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Department of Energy
Chicago Operations Office
Salt Repository Project Office
505 King Avenue
Columbus, Ohio 43201-2693

April 13, 1984

R. Johnson, Project Manager
Salt Section
Repository Projects Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Johnson:

SUBJECT: DRAFT MINUTES OF MEETING WITH SALT STATE REPRESENTATIVES AND NRC, MARCH 29-30, 1984; MINUTES OF MEETING WITH SALT STATE REPRESENTATIVES AND NRC, JANUARY 26-27, 1984

Enclosed are the draft minutes of the meeting with salt state representatives and NRC, March 29-30, 1984, for your review and comment. The referenced attachments will be provided when the minutes have been finalized. This draft incorporates comments made by my office. Please notify D. Halliday of Battelle/ONWI of any corrections or additions you may have.

Also enclosed are the final minutes of the January 26-27, 1984 meeting. I look forward to receiving your comments on the draft minutes and to the continuation of our bimonthly meetings.

Sincerely,

Theodore J. Taylor
Chief
Socioeconomic, Environmental,
and Institutional Relations
Salt Repository Project Office

SRPO:TJT:2052A

IN#220-84

Enclosures
As Stated

516

cc: T. Verma, NRC, w/enclosures
B. Gale, DOE-HQ, w/enclosures
J. Bennett, DOE-HQ, w/o enclosures
E. Burton, DOE-HQ, w/enclosures
C. George, DOE-HQ, w/enclosures
J. Dorsheimer, Weston, w/o enclosures

DRAFT MINUTES OF
MEETING WITH SALT STATE REPRESENTATIVES AND NRC

MARCH 29-30, 1984

March 29, 1984

A listing of attendees (Attachment 1) and the agenda (Attachment 2) are attached.

Ted Taylor opened the meeting and welcomed representatives from all four salt states and NRC. Ted introduced new SRPO staff members. Other introductions were made. The four states and NRC received handout packets that included: OCRWM's new toll-free telephone number (for information on public hearings between DOE and NRC), organization charts of SRPO, ONWI, and state charts from Mississippi, Louisiana, and Utah. Texas distributed a sheet of its state organization (Attachment 3). Louisiana will distribute a revised chart soon showing the new governor and new organization structure.

SITING GUIDELINES

Critz George, DOE-HQ, discussed the status of the Siting Guidelines, indicating that NRC had given a preliminary decision on the guidelines, which is being published in the Federal Register, granting provisional concurrence. Seven conditions are to be resolved between NRC and DOE prior to final concurrence. These issues have not yet been resolved, but if resolution is achieved, NRC could issue a final decision by the end of May 1984.

ENVIRONMENTAL ASSESSMENTS

Bob Wunderlich reviewed the environmental assessment process:

- The EA Task Force members are: Bob Wunderlich, Raj Sharma, Stan Goldsmith, and Bob Kennedy.
- A paper is being prepared on the question of one or more than one geohydrologic settings (GHS) in the Gulf Coast.
- Detailed contents of chapters, distributed at last state meeting, remains unchanged except for a reordering of chapters.
- There will be 7 EAs, one for each salt site.
- HQ is writing Chapters 1 and 7 of the EAs for all projects.
- SRPO/ONWI are writing Chapters 2 through 6 for the salt states.
- The table of contents has been revised in order for the chapter material to flow more consistently (old: 2, 3, 4, 5, 6; new: 2, 3, 5, 6, 4).
- Review of data sheets is under preparation; data sheets will be sent to states as soon as they are received (mid-April). Data sheets being sent to states will not have been reviewed by SRPO.
- In-scope issues are being evaluated.
- Disqualifier analyses is continuing.

Bob's viewgraphs were distributed (Attachment 4), along with sample data sheets and supporting back-up materials. References for the EAs were not distributed at the state meeting, but are attached to these minutes (Attachment 5).

A discussion followed on comparative evaluation of sites, multiple sites in one basin, and methods of using available data.

DATA MANAGEMENT

Matt Golis reported on the progress of the Technical Data Management System (TDMS). Access codes are being arranged so salt states and NRC can have direct access. Matt proposed that a one and one-half day training session for potential system users be held during the first week in May (May 7-11). States and NRC are asked to send the appropriate state representative(s) who would be using the system to the training (Attachment 6).

MISSION PLAN

Ralph Stein, DOE-HQ, Geologic Deployment Office, discussed the Mission Plan:

- o The December 1983 draft of Volume I received wide distribution.
- o Approximately 40 comment letters on Volume I were received; HQ is attempting to take these comments into consideration.
- o Draft Mission Plan expects to state as one of the program's goals the receiving of spent fuel by 1998.
- o There are requirements in NWPA for contents of Volume II.
- o Public response process for the draft Mission Plan:
  - notice will be in Federal Register
  - 60-day comment period
  - comment/response document will be prepared
  - goal is to address every comment
- o Chapters are being written by a variety of teams, including project offices, contractors, subcontractors, and other specialized people.

Ralph's viewgraphs and handouts were distributed (Attachment 7).

Discussion followed on additional field testing, the question of exploratory shaft QA, number of shafts, drilling permits, and length of construction time. States expressed need for consistency between the EAs and the Mission Plan.

PUBLIC INFORMATION

Don Keller discussed public information activities as outlined in his viewgraphs (Attachment 8). He reviewed the new outreach activities, including pre-EA activities to help citizens participate more effectively in EA hearings, a public participation plan, status of information exchanges, and status of local information offices in the four states.

A discussion followed on the Program Review Committee (PRC), its members, their backgrounds, and method of selection; Speakers Bureau activities and desire by states to be informed about speaker activities; and the process for establishing the local information offices.

STATE GRANTS GUIDANCE

Barry Gale, DOE-HQ, distributed "Guidelines for Financial Assistance Programs..." (Attachment 9) and discussed the importance of reviewing these guidelines and following them carefully in preparing state grant proposals. These guidelines need to be developed for Phase III (site characterization).

States were informed that DOE needs clear justification of need for the grant and how it relates to the requirements of the Act. It was recommended that states discuss grant proposal content with DOE prior to actually writing and submitting a proposal. Questions of allowable activities under a grant can (and should) be reviewed with DOE prior to requests for funding. If states have comments or concerns about the guidelines for grants, these should be submitted to Ted Taylor.

States discussed with Barry possible allowable activities under a grant and the questions of state duplication of DOE studies.

March 30, 1984

NRC PRESENTATION

Bob Johnson, NRC, presented the following comments:

- o Summarized the status of NRC's EA review plans.
- o Activities have started to prepare for reviewing the EAs. Preparation activities include inventory of data/documents, developing scenarios for relating data, sensitivity calculations, and reviewing early drafts of EAs.
- o 60-day comment (less for technical staff); simultaneous review of up to 9 EAs.
- o NRC would like to visit DOE, ONWI, and the states. Would like to have a technical contact for each state.

ACTION: Furnish NRC with name of technical contact. (States)

ACTION: Furnish NRC with a list of significant issues to be addressed in the EAs. (States)

- o NRC would like to discuss these issues with the states before the EAs are released.
- o States should contact NRC's technical staff only on technical questions, not for an opinion or interpretation of policy.
- o Meetings:
  - need posted schedule of all meetings
  - all meetings to be listed on OCRWM's toll-free number
  - meetings will be open to the public
  - states and tribes should be notified by NRC of meetings
  - use standard format for reporting action items from meetings
- o NRC plans QA review at sites and at ONWI.
- o NRC desires to remain up-to-date on data flow now so there will not be a problem related to data development at time of licensing.

STATE CRITIQUE/RECOMMENDATION OF DOE C&C PROCESS

States were asked to comment on and offer suggestions for the salt program's C&C process:

Mississippi - Ron Forsythe

- o Feels state has good rapport with SRPO.
- o Lacking timely communication from HQ; letters taking longer than 30 days for response.
- o Suggestions for information exchanges include: present new information, send people who can "communicate."
- o Highly sensitive political sector in state.
- o Local information office--state prefers to have prior notification.

Texas - Steve Frishman

- o Problems to date have been resolved by working with SRPO.

Utah - Loretta Pickerell

- o Suggestion for information exchange: present information that is understandable.
- o Contractors should be instructed by DOE to avoid stating DOE policy.
- o DOE should oversee speakers bureau.
- o "Surprises" are difficult to explain to state people.
- o HQ needs to provide quicker response to letters on the EA process.

Louisiana

James Friloux attended state meeting for the first time and will have a state report at next state meeting.

1984 ANNUAL INFORMATION MEETING

Gary Pitchford, DOE-HQ/Office of Communications, asked the states for comments and suggestions for the 1984 Annual Meeting to be held in Chicago, November 26-29.

STATE CAUCUS/RESPONSE

State representatives caucused to consider recommendations for the Annual Meeting, agenda for next bimonthly state meeting, timeframe for TDMS training, and response to EA process.

Following the state caucus, Loretta Pickerell presented the states' recommendations:

Annual Meeting

- o Technical sessions and policy sessions should be clearly distinguished.
- o Schedule sessions of interest to salt states so there are not conflicts in meeting times.
- o Include more speakers from the states.
- o States would like early decision regarding inviting and funding travel for residents of the state.
- o No visuals in overview and policy sessions.
- o Edit visuals to be used in technical sessions.
- o Suggest poster session in conjunction with meeting.

EA Process

- o States would like to receive drafts of all chapters (2-6) for all states.
- o States would like to receive data sheets for the other states as well as their own.
- o Would like to be informed of scope and format of hearings on draft EAs.
- o Suggest public hearings should be no sooner than 45 days after issuance of draft EAs, with a 90-day comment period.
- o Would like DOE to specify mechanism for releasing and distributing draft EAs.
- o Would like HQ to release Chapters 1 and 7 to states for early review.
- o Would like to be informed of number and locations of hearings in each state.
- o Request hearings be held in communities near sites and in capital of each state.

TDMS Training

- Week of May 7-11 preferred date for training.
- Prefer approximately 1-1/2 day sessions.
- If a state cannot attend, will request individual training for that state.

Next Bimonthly State Meeting

- Prefer next meeting be held May 24-25 in Washington, D.C.
- Topics for next meeting:
  - Discussion of May 9 draft EA, including possible changes to that draft
  - Discussion of Mission Plan
  - Discussion of development of Transportation Codes
  - Opportunity to meet new director of OCRWM
- Appreciated attendance by DOE-HQ representatives at state meeting and requested their continued presence.

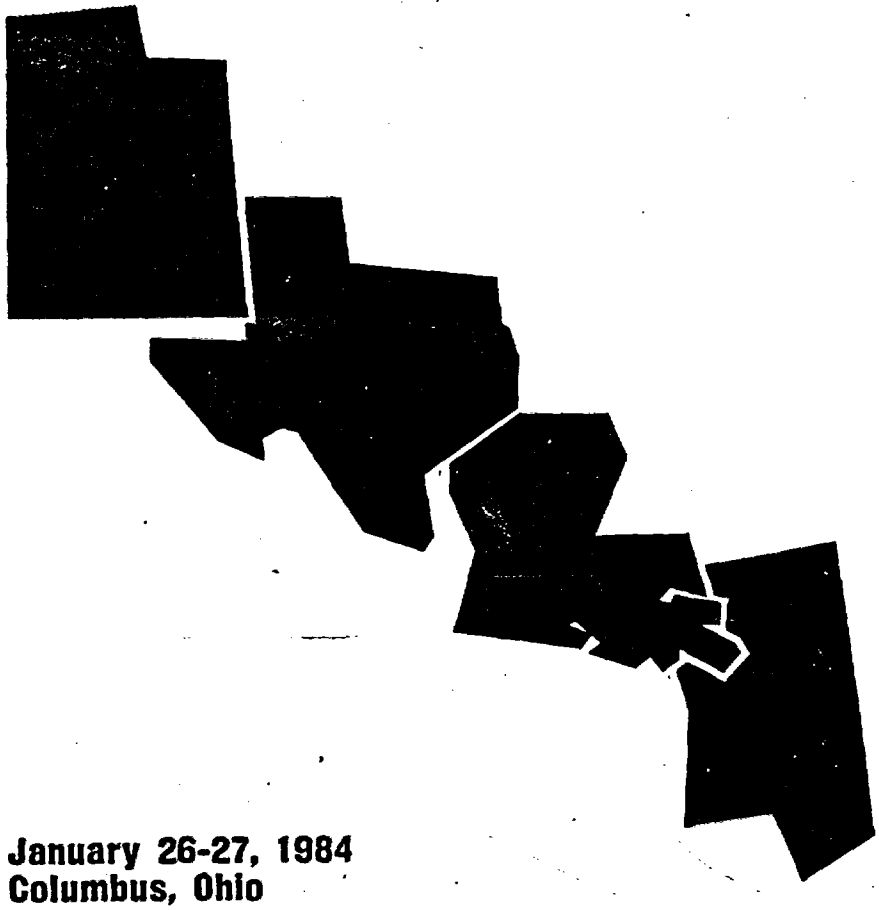
DOE will consider the state recommendations and notify states of plans for the next meeting as soon as possible. Following closing comments by Ted Taylor and Jeff Neff, the meeting was adjourned.

See folder for Hr. to Johnson fr. Taylor 4/13/84

U.S. Department of Energy

National Waste Terminal Storage Program

Meeting with Salt State Representatives



January 26-27, 1984
Columbus, Ohio

MINUTES OF
MEETING WITH SALT STATE REPRESENTATIVES AND NRC

JANUARY 26-27, 1984

BATTELLE MEMORIAL INSTITUTE
505 KING AVENUE
COLUMBUS, OHIO

January 26, 1984

Ted Taylor welcomed state and NRC representatives to the fourth bimonthly state meeting. The listing of attendees (Attachment 1) and the agenda (Attachment 2) are attached. Introductions of all attendees were made. Ted informed the group of the new designation of the DOE Columbus Office, the Salt Repository Project Office (SRPO), and introduced new SRPO staff members who were present. His handouts (Attachment 3) included the new SRPO organization chart. Ted asked that the states consider exchanging detailed and updated organization charts with DOE, contractors, NRC and with each other. The charts should designate contact names and phone numbers.

The schedule was reviewed for the seven environmental assessments, subject to further clarification in the afternoon session. An EA interaction outline was distributed (Attachment 4). Other ongoing program activities were discussed and updates given.

Ted introduced Charles Head, DOE-HQ, who discussed the Mission Plan. Points Mr. Head covered:

- Volume I of the Mission Plan is a discussion of program planning.
- Volume II of the Mission Plan is technical program description and contains considerable detail. It covers the 11 topical areas that are specified in the Act to be discussed by the Mission Plan.
- Schedule: Working draft of Volume I has already been issued to approximately 900 people. HQ wanted only high-level review of this draft. There will not be a formal response document. Volume II draft will have only internal review. Formal draft of Volumes I and II will be issued April 7, 1984, to states and the public. There will be a two-month review period, then two months to develop the final draft. Comments on the formal draft should be in writing. There will be no hearings or public meetings

on either of these drafts. There will be a response document prepared after analysis of comments on the public draft.

- HQ wrote the Mission Plan drafts with assistance from the field offices and contractors.
- HQ will do the final reviewing and editing.

Mr. Head then answered questions from state representatives on the Mission Plan, including statement of goals, HQ's role, number of sites for characterization, transportation, retrievability, format for revisions, realism of the schedules, annotating the revisions and usefulness of table of contents.

Suzanne Gray, manager of ONWI's Socioeconomic Assessment Office, reviewed socioeconomic activities. Her presentation included a statement of socioeconomic goals, socioeconomic activities specified by the Act, approaches to obtaining socioeconomic data, methods of analyzing data, availability of socioeconomic reports, socioeconomic issues raised in each of the salt states at public hearings in 1983, and an overview of sections of the EA dealing with socioeconomic issues and concerns. (Attachment 5) A discussion followed on methods ONWI will be using to obtain socioeconomic information or data.

Bob Wunderlich presented information on the environmental assessment process and a schedule for preparation of the draft EAs. His comments included the following points:

- There will be 7 EAs; one for each salt site.
- The chapters of the EAs for which SRPO is responsible will be submitted to HQ by mid-May, 1984.
- HQ is responsible for writing Chapters 1 and 7 of the EAs for all projects; SRPO/ONWI is responsible for Chapters 2 thru 6 of the EAs for the salt states.
- Appendix A will contain a detailed discussion of the repository.
- EA Task Force has been selected by Wunderlich and basin managers; work has begun.
- DOE is holding firm to 1/85 recommendation date.

A discussion with the states followed on contents of the draft EA outline, commonality (or not) of EAs from basin to basin, and reviewing schedule for EAs. (Attachment 6)

Friday, January 27, 1984

Matt Golis updated state representatives on the status of the technical data management system. He explained that the major emphasis at the moment was to integrate the subsystems into a database that can be accessed remotely. Another aspect is to make the databases of all projects consistent. A training program for potential system users (from the salt states and NRC) was proposed for sometime in March. This training would be approximately 2-3 days. (Attachment 7)

Information from the EA data sheets should be loaded on the data base by the first of April.

Bev Rawles distributed to the states and NRC copies of the "Catalog and Procedures for Requesting Unanalyzed and Processed Data/Information from the NWTS-Salt Repository Project in Columbus, Ohio," which was updated after receipt of comments from the states.

Bob Johnson, NRC, made the following comments on NRC activities:

- NRC's comments on the Mission Plan will be sent to DOE/HQ on January 31, 1984. Copies of these comments will be sent to the states by NRC.
- Schedule for guidelines' concurrence: The draft decision document will be available in late February. There will be a two-week comment period following its release. The final document should be available from the Commission in late April.
- EA review plan probably will be available next month. Copies of the final EA review plan will be sent to DOE and the states by NRC.

Following the state caucus, state representatives made the following recommendations:

- States endorse continuing meetings on a bimonthly basis.
- Length of meetings (1-1/2 days) should remain the same.
- The meetings should rotate to the four salt states, with one meeting a year in Washington, D.C.

- Topics for next meeting:
  -update on Mission Plan (request that technical people from HQ be present)
  -update on EA schedule
  -update on guidelines
  -update on technical database
  -NRC presentation, including NRC comments on the guidelines and EA review plan
  -details and rationale of public information program
- Technical workshops, such as were held on EA issues in August and October, 1983, are not a high priority with states, but would like to leave option open for more of these meetings.
- States made preliminary comments on EA outline, and will provide more extensive written comments by letter. Would like to hear at next state meeting how state comments have been incorporated into the EA outline.
- States expressed concern that EA schedule was too ambitious.
- Utah would like to have individual workshops on the EA; other states will decide and respond as soon as possible.
- States will respond by letter on proposed EA interaction outline.
- States agreed to distribute updated organization charts to DOE and other states. A listing of the designated state contacts was distributed. (Attachment 8)

DOE will consider the state recommendations and reply as soon as possible.

NRC's closing comments included:

- Concur with states on suggested future meeting topics.
- Will distribute updated NRC organization chart; state organization charts should be sent to Donna Mattson.

Other comments:
Utah - Contacts with the state of Utah should be only through designated state contact (Loretta Pickerell).

Submitted by Debra Halliday, ONWI

LIST OF ATTACHMENTS TO

JANUARY 26-27, 1984

MEETING MINUTES

1. List of Meeting Attendees
2. Meeting Agenga
3. T. Taylor's Handouts
4. EA Interaction Outline
5. S. Gray's Handout
6. R. Wunderlich's Handout
7. M. Golis' Handout
8. Designated State Contacts

ATTACHMENT 1

ATTENDEES

MEETING WITH SALT STATE REPRESENTATIVES AND NRC
JANUARY 26-27, 1984

Name	Affiliation	Address
Renwick DeVille	Louisiana Geological Survey	P.O. Box G Baton Rouge, LA 70893
Kelly Haggard	Mississippi Energy & Transportation Board	300 Watkins Bldg., 510 George St. Jackson, MS 39202
Michael Bograd	Mississippi Bureau of Geology	Jackson, MS 39216
Ken Goodwin	Mississippi Department of Economic Development	Jackson, MS
Dan Smith	Nuclear Waste Programs Office	P.O. Box 12428 Austin, TX 78711
Rod Millar	Department of Natural Resources	Salt Lake City, UT 84114
Connie Crandall	Office of Planning & Budget	Salt Lake City, UT 84114
Judith Hinchman	Office of Planning & Budget	Salt Lake City, UT 84114
Pete Parry	Canyonlands National Park	Moab, UT 84532
Thomas C. Wylie	Canyonlands National Park	Moab, UT 84532
Charles Head	DOE/HQ	Washington, D.C.
Ted Taylor	DOE/SRPO	505 King Avenue Columbus, OH 43201
Linda McClain	DOE/SRPO	505 King Avenue Columbus, OH 43201
Bob Wunderlich	DOE/SRPO	505 King Avenue Columbus, OH 43201
Philip Van Loan	DOE/SRPO	505 King Avenue Columbus, OH 43201
Alan Handwerker	DOE/SRPO	505 King Avenue Columbus, OH 43201
Gordon Appel	DOE/SRPO	505 King Avenue Columbus, OH 43201

Name	Affiliation	Address
Robert Johnson	NRC/Division of Waste Management	Washington, D.C. 20555
Donna Mattson	NRC/Division of Waste Management	Washington, D.C. 20555
John Linehan	NRC/Division of Waste Management	Washington, D.C. 20555
Tilak Verma	NRC	505 King Avenue Columbus, OH 43201
Arlie Howell	Battelle Advisor-Mississippi	Route 6, Box 540 Lucedale, MS 39452
Charles Killgore	Battelle Advisor-Louisiana	506 Hundred Oaks Drive Ruston, LA 71270
George Loudder	Battelle Advisor-Texas	P.O. Box 15047 Amarillo, TX 79105
Al LaSala	USGS/SRPO	505 King Avenue Columbus, OH 43201
Michael Mellinger	Weston, Inc.	2301 Research Blvd. Rockville, MD 20850
Bruno Loran	Parsons-Redpath	3040 Riverside Drive Columbus, OH 43221
Jack Fitch	Fluor Engineers	
Stan Goldsmith	Battelle/ONWI	505 King Avenue Columbus, OH 43201
Don Keller	Battelle/ONWI	505 King Avenue Columbus, OH 43201
Helen Latham	Battelle/ONWI	505 King Avenue Columbus, OH 43201
Bill Merriman	Battelle/ONWI	505 King Avenue Columbus, OH 43201
Diane Cattran	Battelle/ONWI	505 King Avenue Columbus, OH 43201
John Suchy	Battelle/ONWI	505 King Avenue Columbus, OH 43201
Debra Halliday	Battelle/ONWI	505 King Avenue Columbus, OH 43201

Name	Affiliation	Address
Raj Sharma	DOE/SRPO	505 King Avenue Columbus, OH 43201
George Heim	Battelle/ONWI	505 King Avenue Columbus, OH 43201
Barb Covert	Battelle/ONWI	505 King Avenue Columbus, OH 43201
Ian Seeds	Battelle/BPMD	505 King Avenue Columbus, OH 43201
Suzanne Gray	Battelle/ONWI	505 King Avenue Columbus, OH 43201
Margaret Boryczka	Battelle/ONWI	505 King Avenue Columbus, OH 43201
Bob Hines	Battelle/ONWI	505 King Avenue Columbus, OH 43201
Beverly Rawles	Battelle/BPMD	505 King Avenue Columbus, OH 43201
Matt Golis	Battelle/ONWI	505 King Avenue Columbus, OH 43201
John Ferrante	Battelle/ONWI	505 King Avenue Columbus, OH 43201

ATTACHMENT 2

AGENDA
FOURTH BIMONTHLY MEETING
WITH SALT STATE REPRESENTATIVES AND NRC

JANUARY 26-27, 1984

BATTELLE MEMORIAL INSTITUTE
505 KING AVENUE
COLUMBUS, OHIO

Thursday, January 26 - Conference Room H

9:00 - 9:30 a.m.	Opening Remarks and Program Update	Ted Taylor
9:30 - 10:00 a.m.	Discussion	
10:00 - 11:00 a.m.	Mission Plan	Charles Head DOE-HQ
11:00 - 12:30 p.m.	Discussion	
12:30 - 1:30 p.m.	Lunch	Cafe Room 3
1:30 - 2:15 p.m.	Socioeconomics	Suzanne Gray
2:15 - 3:30 p.m.	Discussion	
3:30 - 4:15 p.m.	Environmental Assessments	Bob Wunderlich
4:15 - 5:00 p.m.	Discussion	

Friday, January 27 - Conference Room H

8:30 - 9:00 a.m.	Technical Data	Matt Golis
9:00 - 10:00 a.m.	NRC Presentation	Bob Johnson
10:00 - 10:30 a.m.	Discussion	
10:30 - 11:30 a.m.	States' Caucus	
11:30 - 12:00 noon	States' Response, Discussion	

Optional individual appointments with DOE, ONWI personnel during afternoon.

