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COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY

CLEAN II

FINAL DATA MANAGEMENT PLAN PHASE II REMEDIAL INVESTIGATION/ FEASIBILITY STUDY MCAS EL TORO, CALIFORNIA

CTO-0059

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ACRONYMS/ABBREVIATIONS

BEIDMS	Bechtel Environmental Integrated Data Management System
BNI	Bechtel National, Inc.
CAD	computer aided drafting
CCN	correspondence control numbering
CCS	contract compliance screening
CLEAN	Comprehensive Long-Term Environmental Action Navy
CTO	Contract Task Order
DDR	Design Document Register
DMP	Data Management Plan
DQO	data quality objective
GIS	Geographical Information System
MCAS	Marine Corps Air Station
NEDTS	Naval Environmental Data Transfer Standards
NFESC	Naval Facilities Engineering Service Center
PDCC	Program Document Control Center
PP	Program Procedure
Program	CLEAN II Program
Project	CTO-0059 of the CLEAN II Program
PSFCI	Program Subject File Code Index
QA/QC	quality assurance/quality control
RI/FS	Remedial Investigation/Feasibility Study
SIMS	Sample Information Management System
SOP	Standard Operating Procedure
TSSDS	Tri-Service Spatial Data Standards

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Section 1
INTRODUCTION

This data management plan (DMP) provides site-specific guidance related to the collection, maintenance, and use of data in support of the Bechtel National, Inc. (BNI), performance of a Phase II Remedial Investigation/Feasibility Study (RI/FS) at Marine Corps Air Station (MCAS) El Toro, located in Orange County, California. This work is being conducted under the Comprehensive Long-Term Environmental Action Navy (CLEAN) II Program Contract Task Order (CTO)-0059. CTO-0059 is referred to hereafter as the Project; the entire CLEAN II Program is referred to as the Program. This plan is a companion document to the Program Data Management Plan (BNI 1993).

The purpose of the Program DMP is to provide guidance for managing data under the Program such that they are controlled, documented, and retrievable in the format required by the end users. The intent of the Program DMP is to integrate the entire life cycle of environmental data, from planning data collection to archiving data elements, into a logical sequence that addresses all CLEAN II data needs.

The objective of the Project DMP is to meet the data maintenance and access requirements specified in the Program DMP. Emphasis is placed on managing, verifying, and validating data for use in support of Project requirements.

Section Introduction

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Section 2
DATA MANAGEMENT

Project data will vary, ranging from field measurements (e.g., geophysical surveying and soil sample screening) to laboratory analyses of environmental samples. Site data requirements for this Project will be governed by the specific type of data and established data quality objectives (DQOs). Unique data-type combinations will be available to accommodate specific data collection and reporting needs for this Project. An overview of a typical data life cycle is provided on Figure 2-1. Various stages of sampling plan development, data collection, data analysis, data review, and data use are shown on the figure.

Primary data management activities include establishing sampling designs; collecting, encoding, verifying, and validating data; performing quality assurance/quality control (QA/QC) evaluation of the data; and generating output.

2.1 APPLICABLE PROCEDURES

The CLEAN II Program Procedures (PPs) for database functions and tasks are discussed in the following:

PP T2.1 Environmental Database - defines the content, format, and codes to be used for storing environmental data in the CLEAN II Program Environmental Database,

PP T2.2 Sample Information Management System (SIMS) - provides methodology for the use of Sample Information Management Protocols for sample accumulation and tracking functions,

PP T2.3 Sample Analysis Tracking Module - defines the content, format, and codes to be used for storing sample analysis tracking data contained in the CLEAN II Program Environmental Database,

PP T2.4 Data Review - establishes guidelines to be followed in evaluating the usefulness of CLEAN II environmental data for the specific purposes outlined in the Contract Task Orders (CTOs),

PP T2.5 Data Analysis - provides summary of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) methods of data analysis and identifies automation tools that are used during data evaluation, and

