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Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352
WM DOCKET CONTROL CENTER
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Addressees

MINUTES OF QUARTERLY MEETING BETWEEN THE BASALT WASTE ISOLATION PROJECT (BWIP), THE STATE OF WASHINGTON, AND THE AFFECTED INDIAN TRIBES

Transmitted for your information and perusal are the meeting minutes of the quarterly meeting of the BWIP, the State of Washington, and the affected Indian Tribes that transpired on January 22 and 23, 1986. Enclosed are:

- o An attendees list
- o Copies of viewgraphs presented by BWIP (including the agenda)
- o Questions and answers evoked by the BWIP presentations
- o The presentation of the Confederated Tribes of the Umatilla Indian Reservation
- o The presentation of the Nez Perce Tribe
- o Notes of the EWA presentation for the Yakima Indian Nation
- o Notes of the GEOTRANS presentation for the Yakima Indian Nation
- o Notes of the State of Washington's Department of Ecology presentation
- o The presentation from the Washington Institute of Public Policy.

If you have any comments on the enclosed information, please contact Max Powell (509-376-5267) or Jim Mecca (509-376-5038) of my staff.

Very truly yours,

R. P. Saget for.

O. L. Olson, Director
Basalt Waste Isolation Division

B605090056 860319
PDR WASTE
WM-10 PDR

BWI:MLP

Enclosure WM Record File
10.2

WM Project 10
Docket No. _____
PDR
LPDR (B)

Distribution: G. W. Kerr
REB JOB DRM Linahan
MSB RDM CER Hildenbrand
(Return to WM, 623-SS) D. Kunihira
To: CER
From: John Graham, Rockwell

1775

QUARTERLY MEETING ATTENDANCE

January 22-23, 1986

Name	Affiliation	Telephone Number
O. L. Olson	Department of Energy-Richland Operations Office	(509) 376-7334
J. E. Mecca	Department of Energy-Richland Operations Office	(509) 376-5038
M. L. Powell	Department of Energy-Richland Operations Office	(509) 376-5267
B. W. Hurley	Department of Energy-Richland Operations Office	(509) 376-7059
K. Michael Thompson	Department of Energy-Richland Operations Office	(509) 376-6421
Steve Strait	Rockwell Hanford Operations/BWIP	(509) 373-4226
Fred N. McDonald	Rockwell Hanford Operations/BWIP	(509) 376-8556
Ellen Cuywood	WSIPP	(206) 866-6000 Ext. 643
Steve Hart	CERT	(303) 832-6600
William H. Burke	CTUIR	(503) 276-3018
Daniel Hester	CTUIR	(503) 276-3165
Carl L. Sampson	CTUIR	(503) 276-3165
Phil Brown	CERT	(303) 832-6600
Clarice Barnes	CTUIR	(503) 276-3018
Peter Ramatowski	CTUIR	(503) 276-3018
Ron Halfmoon	Nez Perce	(208) 843-2253 Ext. 386
Glen Lane	CERT for Nez Perce/CTUIR	(303) 832-6600
Lisa L. August	GeoTrans/Yakima Indian Nation	(703) 435-4400
Georges V. Abi-Ghanem	EWA/Yakima Indian Nation	(612) 332-0000
M. J. Furman	Department of Energy-Richland Operations Office	(509) 376-7062
A. G. Lassila	Department of Energy-Richland Operations Office	(509) 376-6158
H. E. Lefevre	Nuclear Regulatory Commission/Geotechnical Branch	(301) 427-4532
Bill Brewer	State of Washington	(206) 459-6676
Marta Wilder	State of Washington	(206) 459-6695
Jack Fassett	Rockwell Hanford Operations/BWIP	(509) 376-6211
Dale Landon	Rockwell Hanford Operations/BWIP	(509) 376-6258
Philip Long	Rockwell Hanford Operations/BWIP	(509) 376-6246
Tony Knepp	Department of Energy-Richland Operations Office	(509) 376-4934
Michael B. Arndt	Rockwell Hanford Operations/BWIP	(509) 376-7133
Max E. Power	Washington State Institute for Public Policy	(206) 866-6000
Stephen Rudel	Rockwell Hanford Operations/BWIP	(509) 376-2721
A. M. Tallman	Rockwell Hanford Operations/BWIP	(509) 376-8712
Terry Husseman	Washington State Department of Ecology	(206) 459-6670

**QUARTERLY MEETING BETWEEN THE
BASALT WASTE ISOLATION PROJECT,
THE STATE OF WASHINGTON,
THE YAKIMA INDIAN NATION,
THE NEZ PERCE TRIBE, AND
THE CONFEDERATED TRIBES OF
THE UMATILLA INDIAN RESERVATION**

JANUARY 22 AND 23, 1986

*Rec'd 4/8/86 with th
of 3/19/86. 9thly Mtg.
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AGENDA

JANUARY 22, 1986

- | | | |
|-------|---|------------------------------|
| 8:30 | INTRODUCTORY REMARKS | M. L. POWELL/
J. E. MECCA |
| 8:40 | GEOSCIENCE AND TECHNOLOGY | D. DAHLEM/
B. HURLEY |
| | CURRENT ACTIVITIES | |
| | - GEOLOGY | S. PRICE |
| | - GEOMECHANICS | K. KIM |
| | - HYDROLOGY | S. STRAIT |
| | - GEOCHEMISTRY | M. FURMAN |
| | - IN SITU TEST PLANNING | M. ARNDT |
| | BWIP TOPICAL PRESENTATIONS/
DISCUSSIONS | |
| | - THREE DIMENSIONAL STRATIGRAPHIC
AND STRUCTURAL (GEOMETRIC) MODEL | D. LANDON |
| | - LARGE-SCALE HYDRAULIC STRESS TEST
PLANNING STATUS | M. THOMPSON |
| | - PERFORMANCE ASSESSMENT STRATEGY | T. KNEPP |
| 12:00 | LUNCH | |
| 1:00 | - LICENSING/ENVIRONMENTAL/SAFETY
REGULATORY AND INSTITUTIONAL ACTIVITIES | J. E. MECCA |
| 2:00 | - BUSINESS MANAGEMENT ACTIVITIES | E. HIGGINS |
| 2:45 | QUALITY ASSURANCE | |
| | - QA REQUIREMENTS FOR SITE
CHARACTERIZATION | P. SAGET |
| | - STATUS OF BWIP QA PROGRAM
IMPLEMENTATION | |
| 3:15 | ENGINEERING AND CONSTRUCTION | B. NICOLL |
| | - ORGANIZATION OF ENGINEERING ACTIVITIES | |
| | - OVERVIEW OF THE EXPLORATORY SHAFT AND
REPOSITORY PROGRAMS | |
| | - STATUS OF EXPLORATORY SHAFT AND
REPOSITORY PROGRAMS | |
| | - ACTIVITIES ANTICIPATED FOR THE NEXT
QUARTER | |
| | - OVERVIEW OF REPOSITORY | |

AGENDA

JANUARY 23, 1986

- PROGRAM STATUS
- 9:00 - UMATILLA
- 9:45 - NEZ PERCE
- 10:30 - BREAK
- 10:45 - YAKIMA
- 11:30 - LUNCH
- 1:00 - STATE OF WASHINGTON (DOE)
- 1:45 - STATE OF WASHINGTON (LEGISLATURE)

GEOLOGY ACTIVITIES

**SUE PRICE, MANAGER,
GEOSCIENCES GROUP**

ROCKWELL HANFORD OPERATIONS

GEOLOGIC CHARACTERIZATION

STRATIGRAPHY

- SUBBASALT
- BASALT
- INTERBEDS
- SUPRABASALT
- THICKNESS VARIATIONS
- MODEL DEVELOPMENT

INTRAFLOW STRUCTURE

- TYPES
- DISTRIBUTION
- MODEL DEVELOPMENT

FRACTURE CHARACTERIZATION

- FREQUENCY
- DIMENSIONS
- INFILLING
- MODEL DEVELOPMENT

ROCK CHEMISTRY

- PRIMARY/SECONDARY MINERALOGY OF BASALT
- MINERALOGY OF INTERBEDS
- MINERALOGY OF ALTERED BASALT
- MINERALOGY OF FAULT INFILLING MATERIALS
- MODEL DEVELOPMENT

GEOLOGIC INTEGRATION

- GEOMETRIC FRAMEWORK
- "DYNAMIC" MODEL DEVELOPMENT
- INPUT TO DESIGN, PERFORMANCE ASSESSMENT

TECTONICS

- STRUCTURAL GEOLOGY
- PAST AND PRESENT DEFORMATION
- SEISMOLOGY
- TECTONIC MODEL EVALUATION/ DEVELOPMENT

GEOMORPHOLOGY

- SURFICIAL GEOLOGY
- SURFICIAL PROCESSES
- EROSIONAL INCISION POTENTIAL

ECONOMIC GEOLOGY

- MINERAL RESOURCE OCCURRENCE
- COMPARATIVE VALUE ESTIMATION
- INADVERTANT INTRUSION POTENTIAL

GEOLOGY ACTIVITIES

(SEPTEMBER 1985 - JANUARY 1986)

- **STRATIGRAPHY**
 - DEVELOPED PRELIMINARY STRATIGRAPHY OF BOREHOLES RRL-17 AND DC-23W
 - COMPLETED PUBLICATION ON FRENCHMAN SPRINGS BASALT CORRELATION
- **INTRAFLOW STRUCTURE AND FRACTURE CHARACTERIZATION**
 - **INTRAFLOW STRUCTURE**
 - COMPLETED FIELD DATA COLLECTION, EAST SIDE OF SENTINEL GAP
 - CONDUCTED BOREHOLE OPTIMIZATION STUDY IN SUPPORT OF ENGINEERING DESIGN
 - **FRACTURE CHARACTERIZATION**
 - COMPLETED REPORT ON PRIMARY FRACTURE WIDTHS AND INFILLINGS
 - COMPLETED NORCUS-FUNDED THESIS ON PRIMARY FRACTURE ORIENTATION AND SPACING
 - COMPLETED REPORT ON PRIMARY FRACTURE CHARACTERISTICS OF THE COHASSETT FLOW

GEOLOGY ACTIVITIES

(SEPTEMBER 1985 - JANUARY 1986)

(CONT.)

● ROCK CHEMISTRY

- COMPLETED STATUS REPORT ON SECONDARY MINERALS IN FLOW TOPS (SD-BWI-TI-302)
- CONTINUED STUDIES ON PETROGRAPHY OF GRANDE RONDE FLOW TOPS
- INITIATED STUDIES ON PETROGRAPHY OF INTERBEDS

● TECTONICS

- CONDUCTED FIELD MAPPING IN SNIVELY BASIN AND VANTAGE AREA
- SAMPLED TECTONIC BRECCIA IN CORE AND VANTAGE AREA FOR COMPOSITIONAL ANALYSIS
- INITIATED PREPARATION OF REPORT ON SEISMIC REFLECTION AND REFRACTION TESTING
- CONTINUED WORK ON UPPER COLD CREEK SYNCLINE HYDROLOGIC BARRIER
 - ANALYZED GRAVITY AND MAGNETIC DATA
 - COMPLETED REPORT FOR VERTICAL SEISMIC PROFILING IN BOREHOLES DH-27 AND -28
 - LOCATED TWO ADDITIONAL BOREHOLES
 - LOCATED MAGNETOTELLURIC SITES

GEOLOGY ACTIVITIES

(SEPTEMBER 1985 - JANUARY 1986)

(CONT.)

