

PRODUCTION PILOT REPORT

Prepared for

**U.S. Nuclear Regulatory Commission
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1 PRODUCTION PILOT REPORT

This report documents completion of activities through completion of a Production Pilot under the Center for Nuclear Waste Regulatory Analyses (CNWRA) project Licensing Support Network (LSN). The report combines the requirements of the following intermediate milestones contained in the fiscal year 2003 CNWRA Operations Plans for the Repository Program: (i) Profiling Instructions/Submission Forms, (ii) Demonstration of Electronic File Management System, (iii) Draft Standard Operating Procedures, and (iv) Production Pilot Report.

1.1 Background

In response to a U.S. Nuclear Regulatory Commission (NRC) statement of work, the CNWRA prepared a task description for LSN Document Processing Support. After approval by NRC this tasking was incorporated in the fiscal year 2003 CNWRA Operations Plans for the Repository Program as a modification to an existing project—LSN.

The overall objective of the LSN Document Processing Support was to support the NRC in certifying compliance with 10 CFR Part 2, Subpart J (Procedures Applicable to Proceedings for the Issuance of Licenses for the Receipt of High-Level Radioactive Waste at a Geologic Repository), by making documentary material available electronically via the LSN. The CNWRA has developed a substantial quantity of documentary material for the NRC in its high-level waste regulatory program. This documentary material must be provided in a format, and on a schedule, that will enable NRC to certify compliance with requirements at 10 CFR Part 2, Subpart J, no later than 5 months before U.S. Department of Energy submits a license application for a proposed high-level waste repository at Yucca Mountain, Nevada. This documentary material must be made available in Portable Document Format, must be stored in an electronic file management system at CNWRA, and must be suitable for entry in the Agency-Wide Documents Access and Management System. The CNWRA tasking defined a three-phased process for completing these activities. The objectives of each phase were defined as follows.

Phase 1—Pre-Conversion Document Staging: The CNWRA was to assemble and prepare documents for scanning and develop the associated instructions and profiling guidance. This phase was to prepare for Phases 2 and 3.

Phase 2—Setting Up High-Speed Document Conversion System/Production Pilot: The CNWRA was to validate the adequacy of the CNWRA document scanning procedures, software, and hardware, and ensure readiness for the production scanning effort to be conducted in Phase 3.

Phase 3—Production Document Processing: The CNWRA is to use the procedures, software, and hardware validated in Phase 2 to scan CNWRA legacy documents, incorporate them in an electronic file management system, and submit them to NRC.

This report documents completion of the Phase 1 and 2 activities, provides lessons learned from Phases 1 and 2, and defines the path forward for completion of Phase 3.

2 CONDUCT OF PHASES 1 AND 2

The CNWRA identified opportunities to streamline the activities necessary to complete the project overall. The CNWRA also proposed parallel completion of some activities in different phases. These modifications did not change the defined scope of work. The NRC approved the proposed CNWRA modifications for streamlining and parallel completion of phase activities, and these modifications were incorporated in the fiscal year 2003 CNWRA Operations Plans for the Repository Program.

Work in Phases 1 and 2 of the task was completed in accordance with specifications provided in the NRC statement of work and 10 CFR Part 2, Subpart J. Additionally, the CNWRA ensured that procedures, software, and hardware used in these activities were compatible with those used by the NRC Document Processing Center.

During the conduct of Phases 1 and 2, the CNWRA issued weekly progress reports. These weekly progress reports were submitted electronically on the following Tuesday for work completed each week. The format for the weekly report was approved by the NRC program element manager. In addition, the CNWRA project manager participated in progress report meetings with the NRC program element manager. Project status and financial reports were submitted every 4 weeks as part of the CNWRA Program Manager's Periodic Report that is required by its high-level waste contract with NRC. The CNWRA work was conducted in accordance with the CNWRA Quality Assurance Manual, which has been determined as a result of audits observed by NRC staff, to comply with 10 CFR Part 50, Appendix B; 10 CFR Part 63, Subpart G; and the applicable criteria of ASME NQA-1.

CNWRA and Southwest Research Institute® (SwRI®) staff visited NRC headquarters to observe document processing protocols and procedures. A visit by 2 persons for 1 day to the NRC document processing contractor's facility in Rocket Center, West Virginia, was found to be unnecessary. Rather, a document processing contractor staff member visited SwRI facilities to facilitate installation of software.

2.1 Phase 1—Pre-Conversion Document Staging

During this phase, CNWRA staff (i) assembled and prepared documents for scanning; (ii) assisted NRC staff in preparing profiling guidance; (iii) began developing the associated standard operating procedures; and (iv) obtained the hardware, software, and necessary maintenance agreements. The profiling guidance, in the form of document submission forms and targets, is included in this report as Appendix A. Appendix A meets the requirements of intermediate milestone Profiling Instructions/Submission Forms identified in Table 2-2 of the CNWRA fiscal year 2003 operations plans. The CNWRA used Phase 1 to ensure readiness for Phases 2 and 3.

During earlier preparations for conducting LSN activity, the CNWRA, NRC staff, and NRC contractors inventoried CNWRA legacy documents, defined document categories, and identified potential problems and processing requirements for each category. CNWRA and SwRI staff also traveled to NRC headquarters to develop an understanding of NRC document processing procedures, requirements, and capabilities.

As an early Phase 1 activity, CNWRA staff collaborated with NRC staff to develop document submission forms for each document category. These document submission forms will be attached at the front of CNWRA document submittals and will facilitate profiling each document in the Agency-Wide Documents Access and Management System. CNWRA staff also prepared targets that will be incorporated in scanned documents to identify the locations of items such as compact disks, tapes, and floppy disks that cannot be scanned or practically converted to a scanned document. Some documentary material, such as rock and metal samples, will be represented in the LSN only as bibliographic headers that identify the nature of the materials and their location. These materials also require document submission forms to support profiling. These forms and targets meet NRC format and content requirements used by the Document Processing Center.

A key element of the overall task is preparing documents for scanning. This preparation includes such work as removal of staples, flattening bent corners, repairing page tears, and inserting targets. Any material that may be sensitive will be set aside for specific evaluation by NRC staff. Scientific notebooks will be scanned without cutting or removing the bindings. This document processing work could become critical path activity. Accordingly, the CNWRA began this work during Phase 1 rather than waiting until Phase 3 as suggested in the program element plan. Document preparation will continue into Phase 3 as a parallel activity.

The program element plan stated that, during Phase 2, the CNWRA would obtain hardware and software to support production scanning and would develop draft standard operating procedures. These activities were conducted during Phase 1, thereby streamlining completion of the Production Pilot in Phase 2. The Production Pilot in Phase 2 was used to validate and finalize these procedures. Also, the CNWRA purchased, installed, and tested required hardware and software during Phase 1 to ensure its readiness to support the Production Pilot in Phase 2. Maintenance agreements for hardware were also put in place during Phase 1.

As part of the defined scope of work, draft standard operating procedures were developed during Phase 1 for the following activities:

- Quality assurance verification of scanned document quality;
- Quality assurance control and verification of document preparation, record and file management, scanning, and file transmittal to NRC; and
- Administration of record and file management (e.g., work flow and process, use of unique numbers for each file, file separation, use of document submission forms and targets, special handling requirements, file naming conventions, scanner settings, and transmittal to NRC).

The CNWRA procedures provide for recording that documents have been successfully entered into the Agency-Wide Documents Access and Management System.

The standard operating procedures incorporate conversion specifications for each document category. Additionally, qualifications of all persons involved in document preparation, scanning, and management will be documented in personnel training records.

SwRI and CNWRA obtained the following software to support this task:

- Kofax Ascent Capture Version 5.51;
- Prime Recognition Optical Character Recognition Version 3.90 with
 - Standard features including 3 Optical Character Reader engines and automatic zoning,
 - Color/gray scale image input option,
 - Portable Document Format output option, and
 - Multiple processor option.
- Lead Tools Raster Imaging 13.

SwRI and CNWRA obtained and will use the following hardware to support this task.