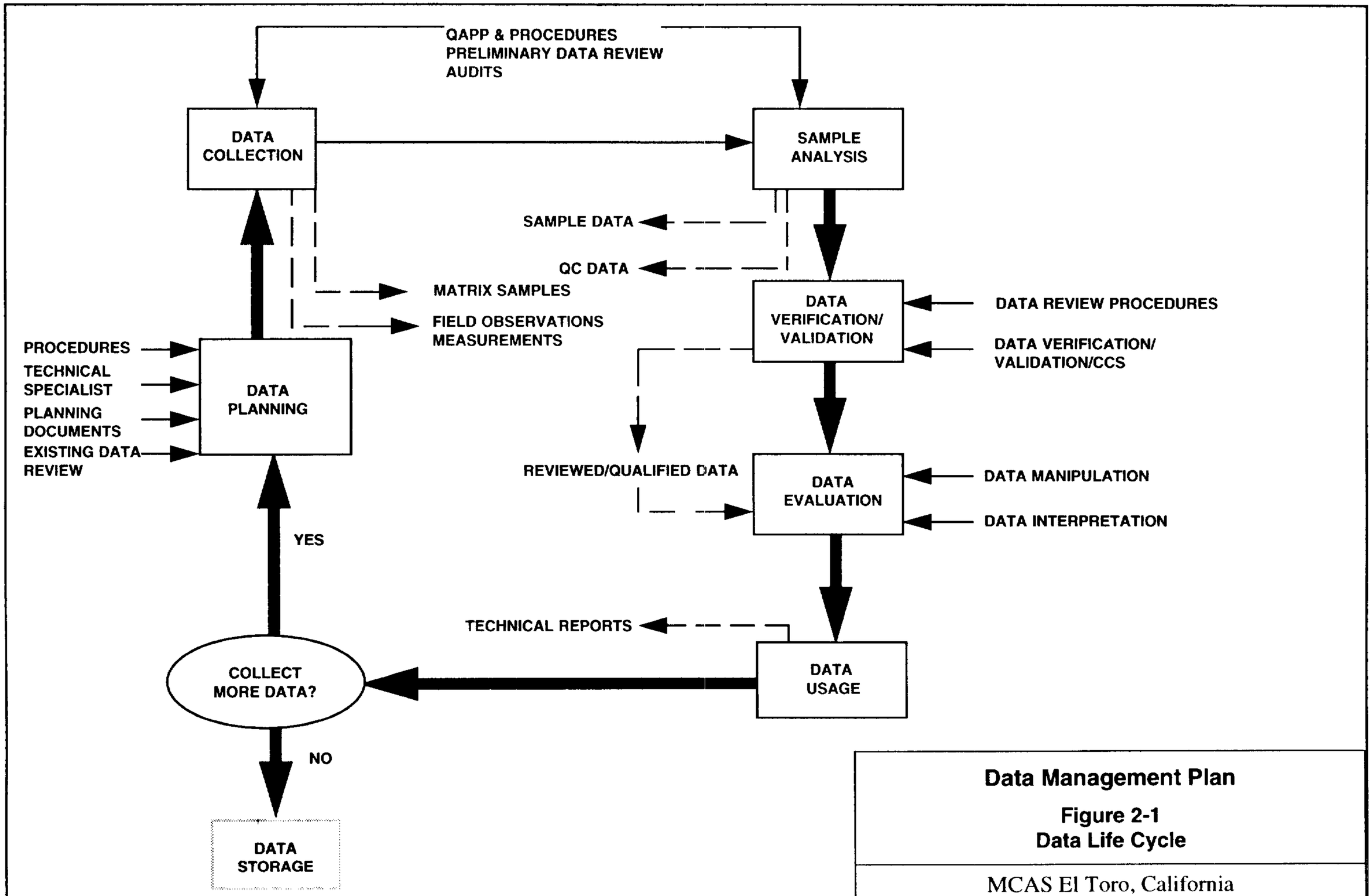
PP A1.1 Program Document Control - describes the methods for identifying, recording, and filing project documents and records.

2.2 DATA MANAGEMENT RESPONSIBILITIES

The data management staff shares responsibility for high-quality products with Project management. All stages of data processing require that the Project technical and management staff form a team with the data management staff. Data processing includes the design of data collection schemes and definition of previously mentioned DQOs to transmitting data to the Navy.

The CTO Leader is responsible for the following:

- oversight of Project data-gathering activities and adherence to Program data management procedures;
- reviewing field-collected data and timely transmission of data to the Program Document Control Center (PDCC) and the Data Management Group; and
- providing a review of hard copy data as soon as it is received from the laboratory (this provides a preliminary check on the data values' accuracy).



Data Management Plan

Figure 2-1
Data Life Cycle

MCAS El Toro, California

CLEAN II Program

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Job No. 22214

The CLEAN II PDCC staff have responsibility for accurate and timely entry of data transmittals from field and laboratory sources into the PDCC database (correspondence control number [CCN] and Design Document Register [DDR] numbering) and for distribution of the appropriately numbered data submittals to the Program Data Manager.

The data management staff is responsible for the following:

- compiling project data into the Program database;
- making data readily available to Program and project personnel;
- training data users, developing application interfaces, and providing systems maintenance and data archival services;
- defining access levels for new users (e.g., read-only, modify, add, and delete privileges);
- setting up user accounts (e.g., assigning passwords, allocating directory space, providing instructions for logging onto the system); and
- defining user profiles, including the type of terminal or workstation, user expertise, and application.

The data management system is designed to meet user needs and to respond to deficiencies or new applications as they become known. The data management staff will respond to comments arising from user feedback will perform and systems oversight. The staff will also respond to Navy requests whenever required and will conform to Navy data management practices.

Section 3
DATABASE

The database resides on a computer system at the BNI San Diego office facility. The database is maintained using ORACLE™, a relational database management software system. The Program database content, format, and utility are defined in detail in PP T2.1, Environmental Database. The database files to be used in this Project are described briefly in the following sections. Data tables and information categories used in the CLEAN II database are shown in Table 3-1. Descriptions of all primary database files are presented in the Program DMP.