ATTACHMENT 3

INTRODUCTION AND PROGRAM UPDATE
Ted Taylor
January 26, 1984

Organization Changes and New Staff

- o DOE-CH, DOE-SRPO, and ONWI organization charts
- o New Staff: Dr. Raj Sharma
- o Contractor representatives: Mr. Jack Fitch(Fluor), Mr. Bruno Loran(Parsons Redpath)

Mission Plan

- o Vol. I and II to be submitted on April 7, 1984
- o Vol. I comments (informal) due on January 31, 1984
- o Vol. II to be given to states for informal review if time permits
- o Agenda item with Mr. Charles Head from HQ

Guidelines

- o NRC Hearing on January 11, 1984
- o NRC staff report due in mid-February 1984
- o NRC response to DOE due in late-April 1984

Environmental Assessments

- o SRPO action:
  - * assumptions: NRC concurrence with guidelines and conducting of bimonthly meetings
  - * prepare 7 EAs, first complete internal draft by mid-March, 1984
  - * draft to HQ for review by mid-April 1984

* final draft to HQ by mid-May 1984

* interactions with the states: to be discussed at Friday's session

o HQ schedule and action:

* publish draft in August 1984

* hold hearings following issuance of draft (SRPO to hold salt hearings)

* issue final EAs in December 1984

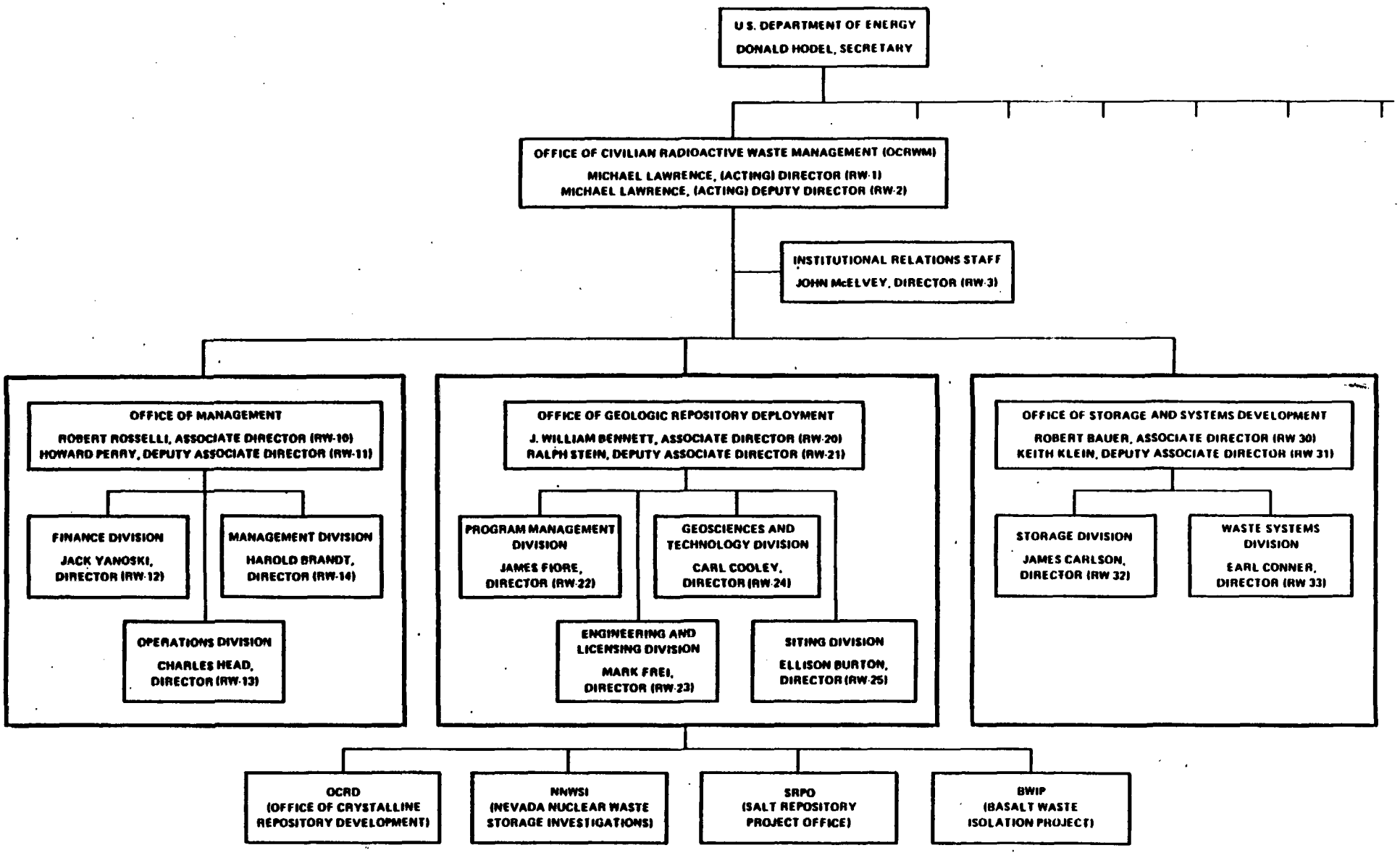
* nomination in December 1984

* recommendation on January 1, 1985

State Grants

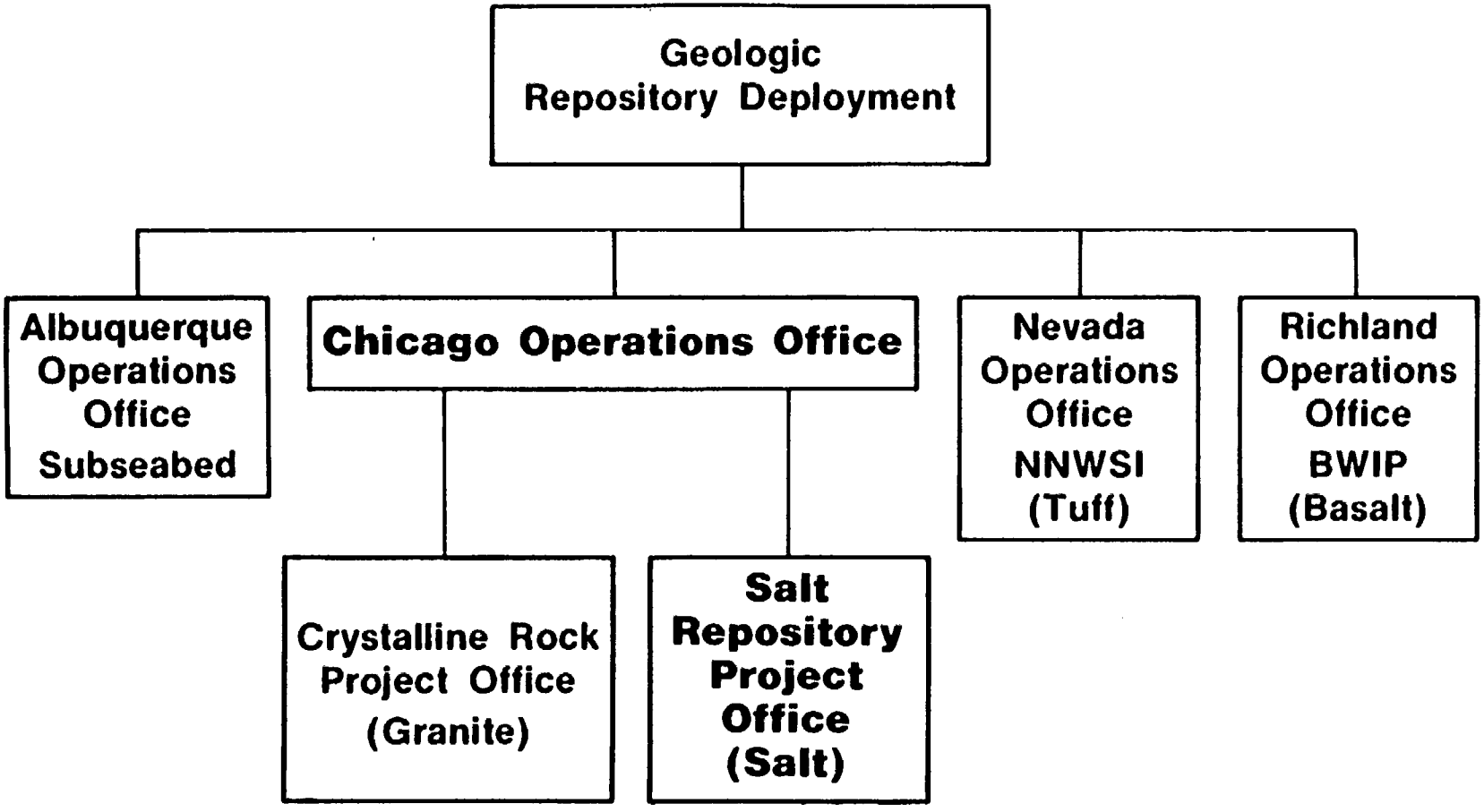
o Current status

o Possible revisions for increased interaction



CIVILIAN RADIOACTIVE WASTE MANAGEMENT ORGANIZATION

1/16/84



Geologic Repository Deployment Organization

Department of Energy
Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60439

Donald L. Bray, Assistant Manager for
Project and Technology Management

SUBJECT: REVIEW OF CH RADIOACTIVE WASTE MANAGEMENT ORGANIZATIONS AND LOCATIONS

The study group, which I chartered in early November and which was chaired by Tim Crawford, has submitted a final report and recommendations to me. Their charter was to review a number of areas related to organization and location of the CH radioactive waste management responsibilities. They analyzed a number of options for organization and location and have considered associated advantages and disadvantages.

I have accepted the study group's report and have decided to proceed as follows: first, the National Waste Terminal Storage Program Office, located in Columbus, Ohio, will be organizationally reassigned as an independent project office to report directly to your office; second, there will be established a Crystalline Rock Project Office that will also report to the AMPTM. Further, I accept the recommendation that the CH office in Columbus should not be relocated at this time, but that a phased move either from Columbus to Chicago, or from Columbus to a specific repository site, or some combination of the two, be accomplished between the time scheduled for site nominations (March 1985) and the expiration of the current BMI research and development support contract (salt) in September 1987.

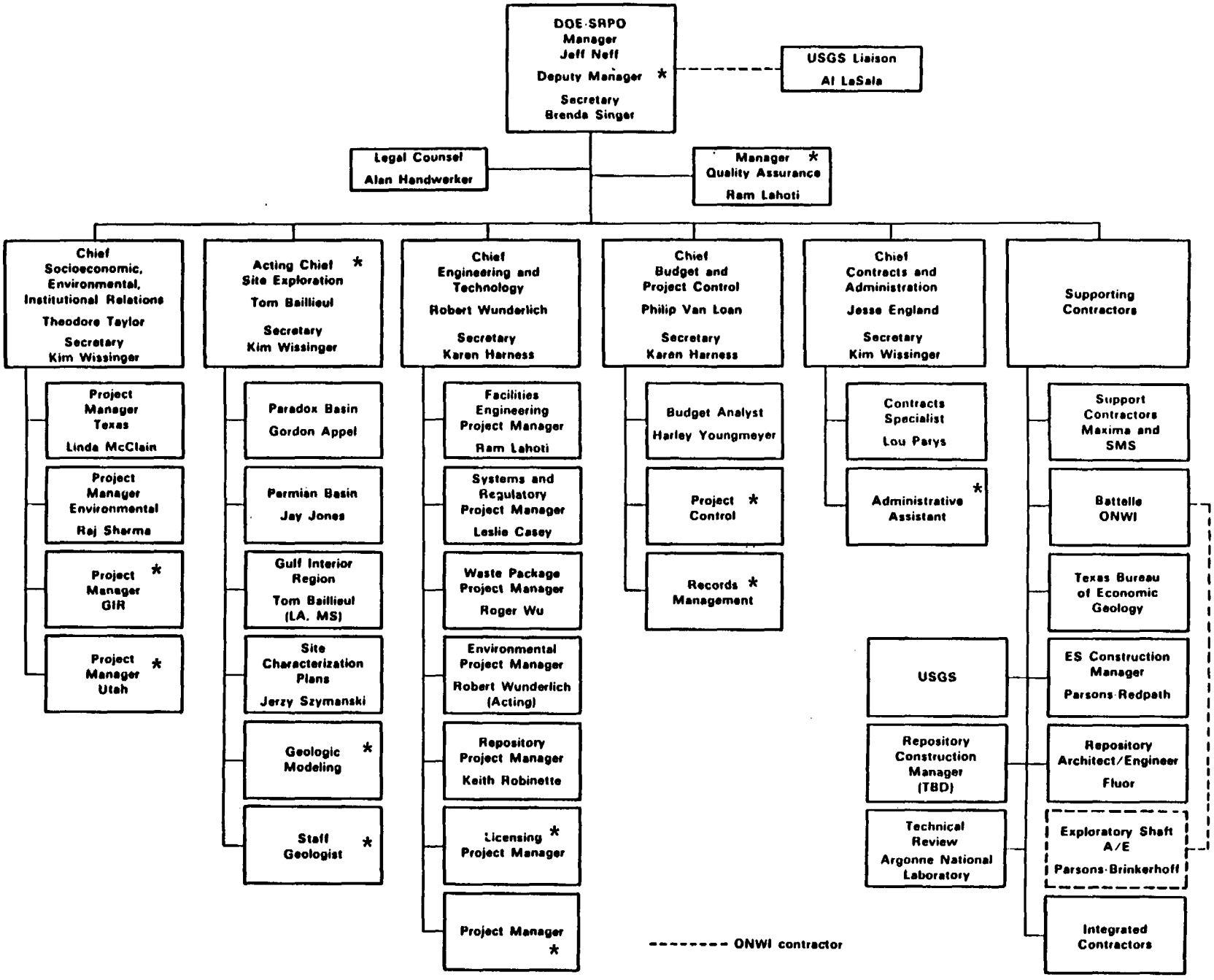
To implement these actions, I have asked the Assistant Manager for Administration to prepare the necessary organization change documents to complete the reorganization and to provide the appropriate Headquarters notification. I am also asking that you prepare plans for the implementation of these and related responsibilities. This plan should specifically address management of the two project offices and the impact of these changes on the balance of your organization.

Hilary J. Rauch
Manager

cc: Principal Staff

JAN 84 11: 1[illegible]

Salt Repository Project Office
Columbus, Ohio



*Vacant

4.1. Quality Assurance Manager

The Quality Assurance Manager plans, directs, and coordinates activities of the QA program. This includes guiding, monitoring, and evaluating quality assurance programs for a large number of complex and varied operations involving advanced R&D work crossing several technical disciplines. Responsibilities include the following:

a. Interprets DOE/HQ policy for the SRPO Manager in regard to quality assurance for all activities assigned to SRPO.

b. Maintains liaison with appropriate Headquarters components.

c. Provides evaluations and recommendations to the SRPO chiefs and project contractors on all phases of assigned functions, including review of procurement documents for adequate QA provisions.

d. Directs staff inspections, appraisals, audits and reviews of contractor programs and procedures, as required by DOE policies and procedures, or as otherwise necessary to achieve the highest level of quality consistent with end-product usage and consequences of failure of the product or process.

e. Notifies responsible management of unsatisfactory work or unapproved practices and, if necessary, may stop unsatisfactory work with administrative approval of the SRPO Manager.

f. Provides technical management with direction and guidance for quality assurance programs to assure achievement of project objectives.

g. Prepares, coordinates, issues, and controls the SRPO Quality Assurance Manual, including the procedures therein, and revisions.

h. Performs an annual check of the SRPO Quality Assurance Manuals to assure that they are current and complete.

i. Updates and issues QA action list on quarterly basis.

j. Coordinates annual review of all Salt Repository Project Office and QA procedures.

4.2 Chief-Engineering and Technology

The Chief, Engineering and Technology is responsible for the management overview of the salt repository project engineering and technology activities required for the construction and operation of mined geologic repositories in salt. The Chief provides for the detailed planning and implementation of the systems, waste package, repository, regulatory and test facilities subprograms within the salt repository project. This includes the development and application of specific base technologies and a uniform design approach leading to the development of a licensed high level nuclear waste repository in salt. Major duties and responsibilities include the following:

a. Develops strategies and plans for the conduct of engineering and technology activities, including the identification of objectives and priorities, criteria and specifications, schedules, budgets, and monitoring of DOE and contractor project control systems.

b. Provides technical and administrative supervision of SRPO personnel performing work in engineering and technology. Establishes policies and general guidelines and periodically reviews work to assure compliance with requirements. Reviews and makes decisions on work performed by a wide variety of high-level professional contractor personnel.

c. Advises and consults with the Manager of SRPO, top-level DOE management and contractor staff to formulate Salt Repository Project plans related to engineering and technology.

d. Evaluates work in progress and status of the engineering and technology program. Assures that tasks are being performed within the scope of plans and policies approved by DOE. Reviews and interprets program policy guidance received from DOE-HQ and the Manager, SRPO and recommends clarifications where required. Independently proposes changes to policies and criteria where needed.

e. Analyzes existing and proposed documents and regulations which will result in future standards and criteria requiring agency compliance (e.g., NRC, CEQ, and EPA-sponsored criteria, standards, and regulations), and recommends changes in the research and development program planning to address current and future response needs.

f. Prepares, recommends, and defends budget and justification for program requirements, including recommendation of priorities for the Salt Repository Project.

g. Analyzes existing engineering and technology programs and provides guidance to contractor personnel through review and preparation of work package agreements. Reviews and recommends technical program requirements for contracts and grants.

Prepares and reviews work scopes, quality assurance requirements, and administrative guidance to meet project objectives.

4.3 Chief-Site Exploration

The Chief, Site Exploration, is responsible for identifying and characterizing sites in salt that are suitable for the construction and operation of mined geologic repositories for the containment and isolation of high-level radioactive waste. The Chief provides for detailed planning and implementation of geologic exploration and site characterization as well as for the experimental characterization activities required to support the siting of a repository as part of the Civilian Radioactive Waste Management Program. Major duties and responsibilities include the following:

a. Develops strategies and plans for the conduct of site exploration activities including the identification of objectives and priorities, criteria and specifications, schedules, budgets, and monitoring of DOE and contractor project control systems.

b. Provides technical and administrative supervision of SRPO personnel performing work in site exploration. Establishes policies and general guidelines for site exploration and periodically reviews work to assure compliance with professional requirements. Reviews and makes decisions on work performed by a wide variety of high-level professional contractor personnel including geologists, hydrologists, geophysicists, physicists, environmentalists, and geochemists.

c. Advises and consults with the Manager of SRPO, top-level DOE management and contractor staff to formulate Civilian Radioactive Waste Management (CRWM) program plans related to site exploration.

d. Evaluates work in progress and status of the Site Exploration Program. Assures that tasks are being performed within the scope of plans and policies approved by DOE.

e. Conducts, participates in, and arranges meetings on CRWM matters with numerous local, State, Federal, and scientific organizations to obtain concurrence and cooperation in the implementation of the CRWM program.

f. Develops geotechnical guidelines and procedures for the collection, evaluation, and reporting of surface and subsurface geologic, hydrologic, geophysical, and other physical data.