- **TECTONICS (CONT.)**
 - **COMPILED SEDIMENT ANALYTICAL DATA**
 - **COMPLETED PUBLICATION ON LATE CENOZOIC STRATIGRAPHY AND TECTONIC EVOLUTION WITHIN A SUBSIDING BASIN**
 - **PROCESSED BACKLOG OF SEISMIC EVENT LOCATIONS AND MAGNITUDES**
 - **INITIATED STUDY TO ASSESS POTENTIAL FOR IRRIGATION-INDUCED SEISMICITY**
 - **DEVELOPED PRELIMINARY SEISMIC DATA FOR SITE CHARACTERIZATION PLAN (SCP) ENGINEERING DESIGN**

- **ECONOMIC GEOLOGY**
 - **COMPLETED INTERIM REPORT ON STRATIGRAPHY AND HYDROCARBON POTENTIAL (SD-BWI-TI-265)**
 - **COMPLETED REPORT ON EXPLORATION ACTIVITIES, OCTOBER 1984 THROUGH SEPTEMBER 1985**

GEOLOGY ACTIVITIES

(SEPTEMBER 1985 - JANUARY 1986)

(CONT.)

- **GEOLOGIC INTEGRATION**
 - **ADDRESSED ENVIRONMENTAL ASSESSMENT REVIEW COMMENTS**
 - **CONTINUED PLANNING EFFORTS**
 - **CONTINUED FORMULATION OF SCP AND SCIENCE PLANS**
 - **PROVIDED INPUT TO EXPLORATORY SHAFT PROGRAM PLANNING**
 - **COMPLETED DEVELOPMENT OF PRELIMINARY STRATIGRAPHIC AND STRUCTURAL MODEL**
 - **PROVIDED SUPPORT TO HYDROLOGIC MODELING ACTIVITIES**
 - **PROVIDED SUPPORT TO SCP ENGINEERING DESIGN**

IMPORTANT BASALT WASTE ISOLATION PROJECT EVENTS

FOURTH QUARTER, 1985

- o ENVIRONMENTAL ASSESSMENT
 - FINAL REVIEW
 - RECONCILIATION
 - COMMENT RESPONSES

- o HIGH LEVEL TECHNICAL REVIEWS
 - WITH NRC ON LARGE SCALE HYDRAULIC STRESS TEST
 - WITH USGS AND NRC ON GEOCHEMISTRY
 - WITH NRC ON EXPLORATORY SHAFT DESIGN
 - WITH NRC AS PARTICIPANT IN OCRWM SEISMIC-TECTONIC POSITION DEVELOPMENT
 - STATE OF WASHINGTON LEGISLATIVE REVIEW OF PROGRAM

- o SITE CHARACTERIZATION PLAN - DEVELOPMENT OF STRATEGY TO ADDRESS ISSUES

- o PROGRAM PLANNING LOGIC DEVELOPMENT

- o BWI QUALITY ASSURANCE PROGRAM

**QUARTERLY MEETING
WITH STATE AND INDIAN NATIONS**

**MAJOR ACTIVITIES
IN GEOMECHANICS AREA
(1ST QUARTER, FY 86)**

**JANUARY 22 & 23, 1986
KUNSOO KIM**

GEOMECHANICS

- (1) LONG TERM PLANNING**
- (2) TESTING AND CHARACTERIZATION**
- (3) TEST METHOD AND INSTRUMENTATION DEVELOPMENT**
- (4) NUMERICAL MODELING AND ANALYSIS**
- (5) INPUT TO REPOSITORY DESIGN ACTIVITY**

(1) LONG TERM PLANNING

A) EXPLORATORY SHAFT TEST PLAN

- **TEST DESIGN REQUIREMENT DOCUMENTS (IN PREPARATION)**
- **FACILITY OPERATING PLAN (COMPLETED)**
- **PREPARATION FOR AN NRC WORKSHOP (IN PROGRESS)**

B) SITE CHARACTERIZATION PLAN

- **CHAPTER 2, GEOENGINEERING (READY FOR EXTERNAL REVIEW)**
- **CHAPTER 8.3.2, REPOSITORY PROGRAM (IN PREPARATION)**

C) GEOMECHANICS SCIENCE PLAN

- **(IN PREPARATION)**

(2) TESTING AND CHARACTERIZATION

(A) LABORATORY TEST

- ESTABLISHED LAB THERMAL PROPERTY TESTING CAPABILITY
- INITIATED THERMAL CONDUCTIVITY, EXPANSIVITY, AND SPECIFIC HEAT TESTS

(B) FIELD TEST

- COMPLETED AND RELEASED THE BLOCK TEST FINAL REPORT
- REVISED AND RELEASED THE IN SITU STRESS REPORT
- NSTF HEATER TESTS REPORT IN FINAL STAGE OF PREPARATION
- COMPLETED SHOTCRETING TUNNEL #1 AT THE NSTF AND ASSOCIATED SHOTCRETE TESTS
- RECEIVED APPROVAL ON ADDITIONAL HYDROFRACTURING TESTS AND THE ASSOCIATED INVESTIGATIONS

(3) TEST METHOD AND INSTRUMENTATION DEVELOPMENT

(A) COMPLETED TEST DESIGN REQUIREMENT FOR.

- THERMAL CONDUCTIVITY PROBE
- FLAT JACK TEST
- PLATE BEARING TEST
- MINE-BY TEST

(B) COMPLETED CONCEPTUAL DESIGNS FOR

- THERMAL CONDUCTIVITY PROBE
- MINE-BY TEST
- CHAIN SAW SLOT CUTTER

(C) OTHER DEVELOPMENT ACTIVITY

- FLAT JACK (POLYMER FLAT JACK)
- MPBX WITH GRAPHITE RODS
- DEFLECTOMETER

(4) NUMERICAL MODELING AND ANALYSIS

(A) NUMERICAL CODE ACQUISITION, INSTALLATION, AND TESTING

•COMPLETED, ABACUS

(B) CODE VERIFICATION AND BENCHMARKING

•COMPLETED, ADINA

(C) REVISION OF GEOMECHANICS DATA BASE

•COMPLETED

(5) INPUT TO REPOSITORY DESIGN ACTIVITIES

(A) CONSENSUS WORKSHOP ON GEOENGINEERING DESIGN PARAMETERS

- PROCEEDINGS COMPLETED AND RELEASED**

(B) INITIATED IMPLEMENTATION OF WORKSHOP RECOMMENDATIONS

- COLLABORATING WITH ENGINEERING DESIGN AND DEVELOPMENT DEPARTMENT TO INITIATE A STUDY FOR AN IMPROVED UNDERGROUND DESIGN ANALYSIS METHOD TO SUPPORT THE ADVANCED CONCEPTUAL DESIGN**

HYDROLOGIC UPDATE

S. R. STRAIT

JANUARY 22, 1986

PURPOSE

PROVIDE AN OVERVIEW OF HYDROLOGIC ACTIVITIES OVER THE
LAST QUARTER OF 1985.