3.1 GEOGRAPHICAL INFORMATION

The topography and relative locations of key landmarks and structures will be incorporated into detailed maps of the site as appropriate. This mapping activity will be performed by a California-certified subcontractor. Methods will include ground-based mapping.

Designated areas will be surveyed to accurately fix both horizontal and vertical positions of identified features and, more importantly, specific investigation locations. Horizontal positioning data will be in the California State Plane, NAD 1983, coordinate system. The results will be presented as maps or drawings accurately associated with permanent benchmarks. These maps will be available to Project staff in both hard copy and electronic formats and will conform as closely as practical to the Tri-Service Spatial Data Standards (TSSDS).

The geographical coordinate data will be in a format consistent with conventions described in the Program DMP. The location data are found in the database table EDMS_SAMPLE_STATIONS. This table is used for locations that are referenced to other data assembled in the course of the investigation (e.g., water samples) or to repeated sampling events at the same location.

A station-wide base map has already been generated for MCAS El Toro by the CLEAN I team during the Phase I RI. The surveyed locations of existing monitoring wells, Phase I sample locations, and other location information have been tied to this base map by the CLEAN I team and incorporated into a Geographical Information System (GIS) using ARCINFO™. The CLEAN II team have received the geographical elements of the CLEAN I GIS and incorporated them into an AutoCAD™ base map and/or an ARCINFO™ GIS. The coordinate data will also be transferred and, together with new coordinate information generated during implementation of the Phase II work, stored in the Bechtel Environmental Integrated Data Management System (BEIDMS).

3.2 GEOPHYSICAL DATA

Surface geophysical methods will be used to focus investigation efforts on specific areas of interest and to locate utilities or other subsurface obstructions prior to drilling.

Table 3-1
CLEAN II Data Tables and Information Categories

Table Type	Table Name[1]
Reference	ANALYTES
Tracking	CHAINS_OF_CUSTODY
Reference	COLLECTION_METHODS
Tracking	CONTAINERS
Reference	CONTAINER_TYPES
Reference	CRITERIA
Tracking	DATA_PACKAGES
Tracking	DATA_SOURCES
Descriptor	FACILITIES
Measurement	FIELD_MEASUREMENTS
Reference	INSTRUMENTS
Descriptor	LITHOLOGY[2]
Tracking	LOG_BOOKS
Reference	MATRICES
Reference	METHODS
Reference	METHOD_DETECTION_LIMITS
Reference	PAY_ITEMS
Reference	PRESERVATIVES
Reference	QUALIFICATION_CODES
Reference	QUALIFIERS
Reference	QUALITY LEVELS
Measurement	RESULTS
Tracking	RESULT_QUALCODE
Reference	RESULT_TYPES
Measurement	SAMPLES
Measurement	SAMPLE_STATIONS
Reference	SAMPLE_TYPES
Tracking	SAMPLING_EVENTS

(table continues)

Table 3-1 (continued)

Table Type	Table Name[1]
Tracking	SEIR
Tracking	SEIR_PAY_ITEMS
Descriptor	SITES
Descriptor	SOIL_BORINGS[2]
Tracking	TABLE_CHANGES[2]
Descriptor	TANKS[2]
Reference	STATION_TYPES
Tracking	TRANSFERS
Descriptor	UNITS
Tracking	WATER_LEVEL_MEASUREMENTS
Measurement	WATER_LEVEL_RESULTS
Descriptor	WELLS
Measurement	WELL_DEVELOPMENTS
Measurement	WELL_RESULTS

Notes:
[1] Equivalent to the NEDTS "FILENAME".
[2] Tables that are not developed at this time but that are planned when the need arises. gINT™ data will define some of them and Navy specifications of their NEDTS transfer formats will also provide input into table content and format.

Surface geophysical methods may include electromagnetic induction, ground-penetrating radar, and magnetic methods. Surface geophysical data are typically the result of interpretation of field survey information and are not amenable to electronic transfer or processing. Some aspects of the interpretation, however, may be entered into the EDMS_FIELD_MEASUREMENTS table.

Downhole geophysical techniques are planned to be performed in certain exploratory boreholes during the Phase II fieldwork. Downhole geophysical methods may include gamma ray, resistivity, spontaneous potential, sonic, and neutron logging. These data will ultimately be incorporated in cross sections and used to interpret the stratigraphy beneath the Study Area. Currently, BEIDMS does not have a data table specifically structured for storing and manipulating downhole geophysical data. Such a table will be specifically developed for this project and will follow requirements of the Navy Environmental Data Transfer Standards (NEDTS).

3.3 GEOLOGIC DATA

In the course of subsurface investigations, conducted by either drilling or excavating, data will be gathered on soil classification, particle size, odor, color, and equipment

performance to characterize site geology. This information must be spatially correlated with other data and, therefore, will be incorporated into mapping or drawing systems.