- High-speed scanners capable of scanning more than 50 pages per minute at 300 dots per inch;
- Flatbed scanners with color transparency adapter; and
- Large format color scanner(s) capable of scanning E size drawings in 256 colors.

For this assignment, the CNWRA proposes using equipment owned by another SwRI division or a local contractor. This approach avoids very large hardware costs associated with processing a small number of documents.

The use of the above hardware and software will not be limited to the LSN project and was therefore not billed as direct cost to NRC.

2.2 Phase 2—Setting Up High-Speed Document Conversion System/Production Pilot

During this phase, the SwRI and CNWRA, NRC, and NRC document processing contractor staff validated the adequacy of the CNWRA document scanning procedures, software, and hardware. CNWRA and staff from the SwRI Publications Services Department used the draft standard operating procedures, software, and hardware developed or obtained during Phase 1 to demonstrate a high-speed document conversion system.

During the Production Pilot, the hardware, software, and operating procedures were used to process documents from each of the document categories identified in the program element plan. The Production Pilot (i) identified document preparation and scanning problems, (ii) defined solutions to those problems, (iii) validated and revised the draft standard operating procedures, and (iv) confirmed that appropriate standards for document scanning and management have been established. The final standard operating procedures are included as Appendix B to this report.

When choosing documents for the Production Pilot, the CNWRA selected documents from each category that present the range of scanning and preparation complexities expected. Examples

of these difficulties included large document size, multiple page sizes, complex color graphics, faded text, and damaged pages.

The scanning rates and the times required to complete each step of the document preparation and processing procedure were used to refine the cost estimate for Phase 3. The revised cost estimate is included as Appendix C to this report.

2.3 Lessons Learned During Conduct of Phases 1 and 2

This section documents results from conducting Phases 1 and 2 that resulted in changes to the standard operating procedures or plans for the completion of Phase 3 activities.

2.3.1 Refinements to the CNWRA Electronic Library Facilities System

The NRC direction to CNWRA required that documentation must be stored in an electronic file management system. CNWRA elected to use its already established Electronic Library Facilities (ELF) system. To meet the needs of LSN System documentary material processing, it was necessary to expand the capabilities of this system. As a result, that system now makes extensive use of automated features such as (i) generation of document submission forms, (ii) spell checking, (iii) cutting and pasting, (iv) generation of document lists, and (v) date tracking for key process steps.

2.3.2 Refinements of Draft Standard Operating Procedures

During Phase 1, CNWRA prepared a draft standard operating procedure for records management to be used to control processing of documentary material for the LSN. Completion of the Production Pilot allowed specific aspects of this procedure to be improved. Specific changes included (i) improvements to the process flow diagram; (ii) refinements to procedures for control of sensitive, unclassified information; (iii) streamlining the process interactions between the CNWRA and SwRI Publications Services staff; and (iv) generating automated reports showing processing statistics. The final procedure has received concurrence from the CNWRA management and is attached to this report as Appendix B.

2.3.3 Refinements to the Cost Estimate and Schedule for Phase 3

Completion of Phases 1 and 2 provided several insights that resulted in changes to the cost estimate and schedule. Specific changes to expected costs reflect the following: (i) work done during Phases 1 and 2 that may be omitted from the cost estimate; (ii) a recognition of the more extensive work required to assemble, prepare, and scan scientific notebooks; (iii) refinements to document scanning times; (iv) a recognition that no specific resources need be assigned to the optical character recognition process; (v) a reduction in the number of documents that will be subjected to Prime Verify screening; and (vi) incorporation of fiscal year 2004 labor rates.

Changes to the schedule for Phase 3 were also adopted. Before beginning Phase 1, CNWRA expected that the NRC staff would define a document priority that would control the schedule. However, preparing for and conducting the Production Pilot revealed that multiple flatbed and high speed scanners will be used. This allows for different document categories to be processed simultaneously and in parallel. Therefore, CNWRA will now follow an approach that

allows for continuous scanning of scientific notebooks using as many as four flatbed scanners while processing other document categories on the high-speed scanners. The goal will be to complete the entire CNWRA legacy document inventory in the most efficient manner possible to meet a March 2004 completion date.

3 PATH FORWARD

During Phase 3, CNWRA will use the procedures, software, and hardware validated in Phase 2 to scan CNWRA legacy documents and submit them to NRC. Phase 3 work will be conducted in accordance with an approved work plan issued by NRC. To facilitate timely completion of the work, the CNWRA project manager collaborated with the NRC program element manager to begin preparing the work plan during Phase 2. Portable Document Format files created during Phase 3 will be maintained in an electronic file management system that is operated in accordance with the standard operating procedures prepared during Phases 1 and 2. Once CNWRA has submitted files to NRC, NRC will have responsibility for adding them to the Agency-Wide Documents Access and Management System. During Phase 3, the CNWRA project manager will obtain technical assistance from the NRC staff as required to ensure that the document processing is being completed satisfactorily.

During Phase 3, a 100-percent quality check will be performed of each image to ensure that scanning specifications have been met. Any required rescanning will be documented using the appropriate standard operating procedure.

The path forward to completion consists of three primary steps.

- (1) Begin full-scale document processing of multiple document categories using all available scanning equipment.
- (2) Develop the necessary standard operating procedures for continued processing of CNWRA documents once the legacy inventory has been completed.
- (3) Refine and implement a CNWRA records retention policy to ensure that the appropriate documentary material is retained by the CNWRA staff and is processed properly to meet the requirements of 10 CFR Part 2, Subpart J.

APPENDIX A
DOCUMENT SUBMISSION FORMS AND TARGETS

CNWRA SINGLE DOCUMENT SUBMISSION FORM

Document Date:	Date
Document Type:	CNWRA Technical Report
Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Title:	(Title of report)
Author Name:	
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
Case/Reference Number:	
Document Report Number:	Q# and report no. if applicable
Keyword:	
Comment:	
Document Sensitivity:	<input type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive <input type="checkbox"/> Non-Sensitive - Copyright <input type="checkbox"/> Sensitive - Copyright
Text Source:	<input type="checkbox"/> No Text Source <input type="checkbox"/> OCR'd from scanned image - no corrections made <input type="checkbox"/> OCR'd from scanned image - corrections made

CNWRA SINGLE DOCUMENT SUBMISSION FORM

Document Date:	Last date signature
Document Type:	CNWRA Reviewer Comments on Technical Report
Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Title:	Comments on (Title of Report being commented on; including the report number)
Author Name:	(list all commenters, e.g., Brossia C S, Dunn D S, Moghissi O C)
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
Case/Reference Number:	Report Number (if any)
Document Report Number:	Q# and report no.
Keyword:	
Comment:	
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CNWRA SINGLE DOCUMENT SUBMISSION FORM

Document Date:	Date
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Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Title:	(title of article)
Author Name:	(all names appearing on the forms)
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
Case/Reference Number:	
Document Report Number:	Q#
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Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
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Author Name:	(list of commenters)
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
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CNWRA SINGLE DOCUMENT SUBMISSION FORM

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Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Title:	CNWRA Abstract:
Author Name:	
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
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Author Name:	
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
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Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
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Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
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Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
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Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
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Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
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Author Name:	List all names
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
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Title:	QA Surveillance Report No. _____", description detailed in the "scope" section of the report, and the date range covered by the report.
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Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
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CNWRA SINGLE DOCUMENT SUBMISSION FORM

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Author Name:	(all names appearing on the forms)
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
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Document Report Number:	Q# and QA Corrective Action Report No.
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Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
Case/Reference Number:	
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Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
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Title:	Instrument calibration record for
Author Name:	(leave blank if no author)
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
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CNWRA SINGLE DOCUMENT SUBMISSION FORM

Document Date:	Date first purchase order initiated
Document Type:	CNWRA Procurement Record
Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Title:	Procurement record for (records 2000 and beyond need name of project and date range; records prior to 2000 need "high-level waste repository project" and date range)
Author Name:	
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
Case/Reference Number:	
Document Report Number:	Q#
Keyword:	
Comment:	
Document Sensitivity:	<input type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive <input type="checkbox"/> Non-Sensitive - Copyright <input type="checkbox"/> Sensitive - Copyright
Text Source:	<input type="checkbox"/> No Text Source <input type="checkbox"/> OCR'd from scanned image - no corrections made <input type="checkbox"/> OCR'd from scanned image - corrections made

