nonallocation projections and performance, and QC frequency for invoice processing.

Additional related data are case-number (which is the same under all SMO systems), geographical regions, sampling activity purpose, site-related information such as spill-id, site-name and site status, lab-related information such as QC frequency and lab name.

STAT contains a data universe which is representative of approximately 30 percent of CLP sites. A statistical sample of 17,197 environmental samples representing 10.4 percent of the samples analyzed under routine analytical procedures was selected from each chosen site using a modified, stratified systematic random sampling procedure.

A total of 18 organic and 18 inorganic samples was selected from each site where available. Sample data are available for over 160 organic and inorganic target compounds and elements and nontarget organic compounds for each site. Sample selected Chemical Abstracts Service (CAS) Registry number, actual detection limits, and sample matrix (e.g., surface water, soil, etc.) are available for each analysis. Blank data assist in assessing possible laboratory or contamination of samples is also available.

CCS data concern the results of the CCS inspection of each sample. This includes a summary of completeness and compliance status of the data divided into 27 specific evaluation criteria for organic analyses, and 19 for inorganic analyses. The status for each of these criteria is entered into the CCS data base for each sample.

MIS/RAS data are related to the activities surrounding payment of laboratory sample analysis activities and the graphical reporting thereof. Some general categories of MIS/RAS data are :

- Accounting and payment information such as: program responsible for payment (Superfund and non-Superfund), processing of 2550 invoice, costlot per sample price for a specified number of samples under a lab contract, total value of government

obligated funds to purchase sample analysis, penalties and incentives for late and early performance and analysis and appropriations.

- Laboratory and sample data such as: lab capacity, late samples, required fraction analysis per sample, date of sample analysis, and sample weight.

- Contract data such as contract and contract modification numbers.

3.3.1 System Data Base

The SAM data base utilizes the FOCUS DBMS and contains a single FOCUS file, which is further organized into separate segments. Several SAS files comprise the STAT data base. These files are discussed in the following Section 3.3.2.

SAS files comprise the CCS data base. These files are discussed in following Section 3.3.2. The CCS data base usually contains two months' data in an active file at all times. Data older than two months are stored in a separate file, which is called an archive file. The entire CCS system occupies approximately 50,000 tracks and is expected to grow at a rate of 1000 tracks per month.

MIS/RAS data are organized, maintained and accessed by SAS files, which are discussed in Section 3.3.2.

TIP is organized and maintained in SAS and FOCUS files. The TIP data base contains approximately 300,000 sample records and processes approximately 8000 samples and 700 invoices each month.

3.3.2 Files

SAM uses intermediary files in the update portion of the system.

STAT uses six primary files. These files contain the following data:

- The ALLDATA file is the result of the selection of a random sample of EPA samples for 1980-1983. This file contains information of VOA/BNA/PEST compounds distribution during that period.
- The METALBLK file includes blank data for inorganic soil samples for 1980-1983. These blank data are associated with the inorganic soil samples in ALLDATA. This file helps in monitoring QA/QC of inorganic soil samples.

- The ORG84 file is a collection of sample results at the compound level generated for certain ad hoc reports. The file gives the distribution of a compound during 1984 and specifies whether a sample is of BMA/VOA/PEST fraction.
- The SITEMF file is one of the site files in which unique site names are given for Cases. This file also describes where the site is located and whether the site is on the NPL or not.
- The SU8486 file contains compound level information for a collection of samples for 1984-1986. This collection of data will go into the data base for future statistical analysis for QA/QC and trend analysis.
- The VOA8486 file contains volatile compound level information of a collection of samples for 1984-1986. This collection of data will go into the data base for future statistical analysis for QA/QC trend analysis.

The information stored in MIS/RAS is divided into 15 major files:

- 1) BACKMF - contains information regarding laboratory performance at the sample level and is updated quarterly.
- 2) BARTIME1 - contains information regarding laboratory performance analysis organized by calendar year. This is a derivative of the BACKMF file and is updated quarterly.
- 3) BARTIME2 - contains quarterly information regarding RAS program performance analysis. This is a derivative of the BACKMF file and is updated quarterly.
- 4) BARTIME3 - contains information regarding RAS program analysis organized by Fiscal year. This file is a derivative of the BACKMF file and is updated quarterly.
- 5) BKLOGREG - contains information regarding region performance analysis organized by fiscal year. This file is a derivative of the BACKMF file and is updated quarterly.
- 6) CASEMF - contains the most current information on samples at the case summary level and is updated monthly.