Geotechnical laboratory analysis will also be conducted and will include moisture content, bulk density, permeability, porosity, plasticity index, and grain size distribution analyses.

Soils and lithology data may be entered in three database tables. The first is EDMS_SOIL_BORINGS, which includes soil boring characteristics observed in the field. The second database table is EDMS_WELLS, which contains records of well-construction details for each well. The final table is EDMS_LITHOLOGY, which is the repository for data specific to soil types and stratigraphic/lithologic information.

3.4 HYDROGEOLOGICAL DATA

Hydrogeological data collected for the MCAS El Toro Phase II RI/FS will consist of water level measurements in groundwater monitoring wells. These values are recorded in the EDMS_WATER_LEVEL_RESULTS database table.

3.5 CHEMICAL ANALYSIS RESULTS

Chemical analysis results refer to data describing the concentrations of classes of compounds, specific compounds, or elements found in samples by field or laboratory analytical methods. The data are collected for a number of purposes, including health and safety monitoring, selection of samples for analysis, determination of contaminant concentrations, waste disposal, and prediction of fate and transport of contaminants.

The chemical data may be characterized as:

- field screening data,
- field analysis data, and
- laboratory analysis data.

Each data type has a specific purpose with an associated quality management strategy that is tailored to the use of the data. This strategy is defined through the DQO process.

3.5.1 Field Screening Data

Field screening data are used by field staff to direct the course of work. Field screening is typically performed using on-site analytical or direct-reading instrumentation and may include immunoassay, x-ray fluorescence, or litmus-type tests. Results from field screening are compared to preestablished threshold values. The results are recorded in a logbook, along with any related work-process decision. This documentation is reviewed by appropriate supervisory staff for QA, and the data are recorded for future reference in the EDMS_SAMPLE and EDMS_RESULTS database tables.

3.5.2 Field Analysis Data

Field analysis data are differentiated from screening data by the level of precision and accuracy that can be expected from the procedure. Examples of field analysis data to be conducted during the execution of CTO-0059 include field pH measurements, mobile laboratory analyses, and portable gas chromatography analyses. Field analysis data are supported by calibration of the instruments using two or more standards and by continuing calibration verification at frequencies specified in the CTO-0059 QAPP as well as the CLEAN II PPs and Standard Operating Procedures (SOPs). The results are entered into the EDMS_FIELD_MEASUREMENTS database table, or the EDMS_RESULTS table.

3.5.3 Laboratory Analysis Data

A large portion of the Project data management support will be associated with laboratory-based analyses. Detailed procedures, consistent with Naval Facilities Engineering Service Center (NFESC) guidelines and CLEAN II PPs for assuring data precision, accuracy, representativeness, completeness, and comparability, will be employed. The results will be entered in the EDMS_RESULTS database table and will be referenced to several other associated database tables that will aid in managing both the data and many of the contractual and procedural requirements.

Sample information management will include use of data collection forms, chain-of-custody forms, sample labels, custody seals, etc., necessary to follow the procedures outlined in PP T2.2, SIMS.

As part of the data management process, the following will be monitored during field investigations:

- submission of environmental samples for laboratory analysis,
- schedules associated with sample analyses (including holding times),
- transfer of electronic data deliverables and hard copies from the laboratory, and
- tracking of data validation.

The CLEAN II electronic format for analytical data deliverables is shown in Table 3-2.

3.6 DATA ENTRY

Data will be entered into the Program database through either electronic transfers or manual entry. Data entry will adhere to appropriate QA and verification requirements. Detailed procedures for transmittal of data are provided in PP T2.2, SIMS; PP A1.1, Program Document Control; and various program SOPs defining collection and recording of specific data types. Figure 3-1 is an example of a manual entry data form.

Table 3-2
CLEAN II Electronic Format for Data Deliverables

Field	Columns	Length	Format	Description
CONTAINER_ID	1-15	15	CHAR	Sample container ID assigned by project
LAB_CODE	16-23	8	CHAR	Code to identify analytical laboratory
SDG_ID	24-38	15	CHAR	Sample delivery group assigned by laboratory to identify a batch of samples
LAB_SAMPLE_ID	39-53	15	CHAR	Sample ID assigned by laboratory for internal tracking
BLANK_ID	54-68	15	CHAR	Blank sample ID associated with sample
ANALYTE_ID	69-83	15	CHAR	Unique identifier, such as CAS number or other parameter, to indicate laboratory analysis
ANALYTE_NAME	84-163	80	CHAR	Name of analyte (compound)
PAY_ITEM	164-178	15	CHAR	Subcontract document pay item number
RESULT	179-193	15	NUMBER	Analytical result, detection limit value, or percent recovery
ERROR	194-208	15	NUMBER	2 sigma error for radiological data
RESULT_UNITS	209-218	10	CHAR	Measurement units for result
RESULT_TYPE	219-224	6	CHAR	Code identifying type of laboratory analysis (MS, MDS, DUP, etc.)
QUALIFIER	225-229	5	CHAR	Result qualifier placed on result by laboratory
DATE_LAB_REC	230-240	11	DATE	Date of sample receipt by lab (DD-MMM-YYY)
DATE_PREPPED	241-251	11	DATE	Date of sample prep (DD-MMM-YYY)
TIME_PREPPED	252-256	5	CHAR	Time of sample prep (HH:MM); 24-hour clock
DATE_ANALYZED	257-267	11	DATE	Date of sample analysis
TIME_ANALYZED	268-272	5	CHAR	Time of sample analysis (HH:MM); 24-hour clock
METHOD	273-287	15	CHAR	Analytical method
FILTER_FLAG	288-288	1	CHAR	Filtered or unfiltered analysis code (F or U)
DETECTION_LIMIT	289-303	15	NUMBER	Method detection limit
DL_UNITS	304-313	10	CHAR	Units for method detection limit