CNWRA SINGLE DOCUMENT SUBMISSION FORM

Document Date:	Earliest log date
Document Type:	CNWRA Scientific Sample Custody Log
Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Title:	_____ Sample Custody Log for and date range
Author Name:	
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
Case/Reference Number:	
Document Report Number:	Q#
Keyword:	
Comment:	
Document Sensitivity:	<input type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive <input type="checkbox"/> Non-Sensitive - Copyright <input type="checkbox"/> Sensitive - Copyright
Text Source:	<input type="checkbox"/> No Text Source <input type="checkbox"/> OCR'd from scanned image - no corrections made <input type="checkbox"/> OCR'd from scanned image - corrections made

CNWRA SINGLE DOCUMENT SUBMISSION FORM

Document Date:	Earliest log date
Document Type:	CNWRA Scientific Notebooks and Supplemental Material
Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Title:	Scientific Notebook No._____, (Title of Notebook, to include the general category of the book and a date range.)
Author Name:	
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
Case/Reference Number:	
Document/Report Number:	Q# and Notebook No.
Keyword:	
Comment:	
Document Sensitivity:	<input type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive <input type="checkbox"/> Non-Sensitive - Copyright <input type="checkbox"/> Sensitive - Copyright
Text Source:	<input type="checkbox"/> No Text Source <input type="checkbox"/> OCR'd from scanned image - no corrections made <input type="checkbox"/> OCR'd from scanned image - corrections made

CNWRA SINGLE DOCUMENT SUBMISSION FORM

Document Date:	Date (will be taken from the software release form within the software package)
Document Type:	CNWRA Software Control Documentation
Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Title:	Title (of software or computer code), version, (brief description of the software.
Author Name:	
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
Case/Reference Number:	
Document/Report Number:	Q#
Keyword:	
Comment:	
Document Sensitivity:	<input type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive <input type="checkbox"/> Non-Sensitive - Copyright <input type="checkbox"/> Sensitive - Copyright
Text Source:	<input type="checkbox"/> No Text Source <input type="checkbox"/> OCR'd from scanned image - no corrections made <input type="checkbox"/> OCR'd from scanned image - corrections made

CNWRA SINGLE DOCUMENT SUBMISSION FORM

Document Date:	Date at signature lines
Document Type:	CNWRA Subcontractor/Consultant Statement of Work
Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Title:	Name of Person or Company and scope of work
Author Name:	
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
Case/Reference Number:	
Document Report Number:	Q#
Keyword:	
Comment:	
Document Sensitivity:	<input type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive <input type="checkbox"/> Non-Sensitive - Copyright <input type="checkbox"/> Sensitive - Copyright
Text Source:	<input type="checkbox"/> No Text Source <input type="checkbox"/> OCR'd from scanned image - no corrections made <input type="checkbox"/> OCR'd from scanned image - corrections made

ADDITIONAL INFORMATION FOR _____ : (TARGET)

Document Date:	
Availability:	Southwest Research Institute® Center for Nuclear Waste Regulatory Analyses 6220 Culebra Road San Antonio, Texas 78228
Contact:	Southwest Research Institute® Center for Nuclear Waste Regulatory Analyses 6220 Culebra Road San Antonio, TX 78228-5166 Attn.: Director of Administration 210.522.5054
Data Sensitivity:	<input type="checkbox"/> "Non-Sensitive" <input type="checkbox"/> Sensitive <input type="checkbox"/> "Non-Sensitive - Copyright" <input type="checkbox"/> Sensitive - Copyright
Date Generated:	
Operating System: (including version number)	
Application Used: (including version number)	
Media Type: (CDs, 3 1/2, 5 1/4 disks, etc.)	
File Types: (.exe, .bat, .zip, etc.)	
Remarks: (computer runs, etc.)	Media contains:

APPENDIX B

**CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
ADMINISTRATIVE PROCEDURE AP-019,
RECORDS MANAGEMENT**

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Records Management


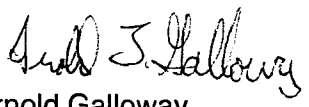

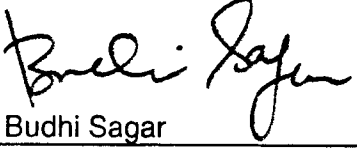
EFFECTIVITY AND APPROVAL

Revision 0 of this procedure became effective on 9/3/03. This procedure consists of the pages and changes listed below.

<u>Page No.</u>	<u>Change</u>	<u>Date Effective</u>
All	0	9/3/03

Supersedes Procedure No.: NA

Approvals

Written By  Pat Mackin	Date	Concurrence Review  Arnold Galloway	Date 9/3/03
Quality Assurance  Robert Brient	Date 9/3/03	Cognizant Director  Budhi Sagar	Date 9/3/03

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AP-019 Records Management

1. PURPOSE

The purpose of this procedure is to provide instructions for assembling and preparing, scanning, processing and filing, shipping, and managing and verifying Center for Nuclear Waste Regulatory Analyses (CNWRA) records for all clients. This procedure will also be used to submit CNWRA documentary material to meet requirements for the Licensing Support Network (LSN) in accordance with 10 CFR Part 2, Subpart J (Procedures Applicable to Proceedings for the Issuance of Licenses for the Receipt of High-Level Radioactive Waste at a Geologic Repository) and for any derivative discovery of records associated with a high-level waste repository licensing proceeding. Additionally, this procedure may provide support to the U.S. Nuclear Regulatory Commission (NRC) in responding to Freedom of Information Act requests. This procedure addresses both legacy records (records from the past) and records that will continue to be generated by the CNWRA.

2. APPLICABILITY

This procedure is to be used for managing all CNWRA records, except those that are classified.

3. RESPONSIBILITIES

3.1 The Technical Director is responsible for resolving any questions related to identifying or categorizing sensitive records.

3.2 The Director of Administration is responsible for implementing and maintaining this procedure including collaborating with U.S. Nuclear Regulatory Commission (NRC) staff to (i) identify profiling data and prepare submission forms and targets for each documentary material category, (ii) prepare electronic files for documentary material in accordance with NRC specifications, and (iii) submit documentary material to the NRC. The Director of Administration is responsible for providing and documenting training for CNWRA staff assigned to records management activities.

3.3 The Director of Quality Assurance is responsible for auditing compliance with this procedure.

3.4 CNWRA directors, element managers, principal investigators, and project managers are responsible for managing records in accordance with this procedure.

3.5 The CNWRA staff is responsible for complying with the records retention policy stated in Section 5 of this procedure.

4. DEFINITIONS

4.1 Classified information—Information (such as a document or correspondence) that is designated national security information, restricted data, or formerly restricted data. This procedure does not address classified information.

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4.2 CNWRA legacy records—CNWRA records prepared prior to (date to be determined with concurrence of NRC once processing of legacy documents has begun). CNWRA legacy records will be managed in accordance with Section 4.1 of this procedure. CNWRA records prepared after (date to be determined) will be managed in accordance with Section 4.2 of this procedure.

4.3 Document submission forms—Forms that provide information needed to profile CNWRA records in the NRC Agency Wide Documents Access and Management System (ADAMS). Profiling is a term used by the NRC Document Processing Center to describe standardized information required to enter and identify documents in ADAMS.

4.4 File set—The group of records or files that will be placed on an individual compact disk (CD-ROM). For example, a file set may be all the procurement records for a fiscal year or the entire set of calibration records. File sets are defined on a case-by-case basis taking into account parameters such as purpose, size, and individual significance of records.

4.5 Assembling and preparing—Actions necessary to prepare records for processing and managing. Assembling and preparing includes actions such as removing staples, straightening corners, and repairing page damage.