- BASELINE MONITORING
- LARGE-SCALE HYDRAULIC TESTING
- REGIONAL HYDROLOGY

BWIP HYDROGEOLOGY PROGRAM

**HYDROLOGIC
CHARACTERIZATION**

**PHYSICAL
HYDROGEOLOGY**

**CHEMICAL
HYDROGEOLOGY**

**DATA BASE
MANAGEMENT**

**REGIONAL
FLOW
SYSTEM**

**SITE-SPECIFIC
PARAMETERS
IDENTIFICATION**

**- SUPPORT TO
FLOW
INTERPRETATIONS**

**- RETRIEVABILITY
- TRACEABILITY
- CORRELATIONS**

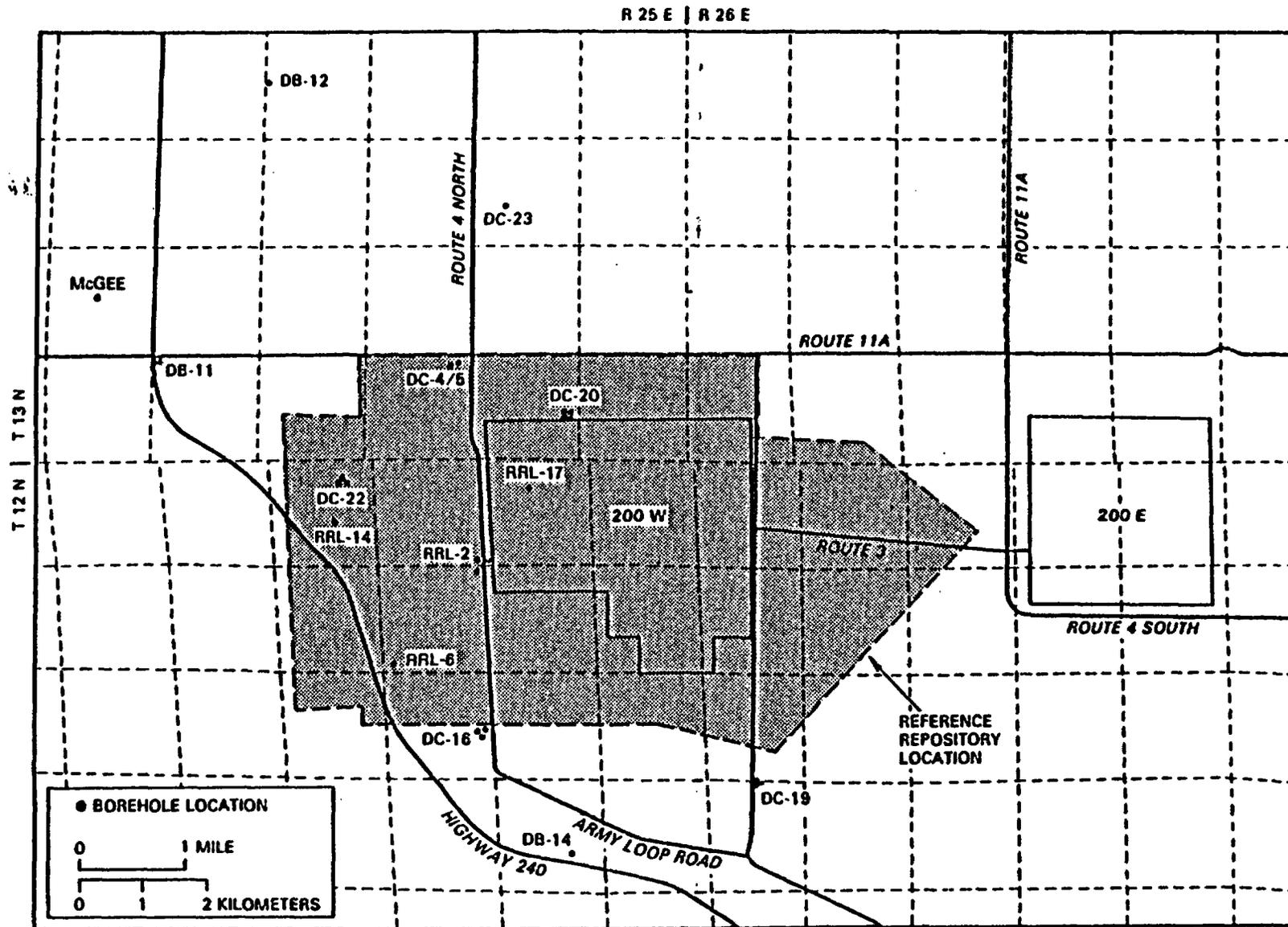
**- BOUNDARY
CONDITION
FOR
PERFORMANCE
SCALE MODELS**

**- PERFORMANCE
PARAMETERS**

**- TRANSPORT
PARAMETERS**

BASELINE MONITORING

- CONTINUING TO MONITOR WATER LEVELS AND DOWNHOLE PRESSURE AT DC-19, -20, -22, AND RRL-2
- TELEMETRY OF PRESSURE DATA FROM WELLSITES
- INSTALLED PIEZOMETERS AT DC-23W IN WANAPUM BASALT
- ISSUED HEADCO (RHO-BW-ST-71P)
- INSTALLED WESTBAY SYSTEM IN RRL-14
- MONITORING 34 WELLS AS PART OF HANFORD SITE MONITORING NETWORK
- DATA BASE EFFICIENCY IMPROVED BY NEW NAS COMPUTER



2K8512-2

PIEZOMETER FACILITIES

DC-19, DC-20, AND DC-22

BASAL RINGOLD
RATTLESNAKE RIDGE INTERBED
MABTON INTERBED
PRIEST RAPIDS FLOW TOP
SENTINAL GAP FLOW TOP
GINKGO FLOW TOP
ROCKY COULEE FLOW TOP
COHASSETT FLOW TOP
UMTANUM FLOW TOP

RRL-2C

ROCKY COULEE FLOW TOP
ROCKY COULEE INTERIOR
COHASSETT FLOW TOP
COHASSETT INTERIOR
GRANDE RONDE #5 FLOW TOP
GRANDE RONDE #5 INTERIOR