- 7) CASESAVE - is the backup file for the CASEMF file and is updated monthly.
- 8) CONTMF - contains contract status and funding information for each contract awarded to the laboratory and is updated monthly.
- 9) CONTRACT - contains information regarding contract rules and delivery performance analysis for each contract awarded to the laboratory.
- 10) CONTSAVE - is the backup file for the CONTMF file and is updated monthly.
- 11) LABPLOT - contains information regarding laboratory performance analysis. This file is a derivative of the BACKMF file and is updated quarterly.
- 12) PLODAT - contains monthly analysis of sample and financial utilization at the case level. This file is derived by combining the CONTMF and CASEMF Master Files, and is updated monthly.
- 13) PROGLOT - contains information regarding RAS program performance analysis organized by calendar year. This file is derived from the BACKMF file and is updated quarterly.
- 14) SAMPLE - contains the most current sample data as well as historical samples, and is updated daily.
- 15) SITE86 - provides invoice information which tracks the costs incurred at each site with an EPA site/spill identifier.

TIP contains several files including Contract Bid File, Case Cost Adjustments File, Contract Master File, CostLot Master File, Dioxin Active Sample File, several invoice files reflecting the different invoice types, inorganic and organic active, semi-active and nonactive sample files. The Cost Allocation subsystem contains the Financial Balance file and the Invoice Transaction file.

3.4 Hardware

3.4.1 Type

All SMO systems utilize two IBM 4381s and an IBM 3090.

3.4.2 Peripherals

SNO users access CLP systems via 3270 terminals with dedicated lines or ASCII TTY terminals with dial-up capability. PCs are available to users and help them to customize some of the applications.

3.5 Software

SAM utilizes TSO, CLIST, SAS, and FOCUS.

STAT utilizes TSO and SAS.

CCS utilizes TSO, ISPF, and SAS (Basics and FSP).

MIS/RAS utilizes TSO, ISPF, CLIST, and SAS.

TIP utilizes TSO, CLIST, SAS, ISPF and FOCUS.

3.5.1 On-line

SAM on-line programs utilize FOCUS FIDEL.

STAT has no on-line programs.

CCS, MIS/RAS, and TIP on-line programs are written in SAS and CLIST. The Cost Allocation subsystem to TIP is written in FOCUS.

3.5.2 Batch

SAM batch programs utilize FOCUS Financial Reporting Language used for reports, TSO, CLIST, SAS, and FOCUS.

STAT, CCS, MIS/RAS, and TIP batch programs are written in SAS.

3.5.3 Communications

SAM user communications are made possible through the USEPA Telecommunications Network Menu.

4.0 System Functions

SAM is a menu-driven system which provides data base maintenance and reporting functions. SAM functions include CLP Tracking System, RAS data reports, LAB data reports, allocation reports, projection/scheduling reports, and maintenance features.

Although the RAS and LAB data reports are on the main menu, these options are currently unavailable.

STAT exists as a collection of SAS files from which reports are generated using customized SAS programs. There are no menus or specially designed inquiry screens for the data base. The primary functions of STAT are to select data base population, check data collection status, add data to the data base, and run ad hoc reports.

CCS is a menu-based system which allows for a variety of functions including calculations of initial payment recommendation, tracking of laboratory responses to CCS, production reconciled sample status reports, modifying payment recommendation based on the timeliness of the laboratories' responses, and tracking of laboratory and program performance trends over viable time frames.

MIS/RAS is a menu-driven on-line access system with batch reporting available at scheduled intervals and on request. All available information maintained in the system can be viewed or updated by authorized users.

TIP is a menu-driven on-line access system which allows for the entry of data from screens and uploading of diskettes, and the generation of hundreds of different reports.

4.1 System Input

4.1.1 Data Input

The initiation of the data entry process for SAM is dependent upon the weekly receipt of the CLP-SMO Weekly Scheduling Worksheets from the SMO Environment Program Coordinators. Each coordinator is responsible for tracking every sample scheduled and shipped by a particular EPA region. This detailed scheduling and shipment information is placed on the Scheduling Worksheet and, at the end of each week, is given to the system user for data entry.

The SAM entry menu allows access to the add, update, delete, and inquiry screens for the initial information, which comprises nonSuperfund document control number, client projections for allocating sample analyses by region and new case number; and for laboratory assignment and shipment records, sample request records, and separate maintenance of case number and document control records.

STAT has no user interface for entering data besides the PC-based upload procedure.

CCS data entry procedures include diskette upload and on-line screen entry.

The entry of MIS/RAS data occurs through the RAS - Contract and RAS-Case Data Entry screens. Access to these screens allows for the entry of new contract and case records. The screens which pass validation and are accepted to the system are stored in

a transaction file which is incorporated into the data base whenever the system update process is initiated.

TIP data are entered via SAS/FSP and FOCUS screens.