4.6 Sensitive unclassified information—Information that requires a degree of protection because of the risk and magnitude of loss or harm that could result from inadvertent or deliberate disclosure, alteration, or destruction. This term includes proprietary information, unclassified safeguards information, sensitive homeland security information, and other information withheld from public dissemination. Those categories most likely to be used for CNWRA NRC work are predecisional information, safeguards information, official use only information, sensitive homeland security information, and proprietary information. Usually, this information addresses NRC methods, findings, and recommendations concerning regulatory guidance, technical positions, internal surveys, and audits that are not ready for publication or other public release.

4.7 Targets—Forms incorporated into scanned records to identify the location and content of items such as CD-ROM, tapes, floppy disks, and sensitive unclassified information that cannot be scanned or practically converted to a scanned record. Targets may include brief abstracts that describe the nature, use, or location of items that are not scanned.

5. PROCEDURE

This section provides instructions for record maintenance. Section 4.1 is applicable to CNWRA legacy records. Continued processing of follow-on CNWRA records will be performed in accordance with Section 4.2. Where necessary, this procedure provides instructions unique to specific categories of records.

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The records management process covered by this procedure addresses actions subsequent to document development. CNWRA document development falls under the broad direction provided by Southwest Research Institute® (SwRI®) Operating Policies and Procedures, the CNWRA Quality Assurance Manual, and the CNWRA Management Plan. Specific CNWRA procedures governing document development include QAP-001: Scientific Notebook Control; QAP-002: Review of CNWRA Documents, Reports, and Papers; QAP-008: Document Control; QAP-012: Quality Assurance Records Control; QAP-017: Drawing Control; AP-002: Correspondence and Document Control; and TOP-018: Development and Control of Scientific and Engineering Software.

This procedure places records management actions in five phases: (i) assembling and preparing, (ii) scanning, (iii) process documentation and filing, (iv) shipping, and (v) records management and verification.

In accordance with 10 CFR Part 2, Subpart J, confidential financial or commercial information, or information that constitutes safeguards information, requires only an electronic bibliographic header for entry into the LSN. Classified material will be handled, stored, and otherwise controlled in accordance with the National Industrial Security Program Operating Manual, DOD-5220.22-M, which is accepted by NRC and has been implemented by SwRI. Nothing in this procedure is intended to conflict with the requirements of NRC Acquisition Regulation 2052.204.70 regarding handling of classified material. If any such conflict or difference occurs, the terms of the current CNWRA charter contract with the NRC take precedence.

Sensitive records shall be stored in the CNWRA library or the Electronic Library Facility (ELF) electronic database, but may not be disclosed to foreign nationals. The CNWRA will not distribute predecisional information without government approval.

5.1 Managing CNWRA Legacy Records

Figure 1—Processing and Managing CNWRA Legacy Records depicts the process that is described in this section. Actions required in each phase of records management are discussed in the following subsections.

5.1.1 Assembling and Preparing

5.1.1.1 General Assembling and Preparing Procedure

(a) In the assembling and preparing phase, records will be prepared for further processing and managing. Assigned CNWRA support staff shall complete the following types of actions, as necessary, during this phase.

- Remove staples.
- Straighten bent corners.
- Correct page damage, such as tears, that might interfere with scanning.

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- Assign a unique document identifier and file name in the CNWRA ELF system as described in Appendix A.
- Identify and correct any other problems that might interfere with scanning.
- Prepare document submission form (Figure 2) and targets (Figure 3), as required.
 - Document submission forms have been concurred in by NRC staff for each document category and are generated automatically by ELF
- Separate any potential sensitive material and provide it to the Director of Administration for evaluation.
- Record any special scanning requirements such as processing multiple-level overlays.
- Document completion of assembling and preparing of the document submission form in ELF.
- A copy of the document submission form will be provided to SwRI Publication Services.

5.1.1.2 Specific Assembling and Preparing Instructions for Document Categories

These steps are to be performed in addition to those in Section 4.1.1.1, as applicable.

- (a) The procedural steps defined in Section 4.1.1.1 are adequate for most quality assurance programmatic records, procurement records, and sample logs.
- (b) Scientific and field notebooks shall be assembled and prepared by assigned CNWRA staff as follows.
 - Review each notebook for completeness (cognizant CNWRA manager).
 - Provide additional identifying information for data tapes, floppy disks, or other media, as required by the document submission form or target sheets.
 - Identify any potentially sensitive or copyrighted information (cognizant CNWRA manager) and provide it to the Director of Administration.
 - Obtain NRC concurrence in assigning any sensitivity category. The CNWRA Technical Director is responsible for resolving with NRC staff any questions related to record sensitivity or copyright.
 - Complete the appropriate sensitive information identifier in ELF, and prepare the appropriate target and associated descriptive information.
 - Convert media (e.g., Bernoulli disks, 5 ¼" floppy disks) to CD-ROM and complete and attach CD-ROM labels.

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(c) Software control documentation and technical report/presentation review documentation shall be assembled and prepared by assigned CNWRA staff as follows.

- Provide additional identifying information for tapes, floppy disks, or other media, as required.
- Combine any associated QAP-002 review documentation with the associated technical report or software control documentation for concurrent scanning. The review documentation and the report or software control documentation shall be discriminated by having a capital "C" added to the ELF identifier and file name as described in Appendix A.
- Identify any potentially sensitive information (cognizant CNWRA manager) and provide it to the Director of Administration.
 - Obtain NRC concurrence in assigning any sensitivity category.
 - The CNWRA Technical Director is responsible for resolving with NRC staff any questions related to record sensitivity.
 - Complete the appropriate sensitive information identifier in ELF, and prepare the appropriate target and associated descriptive information.
- Convert media (e.g., Bernoulli disks, 5 1/4" floppy disks) to CD-ROM and complete and attach CD-ROM labels.

(d) Calibration records shall be assembled and prepared by assigned CNWRA staff as follows.

- Consolidate information in calibration records from the SwRI Calibration Laboratory with information from CNWRA laboratory files.
- Prepare a separate folder for each calibrated device with the included material in chronological, ascending order, from earliest to latest.

(e) Quality assurance audit reports, surveillance reports, nonconformance reports, and corrective action requests shall be assigned a unique document identifier for each item.

5.1.2 Scanning

5.1.2.1 General Instructions for Scanning

In the scanning phase, the following actions will be completed.

- Record the date a document is sent for scanning in ELF. Publications Services staff must sign for receipt of documents.

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- Establish file sets and file separation.
 - The maximum allowable file size is 50 MB
- Scan, quality check, verify, and process the record for optical character recognition (OCR), as appropriate, using the procedures in Appendix B.
- Complete text source information on the document submission form, as required.
- Produce two electronic versions of any document that has sensitive or proprietary material or material that is not relevant to a high-level waste licensing proceeding.
 - One version will be the complete document for retention in CNWRA files.
 - One version will omit any sensitive, proprietary, or irrelevant information and will be provided to NRC, as directed.
- Generate two compact disks of up to approximately 600 megabytes of information for each file set.
- Receive original documents and records of scanning and OCR from SwRI Publications Services and document in ELF.

5.1.2.2 Specific Scanning Instructions for Document Categories

These steps are to be performed in addition to those in Section 4.1.2.1, as applicable.

The procedural steps defined in Section 4.1.2.1 are adequate for software control documentation, technical report/presentation documentation, quality assurance programmatic records, calibration records, sample logs, and procurement records.

(a) Scientific and field notebooks shall be scanned in accordance with any special scanning instructions provided by CNWRA staff.

(b) Procurement records shall be scanned as follows.

- Send an entire file set of procurement records to SwRI Publications Services.
 - For records generated prior to fiscal year 1999, each year's combined procurement records shall be scanned as a single file set.
 - For years subsequent to fiscal year 1999, procurement records for each project number will be scanned as a separate file. Several projects may be combined for a single file set.
- Produce two electronic versions of procurement records.

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- One version will be the complete set of procurement records for retention in CNWRA files.
- One version will contain only quality affecting procurement files and will be provided to NRC, as directed.

5.1.3 Process Documentation and Filing

CNWRA records process documentation and filing will be supported by the capabilities of ELF and by a dedicated server that will store an image of each scanned document.