DC-23W

PRIEST RAPIDS FLOW TOP
SENTINAL GAP FLOW TOP
GINKGO FLOW TOP

MULTILEVEL PACKERS

RRL-14

ROCKY COULEE FLOW TOP
COHASSETT FLOW TOP
COHASSETT VESICULAR ZONE
GRANDE RONDE #5 FLOW TOP
UMTANUM FLOW TOP

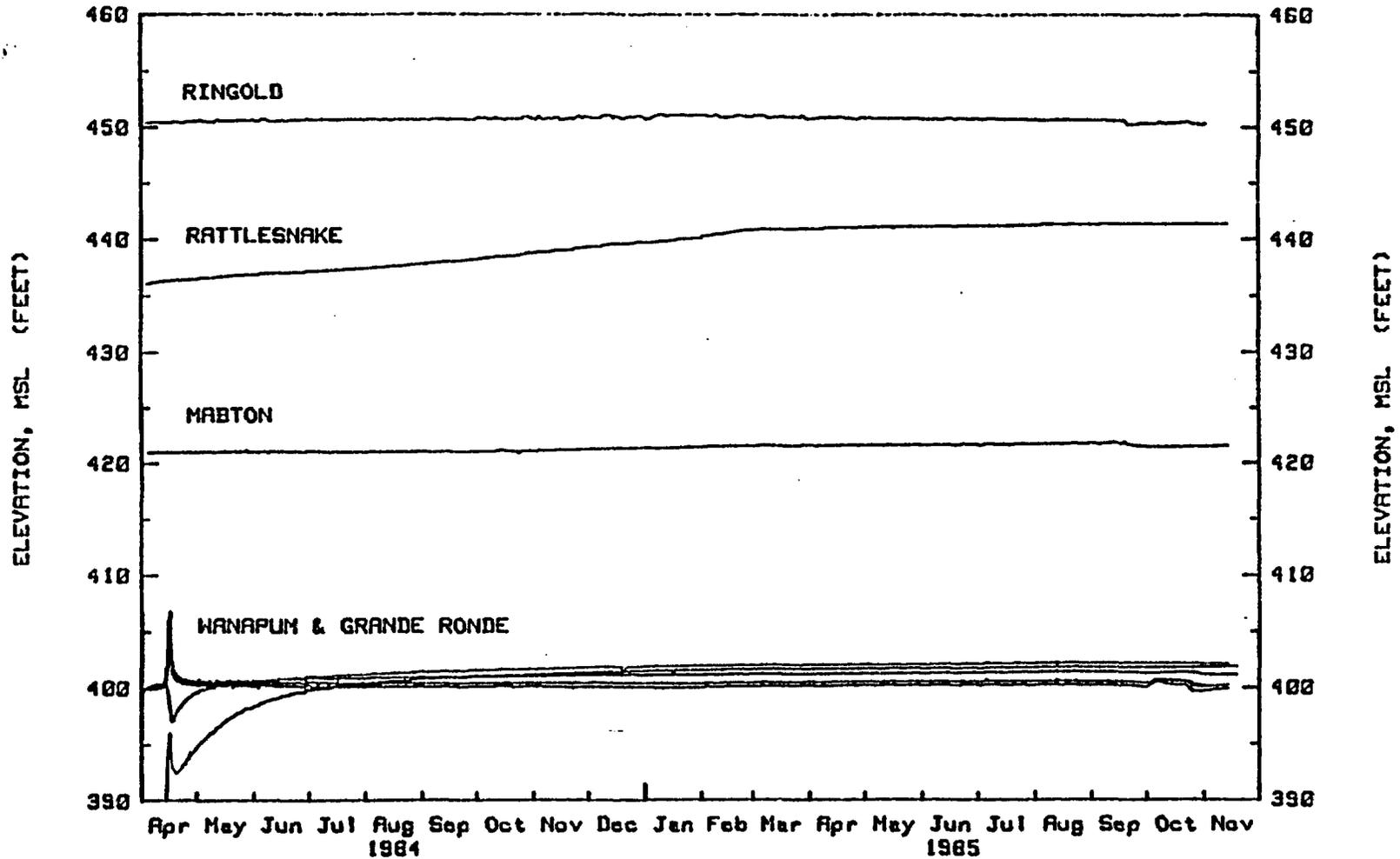
BOREHOLE: DC-19

HYDROGEOLOGIC UNIT: SADDLE MNT/WANAPUM/GRANDE RONDE

LOCATION: HANFORD SITE

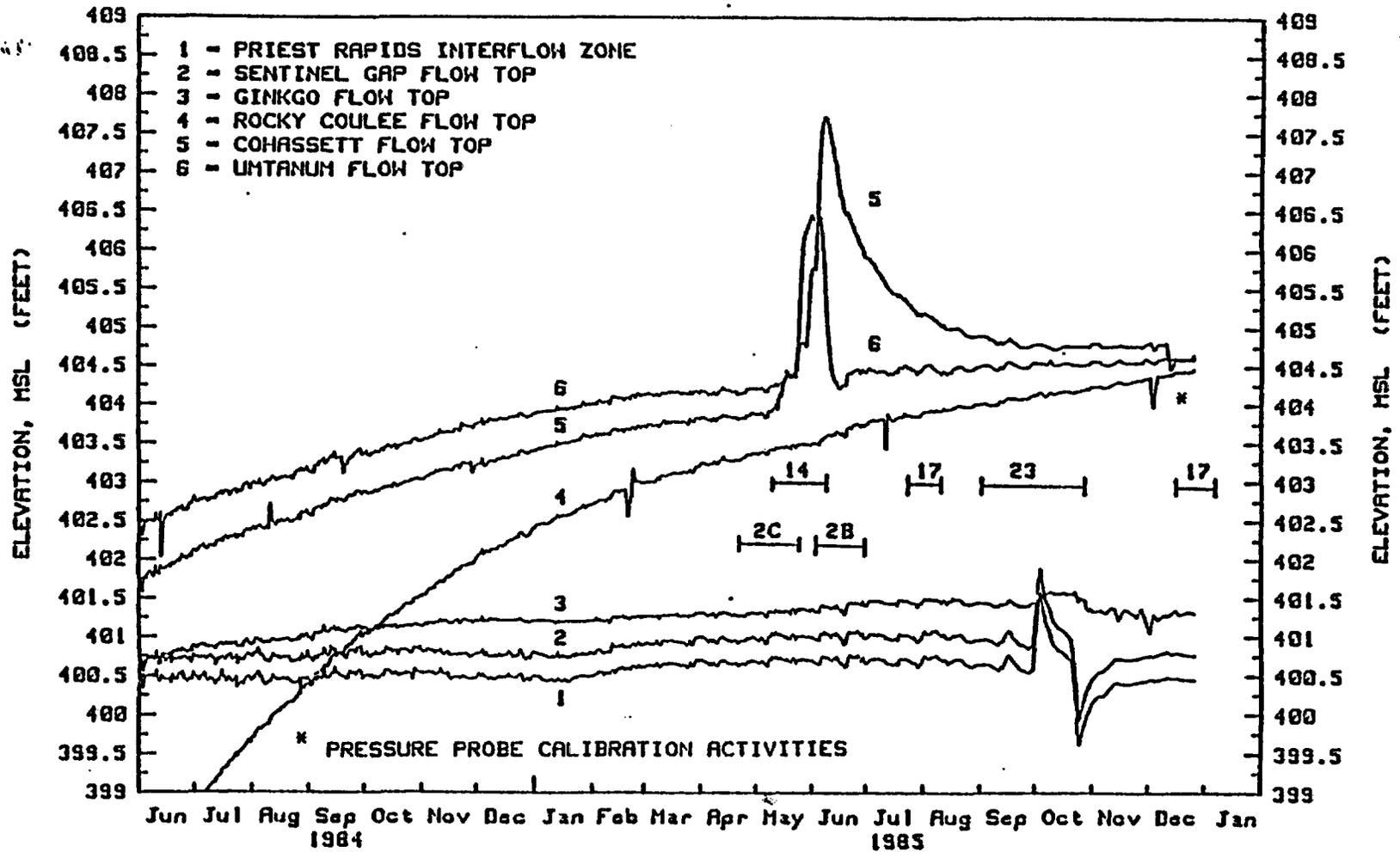
DATUM ELEVATION: MEAN SEA LEVEL

ADJUSTED TO A CONSTANT ATMOSPHERIC PRESSURE OF 14.347 PSI



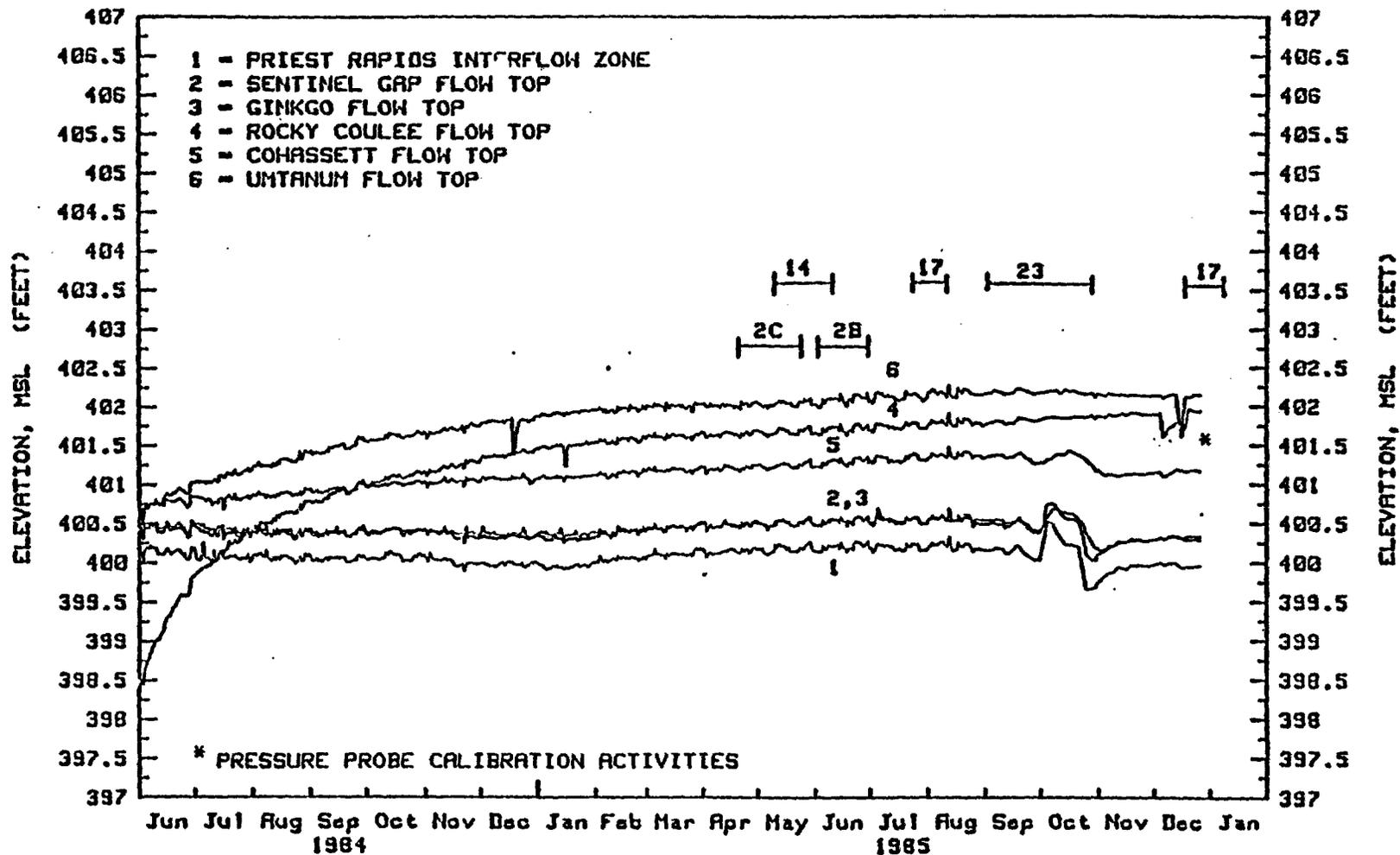
MONTHS
HYDROGRAPH PRODUCED BY
Program WYDAT Rev 4.7 FILE: X195BR85

BOREHOLE: DC-22C HYDROGEOLOGIC UNIT: GRANDE RONDE & WANAPUM
 LOCATION: N 448,600 E 2,204,188 DATUM ELEVATION: MEAN SEA LEVEL
 ADJUSTED TO A CONSTANT ATMOSPHERIC PRESSURE OF 14.347 PSI



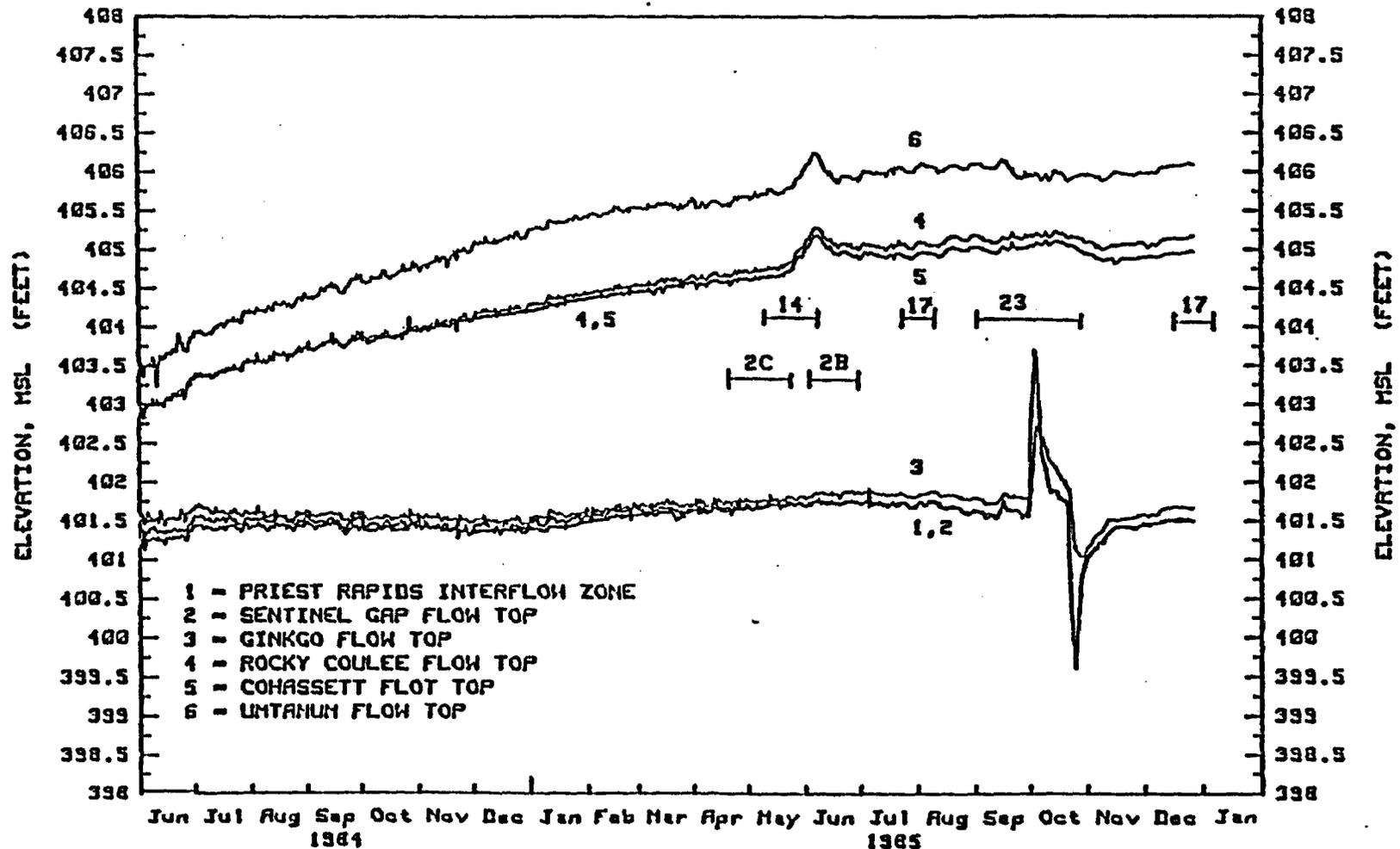
MONTHS
 HYDROGRAPH PRODUCED BY
 Program HYDAT Rev 4.7 FILE: N22HPR85

BOREHOLE: DC-19C HYDROGEOLOGIC UNIT: GRANDE RONDE & WANAPUM
 LOCATION: N 433,933 E 2,225,012 DATUM ELEVATION: MEAN SEA LEVEL
 ADJUSTED TO A CONSTANT ATMOSPHERIC PRESSURE OF 14.347 PSI



HYDROGRAPH PRODUCED BY
 Program WHYDAT Rev 4.7 FILE: X19WPR85

BOREHOLE: DC-20C HYDROGEOLOGIC UNIT: GRANDE RONDE & WANAPUM
 LOCATION: N 451,884 E 2,215,288 DATUM ELEVATION: MEAN SEA LEVEL
 ADJUSTED TO A CONSTANT ATMOSPHERIC PRESSURE OF 14.347 PSI



- 1 - PRIEST RAPIDS INTERFLOW ZONE
- 2 - SENTINEL GAP FLOW TOP
- 3 - GINKGO FLOW TOP
- 4 - ROCKY COULEE FLOW TOP
- 5 - COHASSET FLOT TOP
- 6 - LMTANUM FLOW TOP