(table continues)

Table 3-2 (continued)

Field	Columns	Length	Format	Description
INSTRUMENT_LIM	314-328	15	NUMBER	Instrument detection limit
INST_DL_UNITS	329-338	10	CHAR	Units for instrument detection limit
SAMPLE_VOLUME	339-353	15	NUMBER	Volume of sample (as per container size; sum of multiple containers for one analysis type)
VOLUME_UNITS	354-363	10	CHAR	Units for sample volume
ALIQUOT_SIZE	364-378	15	NUMBER	Sample aliquot size (sample size/volume used for analysis, as per method)
ALIQUOT_UNITS	379-388	10	CHAR	Units for aliquot size
DILUT_FACTOR	389-396	8	NUMBER	Dilution factor
SPIKE_AMOUNT	397-411	15	NUMBER	Amount of analyte added to sample
SPIKE_UNITS	412-421	10	CHAR	Units for spike amount
MOISTURE	422-426	5	NUMBER	Moisture content in percent (solids only)
MATRIX_TYPE	427-436	10	CHAR	Matrix type
RET_TIC	437-443	7	NUMBER	Retention time (TICs only)

FIELD LIST OF VALUES

Field	Value[2]	Description
ANALYTE_NAME	To be determined	To be supplied to contractor prior to any deliverable submission
ANALYTE_ID	CAS numbers or other analyte identification as specified in the Chemical Abstract Services Association or as specified by CONTRACTOR	To be determined
ANALTYE_NAME	Compounds as specified in the Chemical Abstract Services Association or as specified by CONTRACTOR	To be determined
FILTER_FLAG	F	FILTERED
	U	UNFILTERED
QUALIFIER	Qualification codes placed on result	To be supplied to contractor prior to any deliverable submission
RESULT_TYPE	MS	matrix spike
	MSD	matrix spike duplicate
	DUP	duplicate
	MB	method blank
	LCS	laboratory control sample

(table continues)

Table 3-2 continued

FIELD LIST OF VALUES		
Field	**Value**[2]	**Description**
RESULT_TYPE	RE (RE1, RE2, ...)	repeat analysis
	SUR	surrogate spike
	TIC	tentatively identified compound
	TRG	target analyte
	DL (DL1, DL2,...)	dilution
MATRIX_TYPE	gas	air/gas
	sol	solid
	liq	liquid

Notes:
[1] See Section 11.1 of the Technical Specification of Analytical Laboratory Services (TS-002) for valid values
[2] These values are not an inclusive list, others may be used as needed and agreed upon by the CONTRACTOR. Values must be supplied to contractor prior to their use in deliverable submissions.

Section 3 Database

Field Data Transfer Form
Aqueous Samples

Sample ID	Cross-Reference No.	Station ID	COC No.	DTW	pH	Temperature	Conductivity	Other	Sample Date	Sample Time	Date Shipped

Data Management Plan

Figure 3-1
Example of a Field Data Transfer Form

MCAS El Toro, California

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Section 4
DATA EVALUATION AND VALIDATION

The laboratory data evaluation component of data management includes data standardization and verification, data validation, and data review and analysis. Detailed methodologies for these processes are presented in PP T2.4, Data Review, and PP T2.5, Data Analysis.

4.1 STANDARDIZATION

The Program DMP establishes a basis for standardization of the data management process. Data users on every project must be able to retrieve data from any investigation with confidence that values for given parameters are comparable. In the Program DMP, conventions are provided to assure comparability of similar data.

The data management software will convert variables to standardized units whenever necessary to be consistent with the established formats. Any changes to raw data will be documented and accompanied by database change requests, which will be tracked through the PDCC and recorded in the electronic data management system.

4.2 DATA VERIFICATION

Data generators will be responsible for data verification and validation at each site or operable unit. The generators may be the lead field investigators or the Project laboratory coordination staff.

Field data collection and verification (i.e., confirmation that database entries match field logbook entries) will be performed by lead field investigators designated by the Project Manager. Field data verification tasks will be governed by PP T2.4, Data Review, and by CLEAN II SOPs. Verification checklists for each type of collected data have been developed and will be included in the Project document tracking system as attachments to the data collection forms and/or electronic deliverables.