5.1.3.1 Instructions for Process Documentation and Filing

There are no unique process documentation and filing requirements for specific document categories, and the instructions in this section are to be used for all CNWRA records.

Process documentation and filing are to be completed as follows.

(a) Completion of the following document processing steps will be recorded with a date entry in ELF. These steps are depicted in Figure-1, Processing and Managing CNWRA Legacy Records.

- Completion of the document submission form (all grooming actions have been completed). Completing a document submission form will require that the following information has been entered in ELF.
 - Document category
 - ELF identifier (Q number)
 - Title
 - Date
 - Author(s)
 - Sensitivity or classification flag and category (to be used for any category of sensitive or classified information)
- Sending a document for scanning
- Return of a document from scanning
- Completion of filing (original and CD-ROM)
 - For each document, ELF shall identify the CD-ROM containing the document

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- Sending a document to NRC
- Receiving acknowledgment of document receipt from NRC

5.1.4 Shipping

Some CNWRA records are shipped or delivered to NRC or other clients, while other records are retained at CNWRA. This phase of records management provides the means to determine whether records have been provided to the client. For some records prepared to support the NRC high-level waste program, regulatory requirements dictate that the records be entered in the ADAMS system for further transfer to the LSN, if required. The process documentation and filing detailed in Section 4.1.3 will provide confirmation that records have been shipped and, as appropriate, entered in ADAMS.

CD-ROM prepared using this procedure will be mailed to NRC routinely and consistent with Document Processing Center needs. The mailing address will be:

U.S. Nuclear Regulatory Commission
 Attn.: Document Control Desk
 11555 Rockville Pike
 Rockville, MD 20852

5.1.5 Records Management Verification Checks

Implementation of the CNWRA records management process is subject to the CNWRA Quality Assurance Manual. In addition, this procedure requires the following quality control checks.

- Verify the quality of each scanned image.
- Perform a daily operational test of scanner performance whenever scanning is conducted in accordance with this procedure.
- Document operator proficiency in implementing this procedure in personnel training records.
- Establish preventive maintenance programs for each scanning device used in implementing this procedure.
- Confirm once each month that CNWRA software is consistent with the version being used in the NRC Document Processing Center.

5.2 Continuing Management of CNWRA Records

To be developed.

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6. RECORD RETENTION POLICY

Each CNWRA staff member is responsible for implementing the following record retention policy.

- Minimize retention of individual copies of documents that have already been archived in the quality assurance or ELF records.
- Routinely delete administrative electronic mail (e.g., global postings, meeting announcements, inputs to weekly meetings, etc.) from inbox, sent items, and deleted items folders. Maintain electronic or hard copies of email that is an official record (e.g., documentation of a deliverable acceptance or delivery date change).
- Routinely delete or dispose of files that are fully captured in another document that is retained (e.g., inputs to Program Manager's Periodic Reports, or other composite documents).
- Routinely delete unneeded files from "temp" directories that are maintained on desktop computers.

7. RECORDS

All items identified as documentation within this procedure shall be maintained in accordance with the requirements of the CNWRA Quality Assurance Manual and related implementing procedures.

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Appendix A

Assignment of Electronic Library Facility (ELF) Identifiers and File Names

The CNWRA ELF automatically assigns a unique document identifier with the following format. The ELF identifier will also be the basis for the scanned document file name.

Q (Identifies the document as CNWRA record)Date (YYYYMMDD) Three digit unique number for that date (XXX).

As an example, the ELF record Q20030227001 would be the first record entered into ELF on February 27, 2003.

A suffix will be added to the ELF identifier to denote section numbers, if the document must be separated into sections to meet minimum size requirements. An "X" suffix would denote the last section of the document. A suffix will also be used if the item is something other than a regular document, such as a drawing, a target, or the review documentation for the associated technical report or software development records.

Acceptable suffixes are:

D = Drawing

C = Review comment documentation

Examples of unique file names follow.

Q200302270011-01 First section of ELF document Q200302270011

Q200302270011-02 Second section of ELF document Q200302270011

Q200302270011-03X Last section of ELF document Q200302270011

Q200302270011C Review documentation for ELF document Q200302270011

For large or oversized images, a target will be inserted in the document, and the image will be scanned as a separate file. A suffix of the form -D01 will be added to the document file name to identify the oversize image.

CD-ROM will be numbered sequentially in the format LSNn.

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Appendix B

Scanning and Optical Character Recognition of CNWRA Records

B.1 Scanner Settings and Calibration

B.1.1 Settings

For each type of document identified, specific scanner settings and processes will be utilized

The following is an example of the settings used for the Fujitsu fi 4990C high speed black and white or color duplex scanner scanning normal black and white laser printed text .

Resolution:	300 dots per inch (dpi) (400dpi available)
Mode:	Black and white (Halftone, Grayscale, or Color available)
Brightness:	Setting determined for particular scanner
Threshold:	112 (Setting determined for particular scanner, image vs background color)
Contrast:	104 (Setting determined for particular scanner)
Gamma:	Sharp
White Level Follower:	Sets background color of paper to be white in scanned image
Dropout Color:	Green, Red, or Blue (Green is default)
Image Filter:	Normal
Deskew:	Automatic

B.1.2 Calibration

An input test target that allows a color scanner to be calibrated with any photographic medium dye set, the IT8 target, was designed by the American National Standards Institute IT8 subcommittee to be used for both calibration by visual comparison and as a numerical data target.

Each ColorReference consists of 288 patches and has been designed to represent the color space from full saturation to near neutrals for highlight, midtone, and shadows. Hues falling at regular intervals through the color space represent a full spectrum. A linear perception neutral density scale, and CMY and RGB color dye scales provide basic reference points to check for gray balance, tone reproduction, and color correction. Finally, a vendor-optional area containing flesh colors based on the colorimetric measurements of various skin tones plus the colors of nature completes the ColorReference. Scanners will be calibrated monthly using an IT8 scanner target.

A master set of "calibration or settings" pages will be created consisting of samples of various types of copy on various papers. This master set will be scanned and OCR processed at the start of each day. The accuracy of the scanning and OCR process will be verified by examining the file created and comparing it with an accepted standard. This will ensure that the scanner and associated software are operating within acceptable ranges.

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B.1.3 Scanning Procedure

Scanning will be conducted using the following steps.

- (1) Enter the record into a "work in progress" log file.
- (2) Name the file in accordance with Appendix A.
- (3) Scan the record following any special scanning instructions provided by the CNWRA staff.
- (4) Perform a quality check on each scanned page to assure completeness and a level of quality sufficient for further processing or for submittal to the U.S. Nuclear Regulatory Commission (NRC) Agency-Wide Documents Management System (ADAMS). Ensure any special scanning instructions have been complied with.
- (5) Rescan any missing or unacceptable pages until an adequate image is obtained.
- (6) Store "image only" files in unique folders on an assigned server.
- (7) Release files designated for text conversion using the Prime Recognition OCR program to produce an "image plus hidden text" version of a Portable Document Format (PDF) file and store them in unique folders on an assigned server.
- (8) Perform a verification of each page processed by OCR that does not meet the assigned threshold of accuracy using Prime Verify software.
- (9) Release verified documents for processing as Portable Document Format files.

B.1.4 Scanning Format and OCR Requirements by Document Category

- Technical Reports
 - pdf image*
 - Text searchable†
 - OCR correction not required
- Sample Logs
 - pdf image*
 - Text searchable†
 - OCR correction not required
- Software
 - pdf image*
 - Text searchable†
 - OCR correction as required

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- Procurement
 - pdf image*
- Scientific Notebook
 - pdf image* (exception: existing electronic files)
- Quality Assurance Programmatic Records
 - pdf image*
 - Text searchable†
 - OCR correction not required

* Perform OCR correction as necessary.

† All documents will have a pdf image.