MONTHS
 HYDROGRAPH PRODUCED BY
 Program HYDRAT Rev 4.7 FILE: N20XPR85

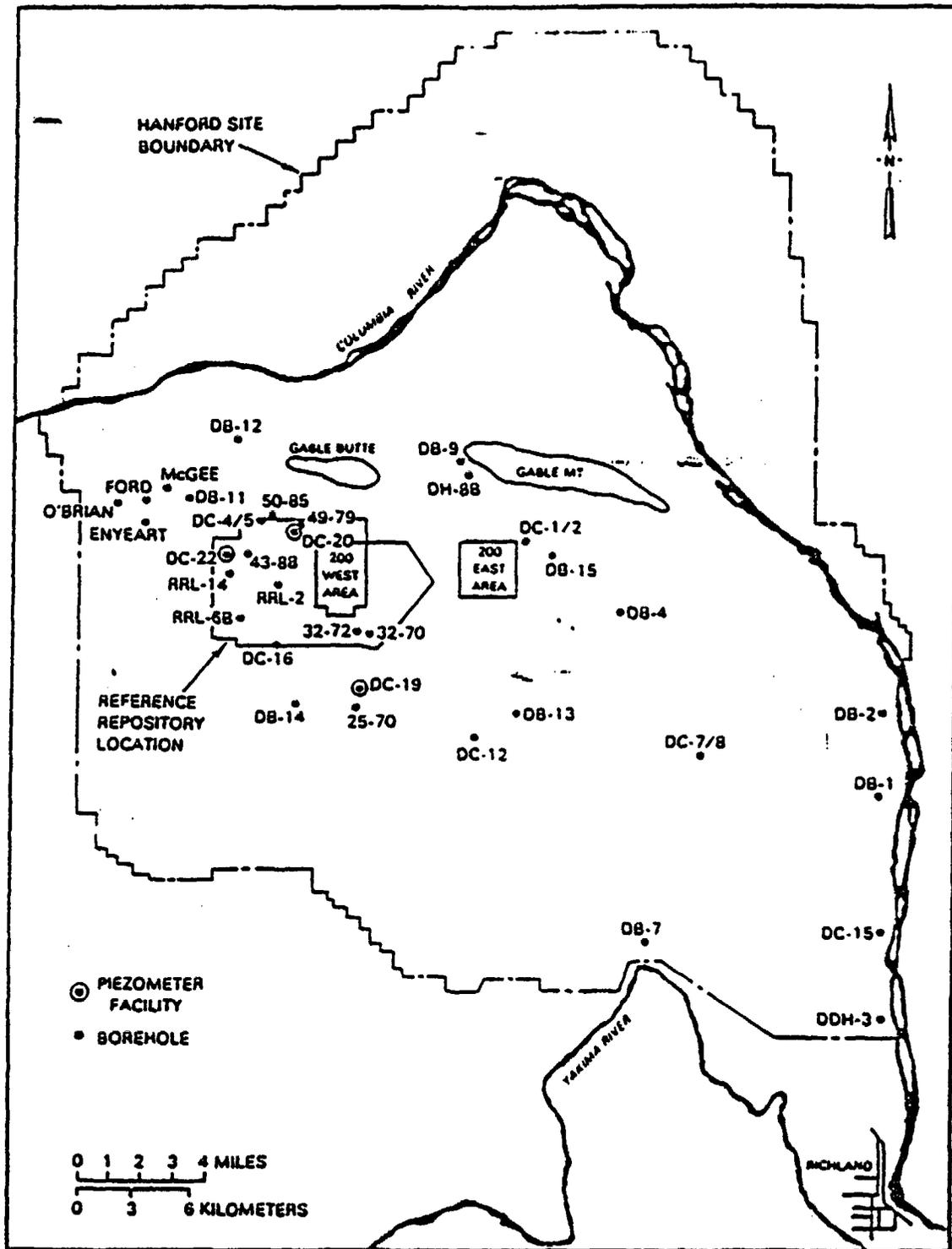


FIGURE 1. Location Map of the Hanford Site Monitoring Network Boreholes and the DC-19, DC-20 and DC-22 Piezometer Facilities.

MONITORING HORIZONS
HANFORD SITE MONITORING NETWORK

UNCONFINED

25-70
32-70
32-72
43-88
49-79
50-85

MABTON INTERBED

DC-16B
DB-9
DH-8B
DB-13
DB-7
DB-4

PRIEST RAPIDS
INTERFLOW

O'BRIAN
FORD
ENYEART
DB-12
DB-14
DC-16C
DB-1
DB-11

WANAPUM

DB-2
DB-15
DC-1
McGEE

GINKGO
FLOW TOP

DDH-3

ROCKY COULEE
FLOW TOP

RRL-6B
RRL-2A
DC-4/5
McGEE

GRANDE RONDE

DC-7/8
DC-12
DC-15
DC-1
DC-2

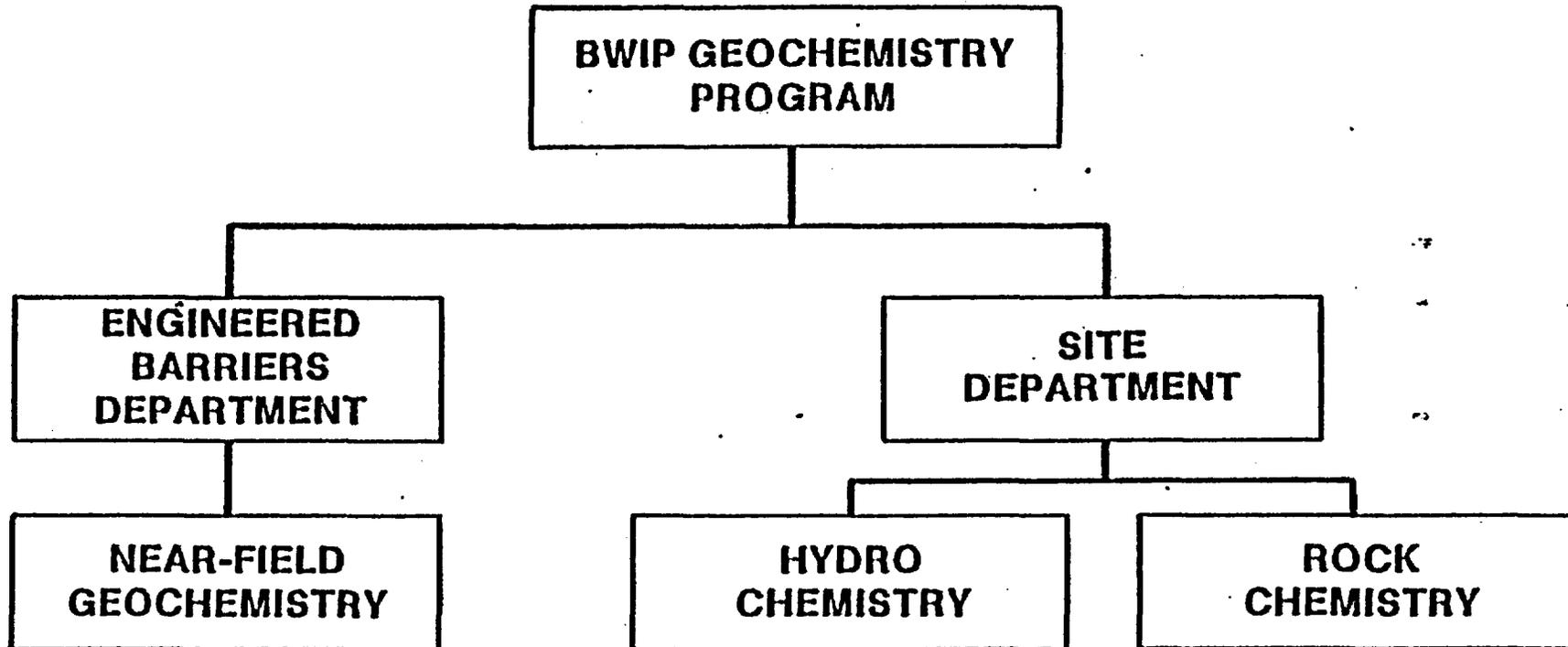
LARGE-SCALE HYDRAULIC TESTING

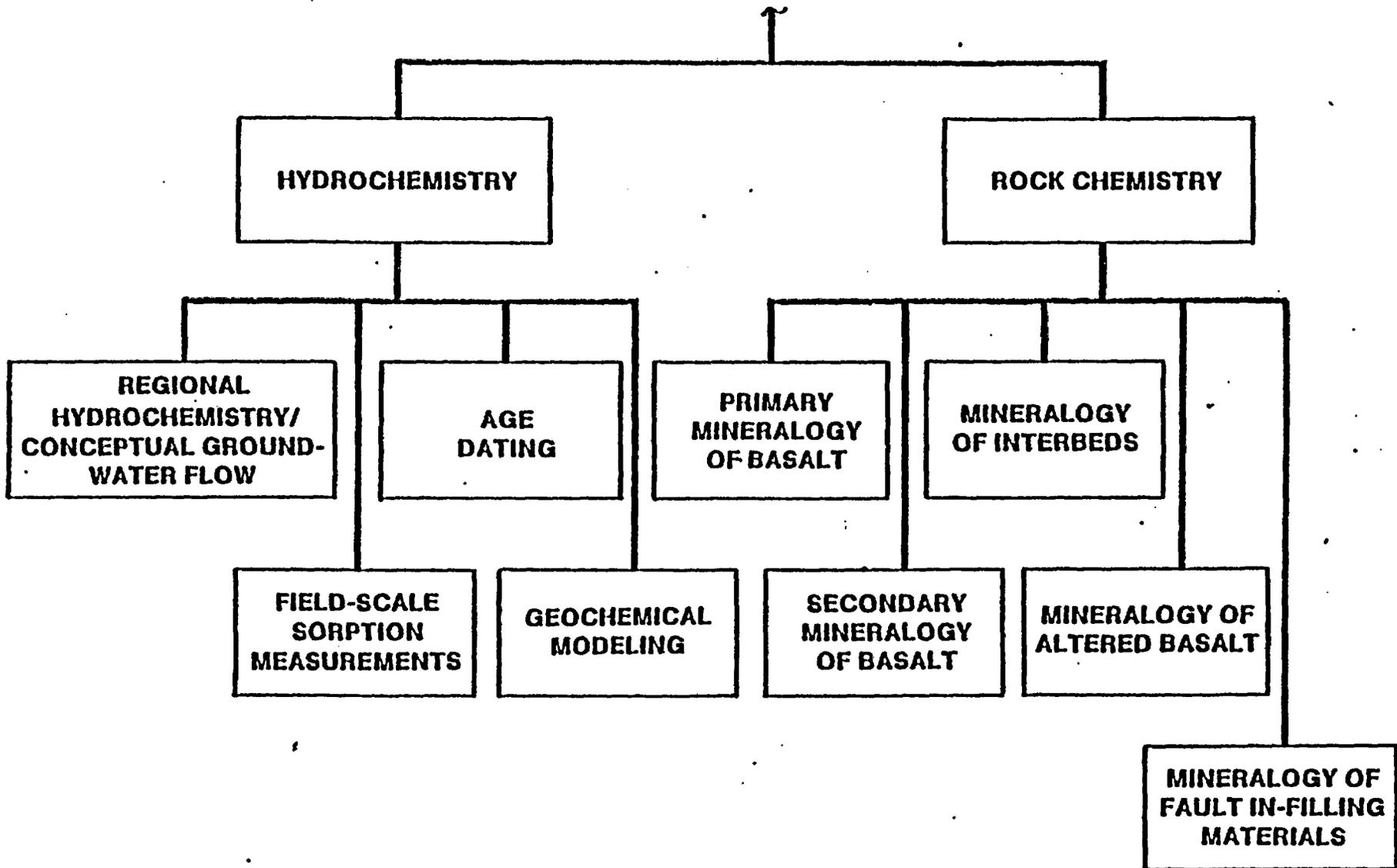
- PREPARED A DRAFT TEST PLAN
- CONDUCTING A READINESS REVIEW
- PROCURING EQUIPMENT