Electronic data will be transferred through the use of magnetic media (e.g., tapes, diskettes, or storage cartridges). The transmitter will verify and document that the data on the associated hard copy matches the contents of the data file. Any discrepancies will be forwarded to an appropriate reviewer (i.e., technical specialist) for resolution.

Following the verification of analytical data, a contract compliance screening (CCS) will be performed. The CCS task includes reviewing the dataset to determine if the data have been accurately transcribed, quantified and qualified, and collected and analyzed according to approved procedures; and whether they comply with the contract specifications under which the work was performed. All Project personnel performing CCS will have complete familiarity with the Project data requirements. If there is major noncompliance with the contract, the review process will stop and the compliance issues will be resolved.

The integrity of any data modification or input will also be assured through the use of standard troubleshooting methods. These methods may include (1) double data entry and subsequent file comparisons and (2) rechecking of output documents by both the

originator of the data and a second checker. The CTO leader, or their designee will decide on the method of data input. At a minimum, the database content must be proven to have a one-to-one correspondence with the raw data as received by data management staff and as documented in the PDCC. Data verification and modification are tracked on data collection forms, database change requests, and in the database itself.

4.3 DATA VALIDATION AND REVIEW

The usefulness of data for specific purposes will be based on application-related data requirements, methods of collection, and validation flags for analytical results. Data qualification will be fully documented, and data quality will be easily interpreted by referencing qualifier flags within each data table. NFESC (formerly Naval Environmental and Energy Support Activity [NEESA]) Level D data QC guidance will apply for laboratory analytical results (NEESA 20.2-047B). Qualification flags consistent with those guidelines will be associated with both the laboratory reporting and data validation processes. Laboratory and valuator flags are fully defined in PP T2.4, Data Review. Any specific data qualification that requires further explanation can be documented in comment fields within the database tables.

The data validation process results in categorizing (flagging) the data according to established classification criteria (e.g., verified, valid, invalid). These classification categories are determined after technical specialists have reviewed the data. These data are accompanied by documentation that demonstrates the following:

- sampling objectives were clearly defined, and the data were collected to meet appropriate regulatory, reporting, confirmation, characterization, or monitoring goals;
- sampling design demonstrates that appropriate media were sampled, appropriate parameters were measured, appropriate samples were taken at the correct place and time, and the samples yielded representative results;
- sample collection followed approved procedures and protocols that were appropriate to yield reliable and reproducible results;
- data reporting included sufficient supporting information to allow clear interpretation of the data; and
- QA/QC procedures were clearly documented and implemented.

Unacceptable data are those that do not fulfill these requirements. Insufficient or questionable data will be further documented or supported by collecting more information as required. The sample selection summary form (SSSF) (Figure 4-1) will be used to collect the information from samplers and data reviewers that documents regulatory, reporting, characterization, and monitoring goals or variances in achieving those goals.

Section 4 Data Evaluation and Validation

NAVY CLEAN II
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SAMPLE SELECTION SUMMARY FORM

CTO-_____

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PART A	**SAMPLE SELECTION CRITERIA**		
1. Sample Identification: **Sample Number:**_____ **Cross-Reference:**_____ **Location:** _____ **Interval:** _____ (in *ft below ground surface* w/r/t soil samples)	**2. Media:** _____	**3. Sample Type:** _____	**4. Sample References** **Date Collected:** ___/___/9__ **SEIR No.:** _____ **Logbook:** _____
5. Sampling Methods (Circle appropriate) Grab Composite GW Purge & Sample Other:			

6. Sample Selection:

Sample selected for **Onsite** &/or **Lab**
(circle as approp.) **Screening** **Analysis**

Sample selected for **additional** analysis other than stated in the SAP because: (check as appropriate)

____ Risk Assessment ____Biased Sample Priority Level change?_____
____ Feasibility Study ____ Onsite Screening Results
____ Quality Control ____ Lithology or Hydrology
____ Geotechnical ____ Site History/Process Knowledge
____ Composite - (circle) Areal Vertical Temporal
____ Other (explain)_____