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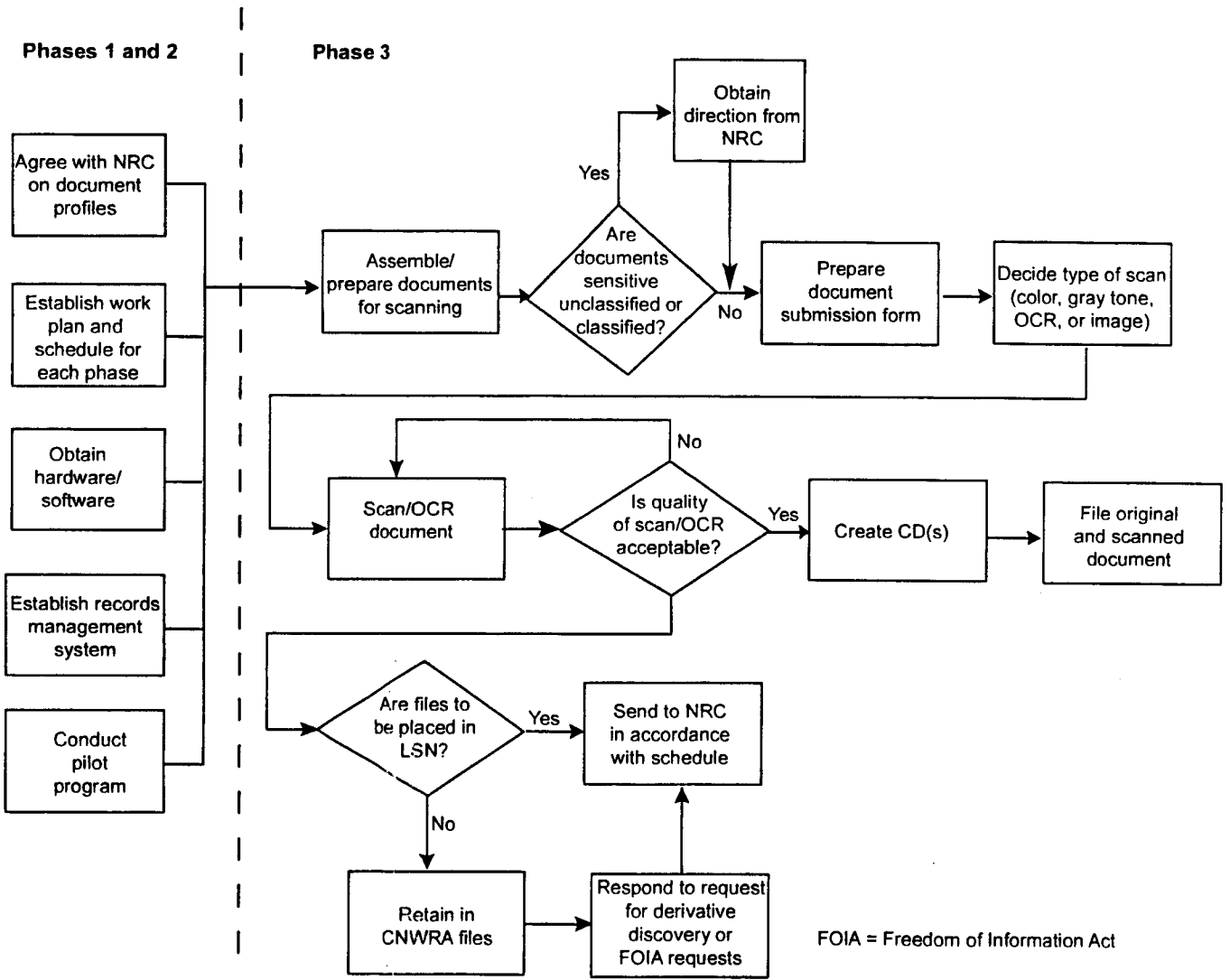


Figure 1. Processing and Managing CNWRA Legacy Records

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Document Date:	
Document Type:	
Availability:	<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available
Title:	
Author Name:	
Author Affiliation:	Center for Nuclear Waste Regulatory Analyses
Docket Number:	WM-00011
License Number:	Pre
Case/Reference Number:	
Document/Report Number:	Q#
Keyword:	
Comment:	
Document Sensitivity:	<input type="checkbox"/> "Non-Sensitive" <input type="checkbox"/> Sensitive <input type="checkbox"/> "Non-Sensitive - Copyright" <input type="checkbox"/> Sensitive - Copyright
Text Source:	<input type="checkbox"/> "No Text Source" <input type="checkbox"/> "OCR'd from scanned image - no corrections made" <input type="checkbox"/> "OCR'd from scanned image - corrections made"

Figure 2. Example Document Submission Form

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

Proc. AP-019

Revision 0 Change 0

ADMINISTRATIVE PROCEDURE

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Document Date:	
Availability:	Southwest Research Institute® Center for Nuclear Waste Regulatory Analyses 6220 Culebra Road San Antonio, Texas 78228
Contact:	Southwest Research Institute® Center for Nuclear Waste Regulatory Analyses 6220 Culebra Road San Antonio, TX 78228-5166 Attn.: Director of Administration 210.522.5054
Data Sensitivity:	<input type="checkbox"/> "Non-Sensitive" <input type="checkbox"/> Sensitive <input type="checkbox"/> "Non-Sensitive - Copyright" <input type="checkbox"/> Sensitive - Copyright
Date Generated:	
Operating System: (including version number)	
Application Used: (including version number)	
Media Type: (CDs, 3 1/2, 5 1/4 disks, etc.)	
File Types: (.exe, .bat, .zip, etc.)	
Remarks: (computer runs, etc.)	Media contains:

Figure 3. Example Target Sheet

APPENDIX C

**PHASE 3 COST ESTIMATE FOR
CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
HIGH-LEVEL WASTE DOCUMENT PROCESSING SUPPORT
SERVICES**

PHASE 3 COST ESTIMATE AND SCHEDULE FOR CNWRA HIGH-LEVEL WASTE DOCUMENT PROCESSING SUPPORT SERVICES

This is a cost estimate and schedule for Phase 3 of Center for Nuclear Waste Regulatory Analyses (CNWRA) documentary material processing to meet U.S. Nuclear Regulatory Commission (NRC) regulatory requirements for the Licensing Support Network (LSN) at 10 CFR Part 2, Subpart J. This cost estimate and schedule incorporate information developed while preparing for and conducting a production pilot in collaboration with the NRC staff. It includes only Phase 3 activities, since completion of the production pilot on August 26–27, 2003, ended Phases 1 and 2.

The cost estimate is organized by individual portions of the work process, which are then combined to obtain the total cost estimate. The individual portions of the work process and cost estimate are (i) document assembly and preparation, (ii) records management, (iii) scanning and optical character recognition (OCR), (iv) quality assurance, (v) management, and (vi) materials. The schedule assumes that activities in these areas proceed in parallel.

Subsequent to the submittal of the initial CNWRA cost estimate, a substantial amount of work has been completed. The costs associated with this completed work have been excluded from this cost estimate and schedule.

Certain assumptions are applied to staff hours and work process time estimates consistent with those used by the NRC document processing contractor, IMC. These assumptions are

- (1) Labor efficiency: Each worker contributes 6.5 effective work hours for each 8-hour work day. This requires that baseline hour estimates be multiplied by 8/6.5 (1.23).
- (2) Rework: 6 percent of all work must be redone to correct deficiencies. This requires that hour estimates be multiplied by 1.06.
- (3) Down Time: Equipment is assumed to be out of service for preventive maintenance or repair 6 percent of the time. All hour estimates for processes requiring use of equipment are therefore multiplied by 1.06.

All labor rates used in this cost estimate are fully loaded rates.