4.4 Chief - Budget and Project Control

The Chief, Budget and Project Control, is responsible for the formulation, presentation and execution of the SRPO budget. The Chief provides for the formulation and implementation of policies, techniques, systems and procedures for project management and control of cost, schedule, performance and technical baselines. The Chief also provides for the planning, development and implementation of document/information management, control and retreival systems. Major duties and responsibilities include the following:

a. Provides technical and administrative supervision of SRPO personnel performing work in the Budget and Project Control. Establishes policies and general guidelines and periodically reviews work to assure compliance with requirements. Reviews and makes decisions on work performed by a wide variety of high-level professional contractor personnel.

b. Coordinates and approves SRPO budget formulation and execution activities, prepares and issues all directions, instructions and approvals affecting the project budget.

c. Advises and consults with the Manager of SRPO, top-level DOE management and contractor staff to formulate overall Salt Repository Project budget, project management and information management plans.

d. Evaluates and analyzes total resource requirements (e.g., financial and human resources) necessary to assure that DOE and the contractors can achieve program objectives.

e. Prepares budget estimates after analysis of program plan and review of contractor performance. Presents budget summaries to all levels of DOE and contractor management.

f. Interprets and clarifies matters with contractor management relative to DOE budgetary, project management and information management policy, procedures, and instructions. Performs a continuing review of contractor's budget, project control and information management operations through personal observations, review of reports, records, and correspondence to assure contractor compliance with DOE guidance.

g. Directs the implementation and the administration of project control baselines, including the coordination of these management activities with the DOE-OCRWM.

h. Develops and implements policies, procedures, systems, and techniques for portraying project status for higher level management review. Analyzes, coordinates, evaluates and reviews all phases of project plans.

i. Provides liaison with Headquarters and other DOE offices as well as with contractors in the area of SRPO project management systems and requirements.

4.5 Chief-Contracts and Administration

The Chief, Contracts and Administration, is responsible for placing contracts relating to Salt Repository Project mission requirements, for establishing long-range procurement program objectives, and for directing and evaluating procurement management functions of contractors. The Chief coordinates the EEO Program both at SRPO and contractors and provides office services for SRPO. The Chief ensures that the cognizant technical manager has identified the technical requirements and applicable regulations and that the Quality Assurance Manager has approved the quality assurance requirements in procurement documents.

a. Review and approval of Support Contractor's sub contracts in accordance with applicable policies and procedures.

b. Review and approve Support Contract's procurement policies and procedures.

c. Initiate, negotiate, and administer DOE Prime Contracts, Interagency Agreements, Grants, etc. in support of the Salt Repository Project Office (SRPO).

d. Report on procurement goals, such as Small Business, Labor Surplus, Socially and Economically Disadvantaged etc. to Chicago Operations Office.

e. Provide SRPO and Prime Contractor's Staff advice on interpretations and application of procurement policies, rules and regulations.

f. Negotiate subcontracts of Battelle Project Management Division (BPMD) when requested because of vendors' conflict of interest restricted cost/business data.

g. Provide administration function for SRPO office; such as liasion between SRPO and CHO on matters related to personnel actions, security and safety related actions, property, space and office requirements.

h. Issue directions, interpretations and clarifications to DOE Prime Contractors on changes to DOE/FPR Procurement Regulations.

4.6 Chief, Socioeconomic, Environmental, and Institutional Relations

The Chief, Socioeconomic, Environmental, and Institutional Relations is responsible for conducting consultation and cooperation activities with affected states, Indian tribes, and units of local government. The Chief is responsible for conducting a public outreach and public participation program, a socioeconomic research and planning program, and the activities associated with the preparation of environmental documents. The Chief coordinates the institutional relations activities of the office with the other project offices, intergovernmental organizations, and Headquarters.

Major Duties and Responsibilities include the following:

a. Develops strategies and plans for conducting consultation and cooperation activities, including meetings, written agreements, and educational activities for interested public officials

b. Provides technical and administrative supervision of SRPO staff performing work in socioeconomic, environmental and institutional relations. Establishes, implements, and modifies policies and general guidelines for staff performance and periodically reviews work to assure compliance with guidelines and professional standards.

c. Reviews and approves contractor program plans relating to socioeconomic and environmental activities including assessments of the impacts of site characterizations, and evaluations of impact mitigation processes. Reviews work products and assures that they are in compliance with program plans and the directives of the NWPA.

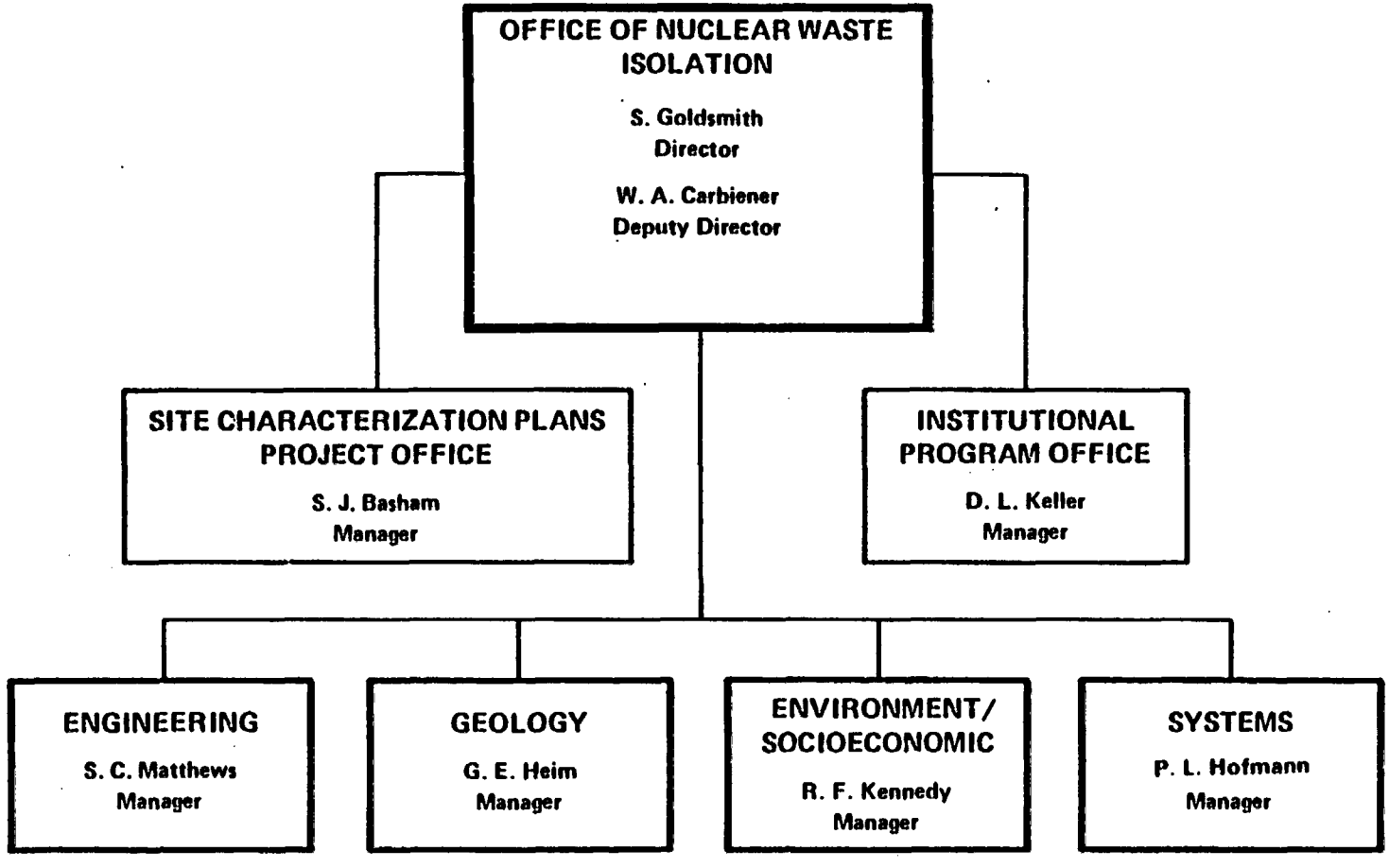
d. Conducts a public participation program, and reviews contractor activity supporting the program. Such program includes public meetings and hearing, briefings, planning meetings, media presentations, and related activity.

e. Determine environmental characteristics in study areas and assesses long-term environmental consequences of program plans.

f. Advises and consults with the Manager of SRPO, top-level management, and contractor staff.

g. Coordinates interactions among geotechnical, engineering, and institutional relations staff to promote understanding of the CRWM program and enhance consultation and cooperation activities.

OFFICE OF NUCLEAR WASTE ISOLATION ORGANIZATION



ATTACHMENT 4

PROCESS OF INTERACTION BETWEEN SRPO AND SALT STATES ON EA PREPARATION	RESPONSIBLE DOE:SRPO IND.	RESPONSIBLE DOE:HQ IND.	RESPONSIBLE STATE IND.
I. Exchange of draft documents			
A. SRPO to send by express mail EA outline and schedule, working drafts of the EA, and topical reports, if any, at point they are transmitted to HQ.	TJT/RW R. Sharma	E. Burton	
B. SRPO to send by express mail all subsequent revisions to schedule and chapter sections sent under I.A., with notification of dates of changes simultaneous with transmittal to HQ.	TJT/RW R. Sharma	E. Burton	
C. State representatives to send to SRPO comments on working draft sections in a time period appropriate for the document.			
II. Seminars and workshops			
A. SRPO to conduct background seminars for state technical staff upon request and consistent with HQ-determined EA schedule.	RW	E. Burton	
B. SRPO to conduct technical workshops for state staff upon request to discuss differences in EA chapters submitted under I.A. and I.B. and state comments submitted under I.C. 1. Primary format of workshop to be conference call among respective technical staffs. Calls shall be documented by DOE in teleconference report that is transmitted to all parties. 2. Secondary format of workshop to be roundtable discussion of specific issues. Conclusions, agreements, and action items shall be documented in meeting report prepared by SRPO and transmitted to all parties.	RW/TJT R. Sharma	E. Burton	
C. SRPO to conduct regular bimonthly meetings with all salt states to discuss EA schedule and status of document preparation, major unresolved issues, and other general issues.	TJT	E. Burton	

PROCESS OF INTERACTION BETWEEN SRPO AND SALT STATES ON EA PREPARATION	RESPONSIBLE DOE:SRPO IND.	RESPONSIBLE DOE:HQ IND.	RESPONSIBLE STATE IND.
III. Data exchanges			
A. SRPO to provide all available documentation and references in material sent under I.A. and I.B. prior to or at time of 1A and 1B material.	TJT/RW R. Sharma	E. Burton	
B. SRPO to provide expeditiously additional documentation and data summaries for specific sections upon specific request.	R. Sharma	E. Burton	
C. States to provide to SRPO within 30 days of identification any data compliations, reports, or other documents deemed applicable to the preparation of the EAs.			
D. SRPO to respond expeditiously to any request for copies of references icontained in the EA documents.	TJT/R. Sharma	E. Burton	
IV. Administrative			
A. SRPO and each state to designate contact person for these interactions.	R. Sharma	E. Burton	
B. SRPO and each state to prepare monthly summary of interactions and status of requests for documents and data; reports to be exchanged at meetings under II.C.	R. Sharma	E. Burton	
C. SRPO to make available office space in Columbus for state liaison persons (part time or full time) upon request.	TJT/JLE	E. Burton	

ATTACHMENT 5

SALT REPOSITORY PROJECT

Socioeconomic Program for a Nuclear Waste Repository

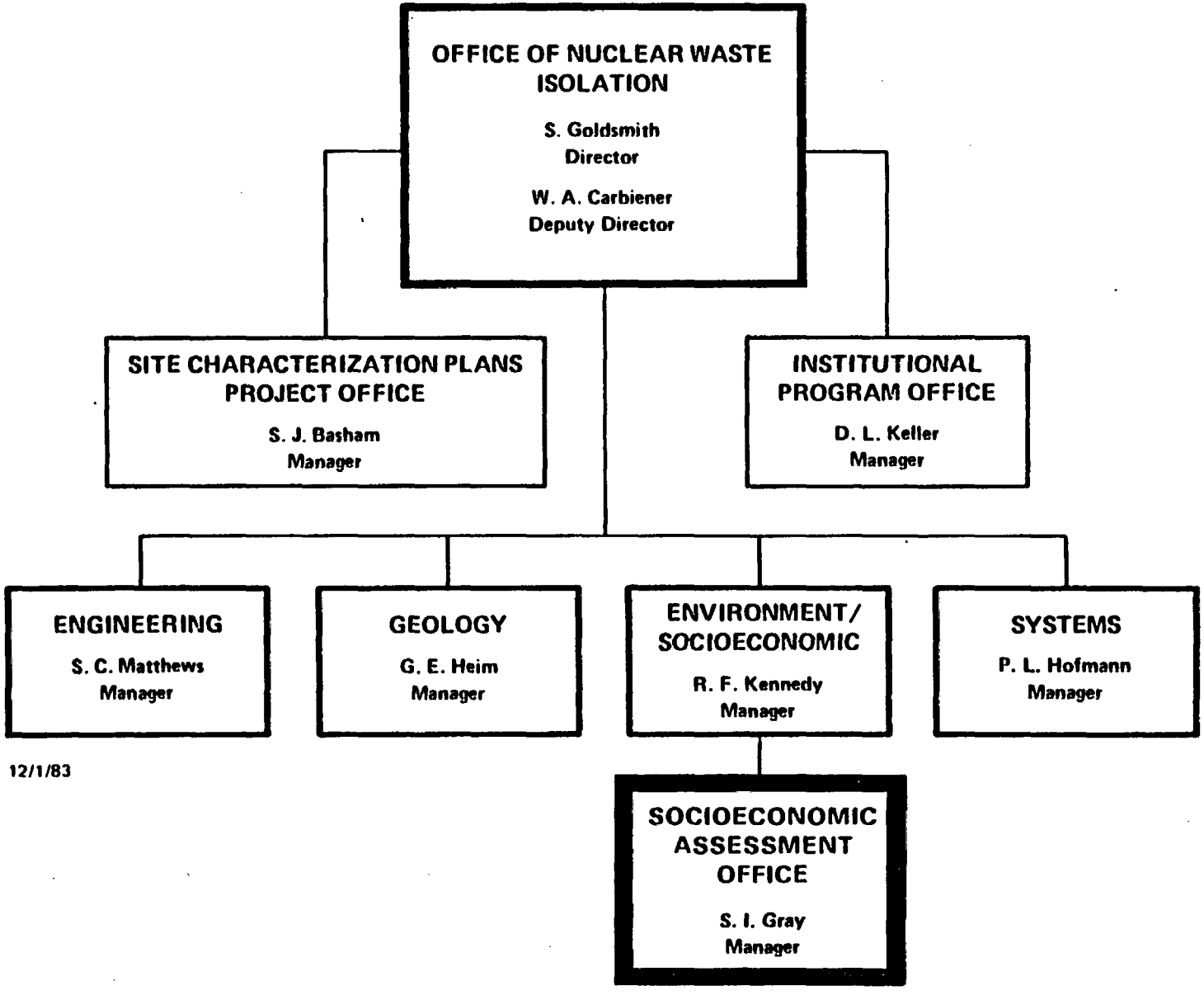
STATES BIMONTHLY MEETING

JANUARY 26, 1984

ONWI

Project Management Division

OFFICE OF NUCLEAR WASTE ISOLATION ORGANIZATION



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Outline for Socioeconomic Discussion

I. INTRODUCTION

- Nuclear Waste Policy Act, a Framework for the Socioeconomic Program
- Socioeconomic Program Goals

II. SOCIOECONOMIC ANALYSIS SUBJECTS

- Statutory Guidance
- Definition of Subjects
- Site Issues

III. METHODS OF ANALYSIS

- Range of Methods
- ONWI's Development of Methods
- Environmental Assessment Analysis
- Site Characterization

IV. COMMUNITY PLANNING NEEDS

- Monitoring During Site Characterization
- Technical and Financial Assistance
- Organizational Needs
- Mitigation Program

V. SUGGESTED FUTURE ACTIVITIES

I. INTRODUCTION

NUCLEAR WASTE POLICY ACT PROVIDES A FRAMEWORK FOR THE SOCIOECONOMIC PROGRAM

A. SOCIOECONOMIC SITING CRITERIA AND GUIDELINES

B. SOCIOECONOMIC IMPACT ASSESSMENT AND DOCUMENTATION

C. SOCIOECONOMIC IMPACT ASSISTANCE

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A. SOCIOECONOMIC SITING CRITERIA AND GUIDELINES

- 960.5-2-1 POPULATION DENSITY AND DISTRIBUTION
- 960.5-2-6 SOCIOECONOMIC IMPACTS

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960.5-2-1 Population Density and Distribution

(a) Qualifying Condition

The site shall be located such that, during repository operation and closure, (1) the expected average radiation dose to members of the public within any highly populated area will not be likely to exceed a small fraction of the limits allowable under the requirements specified in Section 960.5-1(a)(1), and (2) the expected radiation dose to any member of the public in an unrestricted area will not be likely to exceed the limits allowable under the requirements specified in Section 960.5-1(a)(1).

(b) Favorable Conditions

(1) Remoteness of the site from highly populated areas.

(2) A low population density in the general region of the site.

(c) Potentially Adverse Conditions

(1) High residential, seasonal, or daytime population density within the projected site boundaries.

(2) Proximity of the site to highly populated areas, or to areas having at least 1,000 individuals in an area 1 mile by 1 mile as defined by the most recent decennial count of U. S. census.

(d) Disqualifying Conditions

A site shall be disqualified if:

(1) Any surface facility of a repository would be located in a highly populated area; or

(2) Any surface facility of a repository would be located adjacent to an area 1 mile by 1 mile having a population of not less than 1,000 individuals as enumerated by the most recent U.S. census; or

(3) The DOE could not develop an emergency preparedness program which meets the requirements specified in DOE Order 5500.3 (Reactor and Non-Reactor Facility Emergency Planning, Preparedness, and Response Program for Department of Energy Operations) and related guides or, when issued by the NRC, in 10 CFR 60, Subpart I, "Emergency Planning Criteria".

960.5-2-6 Socioeconomic Impacts

(a) Qualifying Condition

The site shall be located such that (1) any significant adverse social and/or economic impacts induced in communities and surrounding regions by repository siting, construction, operation, closure, and decommissioning can be offset by reasonable mitigation or compensation, as determined by a process of analysis, planning, and consultation among the DOE, affected State and local government jurisdictions, and affected Indian tribes; and (2) the requirements specified in Section 960.5-1(a)(2) can be met.

Socioeconomic parameters that will be considered include but are not limited to requirements for labor; impacts on the existing economic base of the affected area, including tourism, recreation, and agriculture; increases in direct and indirect employment and in business sales; competition for resources such as land, water, and construction materials; impacts on State and local community infrastructure and transportation; impacts on housing supply and demand; public-agency revenues and expenditures; impacts on lifestyle and on the quality of life; and increases in social problems, such as crime, alcoholism, and conflicts between in-migrants and long-time residents.

(b) Favorable Conditions

(1) Ability of an affected area to absorb the project-related population changes without significant disruptions of community services and without significant impacts on housing supply and demand.

(2) Availability of an adequate labor force in the affected area.

(3) Projected net increases in employment and business sales, improved community services, and increased government revenues in the affected areas.

(4) No projected substantial disruption of primary sectors of the economy of the affected area.

(c) Potentially Adverse Conditions

(1) Potential for significant repository-related impacts on community services, housing supply and demand, and the finances of State and local government agencies in the affected areas.

(2) Lack of an adequate labor force in the affected area.

(3) Need for repository-related purchase or acquisition of water rights, if such rights could have significant adverse impacts on the present or future development of the affected area.

(4) Potential for major disruptions of primary sectors of the economy of the affected area.