7. Sample Selection Determined By: _____ **Date:** _____
Title

8. Special Observations/Comments: _____

Part B **DATA USABILITY**

9. ANALYTICAL PACKAGE CCN No. _____ **10. SUPPLIER DOCUMENT No.**_____

11. Data Usability Comments : _____

12. BEIDMS Cross References:

Completed By: _____
Date

Data Management Plan

Figure 4-1
Sample Selection Summary Form

MCAS El Toro, California

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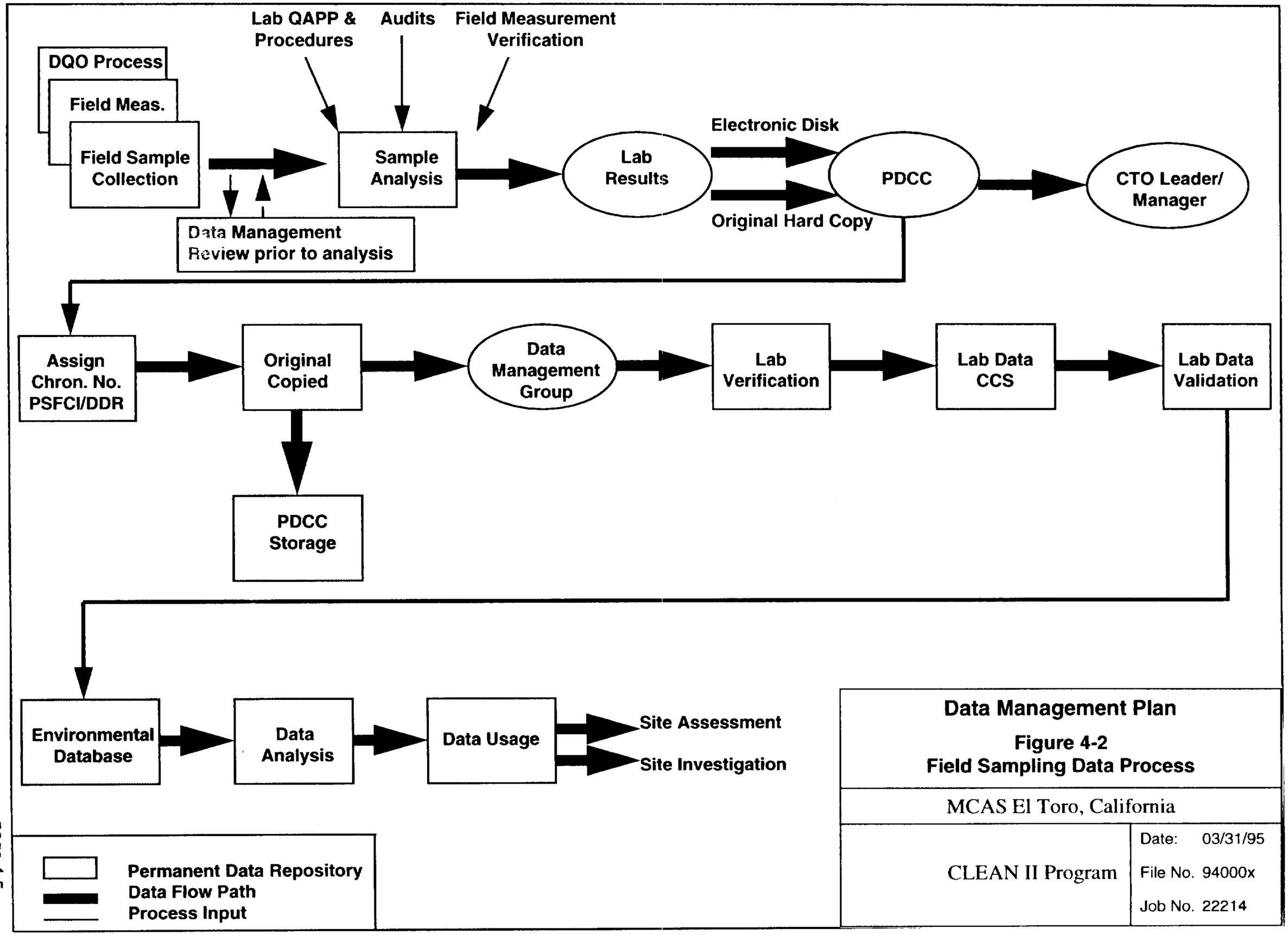
Data will be evaluated in accordance with PP T2.4, Data Review, as illustrated on Figure 4-2. New data will be verified and validated by assuring that applicable PPs are followed and by using guidelines set forth by the United States Environmental Protection Agency. Unverified and invalidated data will be stored in a temporary repository until the appropriate level of data review has been completed. Once the data review process is completed, corrections are made, and limitations are identified, data will be loaded into the production database and released for use.



Data Management Plan

Figure 4-2
Field Sampling Data Process

MCAS El Toro, California

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Section 5
DATA ACCESS AND MAINTENANCE

5.1 DATA ACCESS

The data management system provides direct user access to the verified and validated database tables through customized screens and menus. The Project applications requiring access to these data will include data reporting and statistical evaluations.

Casual data users assigned to this Project will be able to obtain environmental data reports by requesting specific output from the database tables. Output reports will be developed based upon specifications on Request for Data Management Services forms, found in the Program DMP. More sophisticated data users will be able to perform their own queries to generate ORACLE™ output by using SQLASSIST™ or SQLPLUS™, an ORACLE™ utility provided with the relational database management system. SQLASSIST™ is a menu-driven user interface that offers a variety of output formats, including Microsoft Excel™, MS Word™, graphics, ASCII, dBASE III™, and SAS™.