4.1.2 Update

SAM data are updated automatically after a screen entry of new data or a change is successfully submitted to the system. Each time a successful update occurs an archive is made. Archive files of SAM data base updates are held for 30 days.

Updates to SAM occur through the CLP Tracking System, CLP Sched/Allocation Maintenance screen, and Contract Lab Table Maintenance screen.

STAT does not allow updates to data once it has been uploaded. It does however allow for the analysis results for selected samples that must be retrieved from archived storage and input to the system through a PC-based generalized data entry system. Progress made by this process is checked using three status reports. These reports compare the file of selected target samples with the samples in a file containing data uploaded from the PC-based data entry system.

Updates to CCS are applied to the data base during the nightly update process. Any data entered during the interim before this process are written to one of many data entry data set files. These are referred to as "slave files." The slave files mirror the current state of the data base, which serves to allow for updating of existing records as well as addition of new records. The first step in the nightly update process is to extract all new entry transactions from each slave file. The update process is discussed in detail in section 3.2.3.

MIS/RAS data are applied to the MIS/RAS data base when the update process, which typically occurs on a monthly basis, is activated from the Data Entry/Update Menu. The update process is not requested until the data entry transaction files have been reviewed by the MIS/RAS MIS coordinator. The Contract Master File and Case Master File are updated as separate processes, which produce update confirmation listings. Any changes made to existing Contract or Case records are initiated through the Case and Contract Maintenance options on the Data Entry/Update Menu. Changes to existing records are not applied to the data base until after the update process has been initiated.

TIP data enters the system immediately upon entry. Multiuser database access is provided through SAS/SHARE. A nightly adjustment program is run to perform computations based on contract provisions.

4.2 System Output

SAM output may be directed to WIC or two contractor locations via a printer destination menu.

4.2.1 Ad Hoc Data Retrieval

SAM ad hoc retrievals are available through FOCUS, which requires users to be familiar with the FOCUS query language and allows for custom report formats, graphics, and special calculation for financial data.

Requests for STAT data retrievals must be directed to SMO's project officer at the EPA Analytical Operations Branch. STAT data retrievals require reference to the list of data elements to determine which elements are needed for the report, rather than making a choice from a menu. Data retrievals are negotiated and refined orally with the system manager to define necessary data elements and statistical treatment of numerical data. Some typical requests from STAT are:

- Occurrence and concentration data for surface water, groundwater, and soils for use in listing 200 (most commonly detected) toxic chemicals at Superfund sites. Toxicological profiles are produced for the 200 chemicals by the Agency of Toxic Substances and Disease Registry.
- Occurrence/concentration reports for EPA's Office of Toxic Substances. Test Rules Development Branch, for use in determining if 90-subchronic toxicity tests are required under TSCA Section 4.
- Occurrence/concentration reports for EPA's Office of Solid Waste to determine the presence of Appendix VIII and Appendix IX compounds in groundwater.
- Occurrence/concentration reports for OTS for compounds on the 1977 TSCA Inventory.

CCS is not designed to accommodate ad hoc query requests.

MIS/RAS supports ad hoc queries through requests made for ad hoc reports on the ADHOC Reports menu. The ADHOC Reports menu allows the user to run management reports that are the basis for evaluating, planning, and improving analytical services; as well as effectively managing and enforcing all CLP laboratory contracts, responding to ad hoc reporting requirements, and producing reports used to perform quality control checks on MIS/RAS data.

TIP, like CCS, has no built-in provision for ad hoc queries. Advanced users familiar with basic SAS and FOCUS commands can however perform such queries.

4.2.2 Reports

SAM reports are generated on a routine weekly basis. Monthly and quarterly summaries are also produced. The reports are generated for each analytical program (organic and inorganic). The monthly reports (which include weekly summary reports) are first produced as a preliminary report. After the data entered into the systems have been thoroughly quality controlled, a final report is produced for distribution. Three report options are available to the user. They are allocation reports, projection/scheduling reports, and ad hoc reports discussed in Section 4.2.1.

The following reports are available through SAM:

- Monthly Allocation Summary Report
- Monthly Allocation Cumulative Report
- Weekly Allocation Summary Report
- Quarterly Allocation Management Report
- Monthly Allocation Management Report
- Projection/Scheduling Monthly Summary Report
- Weekly Projection/Scheduling Summary Report
- Quarterly Projection/Scheduling Management Report
- Monthly Scheduling/Projection Management Report.

STAT reports are generated on an ad hoc basis only. Ad hoc retrieval for STAT is discussed in Section 4.2.1.

CCS reports serve three primary directives. They are:

- 1) Provide a method of feedback for the labs regarding their performance following their original data submissions and subsequent reconciliation efforts.
- 2) Produce a nightly system error report which reports on any illogical occurrences of combinations of data. This report is used for quality control.
- 3) Produce a reprocessed samples report to monitor sample status changes in the system.