Document Assembly and Preparation

Table 1 lists labor hour and time estimates for document assembly and preparation for each document category. At the NRC staff direction, Table 1 omits personnel records and procurement records, other than those that define a statement of work, provide specifications, or contain quality assurance requirements. Document assembly and preparation was considered to include actions such as removing staples, straightening bent pages, repairing tears, and inserting target sheets. For each document category, a sample of documents representative of the size, condition, and complexity for that category was chosen. The CNWRA support staff then assembled and prepared the document samples for scanning,

Table 1. Document Preparation Time Estimates			
Document Type	Processing Rate (pp/hour)	Number of Pages	Processing Time (hour)
Scientific and Field Notebooks:¹			
Notebooks	1 hour/ notebook	NA	300
Scientific Notebook Supplemental Material ^{2,3}	2,400	10,700	8
Technical Report/Presentation Review Documentation:			
Technical and Programmatic Reviews	900	32,600	36
Technical Report/Presentation Review Documentation (Bldg 139)	900	165,000	183
Calibration of Devices	120	3,750	31
Radiac Calibrations ³	900	120	8
Calibration Procedures ³	1,200	1,000	8
Quality Assurance Programmatic Records:			
Program Documents (Procedures) ³	1,200	250	8
Programmatic Quality Assurance Working Records ³	900	500	8
Quality Assurance Procedures ³	1,200	600	8
Quality Assurance Programmatic Records	300	7,800	26
Quality Assurance Memos ³	300	450	8
Software Control Documentation:			
Active Software	900	11,250	13
Inactive Software	900	7,500	8
Procurement Files:			
Purchase Orders (Bldg. 189)	300	30,100	100
Consultant Purchase Orders and Statements of Work (scope of work only)	360	8,530	24
Purchase Orders (Alamo Downs)	300	8,350	28

Table 1. Document Preparation Time Estimates (continued)			
Document Type	Processing Rate (pp/hour)	Number of Pages	Processing Time (hour)
Sample Logs:			
Rocks ³	2,400	2,500	8
Metal ³	2,400	2,400	8
Geologic/Chemistry Sample Custody Logs ³	2,400	4,000	8
Total	NA	NA	829
¹ Preparation time for scientific notebooks includes estimates for the time required to prepare and insert "targets" for items such as compact or floppy disks. Targets are pages that will be scanned to identify the nature and location of materials such as compact or floppy disks. Preparing targets includes clarifying the data content of compact or floppy disks, determining the presence of any sensitive information, and ensuring consistency of labeling. This activity includes a review of the material by the cognizant CNWRA manager or subject matter expert. Each scientific notebook was assumed to require 1 hour of preparation time. ² Document preparation time for scientific notebook supplemental material was assumed to be similar to that for sample logs, since these documents are very similar to sample logs. ³ For document categories with rapid document preparation times and small quantities of documents, a minimum processing time of 1 day was assigned.			

recording the time required. The results of this process were confirmed or modified, as necessary, during the production pilot.

The resultant approximate document processing rates are included in Table 1 along with the total number of pages remaining in each document category. Table 1 also shows the total remaining time estimated to assemble and prepare each document category for scanning and the total remaining time required to assemble and prepare the entire CNWRA legacy document inventory for scanning. These total time estimates are based on the CNWRA document inventory that was included in the NRC program element plan. Times in Table 1 are rounded to the nearest full hour. This total document inventory assembly and preparation time is then used as the basis for estimating a document scanning and OCR level of effort and cost.

All CNWRA clerical support costs are estimated using a weighted average pay level that includes all clerical pay grades.

In preparing for the LSN production pilot, the CNWRA realized that assembly and preparation of the scientific notebook document category was more complex and time consuming than originally thought. Three primary observations contributed to this realization.

First, scientific notebooks often include color highlights marked by the original authors. In some cases, these color highlights have significance for the technical conclusions documented in the notebooks. In other cases they do not. During assembly and preparation, the CNWRA support staff identified the highlighted areas and submitted them to the cognizant CNWRA manager for a determination of their importance. This step required extra time. In addition, incorporating color into the scanned Portable Document Format file increases scanning time and file size.

Additionally, many scientific notebooks contain floppy disks or other data storage media. The contents of these various media will not be printed in hard copy and included in the Portable Document Format file for the notebook. Rather, the media location will be documented by insertion of a target in the notebook. The target identifies the information on the media in sufficient detail that an LSN user could determine whether obtaining a copy of the information would be useful. Also, these data storage media were converted to CD-ROM, when possible, to prolong their viability. This additional work adds to the time required for scientific notebook assembly and preparation.

Finally, a number of methods were used by scientific notebook authors to append information to the notebooks. These included taping, stapling, inserting multiple-tiered overlays, and folding larger sheets to a size that would fit within the notebook. The CNWRA staff worked with the Southwest Research Institute® (SwRI®) Publications Services staff to identify the best methods for scanning this appended information. This added time to the process.

As a result, even though many scientific notebooks were processed prior to the production pilot, substantial processing time remains.

Document preparation requires no use of equipment, so the correction for down time is not applicable. Therefore, the total number of staff hours required for document preparation is 829 hours × 1.23 × 1.06, or approximately 1,081 hours.

Document preparation will be performed by clerical support staff. Therefore, document processing costs are estimated to be 1,081 hours × \$37.68/hour = \$40,732.

Records Management

Records management will be controlled by the CNWRA administrative procedure AP-019, Records Management. Procedure development was completed in fiscal year 2003. Minor procedure revision may be necessary as experience is gained with document processing.

Records management procedures require that the location and status of documentary materials be tracked using an electronic records management system. CNWRA will use its existing Electronic Library Facilities (ELF) system for this purpose. That system was modified in fiscal year 2003 to support LSN activities.

CNWRA expects that experience with document processing may identify the need for additional refinements to the ELF system. The cost of these refinements is not expected to exceed \$2,000.

A second major component of records management costs will be the staff effort required to enter data in the upgraded ELF system. CNWRA estimates that monitoring the workflow process will require approximately 10 system entries for each file including the generation of weekly and monthly process reports. During the onsite inventory of CNWRA legacy documents the NRC, CNWRA, and NRC document processing contractor staffs estimated that 7,000 documents would be processed. CNWRA assumes that the NRC direction to omit personnel and procurement records has reduced the number of documents by 10 percent, to about 6,300. Therefore, approximately 63,000 system entries will be required to manage records associated with LSN activities. This cost estimate assumes that the document processing effort will require

6 months and that the records management activity for the CNWRA legacy documents will continue during that entire period.

CNWRA plans to have several persons trained in use of the ELF system. Considering the level of records management effort described in the preceding paragraph, the equivalent of one person's time will be devoted to records management for the 6 months of legacy records processing. This activity will be performed by the CNWRA support staff. Assuming 1,848 hours available during a staff year, the cost for operating the ELF system for LSN records management is estimated to be $1,848 \text{ hours/year} \times 0.5 \text{ year} \times 1.23 \times 1.06 \times 1.06 \times \$37.68/\text{hour} = \underline{\$48,117}$.

An additional records management cost will be the preparation of document submission forms for document profiling. Each document must have a submission form. Assuming there are 6,300 documents to be submitted, and that it will require the CNWRA clerical staff 1 minute to generate each submission form, the cost of preparing submission forms will be $6,300 \text{ documents} \times 1 \text{ hour}/60 \text{ documents} \times 1.23 \times 1.06 \times 1.06 \times \$37.68/\text{hour} = \underline{\$5,468}$.

A final records management cost will be expenses associated with mailing CD-ROM to NRC. Under the Materials section of this cost estimate, the assumption is made that 400 CD-ROM will be used to transmit documents to NRC. Based on information from the SwRI Shipping and Receiving staff, the cost to mail a CD-ROM to the NRC headquarters is approximately \$9. Assuming conservatively that each CD-ROM will be mailed individually results in a mailing cost of \$3,600.

Total estimated records management costs are $\$2,000 + \$48,117 + \$5,468 + \$3,600 = \underline{\$59,185}$.

Scanning

Estimating scanning costs requires that the scanning processes for the various document categories be considered separately and that the volume for each scanning process be estimated. The following assessment for scanning CNWRA legacy documents is consistent with a similar evaluation prepared by the NRC document processing contractor, IMC.

Number of book scanning images = 89,020.

Research conducted by CNWRA determined that the cost of purchasing, leasing, or using a book scanner would be excessive relative to the quantity of documents. Therefore, CNWRA will complete this scanning using flatbed scanners. Experience preparing for and conducting the production pilot indicates that two scanning rates must be considered for scientific notebooks, depending on whether the notebook is uncomplicated or whether it has complex features such as foldout sheets, or multiple overlays.