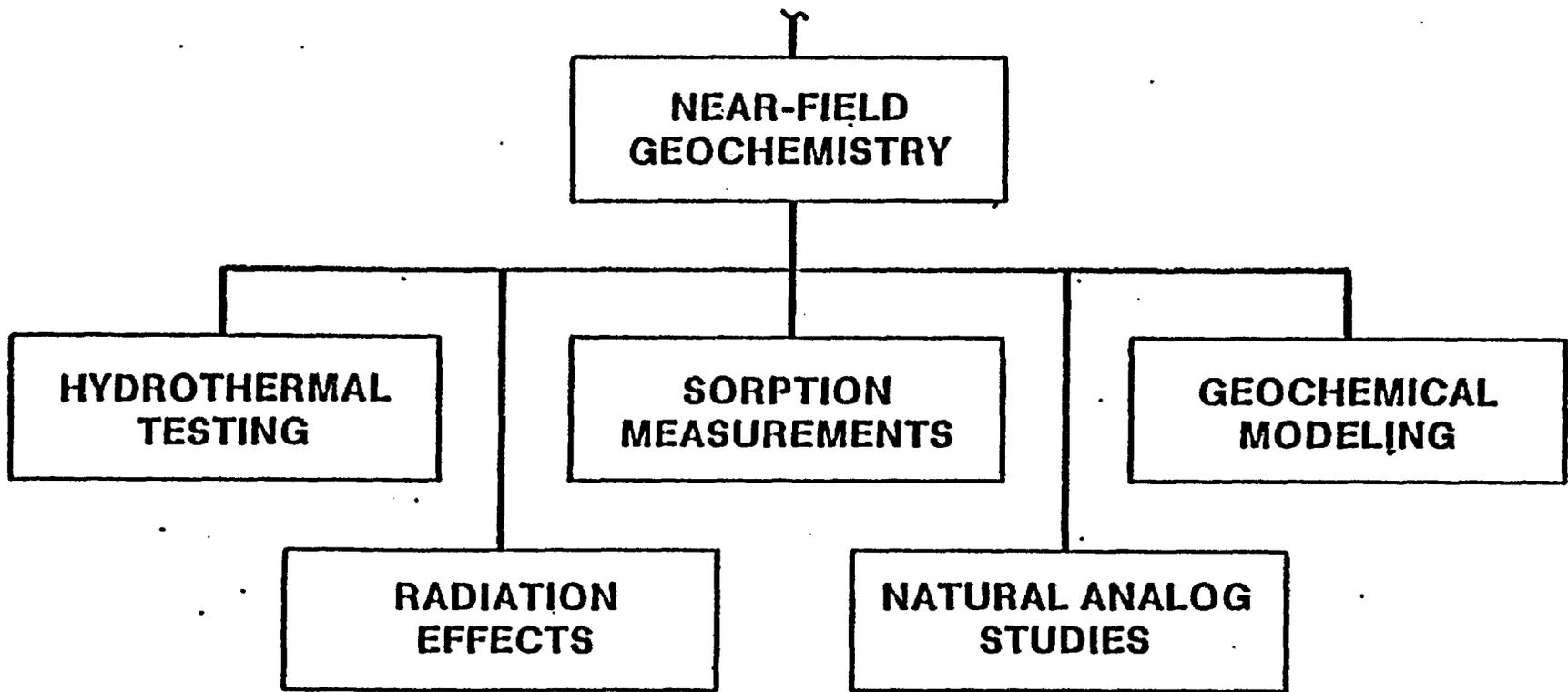
REGIONAL HYDROLOGY

- PREPARED A DRAFT PLAN

Harry Furman







G E O C H E M I S T R Y

INTERACTIONS

DECEMBER - WORKING MEETING WITH THE U. S. GEOLOGICAL SURVEY
TO DISCUSS STRATEGIES AND INTERPRETATIONS OF SITE HYDROCHEMISTRY

AGENDA
DOE-RL/USGS Meeting on Site Hydrochemistry
Basalt Waste Isolation Project

Date: December 10-11, 1985
Place: Richland, Washington

Purpose: Discuss BWIP Site Subsystem hydrochemistry program status and plans with USGS technical staff.

December 10, 1985

8:00	USGS/DOE Administrative Meeting (Federal Bldg)	D.H. Dahlem M.J. Furman
8:30	Introductory Remarks	D.H. Dahlem M.J. Furman
8:40	USGS Introductions	USGS
8:50	Hydrochemistry Program Overview	R.M. Smith

I. Geologic Setting

9:05	Geologic Setting	K.R. Fecht
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II. Hydrochemistry Related to Groundwater Flow

Regional Hydrochemistry

9:30	Regional Hydrochemistry Related to Conceptual Groundwater Flow Models	G.S. Solomon
10:30	Break	

Site Geochemistry

10:45	BWIP Data Base Overview	T.O. Early
11:15	Borehole Development Studies	V.G. Johnson
11:45	Lunch	
1:00	Secondary Minerals in Groundwater Flow Zones	D.G. Horton
2:00	Rock/Water Interactions	T.O. Early
2:45	Break	
3:00	Geochemical Modeling Strategy	G.C. Solomon
3:45	Conceptual Groundwater Flow Models	T.O. Early
5:00	Review and Questions	
5:30	Adjourn	

December 11, 1985

8:00 Groundwater Age Dating/Travel Time V.G. Johnson

Upper Cold Creek Valley Groundwater Flow Model

8:45 Hydrochemistry T.O. Early

9:15 Groundwater Age Dating/Travel Time V.G. Johnson

9:45 Break

III. Radionuclide Migration Studies

10:00 Overview R.M. Smith

10:10 Laboratory Sorption Studies R.M. Smith

Field Based Studies

11:10 Redox T.O. Early

12:10 Lunch

1:30 U-Th Disequilibrium V.G. Johnson

2:30 Field Tracer Tests E.I. Wallick

3:30 Break

3:45 Review and Questions R.M. Smith

4:30 Adjourn

4:30 USGS Caucus

ACCOMPLISHMENTS

- o COMPLETED FIRST MILESTONE REPORT ON UNIVERSITY OF COLORADO CONTRACT FOR "DETERMINING THE REVERSIBILITY OF OXIDATION - REDUCTION REACTIONS IN GROUNDWATER"

- o COMPLETED REPORT ON TEMPLE UNIVERSITY CONTRACT ENTITLED "COMPARISON OF THE HYDROTHERMAL STABILITY OF UMTANUM AND CONIASSETT BASALTS"

- o RELEASED DOCUMENTS ON:
 - "ANALYSIS OF SOLIDS FROM INITIAL 200°C 30 MPa HYDROTHERMAL TESTS WITH 'FULLY RADIOACTIVE' WASTE GLASS AND SPENT FUEL"
 - "EXAMINATION OF SOLIDS FROM 200°C HYDROTHERMAL TESTS WITH SPENT FUEL"
 - "EFFECT OF ALPHA AND GAMMA RADIATION ON THE NEAR-FIELD CHEMISTRY AND GEOCHEMISTRY OF HIGH-LEVEL WASTE PACKAGES"

ACCOMPLISHMENTS (CONTINUED)

- o COMPLETED DRAFT DOCUMENTS:
 - GEOCHEMICAL-MODELING STRATEGIES FOR THE SITE
 - STRATEGIES FOR BOREHOLE LOCATION AND SAMPLING REQUIREMENT FOR HYDROCHEMISTRY
 - STRATEGY FOR FIELD REACTIVE TRACER TEST
 - STRATEGY FOR THE STUDY OF HYDROCHEMISTRY OF SULFUR AND CARBON IN THE COLUMBIA RIVER BASALTS
 - SECONDARY MINERALS IN THE ROCKY COULEE AND COHASSETT FLOW TOPS

- o INITIATED A CONTRACT WITH PORTLAND STATE UNIVERSITY TO STUDY THE MINERALOGY AND GEOCHEMISTRY OF HYDROTHERMALLY ALTERED FLOW TOPS IN THE GRANDE RONDE BASALT AS AN ANALOG OF ELEMENT MOBILITY IN THE REPOSITORY ENVIRONMENT IN BASALT

AGE-DATING GROUNDWATER

**IN SITU TEST PLANNING
(EXPLORATORY SHAFT TESTING)**

**MICHAEL ARNDT, EXPLORATORY SHAFT
RESEARCH PROGRAM MANAGER,
RESEARCH DEPARTMENT**

ROCKWELL HANFORD OPERATIONS

PURPOSE

- ① SITE CHARACTERIZATION
- ② SITE SUITABILITY
 - CONSTRUCTIBILITY CONSIDERATIONS
 - ISOLATION CONSIDERATIONS

CURRENT ACTIVITIES

NRC/DOE/BWIP WORKSHOP

BWIP ISSUES AND CONCERNS

EXPLORATORY SHAFT TESTING PROGRAM

STRATEGIES

DATA SUFFICIENCY (PERFORMANCE ASSESMENT)

DATA APPLICATION

TEST DEVELOPMENT AND DESIGN

GEOLOGY

GEOHYDROLOGY

GEOMECHANICS

GEOPHYSICS

SCOPE OF EXPLORATORY SHAFT PROGRAM (TWO-PHASED PROGRAM)

● PHASE I

- SHAFT
- PORTHOLES
- SHAFT STATION

● PHASE II

- SECOND SHAFT
- MAIN AND TEST DRIFTS
- GEOHYDROLOGIC TEST AREAS
- GEOMECHANICS TEST AREAS

THREE-DIMENSIONAL STRATIGRAPHIC AND STRUCTURAL (GEOMETRIC) MODEL

**DALE LANDON, SENIOR GEOLOGIST,
HOST ROCK STUDIES UNIT**

ROCKWELL HANFORD OPERATIONS

PRELIMINARY STRATIGRAPHIC AND STRUCTURAL MODEL OF THE REFERENCE REPOSITORY LOCATION HANFORD SITE, WASHINGTON

- **PURPOSE**
- **MODEL SCOPE**
- **DATA SOURCES**
- **METHODOLOGY**
- **METHODOLOGY ADVANTAGES**
- **METHODOLOGY LIMITATIONS**
- **MODEL RESULTS**
- **CONCLUSIONS**

PURPOSE OF MODEL

- **MODEL PROVIDES A THREE-DIMENSIONAL REPRESENTATION OF THE STRATIGRAPHY AND STRUCTURE OF THE REFERENCE REPOSITORY LOCATION**
- **MODEL PROVIDES A STRATIGRAPHIC AND STRUCTURAL FRAMEWORK FOR USE IN GEOLOGIC, HYDROLOGIC, PERFORMANCE ASSESSMENT, AND ENGINEERING STUDIES**
- **MODEL SERVES AS A PREDICTIVE TOOL FOR FUTURE BOREHOLE LOCATIONS**