MIS/RAS reports are available to the user graphically as well as textually. The two menus which support these capabilities are the RAS Performance Reports Menu and the RAS Graphic Menu. The RAS Performance Reports Menu allows users to run management reports that are the basis for managing and enforcing all CLP laboratory contracts. The RAS Graphic Menu allows the user to run graphs depicting CLP laboratory costs, usage, backlogs and data turnaround. Type of reports and graphics available are:

- 1) Backlog data update
- 2) Trends in sample timeliness
- 3) T/A time distribution by quarters
- 4) T/A time distribution by months
- 5) Data backlog report
- 6) Samples in backlog
- 7) Casecost report
- 8) FY/CY financial and utilization by month
- 9) Data backlog by programs
- 10) Data backlog aging-rotating months by lab/program
- 11) T/A time-trends in samples' timeliness
- 12) Samples analyzed by rotating months
- 13) Samples analyzed by fiscal year
- 14) RAS quarterly financial/util. by programs

TIP produces hundreds of different reports which pertain to sample lists, invoice reports, and reconciliation.

5.0 System Maintenance

Since the SMO systems environment is a highly dynamic one, the ability for fast implementation of system changes has been built-in to all SMO systems. Controls over change implementation have been established to maximize the stability of system behavior and to allow for the most efficient and effective use of system maintenance and enhancement resources.

5.1 User Change Control Process

As with all SMO systems, the system manager is responsible for specifying and prioritizing change requests for the corresponding data base. The system manager is usually assisted by one or two experienced users of the system, who help in problem resolution and bring needed changes to the attention of the system manager and the programmer responsible for implementing the requested changes.

SMO system users report problems to the system manager or other users assigned by the system manager to coordinate requests for programmer support.

5.1.1 System Enhancements

SMO enhancements are report/requested much the same way that problems are reported. System enhancements must be submitted in writing and are reviewed for action by the system manager and appropriate staff.

5.1.2 System Problems

SMO problems are initially submitted to the system manager and/or a representative for rectification. The SMO user should fully document the problem to the greatest extent possible.

Whenever a problem encountered with a SMO system will take less than a day to correct, the request may be made verbally to the programmer. SMO problems/changes requiring more than a day must be submitted in writing.

In instances where the SMO system manager cannot resolve the problem, the problem is assigned directly to the programmer, who is responsible for diagnosing and resolving the problem.

5.2 Technical Change Control Process

5.2.1 Change Control System Design

The SMO test environment is the set of data files and programs the maintenance programmer uses to test procedures prior to updating production programs. When maintaining the system, the programmer should follow a standard procedure for moving production programs from the production environment to the test environment and vice versa. Even though the procedures of moving programs from the production environment to the test environment seem simple, the lack of a standard procedure can cause considerable problems. Therefore, standard maintenance procedures have been established for use by the data processing staff with the maintenance responsibility.

5.2.2 Change Control Documents

Although SMO software changes and substantial problems are not logged they are submitted in writing and tracked.

Changes to SMO software are documented within the software source code and source code banner. Changes to SMO life cycle documents are submitted on standard forms.

5.2.3 Change Control Activity

The SMO programmer is responsible for changing the program(s) necessary to accommodate a solution to the problem/enhancement.

5.2.4 Change Control Testing

Changes to software are tested by the programmer and by the system manager and corresponding representatives.

5.2.5 Change Control Implementation

Once a SMO change passes through testing it is verbally approved for transfer to the production environment.

The SMO programmer initiating the change is responsible for moving new changes to the production environment.

6.0 Documentation

A major documentation effort for all SMO systems occurred in 1988. Viar was responsible for the development of the documentation, which is on an on-going basis, reviewed by an independent party (PRC). The currency of the documentation matches the current life cycle stage of the system documented.

Viar's SMO documentation is rigorously kept up-to-date. Viar's change control procedures for system documentation rely on the use of a written Documentation Change Request (DCR) form to record any changes to documentation necessitated by system changes. Another key element of the change control process for documents is that every page of each document has the date printed in the lower left corner of the page and the document title appears in the upper right corner. These headers will support accurate document identification when requesting changes and will facilitate the issuance of single updated pages for timely incorporation into the documentation.

6.1 User Documentation

SAM User Manual

STAT User Manual

FOCUS User Manual

CCS User Manual

MIS/RAS User Manual

TIP User Manual *

6.2 Technical Documentation

SAM Maintenance Manual

SAM Operation Manual

STAT Operation/Maintenance Manual

CCS Test Plan **

CCS Design Document

CCS Maintenance Manual *

CCS Operations Manual *