B. SOCIOECONOMIC IMPACT ASSESSMENT AND DOCUMENTATION

SECTION 112(B)(1)(E) OF THE NWPA REQUIRES

- AN EVALUATION OF EFFECTS OF SITE CHARACTERIZATION ACTIVITIES
- AN ASSESSMENT OF THE REGIONAL AND LOCAL IMPACTS OF LOCATING THE PROPOSED REPOSITORY

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C. SOCIOECONOMIC IMPACT ASSISTANCE

SECTION 116(C) OF THE NWPA STATES THAT

- GRANTS SHALL BE MADE TO STATES TO DEVELOP A REQUEST FOR IMPACT ASSISTANCE
- GRANTS SHALL BE PROVIDED IN LIEU OF TAXES TO EACH STATE AND UNIT OF GENERAL LOCAL GOVERNMENT FOR SITE CHARACTERIZATION, REPOSITORY DEVELOPMENT AND OPERATION ACTIVITIES
- TECHNICAL AND FINANCIAL ASSISTANCE TO STATE AND TRIBES TO MITIGATE IMPACTS AT THE AUTHORIZED REPOSITORY CONSTRUCTION SITE

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DRAFT SOCIOECONOMIC PROGRAM GOALS

A. Collect socioeconomic baseline data and project socioeconomic impacts at selected sites

B. Develop a model to project socioeconomic impacts at selected sites

C. Encourage public participation; provide data and technical assistance to state/tribal/local governments involved in the community development process

D. Involve state/tribal/local governments in developing impact assessment projections, mitigation strategies, and monitoring activities

E. Encourage policy measures which can anticipate and prevent adverse impacts

F. Prepare public information materials that address local socioeconomic concerns

G. Prepare community development handbooks for the selected salt site

H. Provide a framework to minimize adverse community impacts and enhance quality of life for existing and future residents through community development planning

I. Provide a framework to ensure that housing and other necessary services are provided to project-related workers, their families, and the existing population

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II. SOCIOECONOMIC ANALYSIS SUBJECTS

STATUTORY GUIDANCE

- 40 CFR 1508.8 COUNCIL OF ENVIRONMENTAL QUALITY REGULATIONS STATES THAT ENVIRONMENTAL CONSEQUENCES INCLUDE THE DETERMINATION OF SIGNIFICANT DIRECT AND INDIRECT SOCIOECONOMIC. . . . EFFECTS
- ENVIRONMENTAL COMPLIANCE GUIDE FOR THE DEPARTMENT OF ENERGY CONCURS WITH THE COUNCIL'S STATEMENT
- SOCIOECONOMIC IMPACTS AS MENTIONED IN GUIDELINE 960.5-2-6
- CURRENT TECHNICAL APPROACH

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SOCIOECONOMIC IMPACT CATEGORIES

- Demography
- Economy
- Community Services
- Government/Fiscal
- Social Structure

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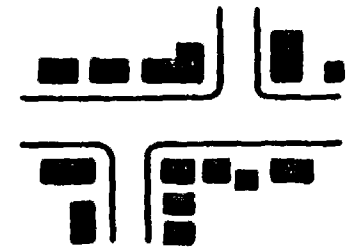
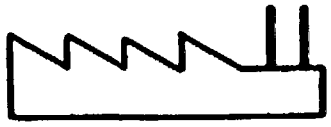
POSSIBLE DEMOGRAPHIC IMPACTS



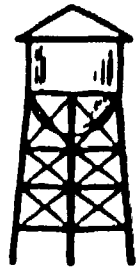
- Increased population due to new workers and families
- Changes in the location of population growth
- Changes in the age, income, and educational characteristics of the population

POSSIBLE ECONOMIC/BUSINESS IMPACTS



- Increased local employment; competition for labor
- Increase in wages and cost of living
- Increased business activity
- Increased land values and changes in land use

POSSIBLE COMMUNITY SERVICES IMPACTS

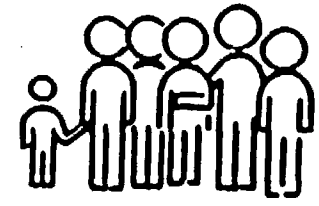


- Increased demand for housing and services
- Demand for better service quality and accessibility
- Higher cost to residents for services

POSSIBLE FISCAL/GOVERNMENT $ IMPACTS

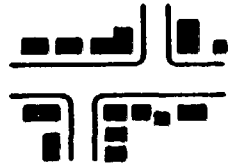
- Increased tax revenues
- Increased governmental payments to communities
- Increased cost of community services
- Need for local government growth

POSSIBLE SOCIAL IMPACTS

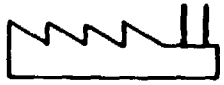


- Perceived changes in lifestyle
- Increased social problems
- More formalized interaction among residents
- Additional sources of community leadership

DEMOGRAPHIC IMPACTS

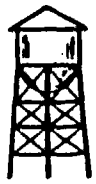


DATA	SOURCES
• Total population trends	• Census data and estimates
• Age, sex, race-ethnicity of population	• Census data
• Birth, death, migration trends	• Census data, state health department
• Characteristics of families and households	• Census data
• Nonresident, temporary population	• Local and regional agencies, state and federal park service
• Population by type of urban center	• Census data, local and regional planning agencies
• Population density	• Census data

ECONOMIC/BUSINESS IMPACTS 

DATA	SOURCES
• Employment: by industrial group and occupation	• Census data, Bureau of Economic Analysis, state and regional planning agencies
• Income: per capita, family	• Census data, Bureau of Economic Analysis
• Economic trends and projections	• Bureau of Economic Analysis, state and regional planning agencies
• Land uses: current and projections	• State, regional, local planning offices, field surveys
• Sales: by industry, trade patterns	• Bureau of Economic Analysis, state and regional planning agencies
• Planning regulations	• State and local agencies

COMMUNITY SERVICES IMPACTS



DATA	SOURCES
• Housing: units, type, condition, vacancy	• Census of housing, state, and regional planning agencies
• Education: enrollment, school capacity	• State department of education, local school districts
• Medical and mental health services	• State health department, department of human resources, National Center for Health Statistics
• Law enforcement	• State police, county sheriff, and local police offices
• Fire protection	• State fire marshal and local stations
• Water supply, wastewater treatment, and solid waste	• Environmental Protection Agency, state health department, and community governments
• Transportation	• State transportation department, community governments
• Social services	• State department of human resources and local offices
• Recreation services	• State recreation agency, local and regional planning agencies

FISCAL/GOVERNMENT IMPACTS $

DATA	SOURCES
• Tax revenues: type and jurisdiction	• State revenue department
• Assessed valuation: rate and jurisdication	• State revenue department, local assessor's office
• Federal and state revenue distribution	• State revenue department, local and regional planning agencies, local treasurer's office
• Government expenditures: types and trends	• State revenue department, local government offices
• Bonding status/capacity	• Local governments

SOCIAL IMPACTS 

DATA	SOURCES
• Community organizations: type and size	• Community agencies
• Community leadership	• Community sources
• Government organization and activity	• Community leaders
• Attitudes, perceptions of community concerning repository development, economic development, community growth and change, environment, etc.	• Discussion with community leaders and citizens
• Local cultural heritage	• Local historical society and other agencies
• Social disorganization: types and incidence of crimes	• State and local crime reports

MAJOR PUBLIC HEARING ISSUES

Louisiana

- Availability of local jobs and location of new residents
- Increased service needs and funding
- Effects on local government finances
- Social changes in local communities
- Compensation for losses and relocation

Mississippi

- Proximity to population centers
- Impact on the economic base of the surrounding area: timber, tourism, fishing, other future development
- Availability of local jobs
- Increase in community service needs
- Change in community lifestyles
- Existence of psychological impacts
- Compensation for losses and relocation

Texas

- Impact on the economic base of the surrounding area, particularly agriculture and prime farmland
- Proximity of population centers
- Availability of local jobs
- Effects on public services
- Existence of psychological impacts

Utah

- Impact on the economic base of the surrounding area, e.g., industrial growth and tourism business
- Social problems associated with a transient work force
- Availability of local jobs
- Competition for water supply with local residents
- Funding of increased community service needs

III. METHODS OF ANALYSIS

DEMOGRAPHIC PROJECTION METHODS

- EXTRAPOLATIVE TECHNIQUES
- RATIO-BASED TECHNIQUES
- LAND USE TECHNIQUES
- ECONOMIC-BASED TECHNIQUES
- COHORT COMPONENT TECHNIQUES

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ECONOMIC PROJECT METHODS

- EXPORT BASE ANALYSIS - EMPLOYMENT AND INCOME MULTIPLIERS
- INPUT-OUTPUT ANALYSIS - FINAL DEMAND, OUTPUT, AND INCOME MULTIPLIERS
- SIMULATION MODELS
- ECONOMETRIC MODELS

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COMMUNITY SERVICE PROJECTION METHODS

- AVERAGE UNITS PER CAPITA
- MARGINAL UNIT REQUIREMENTS
- LOCAL SERVICE STANDARDS
- GENERAL (NATIONAL) SERVICE STANDARDS

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FISCAL ANALYSIS METHODS

- REVENUE ESTIMATION
  - CHANGE IN TAX BASE
  - ESTIMATED TAX RATE
  - TIMING OF REVENUE COLLECTIONS
- EXPENDITURE ESTIMATION
  - PER CAPITA
  - SERVICE STANDARD
  - CROSS-SECTIONAL REGRESSION
  - CASE STUDY

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SOCIAL STRUCTURE ANALYSIS METHODS

- SECONDARY DATA METHODS
- SURVEY METHODS
  - SAMPLE SURVEYS
  - EXPERT-OPINION SURVEYS
- PARTICIPANT OBSERVATION METHODS

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COMPUTERIZED PROJECTION MODELS

1. ATOM 3 (Beckhelm et al, 1975)
2. BOOM 1 (Ford, 1976)
3. BREAM (Mountain West Research, Inc., 1978)
4. CLIPS (Monts and Bareiss, 1979)
5. CPEIO (Monarchi and Taylor, 1977)
6. HARC (Cluett et al, 1977)
7. MULTIREGION (Olsen et al, 1977)
8. NAVAHO (Reeve et al, 1976)
9. NEW MEXICO (Brown and Zink, 1977)
10. RED 2 (Hertsgaard et al, 1978; Leistritz et al, 1979)
11. SEAM (Stenehjem, 1978)
12. SIMPACT (Huston, 1979)
13. WEST (Denver Research Institute, 1979).

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Table 8.2. Methodological Characteristics of Selected Socioeconomic Impact Assessment Models

	Methodological and Integrative Forms by Component						Dynamic Capabilities by Component						
	Econ	Dem	Interface	Subarea Distribution	Service	Fiscal	Econ	Dem	Interface	Subarea Dist.	Ser	Fis	Validation
ATOM 3	I-O	CC-S	E-M-I	% Share	NA	NA	Yes	Yes	Yes	Yes	NA	NA	Historical
BOOM 1	E-B	E-P	E-P-I	NA	P-B	Per Capita	Yes	Yes	Yes	NA	NA	NA	Sensitivity
BREAM	E-B	CC-S	E-M-I	% Share and Gravity	P-B	NA	Yes	Yes	Yes	Yes	No	NA	INP
CLIPS	E-B	CC-S[1]	E-M-I	% Share and Gravity	NA	Per Capita	Yes	Yes	Yes	Yes	NA	Yes	INP
CPEIO	I-O	CC-S	E-M-I	NA	NA	NA	Yes	Yes	Yes	NA	NA	NA	Some Forms Unspecified
HARC	E-B	CC-S	E-M-I	Gravity	P-B	NA	Yes	Yes	Yes	Yes	Yes	NA	Sensitivity
MULTIREGION	E-B	CC-S	E-M-I	NA	NA	NA	Yes	Yes	Yes	NA	NA	NA	Historical
NAVAHO	E-B	CC-S	E-M-M	Gravity	NA	NA	Yes	Yes	Yes	Yes	NA	NA	INP
NEW MEXICO	I-O	CC-S	E-M-M	NA	NA	NA	Yes	Yes	Yes	NA	NA	NA	INP
RED 2	I-O	CC-S	E-M-M	% Share and Gravity	P-B	Per Capita	Yes	Yes	Yes	Yes	Yes	Yes	Sensitivity, Historical
SEAM	E-B	CC-S	E-M-M	LP	P-B	Per Capita Facility	Yes	Yes	Yes	Yes	Yes	Yes	Sensitivity, Historical
SIMPACT	I-O	E-P	E-P-I	% Share	P-B	Per Capita Facility	Yes	Yes	Yes	Yes	Yes	Yes	INP
WEST	E-B	E-P	E-P-I	% Share	P-B	Per Capita	Yes	Yes	No	Yes	Yes	Yes	Sensitivity

Econ
I-O = Input-Output
E-B = Export Base

Dem
CC-S = Cohort Component Survival
E-P = Employment-Population Ratio

Interface
E-M-I = Employment-Migrations-One Phase
E-P-I = Employment-Population-One Phase
E-M-M = Employment-Migration-Multiphase Procedure

INP = Information Not Provided
NA = Not Applicable

Subarea Distribution
% Share = Distribution to subareas on bases of Employment or Population ratio
Gravity = Gravity Allocation Model
LP = Linear Programming Model

Service
P-B = Population Based Projections

Fiscal
Per Capita = Per Capita Costs and Revenues
Facility = Projections of facility requirements also completed

[1]Cohort Component Survival Method used at Regional level only.

Source: ONWI-266, p. 342

ONWI SOCIOECONOMIC REPORTS

1. Socioeconomic Data Base Report for Mississippi, Draft ONWI-499, November, 1983.
2. Socioeconomic Data Base Report for Louisiana, Draft, January, 1984.
3. Methods for Assessing the Socioeconomic Impacts of Large-Scale Resource Developments: Implications for Nuclear Repository Siting, ONWI-266, March, 1983.
4. Socioeconomic Data Base Report for the Paradox Basin, Draft ONWI-471, Feburary, 1983.
5. Citizen Participation in Nuclear Waste Repository Siting, ONWI-267, December, 1982.
6. Socioeconomic Data Base Report for the Permian Basin, ONWI-461, January, 1984.
7. Possible approaches to Community Development for Nuclear Waste Isolation, ONWI-269, October, 1982.
8. Socioeconomic Analysis of Repository Siting (SEARS), Draft Users Manual, Technical Description, Guide to Data Base Preparation, July, 1982.
9. ONWI Socioeconomic Program Plan, Draft ONWI—276, Feburary, 1982.
10. Framework for Community Planning Associated with Nuclear Waste Repository Siting, Draft ONWI-254, October, 1981.

ONWI ONGOING METHODS DEVELOPMENTS

- SEARS MODEL VALIDATION AND APPLICATION
- SOCIAL ASSESSMENT METHODOLOGY

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ANNOTATED OUTLINE

ENVIRONMENTAL ASSESSMENT -

SOCIOECONOMIC ANALYSIS

SIG:1/26/84

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3.1.6 Socioeconomics

The size of the socioeconomic study area is defined and the basis for using the particular study area is discussed. In addition, this introductory paragraph identifies the major socioeconomic topics that will be presented: demography, economy, community services, government, and social structure.

3.1.6.1 Demography

This section introduces the topics of population characteristics, population projections, and population density.

3.1.6.1.1 Population Characteristics

The size and characteristics of the baseline population in the study are described. Both current and historic population is presented. Population characteristics such as age, sex, and race are included. Temporary population in the study area is also described.

3.1.6.1.2 Population Projections

Population projections provided by the states are presented for counties and communities in the study area. The projections are provided in increments through the year 2000.

3.1.6.1.3 Population Density

Population density for counties and communities in the study area is presented. The densities are compared to statewide and nationwide densities.

3.1.6.2 Economy

This section introduces the topics of employment, unemployment, and per capita income trends.

3.1.6.2.1 Employment

A distribution of employment by economic sector is provided for each sector. In addition, a discussion of the major economic sectors and employment trends is provided.

3.1.6.2.2 Unemployment

Historic and current unemployment rates are provided for counties in the study area. These rates are compared to state and national unemployment rates.

3.1.6.2.3 Per Capita Income Trends

Per capita personal income is presented for counties in the study area. The rates are compared to state and national per capita income. Some discussion of trends in per capita income is presented.

3.1.6.3 Community Services and Facilities

This section introduces the topics that follow.

3.1.6.3.1 Housing

The number and type of housing units in the study area are presented fc counties and communities. Types of housing include multi-family, single family, homeowner, rental, and number of substandard units. Vacancy rates for both rental and homeowner units are listed. In addition, the number of hotels/motels is identified for the area.

3.1.6.3.2 Education

Physical capacity, student/teacher ratios, excess capacity, and average daily attendance is presented by community.

3.1.6.3.3 Health

The number of hospitals, licensed beds, and physician/population ratio is presented for each community. Areas where health care is less available or unavailable are discussed.

3.1.6.3.4 Recreation

The amount of land devoted to recreation is presented for communities in the study area. The number of developed acres and developed acres per thousand people is discussed.

3.1.6.3.5 Protective Service

The number of police officers and firefighters in the communities is presented. The service ratios for police and fire protection is also presented.

3.1.6.3.6 Sewage and Water Treatment/Solid Waste

Type and capacity of sewage treatment facilities is described for each community. Amount of excess capacity is identified.

Types and number of solid waste disposal facilities are presented. Sources of water and water treatment is also discussed for each community.

3.1.6.4 Social Structure

This section will describe briefly the history and culture of the region, social problems such as crime, and drug abuse, and other general information which describes the lifestyle of people in the region.

3.1.6.5 Government and Fiscal Arrangements

County revenues and expenditures are presented in this section. The types of revenue analyzed include intergovernmental transfers and local taxes. Local expenditures are also identified for the various counties.

5.2.2 Socioeconomics

Introduction to discussion of project information, and impacts on demography, economy, community services, social structure, government structure. It briefly identifies the types of changes that will result from site characterization activities. These impacts are expected to be small.

5.2.2.1 Project Information

This section discusses estimates of labor force, project phases, the proportion of local people to be hired, and the number of site visitors.

5.2.2.2 Demography

The number of new people moving into the area is estimated for different project phases. These estimates are based on work force size, number of local hires, duration of project workers task. Model projections are not done for this analysis because of the small workforce being considered. Those who stay longer are more likely to relocate with their families. Communities where new people will relocate to are identified.

5.2.2.3 Economic

The number of people displaced from the site as a result of characterization activities is estimated and compensation for landowners is discussed.

Displacement of economic activity, grants-in-lieu of property taxes, changes in business activity,and local purchases related to the repository are discussed here. In addition, the number of project jobs available to people in the local area is estimated. Very little secondary growth is anticipated and thus we do not estimate secondary employment opportunities.

5.2.2.4 Community Services

The need for housing and community services is evaluated for those communities in which new residents are expected to locate. Temporary housing is also considered. Vacancy rates and capacities of various services provide the basis for this analysis.

5.2.2.5 Social Structure

The impact of the new population on community lifestyles and social problems will be discussed.

5.2.2.6 Government and Fiscal

Changes in cost and revenues as a result of inmigrating workers is evaluated in this section. Funds from the grants-in-lieu of taxes provision in NWPA is discussed here as it relates to local revenues.

6.3 Socioeconomic Conditions

Instruction: Provides a general description of potential effects resulting from the construction, operation and closure of a repository on the social and economic fabric for communities near the site. It suggests that changes from the baseline economic, demographic, public service, fiscal and social conditions will be examined in the following sections.

Current project information concerning the expected starting date, number of years in each phase, employment skills needed, costs of construction, operation and post closure, and land area required are presented.

The assessment methodology discusses how inmigration projections were determined using a range of multipliers to produce two reasonable inmigration scenarios, what methods would be used to allocate project-related residents to local communities and how the increase in project-related demand on local services would be evaluated both qualitatively and quantitatively against the baseline service capacities and service ratios.

6.3.1 Demographics

6.3.1.1 Project-related Inmigration: Discusses the total number of inmigrants and then allocates direct and indirect singles and families present during the construction phase to communities in the area using a gravity model procedure.

6.3.1.2 Displacement of Residents at the Site: Discusses the number of residents which may be required to relocate because the government has acquired the fee simple rights to their land. It also describes DOE's authority under the Uniform Relocation Act to compensate displaced persons, businesses, farm operators, etc..

6.3.2 Economic

6.3.2.1 Local Employment: The impact of repository employment versus the total area employment is discussed as is the potential impact on other sectors of the local economy (i.e. farm, small business).

6.3.2.2 Change in Economic Activity: Describes the potential direct and indirect effect of repository and workforce purchases in the economic region.

6.3.2.3 Displacement of Economic Activity: Describes the potential impact of removing productive land on other economic activities in order to locate a repository. Also discussed are the potential effects on local land values near the site and in the local communities.

6.3.3 Community Services: Baseline growth and project-related growth demands(for the high and low inmigration scenarios) on housing, education, protective services, water and sewer, health and other community services are presented for each potentially impacted community.

6.3.1.1 Housing: Describes the range of additional housing units needed by project and related households for each of the impacted communities during the peak year of construction.

6.3.1.2 Education: Describes the range of new project-related students for each community's school district, number of new teachers needed.

6.3.1.3 Protective Services: Discusses the need for additional police and fire personnel for each community for baseline and projected-related increases.

6.3.1.4 Water and Sewage Treatment: Additional water usage for the baseline growth and projected-related inmigration is supplied in average millions of gallons per day for each community. Similar estimates are given for effluent amounts.

6.3.1.5 Health Services: Additional physicians and licensed hospital beds for baseline growth and project-related demands are presented.

6.3.1.6 Other Community Services: Discusses community parkland acreage needed, increases in utility usage and transportation needs.

6.3.4 Social Conditions: A qualitative discussion of changes in baseline social conditions resulting from the new population's differing lifestyle, socioeconomic status and composition and their impact on existing resident groups (elderly, poor, and minorities). Increases in social services resulting from social problems such as family conflict, alcohol and drug abuse, mental illness and crime are also discussed.

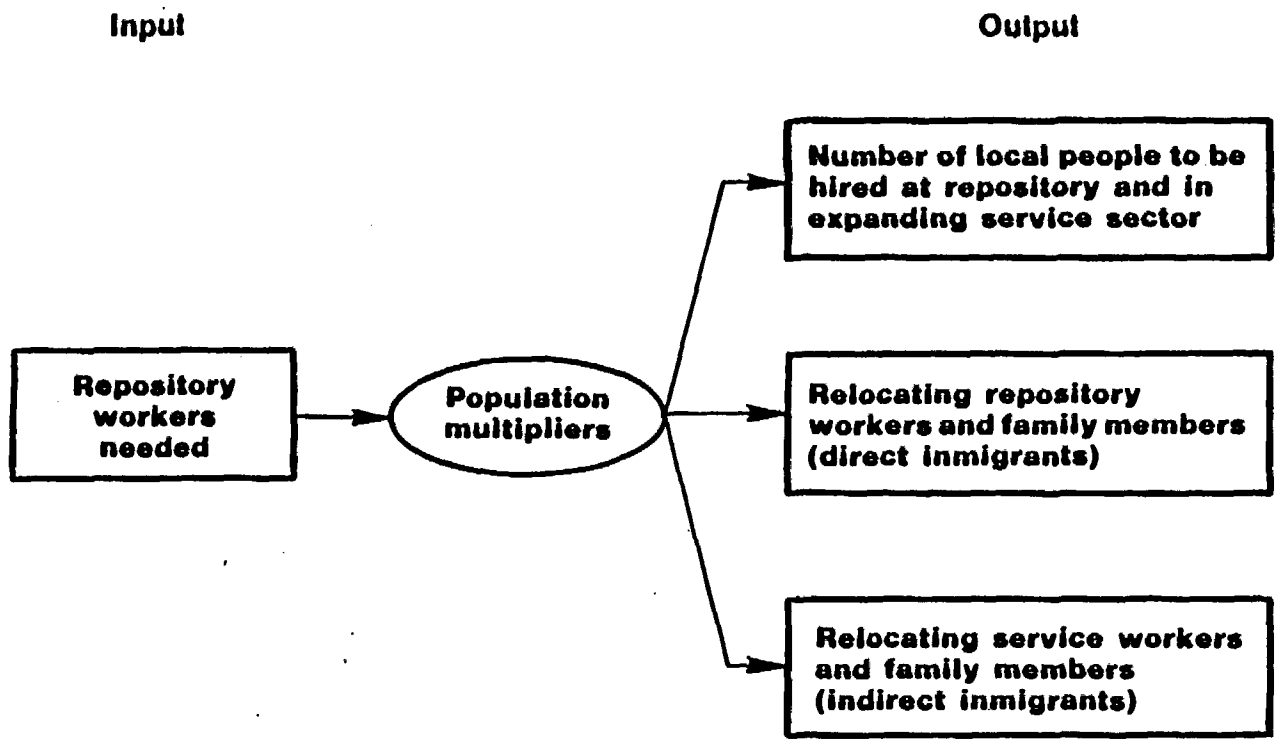
6.3.5 Government and Fiscal Conditions: Describes the types of jurisdictions that are responsible for providing services, their sources of revenue and authority to issue bonds.