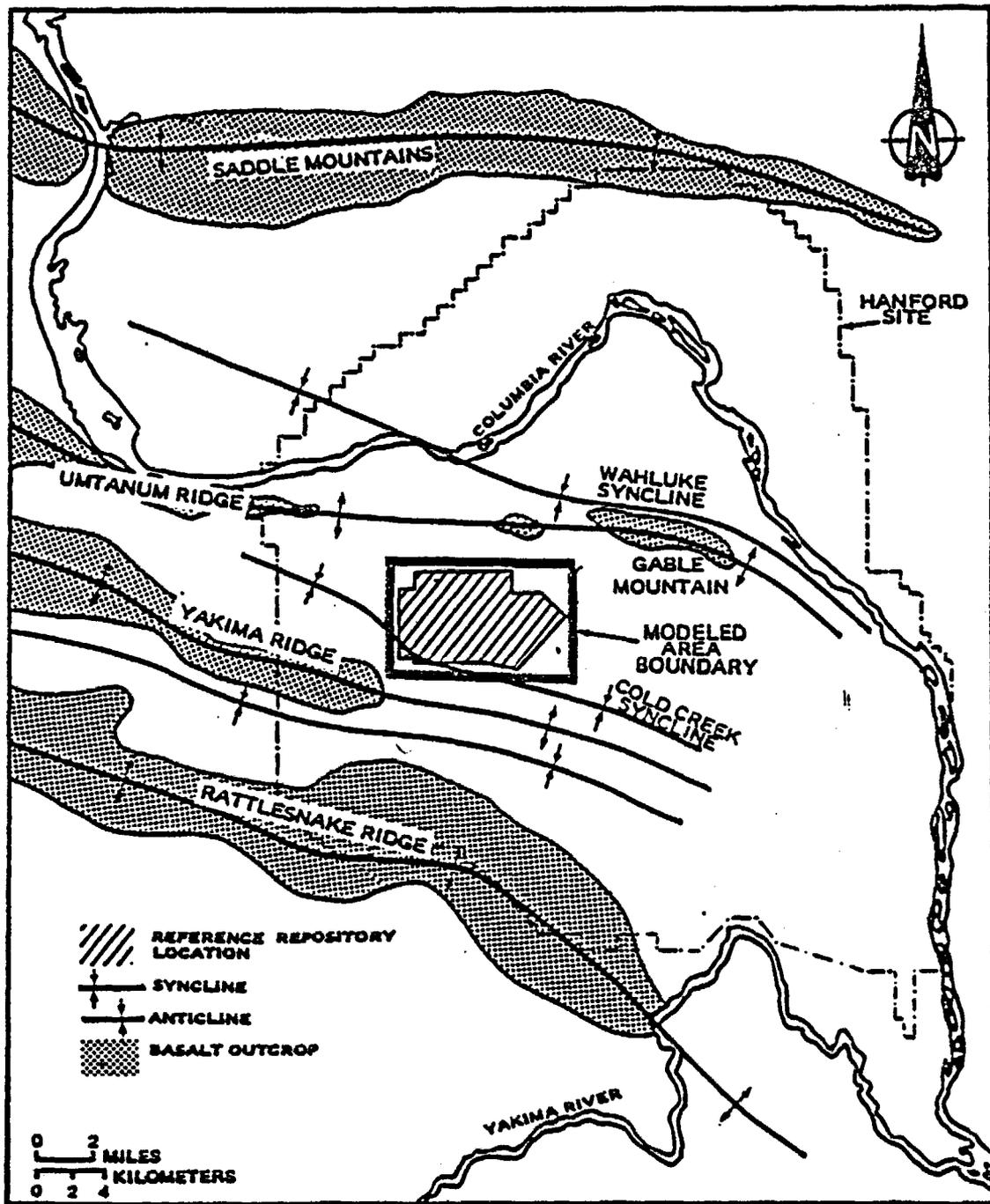
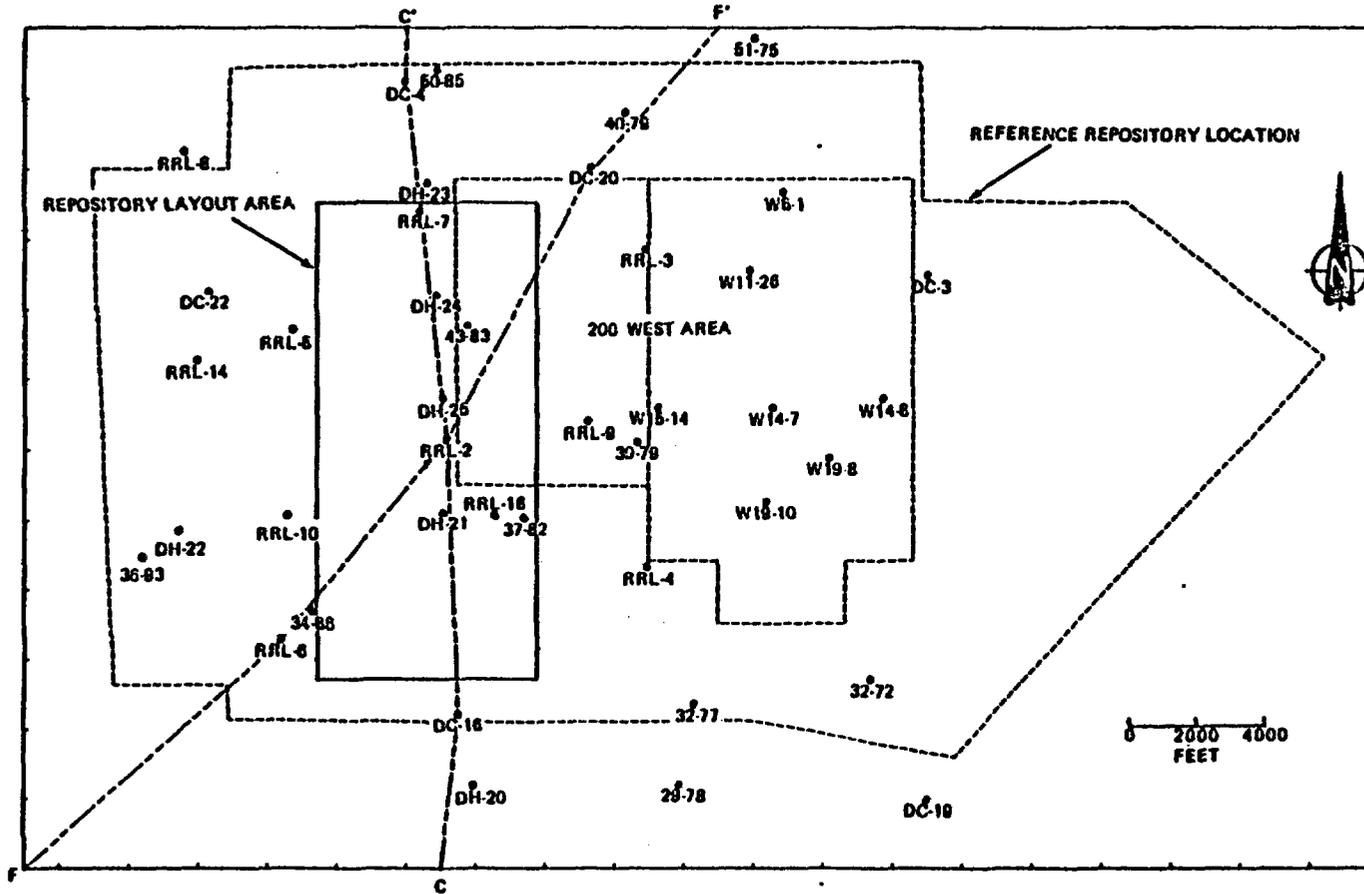


Figure 1. Location Map of the Modeled Area, Reference Repository Location, and the Hanford Site.

LOCATION MAP

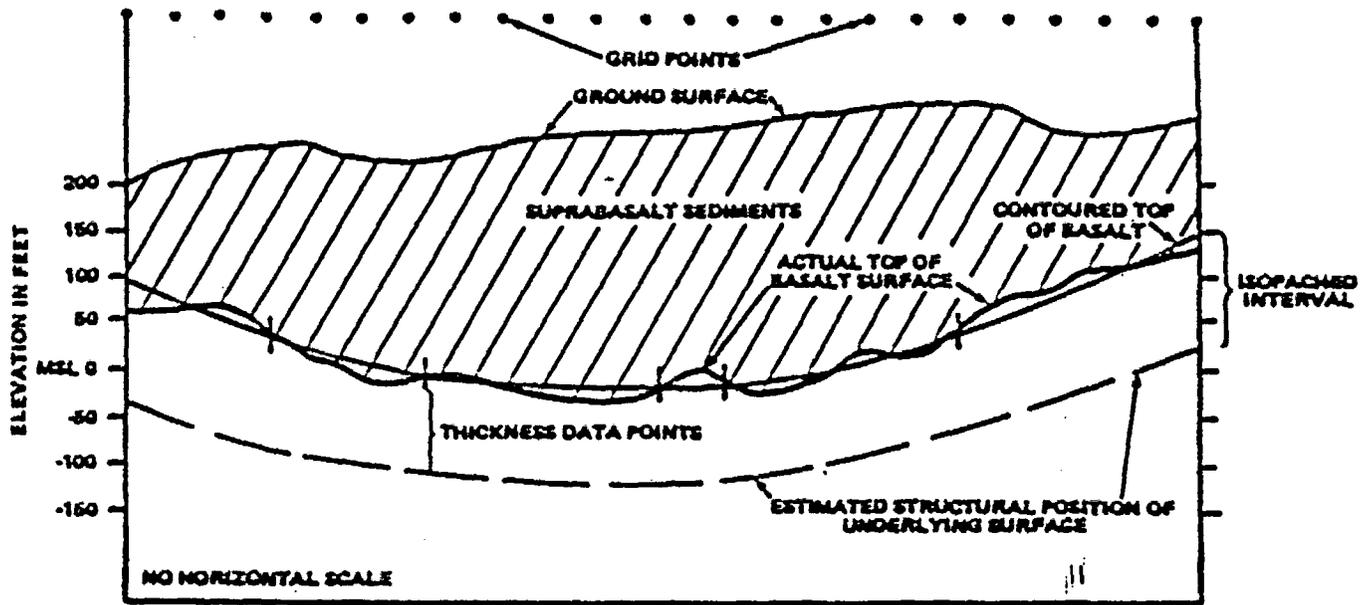


DATA SOURCES

- **BOREHOLE, OUTCROP, AND GEOPHYSICAL DATA (USED TO CONSTRUCT HAND-CONTOURED TOP OF BASALT MAP)**
- **BOREHOLE DATA FROM THROUGHOUT THE PASCO BASIN (USED TO CONSTRUCT UNIT ISOPACH MAPS)**

METHODOLOGY

- **GRID SUBTRACTION TECHNIQUE**
- **COMPUTER SOFTWARE (INTERACTIVE SURFACE MODELING (ISM) BY DYNAMIC GRAPHICS, INC.)**
- **CONSTRUCTION OF SURFACES**
 - **HAND-CONTOURED TOP OF BASALT MAP DIGITIZED**
 - **ISOPACH MAP GRID FILES CONSTRUCTED FROM PASCO BASIN WIDE DATA FILES**
 - **SUBGRIDS OF ISOPACH GRID FILES SUBTRACTED FROM THE NEXT OVERLYING SURFACE**
 - **GRID FILES CONTOURED AND PLOTTED**
 - **CROSS SECTIONS AND BLOCK DIAGRAMS PRODUCED**



Hypothetical Cross Section showing the Contoured Top of Basalt Surface.