5.2 DOCUMENTATION

All data input, procedures, and output (products) will be fully documented and tracked to assure retrievability and to provide data users with a library of available data and applications. Detailed documentation procedures are presented in PP T2.1, Environmental Data Base; PP T2.2, SIMS; and PP A1.1, Program Document Control. This documentation describes database table variables, data sources, file formats, measurement units, and other attributes that will be needed by data users in order to generate specific products. Specific data requirements associated with laboratory analytical methods employed to measure sample contaminant concentrations, site geologic characteristics, regulatory guidelines, and other reference and descriptive information are presented in the applicable work plan. These data will also be tracked and documented within the data management system.

Project files will be established to store all accountable Project documents. Accountable documents include, but are not limited to, procurement request forms, progress reports, letters, daily field reports, field data forms (e.g., boring/drilling logs, well-development logs, well-sampling records, well-construction logs, field-sampling logs, and trench logs), sample event information records, chain-of-custody forms, analytical data, and analytical reports. All incoming and outgoing documentation (whether in hard-copy or electronic form) will be stored in the PDCC located in the BNI San Diego office.

The CTO Leader will be responsible for reviewing the original document, attaching a distribution list, and forwarding both to the PDCC. Originals that are associated with field or sampling activities must be accompanied by a Field Data Review/Correction Form in addition to the distribution list. Upon receipt, the PDCC project administrator will assign a unique chronological number and a four-digit Program Subject File Code Index (PSFCI) to each original. The PSFCI is assigned for use in sorting and retrieving documents at a later date. In addition, a DDR program will be used to log and track all

supplier/procurement documents, laboratory reports, and documents that are often subject to revision. The PDCC staff will assign each consecutive document with a chronological number and PSFCI number. Once appropriate identification numbers are assigned, PDCC will forward a copy to the CTO Leader and will place the original in permanent storage.

5.3 SECURITY

Access to Project data will be unlimited to authorized users, but various levels of access will be established and maintained to assure complete data security and integrity. The data management system is designed to protect against unauthorized data access and corruption of data. User access is controlled by the use of passwords, and users will be provided read-only access to verified and validated data.

On-line access to data tables will be granted to users with read-only privileges for specialized applications or for routine report generation. Only the data management staff will be able to make changes to validated data, and such changes will occur only when database change requests have been submitted through the PDCC with authorization signatures from appropriate technical and management staff.

ORACLE™ offers the following levels of user privileges:

- DBA (database administrator) - create user accounts and assign passwords, grant data access by table and user privileges, set system access on tables, views, and disk space within the database.
- RESOURCE - read/write privileges to the database, add or change data, create tables and views.
- CONNECT - read-only access to the database.
- SELECT - read-only access to specific rows or columns of tables and views.

Preliminary data may be available for modification for specific activities such as the entry of data quality codes by data validators. However, once the data are declared to be validated/verified by authorized personnel (e.g., qualified data validators for laboratory analytical data or lead field investigators for field data collection verification), they will be placed in production database tables. Modifications to production tables may be performed only by data management staff and only when database change requests have been completed and approved by appropriate PMs and technical specialists. Modifications to validated data will also be tracked electronically as separate variables within all database tables. Tracking variables will include the user identification of the person making the change to the database, the date of the change, and the PDCC document control number of the database change request.

Data security will be further enhanced by periodic backups to all database tables and computer programs. Copies of the database will be stored off-site (remote from Program data management facilities and computer systems) to provide backup to all data in case of damage to the facility and computer equipment.

Data users responsible for output from application systems will be responsible for developing ways to assure the integrity and security of their respective data and programs residing on the various systems. The data management staff may assist data users in the performance of application systems programs and data backups.

5.4 BACKUP AND RECOVERY

Data loss due to system failure or other disasters creates the potential for accidental data corruption. This possibility is prevented by a rigorous backup and recovery program. Procedures for the backup and recovery are presented in the Program DMP. The data management staff is responsible for making and maintaining backup copies of data files and tables and for selecting data tables for archival. Tapes or cartridges of the backups will be stored both locally and in an area outside the computer facility.

5.5 DATA TRANSFER

All data collected during performance of this Project will be transmitted to the Navy in NEDTS format (and using NEDTS-specified media) on an agreed-upon schedule. Transmissions will be accompanied with documentation describing number of records transmitted, records modified since previous transmissions, any identified data discrepancies, and planned corrective actions.

CAD and GIS files will be transmitted to the Navy when they are completed or when revisions occur. These files and attributes associated with spatial data will conform as closely as practical with TSSDS.

Historical data from CLEAN I investigations will be transferred to CLEAN II in NEDTS format. These data will be incorporated into the ORACLE™ database system and made available for Project use. MCAS El Toro CAD and GIS files have already been transmitted from CLEAN I to CLEAN II.

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Section 6

REFERENCES

Bechtel National, Inc. (BNI). 1993. Program Data Management Plan. San Diego, CA 92101 (Contact CLEAN II Data Manager, 619/687-8740).

Section 6 References

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