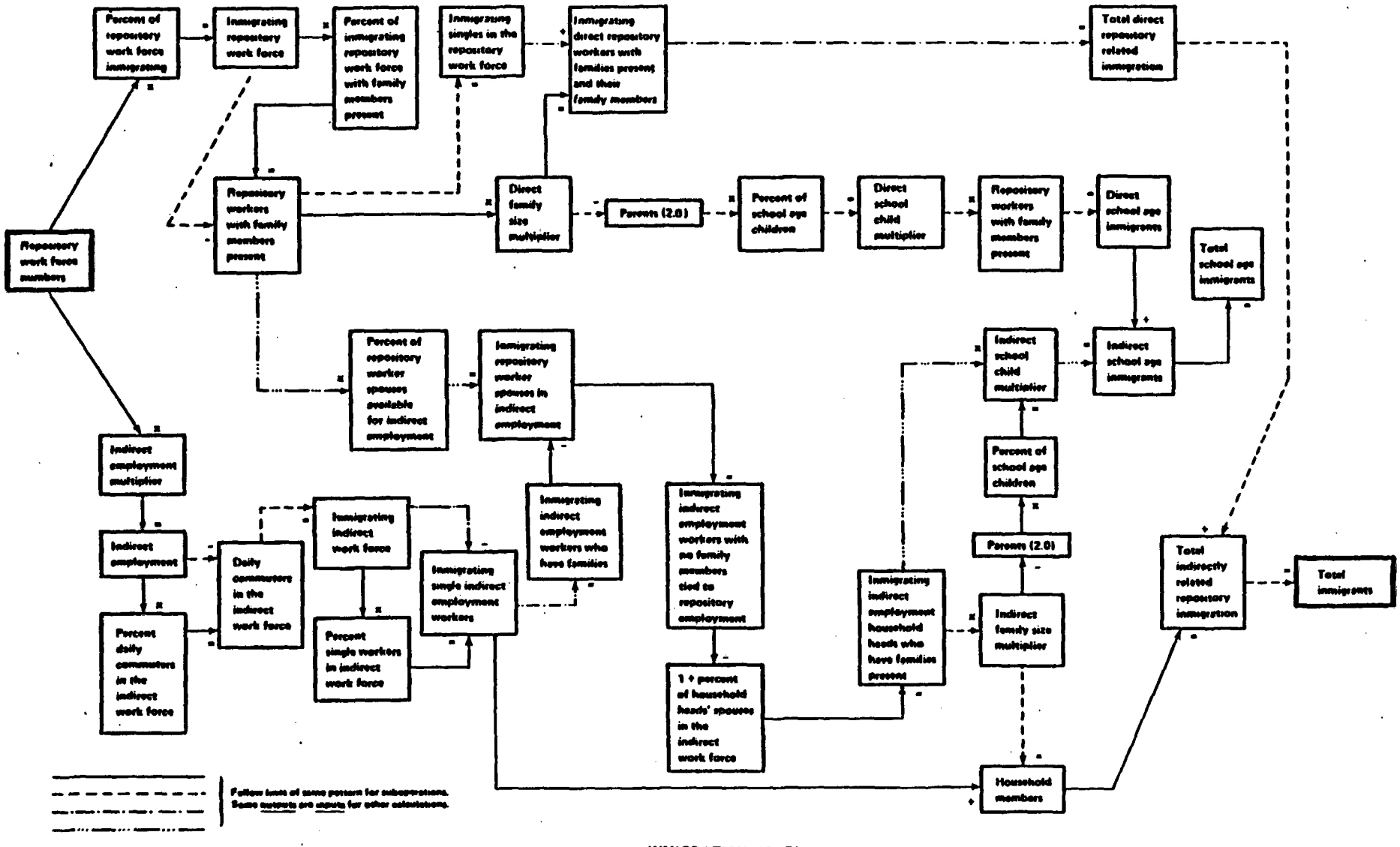
6.3.5.1 Changes in Revenue: Presents a qualitative discussion of the Nuclear Waste Policy Act provisions that may contribute to local government revenues. Front-end financing problems are also discussed.

6.3.5.2 Changes in Governmental Expenditures: In a qualitative manner this section relates expected increased expenditures to local population growth times the per capita cost.

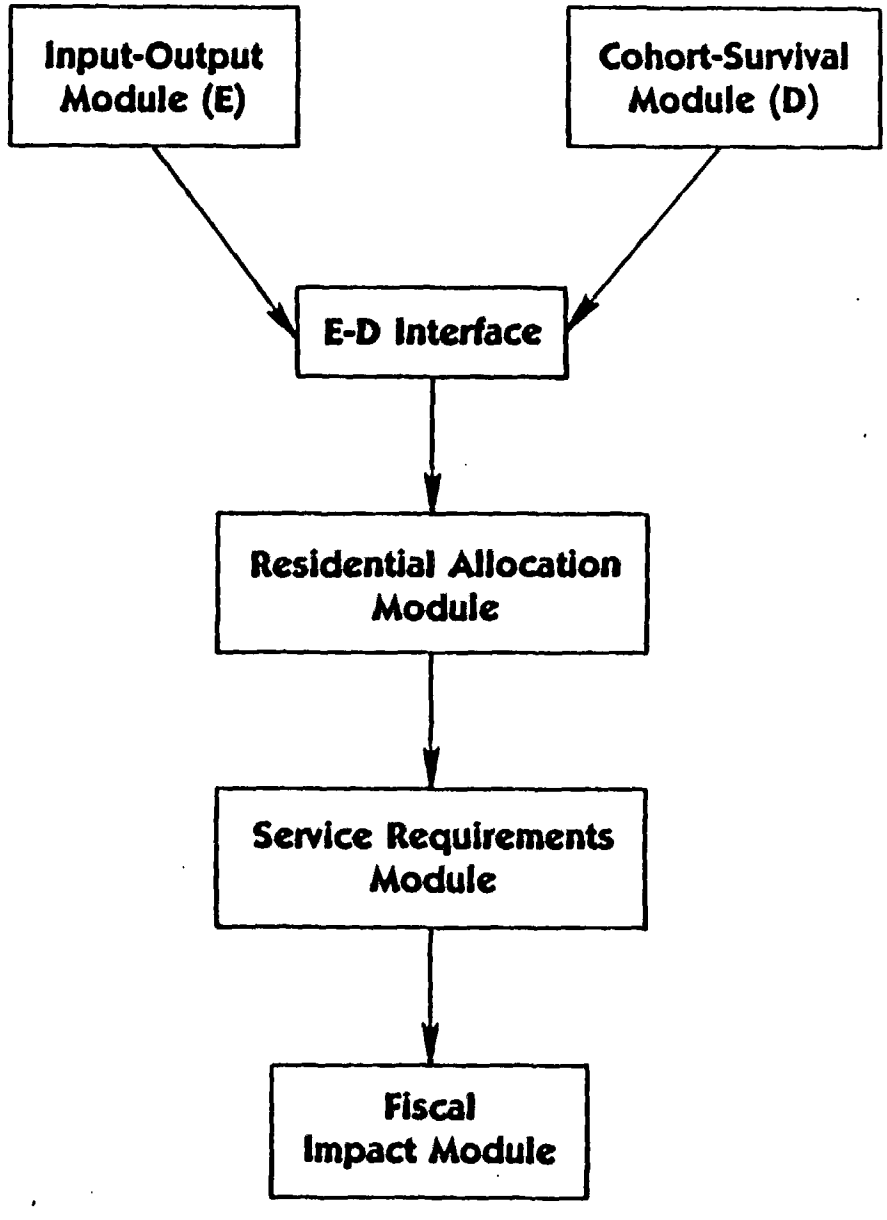
6.3.5.3 Changes in Administrative Workload: Describes in a qualitative manner the nature of impact sudden growth could have on county, school district and community personnel prior to repository construction. Staff needs to plan for and manage growth are highlighted.

Population Inmigration Model



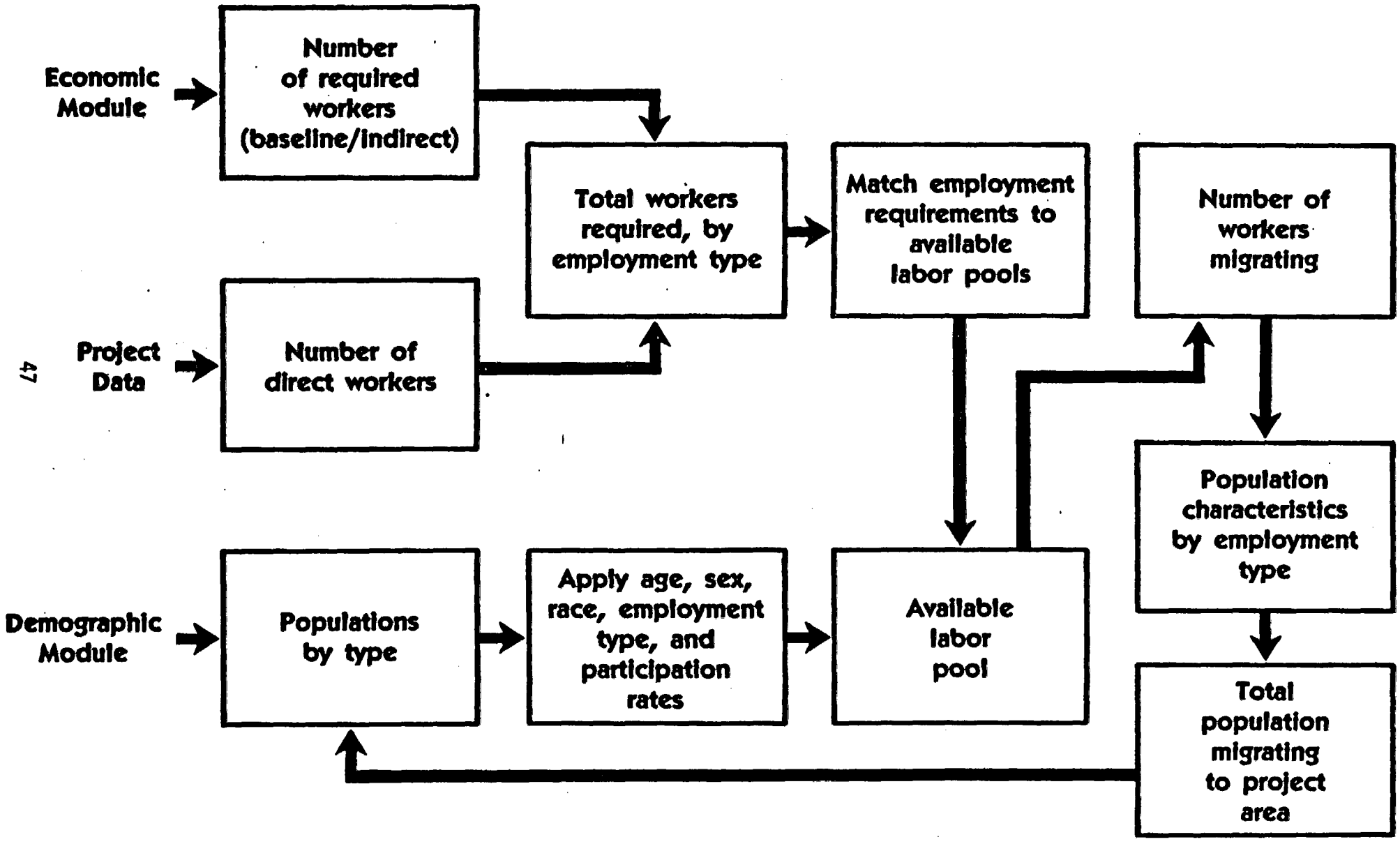


INMIGRATION MODEL
LOGIC OF CALCULATIONS



Conceptual Overview of the Sears Modeling System

ECONOMIC/DEMOGRAPHIC INTERFACE MODULE



IV. COMMUNITY PLANNING NEEDS

MONITORING SYSTEM

- DATA COLLECTION SCOPE AND PROCEDURES
- PROCEDURES FOR UPDATING IMPACT PROJECTIONS
- REPORTING PROCEDURES AND FORMATS

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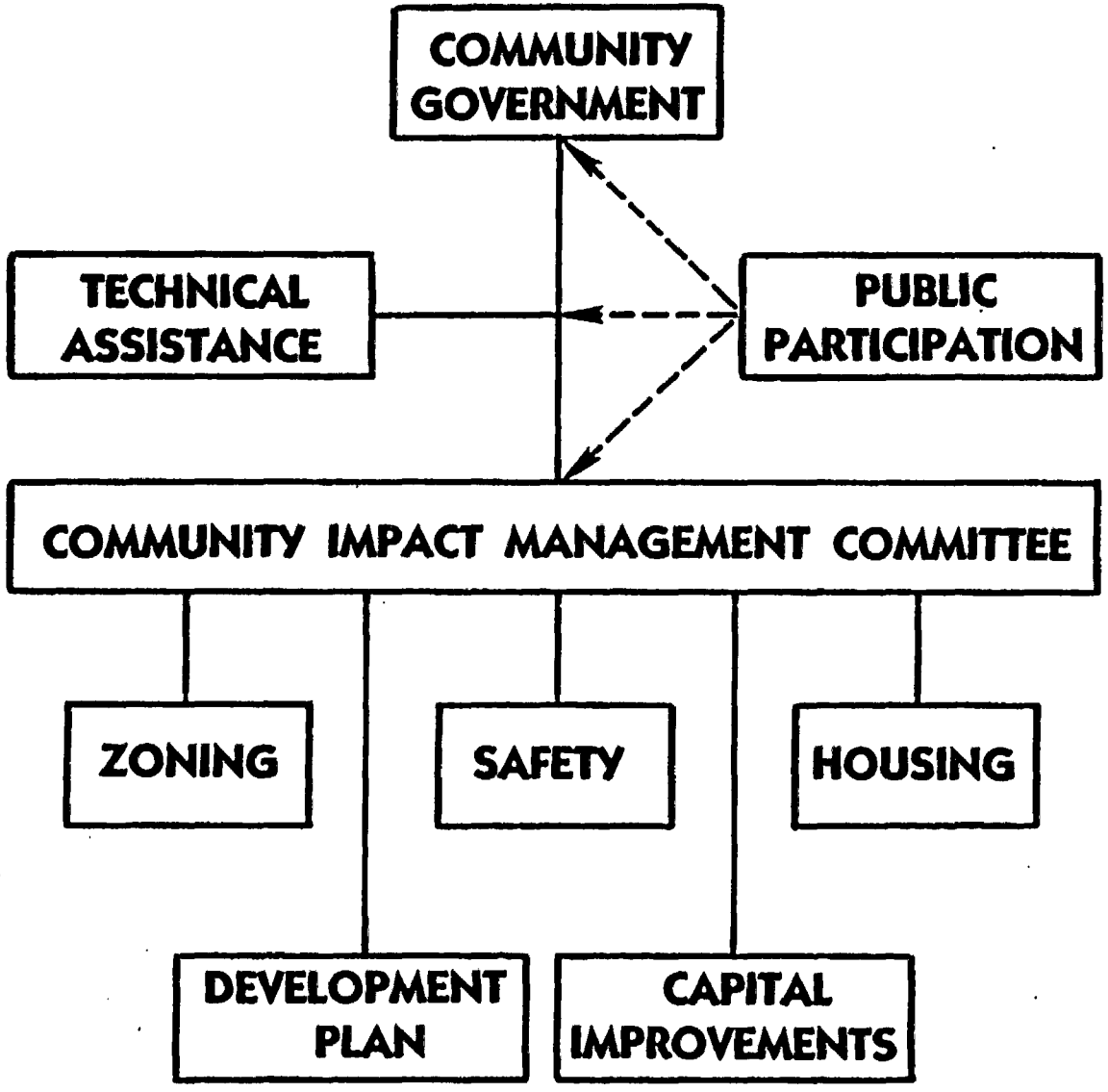
ELEMENTS OF THE MANAGEMENT PROCESS



COMMUNITY ASSISTANCE PROGRAM

- Local job training
- Worker housing
- Worker transportation
- Community service needs
- Local business development

ATTACHMENT 6

Topics

- Organization/schedule
- Environmental assessment outline
- Disqualifying conditions analysis
- Geohydrologic setting
- Comparative evaluation within geohydrologic settings

Organization/Schedule

- Seven environmental assessments, one for each salt site, are being prepared for submittal to DOE-HQ in mid-May, 1984.
  - — First complete environmental assessment drafts available on all sites to DOE-HQ in mid-March, 1984
  - — Second complete environmental assessment drafts available on all sites to DOE-HQ in mid-April, 1984
  - — Final complete environmental assessment drafts available on all sites to DOE-HQ in mid-May, 1984
- ONWI and SRPO have formed an environmental assessment task force to complete the environmental assessments.

Environmental Assessment Outline

- Annotated Table of Contents for environmental assessments (EAs) required by the Nuclear Waste Policy Act (NWPA) dated December 15, 1983, provided to the states.

- The December 15, 1983, version of the outline is being used for development of draft environmental assessments.

Disqualifying Conditions

1. Draft evaluation of seven potentially acceptable salt sites against disqualifying conditions has been completed and documentation provided to HQ this week.
2. Disqualifying conditions are from November 18, 1983, Siting Guidelines:
   - Geohydrology
   - Erosion
   - Dissolution
   - Human interference (natural resources)
   - Population density and distribution
   - Environmental quality
   - Rock characteristics.
3. Draft disqualifying conditions evaluation reports will be used to develop draft environmental assessment Sections 2.3 (Evaluation of the PASs within the Geohydrologic Setting) and 1.4 (Evaluation of PASs).
4. When final siting guidelines become available, disqualifying conditions evaluation will be modified to reflect changes between draft guidelines and final guidelines.

Geohydrologic Setting

- Topic of geohydrologic setting discussed in environmental assessment Sections 1.5 ("Grouping Sites by Geohydrologic Setting"), 2.1 ("The Geohydrologic Setting of the Site"), and 2.2 ("Identification of PASs Within the Geohydrologic Setting").

- Gulf Coast geohydrologic setting position paper being provided to DOE-HQ this week.

Comparative Evaluation

1. Updated list of influence factors and descriptors prepared based on November 18, 1983, version of the siting guidelines.

2. Completed data sheets available by February 29, 1983.

3. Comparative evaluation within each geohydrologic setting complete and draft reports available to HQ by March 31, 1984.

4. Draft comparative evaluation reports will be used to develop draft environmental assessment Section 2.4 (Decision Process and Analysis Supporting Selection of the Preferred Site Within a Setting).

5. When final siting guidelines become available, comparative evaluation will be modified to reflect changes between draft guidelines and final guidelines.

KEY SALT EA MILESTONES
EA CHAPTER DEVELOPMENT
SEVEN SITES

VERSION	CHAPTER	DUE TO SRPO	SUBMIT TO HQ	INITIATE REVIEW	COMPLETE REVIEW
A	2 *	2/27/84	2/28/84	2/27/84	3/5/84
	3	2/27/84	2/28/84	2/27/84	3/5/84
	4	3/19/84	3/20/84	3/19/84	3/26/84
	5	3/5/84	3/6/84	3/5/84	3/12/84
	6	3/12/84	3/13/84	3/12/84	3/19/84
B	2	4/16/84	4/17/84	Two Week Workshop to Resolve Final Comments	
	3	4/16/84	4/17/84		
	4	4/16/84	4/17/84		
	5	4/16/84	4/17/84		
	6	4/16/84	4/17/84		
Final	2	4/30/84	5/14/84	Two Month Workshop at DOE-HQ	
	3	4/30/84	5/14/84		
	4	4/30/84	5/14/84		
	5	4/30/84	5/14/84		
	6	4/30/84	5/14/84		

* Excludes Section 2.4

December 15, 1983

ANNOTATED TABLE OF CONTENTS FOR ENVIRONMENTAL ASSESSMENTS (EAs) REQUIRED BY THE NUCLEAR WASTE POLICY ACT (NWPA)

Foreword

(Prepared by HQ)

A brief discussion of the purpose of the EA, the scope of the EA (including a reference to the public hearings held for that purpose), the basis for the EA (i.e., available data), and the public review and comment process.

Executive Summary

(Prepared by HQ; based on input from Projects)

Chapter 1 SUMMARY OF THE DECISION PROCESS LEADING TO SITE NOMINATION

(Prepared by HQ; based on input from Projects)

1.1 Introduction

The introduction will provide the reader with background information. It will briefly discuss radioactive-waste disposal in mined geologic repositories, the principal features of a repository, the Nuclear Waste Policy Act and its requirements, and the guidelines.

1.2 Summary of the Overall Decision Process

A summary of the overall decision process from screening to the selection of sites for nomination.

1.3 Identification of the Nine Potentially Acceptable Sites (PASs)

Summary description of how the nine PASs were identified. This historical overview section will discuss the process used to select the nine PASs (summary of Section 2.2 combined from all EAs).

1.4 Evaluation of PASs

Summary of evaluation of the nine PASs against the disqualifying conditions (summary of Section 2.3 combined from all EAs). Results may be presented in matrix format.

1.5 Grouping Sites by Geohydrologic Setting

Description of the basis for grouping by geohydrologic setting. This is an application of the guidelines requiring the DOE to consider a diversity of rock types and geohydrologic settings (siting guidelines 960.3.1.1 and 960.3.2.2).

References for Chapter 1

Chapter 2 DECISION PROCESS BY WHICH THE SITE PROPOSED FOR NOMINATION WAS IDENTIFIED

(Prepared by each Project)

Sections 2.1, 2.2, and 2.3 will be included in all EAs; Section 2.4 will be included in salt-site EAs only. The suggested length for this chapter is 40 to 50 pages.

2.1 The Geohydrologic Setting of the Site

A description of the geohydrologic setting. This section will concentrate on a specific geohydrologic setting (i.e., the Permian Basin, the Paradox Basin, the Gulf Interior region, the Southern Great Basin, or the Pasco Basin).

2.2 Identification of PASs Within the Geohydrologic Setting

A description of the process used for identifying the PASs within the geohydrologic setting.

2.3 Evaluation of the PASs within the Geohydrologic Setting

Evaluation of PASs considered within the geohydrologic setting against the disqualifying conditions. The evaluation will be based on currently available information, taking into consideration uncertainty in data. The results of this evaluation will represent a decision point as to whether the site is retained for further consideration (i.e., whether the site is not disqualified on the basis of available information).

The following disqualifying conditions will be used in this evaluation:

- Geohydrology, 960.4.2.1(d)
- Erosion, 960.4.2.5(d)
- Dissolution, 960.4.2.6(d)
- Human Interference (Natural Resources), 960.4.2.8.1(d)
- Population Density and Distribution, 960.5.2.1(d)
- Environmental Quality, 960.5.2.5(d)
- Rock Characteristics, 960.5.2.9(d)

2.4 Decision Process and Analysis Supporting Selection of the Preferred Site Within a Setting

This section will describe how the preferred site was selected from the PASs within the geohydrologic setting. It will include an

evaluation of the available data base to determine those guidelines that allow a reasonable comparison of the sites within a setting. This will be followed by a comparative evaluation based on those guidelines of the sites within the setting.