For an uncomplicated notebook, CNWRA found that a scanning rate of 10 seconds per page, or 360 images/hour is required. Based on experience to date, CNWRA estimates that 75 percent of the images ($89,020 \times .75 = 66,765$) can be done at this rate.

Approximately 25 percent of the images (22,255) will be complicated and will require about 30 seconds per page, or 120 images/hour.

The document inventory conducted by the CNWRA, NRC, and NRC document processing contractor staffs estimated a total of 338,055 high-speed scanning images would be required. This number represents everything except the scientific notebooks. The NRC staff direction to omit personnel and procurement records removed an estimated 51,375 images from this total. Therefore, the total number of high-speed scanning images will be approximately 286,680.

There will be some requirement for large format scanning. An estimate of the quantity of large format scanning was not included in the document inventory because the number was expected to be small. CNWRA research indicates that the high cost of obtaining such a scanner is not justified for the small number of documents that must be scanned. Therefore, CNWRA proposes that a local document processing contractor be used for this small number of images. The scanned documents will be returned to CNWRA and included in the records management system along with all other documents. CNWRA assumes that the cost of scanning this small number of large format documents will be \$5,000.

Scanning uncomplicated scientific notebook pages will require 66,765 images/360 images/hour x 1.23 x 1.06 x 1.06 = 256 hours.

Scanning complicated scientific notebook pages will require 22,255 images/120 images/hour x 1.23 x 1.06 x 1.06 = 256 hours.

The total scientific notebook scanning time will be approximately 512 hours.

This scanning will be conducted by a SwRI Document Finisher at a total cost of \$57.39/hour x 512 hours = \$29,384.

High-speed scanning will require 286,680 images/1,200 images/hour x 1.23 x 1.06 x 1.06 = 330 hours.

This scanning will be conducted by a SwRI Document Finisher at a total cost of \$57.39/hour x 330 hours = \$18,939.

Along with scanning, those documents that are text-searchable are processed by OCR software. This process requires no operator action, and no separate costs are allocated to it.

After OCR is complete, the Prime Verify software will be used to support any necessary corrections. In collaboration with the NRC staff, a decision was made to apply Prime Verify only to the software control documentation. From Table 1, there are approximately 20,000 images of software control documentation. Assuming approximately 10 percent (about 2,000) of the OCR images require some correction, that 60 images can be corrected each hour, and that the Prime Verify work is conducted by a SwRI Document Imager, the cost would be 2,000 images/60 images/hour x 1.23 x 1.06 x 1.06 x \$57.39/hour = \$2644.

Once files are scanned and the OCR process is complete, CD-ROM must be prepared. For planning, it is assumed that 20 to 30 files, on average, may be placed on each CD-ROM. Using the estimate from the CNWRA legacy document inventory, approximately 400 CD-ROM would be required. However, CNWRA will prepare a duplicate of each CD-ROM (one for shipment to NRC, and one for CNWRA records). Therefore, approximately 800 CD-ROM will be required. The time required to generate both CD-ROMs is the same as that required to generate a single

CD-ROM. Therefore, to estimate the labor costs for preparing CD-ROM, it is necessary only to determine the labor costs for generating 400 CD-ROM (the cost of purchasing the CD-ROM is included in the Materials section of this cost estimate). Using available SwRI equipment, on average, 6 CD-ROM can be prepared in 1 hour. CD-ROM will be prepared by a SwRI Document Finisher. Therefore, the cost of CD-ROM preparation is estimated to be $400 \text{ CD-ROM} \times 1 \text{ hour}/6 \text{ CD-ROM} \times \$57.39/\text{hour} \times 1.23 \times 1.06 \times 1.06 = \underline{\$5,288}$.

Total estimated Phase 3 scanning and OCR costs are $\$5,000 + \$29,384 + \$18,939 + \$2644 + \$5,288 = \underline{\$61,255}$.

Quality Assurance

There are three components of quality assurance to be considered in LSN document processing costs: (i) a 100-percent quality check of scanned images, (ii) procedural compliance during each step of the work flow process, and (iii) project quality assurance oversight and management. Each is addressed separately in the following discussion.

The SwRI Publications Services staff will perform a page-by-page quality check of all scanned documents, equivalent to the procedures used in the NRC Document Processing Center. This cost estimate assumes there will be a total of 375,700 scanned images (based on the onsite CNWRA legacy document inventory conducted by NRC, CNWRA, and the NRC document processing contractor). SwRI Publications Services experience is that the image quality control processing rate of 1,000 images per hour used by IMC is reasonable. Assuming that a SwRI Document Finisher is used for the quality check, the image quality checking will require $375,700 \text{ images}/1,000 \text{ images per hour} \times 1.23 \times 1.06 \times 1.06 \times \$57.39 = \underline{\$29,798}$.

The CNWRA Director of Quality Assurance will conduct both scheduled and unscheduled surveillances of LSN activities. However, under the CNWRA high-level waste contract with the NRC, the Director of Quality Assurance has a separate cost account. The resources allocated to the CNWRA Quality Assurance function are adequate to incorporate surveillance of LSN activities. Therefore, no separate quality assurance costs need be considered in this estimate.

Total estimated quality assurance costs are \$29,798.

Management

Management and supervision of LSN activities will require the following individuals, activities, and levels of effort.

CNWRA President: 1 hour per week for 24 weeks for a total cost of \$5,116

CNWRA Technical Director: 1 hour per week for 24 weeks for a total cost of \$5,116

CNWRA Project Manager: 10 hours per week for 24 weeks for a total cost of \$51,158

SwRI Publication Services Supervisor: 10 hours per week for 24 weeks for a total cost of \$19,370

No travel is expected in fiscal year 2004.

Work procedures were prepared in fiscal year 2003. Refinements may be required in fiscal year 2004 as experience is gained with document processing. The cost of these refinements is expected to be about \$1,000.

Approximately 4 hours of computer technical assistance are expected to be required each week for support of the records management system. This will cost 4 hours/week x 24 weeks x \$51.78/hour x 1.23 = \$6,114.

Total estimated management and travel costs are \$5,116 + \$5,116 + \$51,158 + \$19,370 + \$1,000 + \$6,114 = \$87,874.

Materials

All materials used to support LSN activities will also be used to support a variety of other CNWRA and SwRI projects or are considered consumables. Therefore, all materials were purchased as overhead expenses or consumables, not directly chargeable to NRC. If document processing goes beyond 1 year from the time of original purchase, some software licenses and maintenance agreements will have to be renewed.

Total estimated cost for completion of Phase 3 of the project is \$40,732 + \$59,185 + \$61,255 + \$29,798 + \$87,874 = \$278,844.

Cost Estimate by Phase

The NRC request for proposal requires that CNWRA provide a cost estimate by activity phase. The CNWRA proposal contained several recommendations for modifying the sequences of events that take place in each phase, and NRC agreed to these modifications. Only Phase 3 remains to be completed.

Schedule and Cost Distribution

In discussion with the NRC staff, CNWRA concluded that to meet the desired project completion date, the SwRI document processing facilities must be employed as efficiently as possible. Therefore, flatbed and high-speed scanners will be operated simultaneously. As many as four flatbed scanners and two high-speed scanners may be available at any time. Rather than process only one document category at a time, document categories will be processed in parallel in a manner that best utilizes the available equipment. The most time consuming scanning job is expected to be the scientific notebooks. Therefore, multiple flatbed scanners will be employed for these notebooks. The overall project goal is to complete processing the CNWRA legacy documents by the end of March 2004.

Assuming that full-scale production commences at the beginning of September 2003, 7 months are available to complete legacy document processing. Further assuming a constant work effort during those 7 months, 1/7 of the \$278,844 (\$39,835) will be expended each month. One of these months will be in fiscal year 2003. Therefore, the funds required in fiscal year 2004 to complete Phase 3 of the project are approximately \$239,000.