References for Chapter 2

Chapter 3 THE SITE AND THE REPOSITORY

(Prepared by each Project)

The suggested length for this chapter is about 30 pages.

3.1 The Site

Description of the site, including those characteristics that may be affected both by site characterization activities and by repository development at the site. The depth of the discussion should be adequate for the reader to understand the evaluation presented in the Chapter 4 comparisons of the site with the siting guidelines, and commensurate with the importance of the potential effect, with less important material summarized or incorporated by reference. Graphics (maps, photos, diagrams) and tables should be used to organize and display information.

3.1.1 Location, General Appearance and Terrain, and Present Uses

3.1.2 Geologic Conditions

3.1.3 Hydrologic Conditions

3.1.3.1 Surface Water

3.1.3.2 Ground Water

3.1.4 Environmental Setting

3.1.4.1 Land Use

3.1.4.2 Terrestrial and Aquatic Ecosystems

3.1.4.3 Air Quality and Weather Conditions

3.1.4.4 Noise

3.1.4.5 Aesthetic Resources

3.1.4.6 Archaeological, Cultural, and Historical Resources

3.1.5 Transportation

The transportation section will address the existing transportation network.

3.1.6 Socioeconomic Conditions

3.1.6.1 Population Density and Distribution

3.1.6.2 Economic Conditions

3.1.6.3 Community Services

3.1.6.4 Social Conditions

3.1.6.5 Fiscal Conditions and Government Structure

3.2 The Repository

A brief physical description as well as a conceptual description of the repository, aimed at introducing the reader to concepts that will be discussed in Chapter 4, such as engineered barriers and controlled area.

References for Chapter 3

Chapter 4 SUITABILITY OF THE SITE FOR SITE CHARACTERIZATION AND FOR DEVELOPMENT AS A REPOSITORY

(Prepared by each Project except for Section 4.1)

The suggested length for this chapter is 40 to 50 pages.

4.1 Guidelines That Do and Do Not Require Site Characterization

(Prepared by HQ)

The rationale for distinguishing between guidelines requiring site characterization and those not requiring site characterization.

4.2 Suitability of the Site for Development as a Repository; Evaluation Against the Guidelines That Do Not Require Site Characterization

The purpose of this section is to meet the requirements of Section 112(b)(1)(E)(i) of the Act by evaluating the site proposed for nomination against the guidelines that do not require site characterization. The scope and content of this chapter will be determined by the definition of site characterization as contained in the Act. For each technical guideline there are qualifying, favorable, and potentially adverse conditions. This section will evaluate the site against these conditions, as applicable. Favorable and potentially adverse conditions need not be evaluated if they do not apply to the site being evaluated, and the evaluation of compliance with any condition need not be final. Reference should be made to Chapter 2 for evaluation of disqualifying conditions.

The guidelines that do not require site characterization should include the following:

4.2.1 Technical Guidelines

4.2.1.1 Site Ownership and Control, 960.4.2.8.2

4.2.1.2 Population Density and Distribution, 960.5.2.1

4.2.1.3 Site Ownership and Control, 960.5.2.2

4.2.1.4 Meteorology, 960.5.2.3

4.2.1.5 Offsite Installations and Operations, 960.5.2.4

4.2.1.6 Environmental Quality, 960.5.2.5

4.2.1.7 Socioeconomic Impacts, 960.5.2.6

4.2.1.8 Transportation, 960.5.2.7

4.2.2 System Guidelines

4.2.2.1 Preclosure Radiological Safety, 960.5.1(a)(1)

4.2.2.2 Preclosure Environmental Quality, Socioeconomics, and Transportation, 960.5.1(a)(2)

4.3 Suitability of the Site for Site Characterization: Evaluation Against the Guidelines that Do Require Site Characterization

The purpose of this section is to meet the requirements of Section 112(b)(1)(E)(i) of the Act by evaluating the site against the guidelines that do require site characterization. For each technical guideline there are qualifying, favorable, and potentially adverse conditions. This section will evaluate the site against these conditions as applicable. Favorable or potentially adverse conditions need not be evaluated if they do not apply to the site being evaluated, and the evaluation of compliance with any condition need not be final.

Because of the complex interactions among the many technical factors affecting the performance and suitability of any given site, both the qualifying and the disqualifying conditions must be evaluated in terms of their site-specific importance to meeting the system guidelines. Reference should be made to Chapter 2 for evaluation of the site against disqualifying conditions. Evaluation against system guidelines cannot be supported by comprehensive system assessments in the pre-characterization phases; they will be supported by a simplified preliminary performance assessment, based upon available data, that evaluates the site's performance from a system analysis of the technical guidelines. Guidelines that require site characterization should include the following:

4.3.1 Postclosure Technical Guidelines, 960.4.2

4.3.1.1 Geohydrology, 960.4.2.1

4.3.1.2 Geochemistry, 960.4.2.2

4.3.1.3 Rock Characteristics, 960.4.2.3

4.3.1.4 Climatic Changes, 960.4.2.4

4.3.1.5 Erosion, 960.4.2.5

4.3.1.6 Dissolution, 960.4.2.6

4.3.1.7 Tectonics, 960.4.2.7

4.3.1.8 Human Interference and Natural Resources, 960.4.2.8 and 960.4.2.8.1

4.3.2 Postclosure System Guideline, 960.4.1

4.3.3 Preclosure Technical Guidelines, 960.5.2

4.3.3.1 Surface Characteristics, 960.5.2.8

4.3.3.2 Rock Characteristics, 960.5.2.9

4.3.3.3 Hydrology, 960.5.2.10

4.3.3.4 Tectonics, 960.5.2.11

4.3.4 Preclosure System Guidelines

4.3.4.1 Preclosure Ease and Cost of Construction, Operation, and Closure 960.5.1(a)(3)

Detailed guidance on the format for presenting the evaluation of the site proposed for nomination with respect to these technical and system guidelines is given in Attachment 1.

4.4 Analyses Supporting the Comparison with Systems Guidelines

4.4.1 Preclosure System Guidelines Analyses

4.4.2 Postclosure Preliminary System Guidelines Analysis: A Preliminary System Performance Assessment

References for Chapter 4

Chapter 5 EXPECTED EFFECTS OF SITE CHARACTERIZATION ACTIVITIES

(Prepared by Projects)

This chapter will describe the proposed site-characterization activities and evaluate their expected effects. It will also discuss

alternative activities that may be undertaken to avoid such effects and proposed measures to mitigate any significant adverse effects. Relevant issues raised in State, tribe, and public comments will also be addressed. The suggested length for this chapter is about 15 pages.

5.1 Site Characterization Activities

This section will discuss all site characterization activities that are planned for the site proposed for nomination, using the Act's definition of "site characterization."

5.1.1 Field Studies

5.1.2 Exploratory Shaft

5.1.2.1 Construction

5.1.2.2 Testing

5.1.2.3 Final Disposition

5.1.3 Other Activities

5.2 Expected Effects of Site Characterization

This section will describe the effects expected from each of the activities listed above. The depth of the discussion will be commensurate with the expected effect; the discussion can be presented as a narrative that covers all phases of site characterization, rather than separate sections for each phase. Included in the discussion will be both positive and adverse effects. It should cover, as appropriate, the characteristics and conditions listed in Chapter 3 (geologic conditions; hydrologic conditions; land use; ecosystems; air quality; noise; aesthetic resources; archaeological, cultural, and historical resources; population density and distribution; economic conditions; community services; social conditions; and fiscal conditions). Transportation effects, if any, can be included with socioeconomic effects.

5.2.1 Expected Effects on the Physical Environment

This section will discuss the expected effects of site-characterization activities on various components of the physical environment (e.g., surface water, ecosystems, air quality), as appropriate.

5.2.2 Expected Socioeconomic Effects

5.3 Alternative Site Characterization Activities That Would Avoid Adverse Effects

References for Chapter 5

Chapter 6 REGIONAL AND LOCAL EFFECTS OF LOCATING A REPOSITORY AT THE SITE

(Prepared by each Project)

This chapter will discuss the environmental, socioeconomic and transportation effects expected to result from locating a repository at the nominated site and their significance. It may include any specific additions to the repository description in Chapter 3 necessary to adequately explain these effects. The discussion of effects will cover the preclosure phase of the repository (construction, operation, and closure), taking care to include only applicable effects for each phase. It will identify possible conflicts between proposed repository activities and the objectives of Federal, regional, State, local, and affected Indian tribe land-use plans, policies, and controls. A discussion of means to mitigate adverse environmental and socioeconomic effects will also be included. The discussion will distinguish between regional and local effects; and for local effects it will distinguish between onsite and offsite effects. The suggested length for this chapter is 20 pages.

6.1 Expected Effects on the Physical Environment

This section will discuss the expected effects, including radiological effects if any, on geologic and hydrologic conditions; land use; ecosystems; air quality; noise; aesthetic resources; and archaeological, cultural, and historical resources.

6.2 Expected Effects of Transportation

6.3 Expected Effects on Socioeconomic Conditions

6.3.1 Population Density and Distribution

6.3.2 Economic Conditions

6.3.3 Community Services

6.3.4 Social Conditions

6.3.5 Fiscal Conditions and Government Structure

References for Chapter 6

December 15, 1983

Chapter 7 COMPARATIVE EVALUATION OF SITES

(Prepared by HQ with input from Projects)

A comparative evaluation and discussion of all nominated sites against each guideline (including, in matrix form, a summary of data for each site against all guidelines, technical and system, and the results of preliminary performance assessment) and against one another.

Glossary

Acronyms and Abbreviations

Index

December 15, 1983

Attachment 1

FORMAT FOR PRESENTING THE EVALUATION OF THE SITE WITH RESPECT TO THE TECHNICAL GUIDELINES (960.4.2 and 960.5.2)

I. A description of how this section is organized

II. Statement of qualifying condition

III. Evaluation process

- A. Relevant data
- B. Assumptions and data uncertainty
- C. Analysis (or reference to system calculations)

IV. Favorable conditions

- A. Position statement for each favorable condition
- B. Brief statement of rationale (refer to position statement)

V. Potentially adverse conditions

- A. Dismiss those which do not apply
- B. Discuss mitigating aspects where appropriate
- C. For those remaining potentially adverse conditions, provide:
  - 1. Position statement for each potentially adverse condition
  - 2. Brief statement of rational for each position

VI. Conclusion on qualifying condition

- A. Statement of position
- B. Basis for conclusion given the reevaluation of favorable and potentially adverse conditions (individually and/or collectively).

December 15, 1983

Attachment 1 (Continued)

FORMAT FOR PRESENTING THE EVALUATION OF THE SITE WITH RESPECT TO THE SYSTEM GUIDELINES (960.4-1 and 960.5-1)

I. Description of how this section is organized

II. Statement of qualifying condition

III. Evaluation process

A. Statement of technical guidelines appropriate to system guideline

B. Composite consideration of evaluations of technical guidelines appropriate to system guideline (including preliminary performance assessments)

IV. Conclusion on qualifying condition

COMPARATIVE EVALUATION OF POTENTIAL REPOSITORY SITES
List of Influence Factors and Descriptors
Based on DOE October 28 Guidelines

Current Classification	Guideline Paragraph Reference	Influence Factor	Descriptor
PA1	960.4-2-1	GEOHYDROLOGY	
	b1, b2		A. Expected ground-water travel time in the host rock
	b1		B. Prewaste ground-water travel time outside the host rock
			C. Deleted
	b2		D. Hydrologic processes
	b3, c3		E. Geohydrologic modeling
	b5(i)		F. Hydraulic conductivity in geohydrologic units
	b5(ii)		G. Hydraulic gradient within geohydrologic units
	b5(iii)		H. Potentiometric head difference between surrounding geohydrologic units
	b6(i)		I. Saturation level in and around host rock (unsaturated zone)
	b6(ii)		J. Depth of water table (unsaturated zone)
	b6(iii)		K. Presence of geohydrologic diversion units above host rock (unsaturated zone)
	b6(iv)		L. Host rock drainage (unsaturated zone)
	b6(v)		M. Precipitation and evapotranspiration (unsaturated zone)
	b7		N. Total dissolved solids concentration in ground water
	c1		O. Expected changes in hydraulic gradient
	c1		P. Expected changes in hydraulic conductivity
	c1		Q. Expected changes in ground-water flux
	c2		R. Presence of potable or irrigation ground water along flow paths

Current Classification	Guideline Paragraph Reference	Influence Factor	Descriptor
PA2	960.4-2-2	GEOCHEMISTRY	
	b1		A. Nature and rates of geochemical processes
	b2		B. Geochemical conditions inhibiting radionuclide transport - inside repository
	b2		C. Geochemical conditions inhibiting radionuclide transport - outside repository
	b3		D. Stability of mineral assemblages under expected repository conditions
	b4		E. Expected dissolution of radionuclides in the repository
	b5		F. Retardation factors - outside the repository
	c2		G. Geochemical effects on sorption or rock strength
	c3		H. Ground water effects on engineered barrier system
PA3	960.4-2-3	ROCK CHARACTERISTICS	
	b1		A. Vertical thickness of host rock
	b1		B. Areal extent of host rock
	b2		C. Thermal conductivity
	b2		D. Creep rate
	b2		E. Linear thermal expansion of host rock
			F. Deleted
	c2, c3		G. Effects of waste heat on waste isolation
PA4	960.4-2-4	CLIMATIC CHANGES	
	b1,b2,c1,c2		A. Effects of climatic change on waste isolation
PA5	960.4-2-5	EROSION	
	b1,b2,b3,c1,c2		A. Rate of erosion
PA6	960.4-2-6	DISSOLUTION	
	b,c		A. Host rock dissolution

Current Classification	Guideline Paragraph Reference	Influence Factor	Descriptor
PA7	960.4-2-7	TECTONICS	
	b,c2,c5,c6		A. Tectonic processes that affect isolation
	c1		B. Tectonic and igneous activity in Quaternary
			C. Deleted
			D. Deleted
			E. Deleted
			F. Deleted
	c2,c3		G. Maximum ground acceleration
	c4		H. Magnitude and frequency of earthquakes
PA8	960.4-2-8-1	HUMAN INTERFERENCE (Natural Resources)	
	b		A. Presence of natural resources
	b,c1,c4		B. Average value of natural resources
	c2		C. Presence of mines
	c3		D. Deep drilling history
	c5		E. Human activities affecting ground-water flow
PA9	960.4-2-8-2	HUMAN INTERERENCE (Site ownership and control)	
	b		A. Present land ownership and control
	b		B. Surface and subsurface mineral rights
	c		C. Land acquisition

Current Classification	Guideline Paragraph Reference	Influence Factor	Descriptor
PB1	960.5-2-1	POPULATION DENSITY AND DISTRIBUTION	
	b1		A. Proximity to highly populated areas
	b, c2		B. Proximity to places with > 1000 persons in a 1 m^2 area
	b2		
	c1		C. Regional population density
			D. Population density within site boundaries
PB2	960.5-2-2	SITE OWNERSHIP AND CONTROL	
	b		A. Present land ownership and control
	b		B. Surface and subsurface mineral and water rights
	c1		C. Land acquisition
PB3	960.5-2-3	METEOROLOGY	
	b		A. Dispersion of potential radioactive releases
	c1		B. Potential for public exposure
	c2		C. History of extreme weather
			D. Deleted
			E. Deleted
			F. Deleted
			G. Deleted
			H. Deleted
			I. Deleted
			J. Deleted
PB4	960.5-2-4	OFFSITE INSTALLATIONS AND OPERATIONS	
	b,c2		A. Offsite nuclear facilities
	c1		B. Presence of nearby hazardous installations or operations

Current Classification	Guideline Paragraph Reference	Influence Factor	Descriptor
PB5	960.5-2-5	ENVIRONMENTAL QUALITY	
	b1,c1		A. Anticipated ability to comply with applicable environmental requirements
	b1		B. Air quality
	b1,b2		C. Aesthetics
	b1,b2		D. Noise
	b2		E. Access corridors
	b1,b2		F. Water quality
	c3		G. Dedicated Federal lands
	c4		H. State park land
	c5		I. Native American or cultural resources
	c6		J. Threatened or endangered species' habitat
PB6	960.5-2-6	SOCIOECONOMIC IMPACTS	
	a		A. Increased resource competition
			B. Deleted
	b1,c1		C. Housing and related services
	b2,c2		D. Adequacy of local labor force
	b3		E. Potential net increases in local employment
	b3		F. Potential net increases in local business sales
	b3		G. Potential increases in local government revenues
	b4,c4		H. Potential impacts on regional economic base
	c3		I. Water limitations on future development
			J. Potential social problems

Current Classification	Guideline Paragraph Reference	Influence Factor	Descriptor
PB7	960.5-2-7	TRANSPORTATION	
	b1(i,iii),c1,c2		A. Access routes: construction cost
	b1(ii),c4		B. Federal condemnation for land for access routes
	b1(v)		C. Access route infringement on local cities/towns
	b2,c3		D. Proximity to adequate existing highways/ railways
	b3,c3		E. Proximity to national transportation system
	b4		F. Railroad interchanges
	b5,c4		G. Transportation life-cycle costs
	b5,c2,c4		H. Transportation risks
	b6		I. Regional waste carriers
	b7		J. Adoption of federal transportation regulations
	b8		K. State and local transportation accident response plans
	b9		L. Delays caused by weather
	c4		M. Local environmental impact
			N. Enactment of state or local laws in governing high-level nuclear waste transportation
PB8	960.5-2-8	SURFACE CHARACTERISTICS	
	b1		A. Terrain with low relief
	c, 960.5-2-10		B. Potential flooding of surface and underground facilities
	b1,b2		
	b2		C. Drainage of site
PB9	960.5-2-9	ROCK CHARACTERISTICS	
	b1,c1		A. Vertical thickness of host rock
	b1,c1		B. Areal extent of host rock
	b2,c2		C. Extent of required artificial support for underground openings

Current Classification	Guideline Paragraph Reference	Influence Factor	Descriptor
	c3		D. Extent of maintenance of underground openings
	c4		E. Retrieval difficulty and hazards
	c5		F. Hazards due to anomalies in host rock
	b2,c2		G. Host rock discontinuities above and below repository openings
PB10	960.5-2-10	HYDROLOGY	
	b1		A. Presence of aquifers between host rock and land surface
	c		B. Complexity of required engineering ground-water control measures
PB11	960.5-2-11	TECTONICS	
	b,c2		A. Expected preclosure impact of earthquakes
	c1		B. Active faulting
	c3		C. Maximum credible earthquake

Jan. 13, 1984

Site: LAVENDER CANYON	Date:
Influence Factor: Geohydrology (960.4-2-1 b1, b2)	Prepared By:
Descriptor: Expected ground-water travel time in the host rock	Guideline Code: PA1 A
Favorability Direction: Longer travel time more favorable	Size/Range of Significant Difference: Two orders of magnitude is significant
	Data Code: QN/OB/AN
	Scale Code:

Descriptor Definition:

Expected prewaste travel time along the path of likely ground-water flow from the repository to the boundary of the host rock.

Available Data (Unit of Measurement):

- Expected travel time: _____ yr.

Technical Review:	Functional Manager:
Signature _____	Signature _____
Date _____	Date _____

Jan. 13, 1984

LAVENDER CANYON

PA1A

Nature of Interrelation with Other Descriptors:*

Travel time to accessible environment via adjacent aquifer should be covered in another data sheet or in this sheet (see PA1B and PA1C).

Underlying Assumption/Rationale/Reasoning**:

*Explain the nature of the interactions between this and related descriptors, e.g., casual, correlation, etc.

**Describe assumptions leading to responses: if the mode of estimation (e.g., measurement techniques, tools, instrumentation) have been important to your responses, please provide the necessary information about it.

Jan. 13, 1984

PA1A

LAVENDER CANYON

Original Cited Source/Basis for Available Data:

Author:

Date:

Document and Page No.

Original Cited Source/Basis for Available Data:

Author:

Date:

Document and Page No.

Original Cited Source/Basis for Available Data:

Author:

Date:

Document and Page No.

Original Cited Source/Basis for Available Data:

Author:

Date:

Document and Page No.

Original Cited Source/Basis for Available Data:

Author:

Date:

Document and Page No.

ATTACHMENT 7

TECHNICAL INFORMATION DATA BASE
(an update)

RECENT DEVELOPMENTS:

- Steering Committee formed
  - expanded TDMS scope (raw data)

- Subsystems being integrated
  - SRP Integrated Data/Information System description

- New Features
  - Revision (*) ⟶ bold/flash/reverse video

RECENT OUTPUT ITEMS:

• Borehole Summaries	-	
• Revised Catalog	-	
• Inventory of Existing Records Turnover Packages	-	Attachment 1
• Response to last meeting questions	-	Attachment 2

PLANNED ACTIVITIES/ITEMS:

• Issue 1st TDMS Technical Data Handbook	3/84
• Training Session for System Users	3/84
• Load EA Data Sheets into TDMS	4/84
• Controlled EA Reference Library Operational (Hard copy and Microfiche)	5/84
• Remote Terminal Access	TBD

RECORDS INVENTORY 1/1/84

I. Records and Information System (RIS)

Total ONWI records -- 81,571 for 4/28/78--1/1/84

- Letters -- 39,910
- Memos -- 20,711
- Reports -- 12,227
- Telex -- 3,365
- Telephone Memos -- 2,339
- Papers -- 2,278
- Speeches -- 79
- Misc. -- 662

STATUS: microfilming and indexing are current. Correspondence is available in Microfilm and hardcopy. Reports are available in hardcopy or microfiche.

II. Controlled Reference Library

Total of 191 documents are available in hardcopy and microfiche.

STATUS: There are a total of 784 documents referenced in the EAs currently in process. Of these 191 are in the library, 300 are on order, and 393 remain to be acquired. It is planned that 90% of these documents will be in the library by 3/31/84. The majority of them are available from the authors.

III. Records Turnover Packages (RTPs)

There are 110 closed projects of which RTPs are to be turned over for 83. (See attached for details). Contracts did not require RTPs for 27.

- 58 received by ONWI
- 11 have been reviewed and accepted by ONWI OA but not received
- 14 have not been reviewed or received
- 9 are outstanding from ORNL but scheduled to be reviewed in 1/84
- 5 are not available from the subcontractor or national lab.

97 (some projects had more than one package).

STATUS: The processing (microfilming, indexing, computerizing) of RTPs is as follows:

- 27 RTPs - microfilmed, indexed, and loaded on the computer
- 19 - microfilmed only
- 3 - being indexed
- 2 - being filmed
- 7 - received but not filmed or indexed.

58 total

TECHNICAL DATA SEARCH ITEMS

January 27, 1984

In the future, the Technical Data Management System will allow retrieval of most types of data items requested. In the meantime, we will provide you with the information requested and/or the reference document where the information can be found.

TEXAS

(1). Seismic data index in the Palo Duro:

Attached is a seismic map. Results of the seismic surveys are not published yet.

(2). Flow directions and rates of saline aquifers in the Palo Duro:

This data will be provided in a document scheduled to be printed by the end of February titled "Hydrogeologic Investigations Based on Drill-Stem Test Data, Palo Duro Basin Area, Texas and New Mexico". The data are also within the Texas Bureau of Economic Geology Annual Report.

(3). Activity plans for drilling and tests in Palo Duro:

ONWI contractors have prepared plans, however, such plans have yet to be approved.

The following is a list of the significant elements of the Data Base (See Figure 1):

1. 262 miles of speculative proprietary 12-fold Vibroseis reflection seismograph data, the use rights to which were purchased from Seiscom Delta (recorded by United Geophysical Company and processed by GeoCom) (Lines D, E, F, G, H and J).

2. 68 miles of speculative proprietary 24-fold Vibroseis reflection seismograph data, the use rights to which were acquired by and purchased from Western Geophysical Company (Line W95).

3. 111 miles of speculative proprietary 24-fold Vibroseis reflection seismograph data, the use rights to which were acquired by and purchased from STM (Lines 4, 4A, 9, 10 and 11).

4. 115 miles of 24-fold Vibroseis reflection seismograph data acquired by Western Geophysical Company while under contract to SWEC during 1982.

5. 33 miles of 24-fold Vibroseis reflection seismograph data acquired by Western Geophysical Company while under contract to SWEC during 1983.

6. Well Log Data - consisting of geologic formation tops interpreted by SWEC from electric logs of tests drilled by SWEC under contract to ONWI together with electric logs from tests drilled by the hydrocarbon industry in the area of investigation - totalling 308 in all.

7. Velocity Survey Data - consisting of in-hole geophone surveys as follows:

   a. SWEC surveys in the J. Friemel, Zeeck, Holtzclaw and Harman test wells, and

   b. The right to use 19 industry run well velocity surveys purchased from the owners of these surveys.

8. Synthetic Seismograms prepared from sonic logs from:

   a. SWEC test wells: J. Friemel, Zeeck, Holtzclaw and Harman in which up-hole velocity survey data are available for check points, and

   b. SWEC test wells: G. Friemel and Detten in which sonic logs were the only input.

9. Other Seismic Data

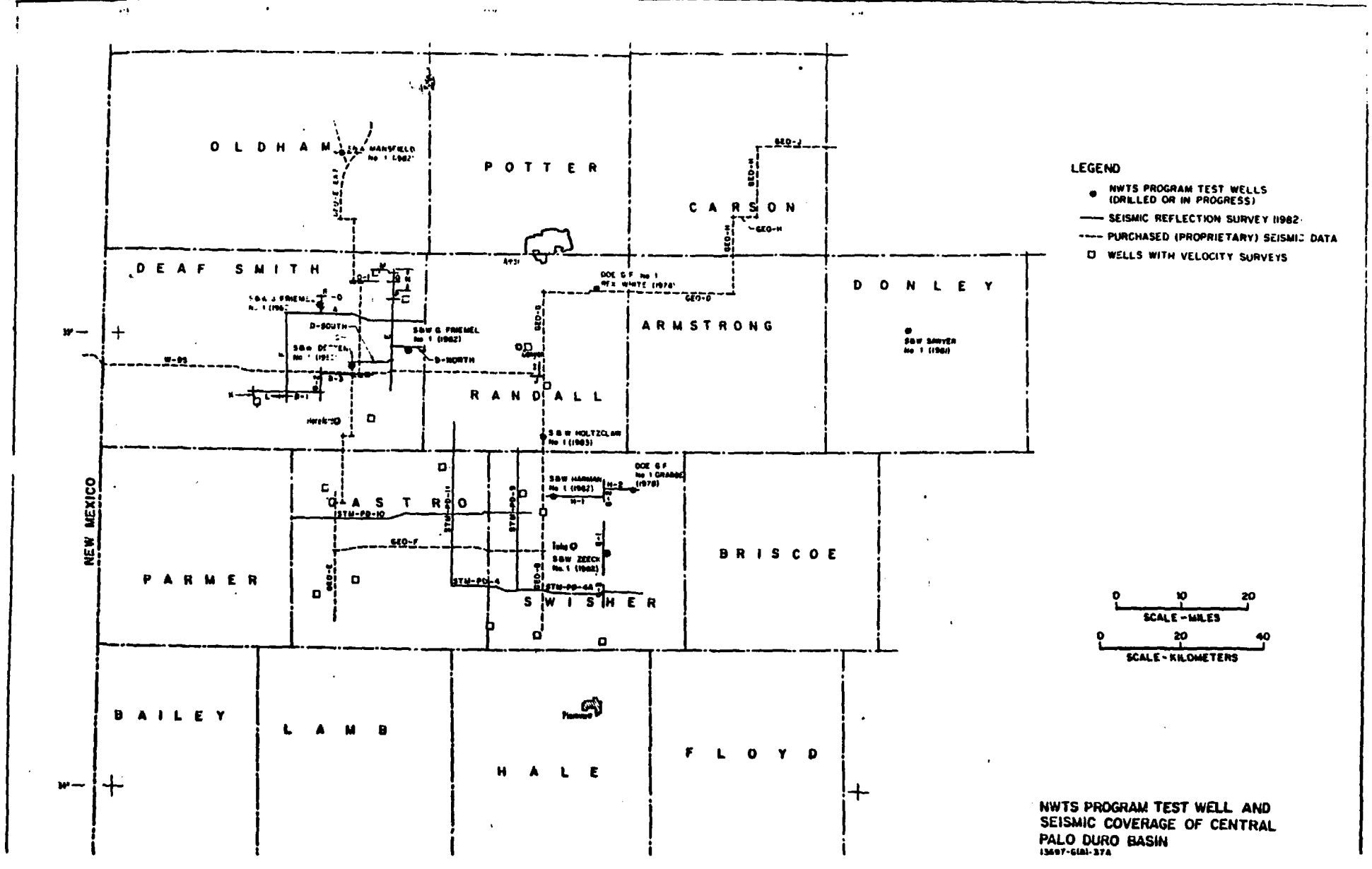
   a. Vertical Seismic Profiles by Schlumberger under contract to SWEC in the J. Friemel and Zeeck test wells.

10. Maps - Land base and well maps largely prepared by Robert F. Muldrow Aerial Surveys and purchased from Geomap were used to compile the following map areas:

a. Central Texas Panhandle - Scale: 1"=16000'
- Covers the entire area

b. Deaf Smith Study Area - Scale: 1"=4000'
- includes Eastern Deaf Smith County, parts of Oldham, Potter and Randall Counties.

c. Swisher Study Area - Scale: 1"=4000'
- includes portions of Swisher, Randall and Armstrong Counties.



NWTS PROGRAM TEST WELL AND SEISMIC COVERAGE OF CENTRAL PALO DURO BASIN

13497-GIBI-37A

MISSISSIPPI

(1). Computer codes and models being used in the Gulf Interior Region on hydrology:

Two codes are currently being used by two groups on the SRP. The Performance Assessment Department of ONWI is using SWENT and closely supported by Intera. This code uses a finite difference model as a basis. The GIR GPM (Ertec) is using GRAM to do preliminary groundwater evaluations. GRAM uses a finite element model for the analysis. The ONWI technical staff (Site and Performance Assessment) are coordinating the results of these evaluations and are taking advantage of the two approaches to obtain a comparison of the models/codes with the expectation that the best available approach will be used during final analyses.

References of interest:

a. First Status Report on Regional and Local Groundwater Flow Modeling for Richton Dome. ONWI-502 (in patent review cycle).

b. Second Status Report on Regional and Local Groundwater Flow Modeling for Richton Dome. ONWI-xxx (in preparation). (Attachment)

(2). Legislative analysis of SB2751 and HB823:

This type of analysis has not been conducted.

(3). Socioeconomics in Mississippi: References of interest:

a. Socioeconomic Data Base Report for Mississippi, Preliminary Draft, ONWI-499.

b. Environmental Characterization for the Gulf Interior-Mississippi, ONWI -193

(4). Hydrologic Studies of Tatum Dome:

The ONWI project has conducted no hydrologic studies of Tatum Dome. The DOE Nevada Office can be contacted for a list of reports relating to this request.

(5). Routing requirements given Richton as a repository:

This request cannot be addressed adequately at the present time. In light of the additional requirements specified in the Siting Guidelines (attachment), studies are currently underway to evaluate routing alternatives. The evaluations vis-a-vis the intent of the Guidelines should be ready within a few months.

(6). Population dose limits:

This information is in ONWI-109, "Evaluation of Area Studies of the U.S. Gulf Coast Salt Dome Basins: Location Recommendation Report."

(7). Petrochemical reserves in Mississippi:

This information is in ONWI-169, "Evaluation of Potential Mineral Resources in the Vicinity of Several Selected Domes in Texas, Louisiana, and Mississippi".

M. Balis
ONWI

Department of Energy
National Waste Terminal
Storage Program Office
505 King Avenue
Columbus, Ohio 43201

January 6, 1984

RECD JAN 6 1983

Ronald Forsythe
Department of Energy and Transportation
Board
214 Watkins Building
510 George Street
Jackson, Mississippi 39202

Dear Mr. Forsythe:

SUBJECT: TRANSMITTAL OF COMPUTER CODE TAPE AND DOCUMENTATION OF "GRAM" TO MISSISSIPPI

In response to your September 30, 1983 letter to me, we have sent a copy of the GRAM computer tape and documentation to Kelly Haggard with her copy of this letter.

Sincerely,

J. O. Neff
Program Manager
NWTS Program Office

NPO:LAC:0872A

ST#203-84

Enclosures:
1) December 2, 1983 letter to J. Holcomb from C. Espana, GRAM Code.
2) June 9, 1982 memo to M. Werner from M. Teubner and J. Tracy, Computer Model Selection, Regional Groundwater Flow, Richton Dome
3) Procedure D-7, Computer Program Documentation, Validation Certification and Change Control for GRAM
4) Program GRAM, Version 2.01
5) October 1983, Documentation of a Three-Dimensional Flow Model-GRAM Version 2.01, Ertec Western, Inc.

cc: K. Haggard, w/enclosures and computer tape
W. Ball

July 1983

CODE NAME : SWENT

STATUS : INTERA Environmental Consultants are currenty performing analysis with the SWENT code. Pacific Northwest Laboratory is currently converting the CDC version of the SWENT code to a VAX version.

DOCUMENTATION : ONWI-457
SWENT: A Three-Dimensional Finite-Difference Code for the Simulation of Fluid, Energy, and Solute Radionuclide Transport
INTERA Envoronmental Consultants, Inc.
April 1983

DEVELOPER : The SWENT code was developed by INTERA Environmental Consultants. The performance, design and test specifications for this code were prepared by R.B. Lantz and S.B. Pahwa. The source code was developed by S.B. Pahwa. This document was written by B.S. RamaRao.

ABSTRACT : SWENT (Simulator for Water, Energy, and Nuclide Transport) simulates the transient, multi-dimensional (1D, x-y, x-z, r-z, x-y-z) transport of fluid, energy, an inert component, and any number of radionuclides in straight or branched chains, through a heterogeneous geologic medium. The first three processes are treated as coupled by the properties of fluid density and viscosity. Aquifer porosity is treated as a function of pressure. The resulting system of non-linear partial differential equations are solved by finite-difference approximations, suitable linearization schemes, and an iterative technique to reduce the errors in linearization. The code has options to simulate any one of the individual processes or coupled combinations of the processes. A special option is avaliable to treat the steady-state fluid flow with transient radionuclide transport. The code offers a wide choice in the specifications of boundary conditions.

To provide control of numerical diffusion and overshoot or undershoot, the model permits the choice of backward or central difference approcimations in the time integration scheme and in the convective terms of the transport processes. Either 'direct' or 'iterative' methods may be used for the solution of matrix equations, as appropriate, from considerations of core storage and time requiements.

There are no restrictions on the number of time steps that can be used. The maximum number of grid blocks would depend upon the cre storage, the type of problem and the solution technique. On CDC-176, about a thousand grid blocks may be accommodated for a normal problem.

The three-dimensional simulation capability of the model can be adapted to a simulation of the fractured medium in one and two dimensions. The capability to link to PABLM, a dose-to-man code, has been incorporated in this model.

SWENT can be used in a wide variety of ground-water applications. In the SCEPTER Program, specifically, it can address the complete assessment of the site subsystem, when operated sequentially with PABLM. Since the code models coupled processes, it is a suitable code for a number of repository assessments.

resources such as land, water, and construction materials; impacts on State and local community infrastructure and transportation; impacts on housing supply and demand; public-agency revenues and expenditures; impacts on lifestyle and on the quality of life; and increases in social problems, such as crime, alcoholism, and conflicts between in-migrants and long-time residents.

(b) Favorable Conditions.

(1) Ability of an affected area to absorb the project-related population changes without significant disruptions of community services and without significant impacts on housing supply and demand.

(2) Availability of an adequate labor force in the affected area.

(3) Projected net increases in employment and business sales, improved community services, and increased government revenues in the affected area.

(4) No projected substantial disruption of primary sectors of the economy of the affected area.

(c) Potentially Adverse Conditions.

(1) Potential for significant repository-related impacts on community services, housing supply and demand, and the finances of State and local government agencies in the affected area.

(2) Lack of an adequate labor force in the affected area.

(3) Need for repository-related purchase or acquisition of water rights, if such rights could have significant adverse impacts on the present or future development of the affected area.

(4) Potential for major disruptions of primary sectors of the economy of the affected area.

960.5-2-7 Transportation.

(a) Qualifying Condition.

The site shall be located such that (1) the access routes constructed from existing local highways and railroads to the site (i) will not conflict irreconcilably with the previously designated use of any resource listed in 960.5-2-5(d)(2) and (3); (ii) can be designed and constructed using reasonably available technology; (iii) will not require transportation system components to meet performance standards more stringent than those specified in the applicable DOT and NRC regulations, nor require the development of new packaging containment technology; (iv) will allow transportation operations to be conducted without causing an unacceptable radiological or nonradiological risk to the public health and safety or unacceptable environmental impact; and (2) the requirements of Section 960.5-1(a)(2) can be met.

(b) Favorable Conditions.

(1) Availability of access routes from local existing highways and railroads to the site which have any of the following characteristics:

(i) Such routes are relatively short and economical to construct as compared to access routes for other comparable siting options.

(ii) Federal condemnation is not required to acquire rights-of-way for the access routes.

(iii) Cuts, fills, tunnels, or bridges are not required.

(iv) Such routes are free of sharp curves or steep grades and are not likely to be affected by landslides or rock slides.

(v) Such routes bypass local cities and towns.

(2) Proximity to local highways and railroads that provide access to regional highways and railroads and are adequate to serve the repository without significant upgrading or reconstruction.

(3) Proximity to regional highways, mainline railroads, or inland waterways that provide access to the national transportation system.

(4) Availability of a regional railroad system with a minimum number of interchange points at which train crew and equipment changes would be required.

(5) Total projected life-cycle cost and risk for transportation of all wastes designated for the repository site which are significantly lower than those for comparable siting options, considering locations of present and potential sources of waste, interim storage facilities, and other repositories.

(6) Availability of regional and local carriers--truck, rail, and water--which have the capability and are willing to handle waste shipments to the repository.

(7) Absence of legal impediment with regard to compliance with Federal regulations for the transportation of waste in or through the affected State and adjoining States.

(8) Plans, procedures, and capabilities for response to radioactive waste transportation accidents in the affected State that are completed or being developed.

(9) A regional meteorological history indicating that significant transportation disruptions would not be routine seasonal occurrences.

(c) Potentially Adverse Conditions.

(1) Access routes to existing local highways and railroads that are expensive to construct relative to comparable siting options.

(2) Terrain between the site and existing local highways and railroads such that steep grades, sharp switchbacks, rivers, lakes, landslides, rock slides, or potential sources of hazard to incoming waste shipments will be encountered along access routes to the site.

(3) Existing local highways and railroads that could require significant reconstruction or upgrading to provide adequate routes to the regional and national transportation system.

(4) Any local condition that could cause the transportation-related costs, environmental impacts, or risk to public health and safety from waste transportation operations to be significantly greater than those projected for other comparable siting options.

EASE AND COST OF CONSTRUCTION, OPERATION, AND CLOSURE.

960.5-2-8 Surface Characteristics.

(a) Qualifying Condition.

The site shall be located such that, considering the surface characteristics and conditions of the site and surrounding area, including surface-water systems and the terrain, the requirements specified in Section 960.5-1(a)(3) can be met during repository construction, operation, and closure.

(b) Favorable Conditions.

(1) Generally flat terrain.

(2) Generally well-drained terrain.

(c) Potentially Adverse Condition.

Surface characteristics that could lead to the flooding of surface or underground facilities by the occupancy and modification of flood plains, the failure of existing or planned man-made surface-water impoundments, or the failure of engineered components of the repository.

960.5-2-9 Rock Characteristics.

(a) Qualifying Condition.

The site shall be located such that (1) the thickness and lateral extent and the characteristics and composition of the host rock will be suitable for accommodation of the underground facility; (2) the repository construction, operation, and closure will not cause undue hazard to personnel; and (3) the requirements specified in Section 960.5-1(a)(3) can be met.

LOUISIANA

(1). Population by municipality for Webster and Bienville parishes, greater/less than 500:

This data is in the Louisiana Socioeconomic Data Base Reports that has been distributed January 26.

(2). Acres forested vs. urban, Webster parish:

This information is ONWI-67, "Regional Environment Characterization Report for the Gulf Interior Region and Surrounding Territory", Table 2.2.3.-1.

(3). Economic minerals production 1950-80 for Bienville parish: References of interest:

a. Regional Environmental Characterization Report for the Gulf Interior Region and Surrounding Territory #, ONWI-67, Section 2.1.1.6.

b. Gulf Coast Salt Domes Geologic Area Characterization Report North Louisiana Study Area, Vol. IV, ONWI-119, Table 9-2.

(4). Salt maps for Vacherie Dome: References of interest:

a. Evaluation of Area Studies of the U.S. Gulf Coast Salt Dome Basins: Location Recommendation Report, ONWI-109.

b. Borehole Locations on Seven Interior Salt Domes, ONWI-280.

(5). Borehole summary, Vacherie Dome>500 m in depth:

Attachment

(6). Groundwater flow rates for Wilcox Stratum:

This is in ONWI-119, Vol. IV "Gulf Coast Salt Domes Geologic Area Characterization Report North Louisiana Study Area", p. 11-41.

ITEM 1

ACCESSION NUMBER :162
RECORD TYPE :borehole summary
WELL ID :, DOE LA Power & Light LH-2A
BASIN,SUBBASIN :, Gulf Interior, Vacherie Dome
COUNTY,STATE :, Webster Parish, LA
LATITUDE :, 32-35 deg-min
LONGITUDE :, 93-23 deg-min
SECTION,BLOCK :, Sec 3, T18N R10W
DRILLING COMPLETION DATE :, 800131 (yymmdd)
BOREHOLE STATUS :, capped
GROUND LEVEL ELEVATION :, 60.8, (199.57) meters(feet)
KELLY BUSHING ELEVATION :, 64.4, (211.57) meters(feet) above msl
TOTAL DEPTH OF BOREHOLE :, 563.9, (1850) meters(feet)
DRILLING TECHNIQUE :, bucket auger;
DRILLING FLUID PROGRAM :, conditioned mud mix
DRILLING PROGRAM (bit,dia.-cm(in),interval-m(ft),comments) :
, NR, 71.1, (28), 0.0, 22.9, (0-75)
, NR, 44.4, (17-1/2), 21.7, 123.4, (71.6-405)
, NR, 25.1, (9-7/8), 121.9, 563.9, (400-1850)
; NR, 27.9, (11), 506.6, 557.8, (1662-1830)
CASING SUMMARY (diameter in cm(in),depth in m(ft),comments):
, 50.8, (20), 21.7, (71.6)
, 32.4, (12-3/4), 121.9, (400)
, 16.8, (6-5/8), 506.6, (1662)
, 11.4, (4-1/2), 480.3, (1575.7-1662)
, 11.4, (4-1/2), 547.0, (1794.8-1814)
, 11.4, (4-1/2), 506.6, (1662-1794.8), .01 inch screen
LITHOLOGIC LOGS :, YES, general description, paleontology,
GEOPHYSICAL LOGS :, YES, induction electric, lateral log, micro laterolog, SP, conductivity, acoustic gravel pack, cement bond, BHC, gamma, gamma-gamma, neutron porosity, caliper, temperature,
CORE LOGS :, NO,
MUD LOGS :, YES, cutting samples, sample lithology, gas monitoring,
FORMATIONS PENETRATED (interval in meters(ft)) :
, RIVER TERRACE-ALLUVIUM, 0.0, 20.7, (0-68)
, SPARTA, 20.7, 39.6, (68-130)
, CANE RIVER, 39.6, 106.7, (130-350)
, WILCOX, 106.7, 265.2, (350-870)
, MIDWAY, 265.2, 478.5, (870-1570)
, ARKADELPHIA, 478.5, 504.5, (1570-1655)
, NACATOCH, 504.5, 563.9, (1655-1850)
CORES (diameter in cm(in), interval in meters(ft),comments):
, NA, NA, NA, NA, NA
SAMPLING PROGRAM (type, interval in meters(ft),comments) :
, water samples, 506.6, 547.0, (1662-1794.8), during formation tests
, sidewall cores, 165.5, 556.3, (543-1825)

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FORMATION TESTS (type,num.,interval in meters(ft),comments):
, drawdown and recovery, NR, 506.6, 547.0, (1662-1794.8)
HYDROGEOLOGIC MONITORING  :, YES, initial capacity tests, groundwater samples long term water level monitoring. Water levels
                          between 5.0 m (16.8 feet) and 5.6 m (18.5 feet) from 4/26/80 to 3/30/81
GEOMECHANICAL FIELD TESTS (type,comments) :
, NR
GEOMECHANICAL LAB TESTS (type,comments)   :
, NR
ROCK SAMPLE TESTS (type,comments)         :
, NR
HYDROCHEMICAL TESTS (type,comments)       :
, hydraulic
, water chemistry
LITHOLOGY (formation,description):
, RIVER TERRACE-ALLUVIUM, mostly light to dark yellow-brown sand fine to medium grained. Some yellow-brown sandy siltstone
, SPARTA, fine colorless sand, interbeds of lignite, clay and siltstone
, CANE RIVER, silty light gray claystone and gray siltstone interbedded with sand
, MIDWAY, fine light yellow sandstone, gray silty claystone, light gray marlstone
, ARKADELPHIA, white chalk containing clay, silt and sand, interbeds of marlstone
, NACATOCH, light gray very fine sand interbedded with dark gray silty marlstone
INITIALIZATION (date,authorities,field numbers,source)  :
000000, OE Swanson, KA St. John, CAB, 2-45,47-61,63,70,72-74,99, (1)
000000, OE Swanson, KA St. John, CAB, 60,73,83, (2)
000000, OE Swanson, KA St. John, CAB, 46, (3)
000000, OE Swanson, KA St. John, CAB, 62,71, (OE Swanson)
SOURCES:
, (1) Law Engineering Testing Company, 1982. Gulf Coast Salt Domes Well Completion Reports Site LH-2, ONWI-181
, (2) Law Engineering Testing Company, July 1982. Gulf Coast Salt Domes Geologic Area Characterization Report North Louisiana
 Study Area, Volume V Appendix, ONWI-119
, (3) Ertec Inc, September 1983. Annual Report-1983 Potentiometric-Level Monitoring Program Mississippi and Louisiana

ITEM 2

ACCESSION NUMBER          :163
RECORD TYPE               :borehole summary
WELL ID                   :, DOE-Continental Forest Industries LH-7A
BASIN,SUBBASIN            :, Gulf Interior, Vacherie Dome
COUNTY,STATE              :, Sienville Parish, LA
LATITUDE                  :, 32-29 deg-min
LONGITUDE                 :, 92-84 deg-min
SECTION,BLOCK             :, Sec 5, T17N R5W
DRILLING COMPLETION DATE  :, 800311 (yymmdd)
BOREHOLE STATUS           :, observation
GROUND LEVEL ELEVATION    :, 99.2, (325.57) meters(feet)
KELLY BUSHING ELEVATION   :, NR, NR meters(feet) above msl
TOTAL DEPTH OF BOREHOLE   :, 798.1, (2618.7) meters(feet)
DRILLING TECHNIQUE        :, bucket auger?
DRILLING FLUID PROGRAM    :, conditioned mud mix
DRILLING PROGRAM (bit,dia.-cm(in),interval-m(ft),comments) :
, NR, 71.1, (28), 0.0, 17.4, (0-57)
```

. NR, 44.4, (17-1/2), 17.4, 123.4, (57-405)
. NR, 25.1, (9-7/8), 121.9, 798.1, (400-2618.7)
. NR, 30.5, (12), 449.9, 470.5, (1476-1570)
CASING SUMMARY [diameter in cm(in),depth in m(ft),comments]:
. 50.8, (20), 17.4, (57)
. 32.4, (12-3/4), 121.9, (400)
. 16.8, (6-5/8), 449.9, (1476)
. 11.4, (4-1/2), 438.3, (1438-1480)
. 11.4, (4-1/2), 475.8, (1561-1565)
. 11.4, (4-1/2), 451.1, (1480-1500), .008 inch slotted screen
. 11.4, (4-1/2), 463.3, (1520-1561), .008 inch slotted screen
LITHOLOGIC LOGS : YES, general description, paleontology,
GEOPHYSICAL LOGS : YES, induction electric, lateral log, micro laterolog, SP, BHC sonic, gravel pack acoustic, cement bond, gamma, neutron porosity, caliper, temperature,
CORE LOGS : NO,
MUD LOGS : YES, cutting samples, sample lithology, gas monitoring,
FORMATIONS PENETRATED [interval in meters(ft)] :
. RIVER TERRACE-ALLUVIUM, 0.0, 9.1, (0-30)
. COOK MOUNTAIN, 9.1, 27.4, (30-90)
. SPARTA, 27.4, 213.4, (90-700)
. CANE RIVER, 213.4, 286.5, (700-940)
. CARRIZO, 286.5, 318.5, (940-1045)
. WILCOX, 318.5, 477.6, (1045-1567)
. MIDWAY, 477.6, 688.9, (1567-2260)
. ARKADELPHIA, 688.9, 720.9, (2260-2365)
. NACATOCH, 720.9, 763.5, (2365-2505)
. SARATOGA, 763.5, 780.9, (2505-2562)
. MARLBROOK, 780.9, 798.1, (2562-2618)
CORES [diameter in cm(in), interval in meters(ft),comments]:
. NA, NA, NA, NA, NA
SAMPLING PROGRAM [type, interval in meters(ft),comments] :
. water samples, 451.1, 469.7, (1480-1541), during formation test
. sidewall cores, 149.4, 789.4, (490-2590)
FORMATION TESTS [type,num.,interval in meters(ft),comments]:
. drawdown and recovery, NR, 451.1, 469.7, (1480-1541)
. drawdown and recovery, NR, NR, NR, (1520-1561)
HYDROGEOLOGIC MONITORING : YES, initial capacity, water level monitoring, Water levels between 78.9m (259.1 feet) and 73.5m (241 feet) from 5/16/80 to 12/4/80, Water levels initially monitored monthly then quarterly
GEOMECHANICAL FIELD TESTS [type,comments] :
. NR
GEOMECHANICAL LAB TESTS [type,comments] :
. NR
ROCK SAMPLE TESTS [type,comments] :
. NR
HYDROCHEMICAL TESTS [type,comments] :
. water chemistry
LITHOLOGY [formation,description]:
. RIVER TERRACE-ALLUVIUM, colorless to light-brown fine sand mixed with red, brownish yellow or light gray clay
. COOK MOUNTAIN, mostly brownish-gray silty claystone
. SPARTA, colorless to light-grey fine to medium grained sands

, CANE RIVER, brownish-gray claystone
, CARRIZO, very fine to medium sands
, WILCOX, very fine to medium grained sands some dark gray to black silty clay and light-gray siltstone
, MIDWAY, dark gray claystone
, ARKADELPHIA, light to medium gray marlstone
, NACATOCH, light to medium gray siltstone interbeds with chalk, claystone and sand
, SARATOGA, white to light gray chalk
, MARLBROOK, very light gray chalky locally silty marlstone
INITIALIZATION (date,authorities,field numbers,source) :
000000, OE Swanson, KA St. John, CAB, 2-45,47-61,63,70,72-74,99, (1)
000000, OE Swanson, KA St. John, CAB, 60,73,83, (2)
000000, OE Swanson, KA St. John, CAB, 46,74, (3)
000000, OE Swanson, KA St. John, CAB, 62,71, (OE Swanson)
SOURCES:
, (1) Law Engineering Testing Company, 1982. Gulf Coast Salt Domes Well Completion Report: Site LH-7, ONWI-183
, (2) Law Engineering Testing Company, July 1982. Gulf Coast Salt Domes Geologic Area Characterization Report North Louisiana Study Area, Volume V Appendix, ONWI-119
, (3) Ertec Inc, September 1983. Annual Report-1983 Potentiometric-Level Monitoring Program Mississippi and Louisiana

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RECORD TYPE                 :borehole summary
WELL ID                     :, DOE-Continental Forest Industries LVH-6A
BASIN,SUBBASIN              :, Gulf Interior, Vacherie Dome
COUNTY,STATE                :, Bienville Parish, LA
LATITUDE                    :, 32-20 deg-min
LONGITUDE                   :, 93-10 deg-min
SECTION,BLOCK               :, Sec 35, T17N R8W
DRILLING COMPLETION DATE    :, 800529 (yymmdd)
BOREHOLE STATUS             :, observation
GROUND LEVEL ELEVATION      :, 68.0, (223.16) meters(feet)
KELLY BUSHING ELEVATION     :, NR, NN meters(feet) above msl
TOTAL DEPTH OF BOREHOLE     :, 914.4, (3000) meters(feet)
DRILLING TECHNIQUE          :, bucket auger
DRILLING FLUID PROGRAM      :, mud mix
DRILLING PROGRAM (bit,dia.-cm(in),interval-m(ft),comments) :
, NR, 66.0, (26), 0.0, 29.6, (0-97)
, NR, 38.1, (15), 26.5, 123.4, (87-405)
, NR, 25.1, (9-7/8), 121.9, 914.4, (400-3000)
, NR, 30.5, (12), 772.7, 826.0, (2535-2710)
CASING SUMMARY (diameter in cm(in),depth in m(ft),comments):
, 50.8, (20), 26.5, (87.25)
, 27.3, (10-3/4), 121.9, (400)
, 16.8, (6-5/8), 772.7, (2535)
, 11.4, (4-1/2), 760.5, (2495-2537)
, 11.4, (4-1/2), 785.5, (2577-2582)
, 11.4, (4-1/2), 822.1, (2697-2702)
, 11.4, (4-1/2), 773.3, (2537-2577), .01 inch slotted screen
, 11.4, (4-1/2), 787.0, (2582-2697), .01 inch slotted screen
LITHOLOGIC LOGS             :, YES, general description, paleontology,
GEOPHYSICAL LOGS            :, YES, induction electric, lateral log, microlog, SP, acoustic, cement bond, sonic, gamma,
                              gamma-gamma, neutron porosity, caliper, dip, temperature,
CORE LOGS                   :, NO,
MUD LOGS                    :, YES, cutting samples, sample lithology, gas monitoring,
FORMATIONS PENETRATED (interval in meters(ft))              :
, SPARTA, 0.0, 34.1, (0-112)
, CANE RIVER, 34.1, 103.0, (112-338)
, WILCOX, 103.0, 295.7, (338-970)
, MIDWAY, 295.7, 527.3, (970-1730)
, ARKADELPHIA, 527.3, 556.3, (1730-1825)
, NACATOCH, 556.3, 608.1, (1825-1995)
, SARATOGA, 608.1, 627.9, (1995-2060)
, MARLBROOK, 627.9, 682.8, (2060-2240)
, ANNONA, 682.8, 710.2, (2240-2330)
, OZAN, 710.2, 773.6, (2330-2538)
, AUSTIN, 773.6, 914.4, (2538-3000)
CORES (diameter in cm(in), interval in meters(ft),comments):
, NA, NA, NA, NA, NA
SAMPLING PROGRAM (type, interval in meters(ft),comments)   :
, water samples, 773.3, 785.5, (2537-2697), during formation test
, sidewall cores, 249.9, 914.4, (820-3000)
```

FORMATION TESTS (type,num.,interval in meters(ft),comments):
, packer, NR, 773.3, 785.5, (2537-2577)
, packer, NR, 787.0, 822.1, (2582-2697)
HYDROGEOLOGIC MONITORING : YES, initial capacity, and water level monitoring. Water levels between 38.5m (126.6 feet) and 38.9m (127.8 feet) from 8/26/80 to 8/24/81. Water levels initially monitored monthly then quarterly
GEOMECHANICAL FIELD TESTS (type,comments) :
, NR
GEOMECHANICAL LAB TESTS (type,comments) :
, NR
ROCK SAMPLE TESTS (type,comments) :
, permeability analysis
HYDROCHEMICAL TESTS (type,comments) :
, permeability analysis
, water chemistry
LITHOLOGY (formation,description):
, SPARTA, mostly very light gray to pale orange fine to medium grained sands
, CANE RIVER, brownish gray claystone and some marlstone
, WILCOX, grayish silty claystone with interbeds of lignite and gray-brown-red fine grained sand
, MIDWAY, medium gray claystone and light gray marlstone
, ARKADELPHIA, chalky light gray marlstone to pale yellow limestone and chalk
, NACATOCH, light gray, very fine coarse silt, light-yellow-gray medium to very coarse siltstone
, SARATOGA, very light gray to white chalk grading into light gray marlstone
, MARLBROOK, moderate to light gray chalky marlstone
, ANNONA, white to light gray chalk grading into marlstone
, OZAN, moderately light gray marlstone, partly chalky and silty
, AUSTIN, light gray fine to medium sand interbedded with light gray fine sandstone and moderately gray marlstone
INITIALIZATION (date,authorities,field numbers,source) :
000000, OE Swanson, KA St. John, CAB, (1)
000000, OE Swanson, KA St. John, CAB, 60,83, (2)
000000, OE Swanson, KA St. John, CAB, 92,83, (3)
000000, OE Swanson, KA St. John, CAB, 46,74, (4)
000000, OE Swanson, KA St. John, CAB, 62,71, (OE Swanson)
SOURCES:
, (1) Law Engineering Testing Company, 1982. Gulf Coast Salt Domes Well Completion Reports Site LVH-6, ONWI-182
, (2) Law Engineering Testing Company, July 1982. Gulf Coast Salt Domes Geologic Area Characterization Report North Louisiana Study Area, Volume V Appendix, ONWI-119
, (3) Slaughter, George M. et al, February 1983. Permeability of Selected Sediments in the Vicinity of Five Salt Domes in the Gulf Interior Region, Law Engineering Testing Company, ONWI-356
, (4) Ertec Inc, September 1983. Annual Report-1983 Potentiometric-Level Monitoring Program Mississippi and Louisiana

ITEM 5

ACCESSION NUMBER	:23
RECORD TYPE	:borehole summary
WELL ID	:, LH-17A
BASIN,SUBBASIN	:, Gulf Interior, Vacherie Dome
COUNTY,STATE	:, Bienville Parish, LA
LATITUDE	:, 32-17 deg-min
LONGITUDE	:, 93-20 deg-min
SECTION,BLOCK	:, Sec 12, T15N R10W

DRILLING COMPLETION DATE : 800721 (yymmdd)
BOREHOLE STATUS : observation
GROUND LEVEL ELEVATION : 82.3, (270) meters(feet)
KELLY BUSHING ELEVATION : 82.9, (272) meters(feet) above msl
TOTAL DEPTH OF BOREHOLE : 731.5, (2400) meters(feet)
DRILLING TECHNIQUE : rotary;
DRILLING FLUID PROGRAM : bentonitic mud
DRILLING PROGRAM (bit,dia.-cm(in),interval-m(ft),comments) :
, NR
CASING SUMMARY (diameter in cm(in),depth in m(ft),comments):
, 50.8, (20), 14.6, (48)
, 27.3, (10-3/4), 121.9, (400)
, 16.8, (6-5/8), 607.2, (1992)
LITHOLOGIC LOGS : YES, general description, paleontology
GEOPHYSICAL LOGS : YES, temperature, compensated density, compensated neutron, caliper, gamma ray, SP, BHC sonic, dual induction, laterolog, formation tester, microelectric
CORE LOGS : NO,
MUD LOGS : YES
FORMATIONS PENETRATED (interval in meters(ft)) :
, QUATERNARY, 0.0, 30.5, (0-100)
, WILCOX, 30.5, 185.9, (100-610)
, MIDWAY, 185.9, 358.1, (610-1175)
, ARKADELPHIA, 358.1, 390.1, (1175-1280)
, NACATOCH, 390.1, 449.0, (1280-1473)
, SARATOGA, 449.0, 463.3, (1473-1520)
, MARLBROOK, 463.3, 524.3, (1520-1720)
, ANNONA, 524.3, 554.7, (1720-1820)
, OZAN, 554.7, 609.6, (1820-2000)
, AUSTIN, 609.6, 731.5, (2000-2400)
CORES (diameter in cm(in), interval in meters(ft),comments):
, NA
SAMPLING PROGRAM (type, interval in meters(ft),comments) :
, sidewall, 125.0, 731.2, (410-2399)
, water samples, 607.5, 616.3, (1993-2022)
FORMATION TESTS (type,num.,interval in meters(ft),comments):
, initial capacity, NR, 607.5, 616.3, (1993-2022), results=95 minute capacity of 0.18 gal/min/ft of drawdown
HYDROGEOLOGIC MONITORING : YES, water levels between 84(276) and 86(281) meters(feet) on 11/18/80 and 3/30/81 respectively. Initially monitored monthly then quarterly
GEOMECHANICAL FIELD TESTS (type,comments) :
, NR.
GEOMECHANICAL LAB TESTS (type,comments) :
, NR.
ROCK SAMPLE TESTS (type,comments) :
, NR.
HYDROCHEMICAL TESTS (type,comments) :
, field tests, dissolute solids of 45,634 mg/l indicates brine(>35K mg/l)
LITHOLOGY (formation,description):
, QUATERNARY, sand with traces of claystone
, WILCOX, three variations of sand, sandstone, and silty sandy, claystone
, MIDWAY, gray claystone

, ARKADELPHIA, marlstone replaced by limestone interbeds near bottom
, MACATOCH, light sands partly consolidated in a chalky matrix
, SARATOGA, marlstone
, MARLBROOK, marlstone
, ARMONA, chalk
, OZAN, marlstone with siltstone and chalk interbeds
, AUSTIN, fine sand with interbeds of claystone, marlstone, and chalk
INITIALIZATION [date,authorities,field numbers,source] :
930826, OE Swenson, MJ Collis, BJM, 2-47,50,53-62 (1)
930926, OE Swenson, MJ Collis, BJM, 49,63 (2)
931031, OE Swenson, KA St. John, CAB, 51,52,62,71 (OE Swenson)
931031, OE Swenson, KA St. John, CAB, 46,74 (3)
SOURCES:
, (1) Law Engineering Testing Company, 1982, Gulf Coast Salt Domes Well Completion Report:Site LH-17, ONWI-195
, (2) Geologic Area Characterization Appendix, Louisiana Study Area, Gulf Coast Salt Dome Project
, (3) Ertec Inc, 1993, Annual Report-1993 Potentiometric-Level Monitoring Program Mississippi and Louisiana, September

ITEM 7

ACCESSION NUMBER	:36
RECORD TYPE	:borehole summary
WELL ID	:, US DOE-Smith #1
BASIN,SUBBASIN	:, Gulf Interior, Vacherie Dome
COUNTY,STATE	:, Webster Parish, LA
LATITUDE	:, NR deg-min
LONGITUDE	:, NR deg-min
SECTION,BLOCK	:, Sec 16, T17N R8W
DRILLING COMPLETION DATE	:, 780411 (yymmdd)
BOREHOLE STATUS	:, observation
GROUND LEVEL ELEVATION	:, 70.1, (230) meters(feet)
KELLY BUSHING ELEVATION	:, 73.5, (241.3) meters(feet) above msl
TOTAL DEPTH OF BOREHOLE	:, 1533.8, (5032) meters(feet)
DRILLING TECHNIQUE	:, mud rotary
DRILLING FLUID PROGRAM	:, mud in saturated brine changed to clear saturated brine at 506.0 m(1660 feet)
DRILLING PROGRAM [bit,dia.-cm(in),interval-m(ft),comments] :	

, NR, NR, (NR), NR, NR, (NR)
CASING SUMMARY [diameter in cm(in),depth in m(ft),comments]:
, NR, (NR), 296.3, (972)
LITHOLOGIC LOGS :, YES
GEOPHYSICAL LOGS :, YES, caliper, compensated density, temperature
CORE LOGS :, YES
MUD LOGS :, YES,
FORMATIONS PENETRATED [interval in meters(ft)] :
, CAPROCK, 165.5, 248.6, (543-815.5)
, SALT, 248.6, 1533.8, (815.5-5032)
CORES [diameter in cm(in), interval in meters(ft),comments]:
, 10.2, (4), 165.5, 248.7, (543-816)
, 10.2, (4), 248.7, 1015.3, (816-3331)
SAMPLING PROGRAM [type, interval in meters(ft),comments] :
, NR, NR, NR, (NR)
FORMATION TESTS [type,num.,interval in meters(ft),comments]:
, core closure, NR, NR, NR, (NR)
HYDROGEOLOGIC MONITORING :, YES, water levels initially monitored monthly then quarterly
GEOMECHANICAL FIELD TESTS [type,comments] :
, NR,
GEOMECHANICAL LAB TESTS [type,comments] :
, strength
, creep
, index
ROCK SAMPLE TESTS [type,comments] :
, NR,
HYDROCHEMICAL TESTS [type,comments] :
, NR,
LITHOLOGY [formation,description]:
, CAPROCK, carbonate (21 ft) porous with open fissues and vugs, gypsum (3 ft) fine grained and crystalline, anhydrite (249 ft) fine grained and crystalline with contact surfaces and inclusions of anhydrite blocks
, SALT, halite (90%) and minor anhydrite in stuply dipping, folded bands of varying fabric
INITIALIZATION [date,authorities,field numbers,source] :
830907, DE Swenson, MJ Golis, NRC, 2-60,62-72,74,99, (1)
830907, DE Swenson, MJ Golis, NRC, 54,61, (2)
830907, DE Swenson, MJ Golis, NRC, 61 caliper and cospensated density, (3)
831031, DE Swenson, KA St. John, CAB, 46,63,74, (DE Swenson)
831031, DE Swenson, KA St. John, CAB, 81, (4)
SOURCES:
, (1) Nance, D. et al, 1979. Lithology of the Vacherie Salt Dome Core, Institute for Environmental Studies, Louisiana State University, E511-02500-5
, (2) Martinez, J.D. et al, 1979. An Investigation of the Utility of Gulf Coast Salt Domes for the Storage or Disposal of Radioactive Wastes, Institute for Environmental Studies, Louisiana State University, E511-02500-A-1
, (3) Hawkins, M.F. Jr., 1978. An Engineering Report of the Boreholes at Vacherie and Rayburn's Salt Dome-North Louisiana Salt Dome Basin, Institute for Environmental Studies, Louisiana State University
, (4) Preifle, T. W. et al, July 1983. Preliminery constitutive Properties for Salt and Nonsalt Rocks From Four Potential Repository Sites, RE/SPEC Inc, ONWI-450

ATTACHMENT 8

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