METHODOLOGY ADVANTAGES

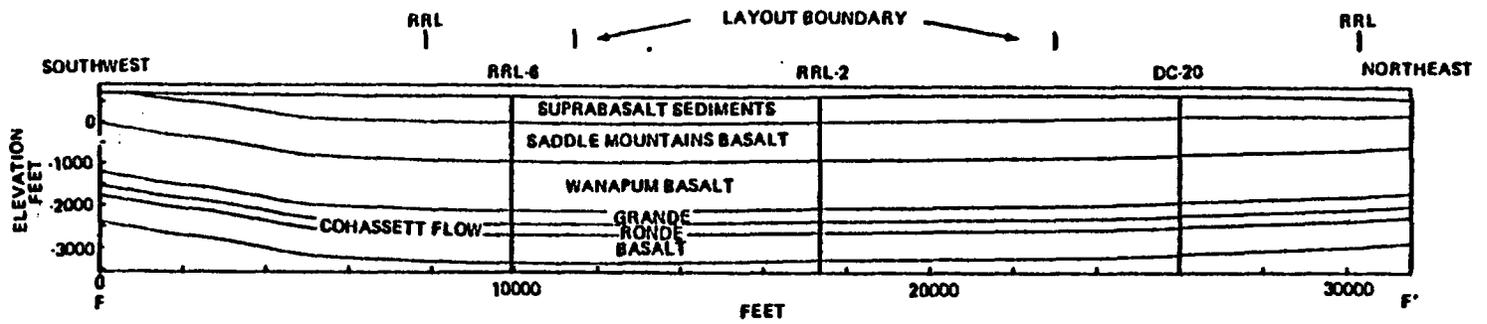
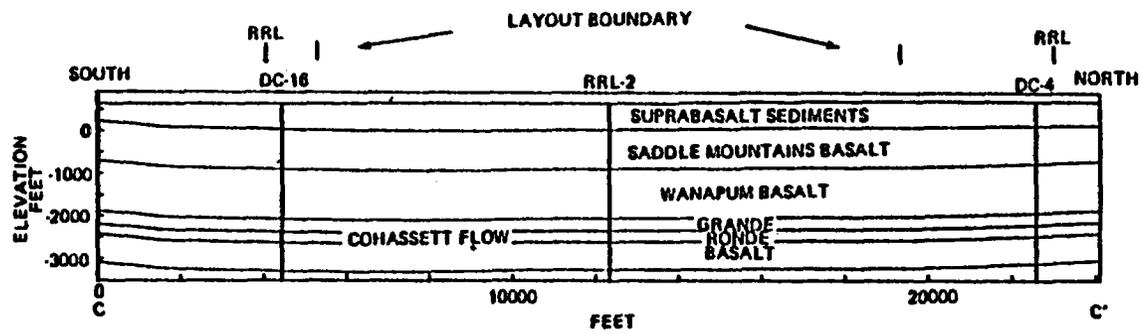
- **TECHNIQUE PRODUCES A MORE PRECISE AND REPRODUCIBLE REPRESENTATION OF THE ELEVATIONS AND THICKNESSES BETWEEN DATA POINTS**
- **TECHNIQUE PROVIDES THE ABILITY TO EASILY UPDATE MODEL AS NEW DATA ARE OBTAINED**
- **TECHNIQUE PROVIDES ABILITY TO PRODUCE MAPS, CROSS SECTIONS, AND BLOCK DIAGRAMS AT ANY SCALE AND FROM ANY VIEWPOINT**

METHODOLOGY LIMITATIONS

- EXPERT JUDGEMENT NOT READILY INTRODUCED AT EACH STRUCTURAL SURFACE
- TOP OF BASALT MAY NOT BE A TRUE STRUCTURAL SURFACE, BUT MAY HAVE SOME EROSIONAL VARIATION

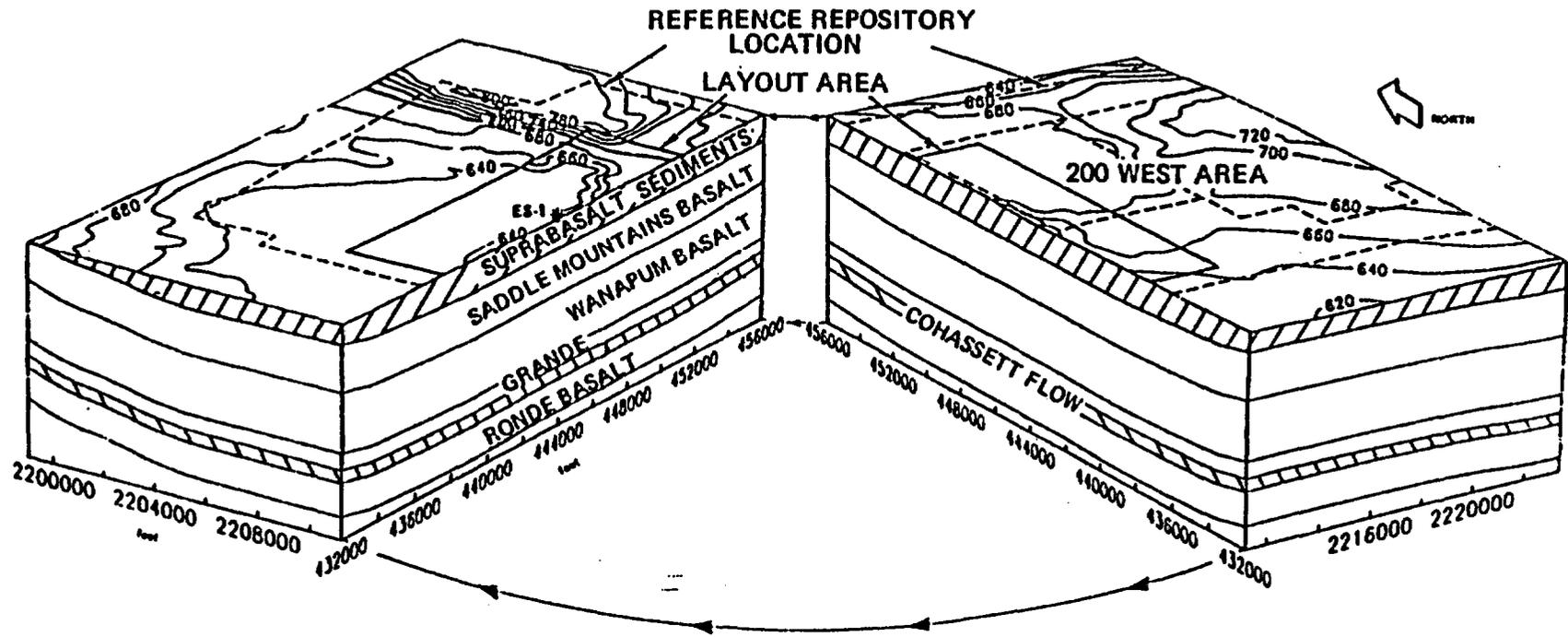
MODEL RESULTS

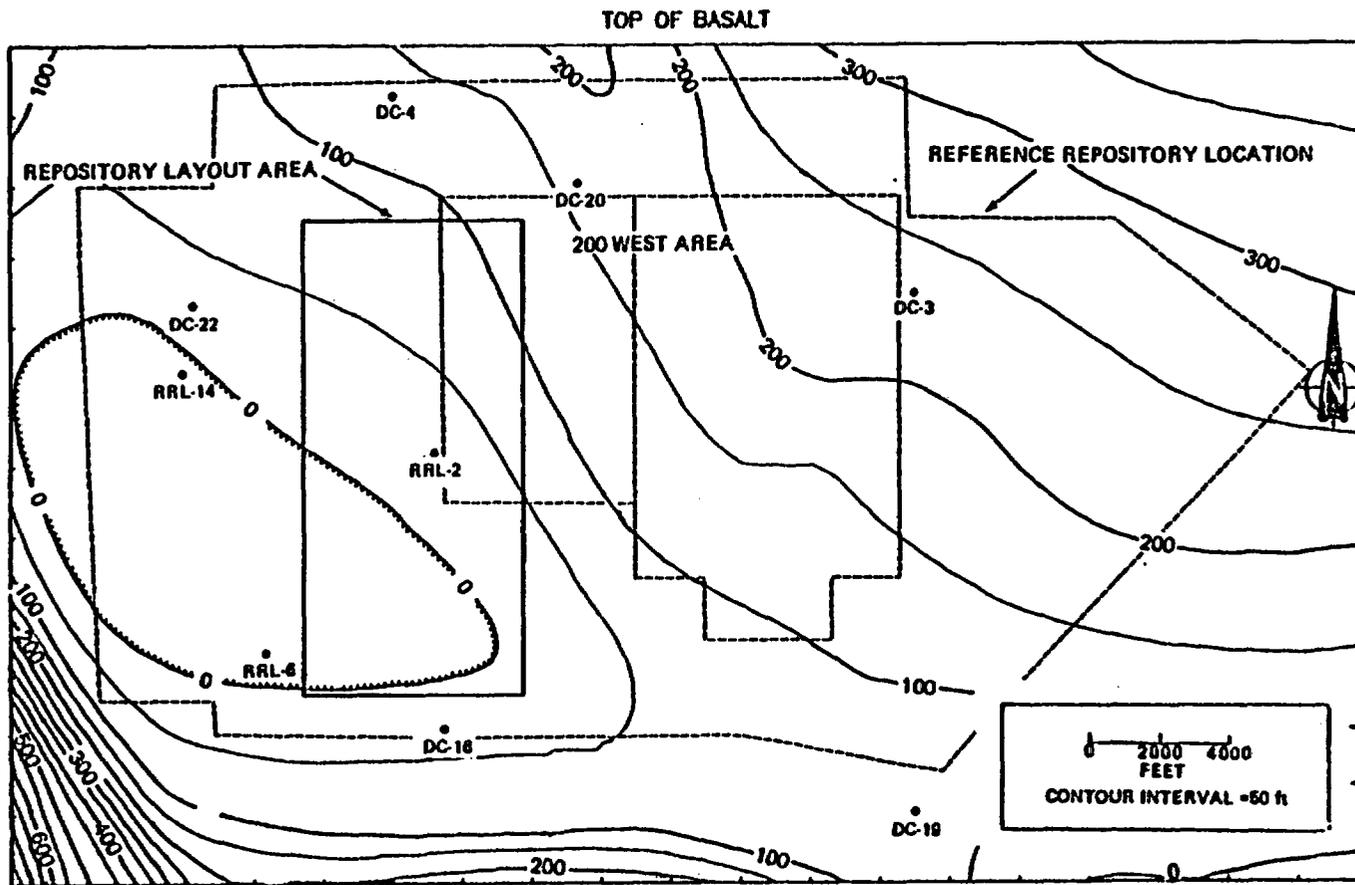
- **THIRTY-EIGHT (38) STRUCTURAL SURFACES**
 - **FIVE (5) PERSPECTIVE BLOCK DIAGRAMS**
 - **ELEVEN (11) CROSS SECTIONS**
- **UNDERLYING SURFACES GENERALLY CONFORM TO THE SAME STRUCTURAL TRENDS AS THE TOP OF BASALT SURFACE**
- **CHANGE IN TREND OF CONTOURS AT EASTERN LAYOUT BOUNDARY**
- **STRUCTURAL DIP BECOMES STEEPER WITH DEPTH IN THE EASTERN REFERENCE REPOSITORY LOCATION, PROBABLY DUE TO LACK OF DATA IN AREA**



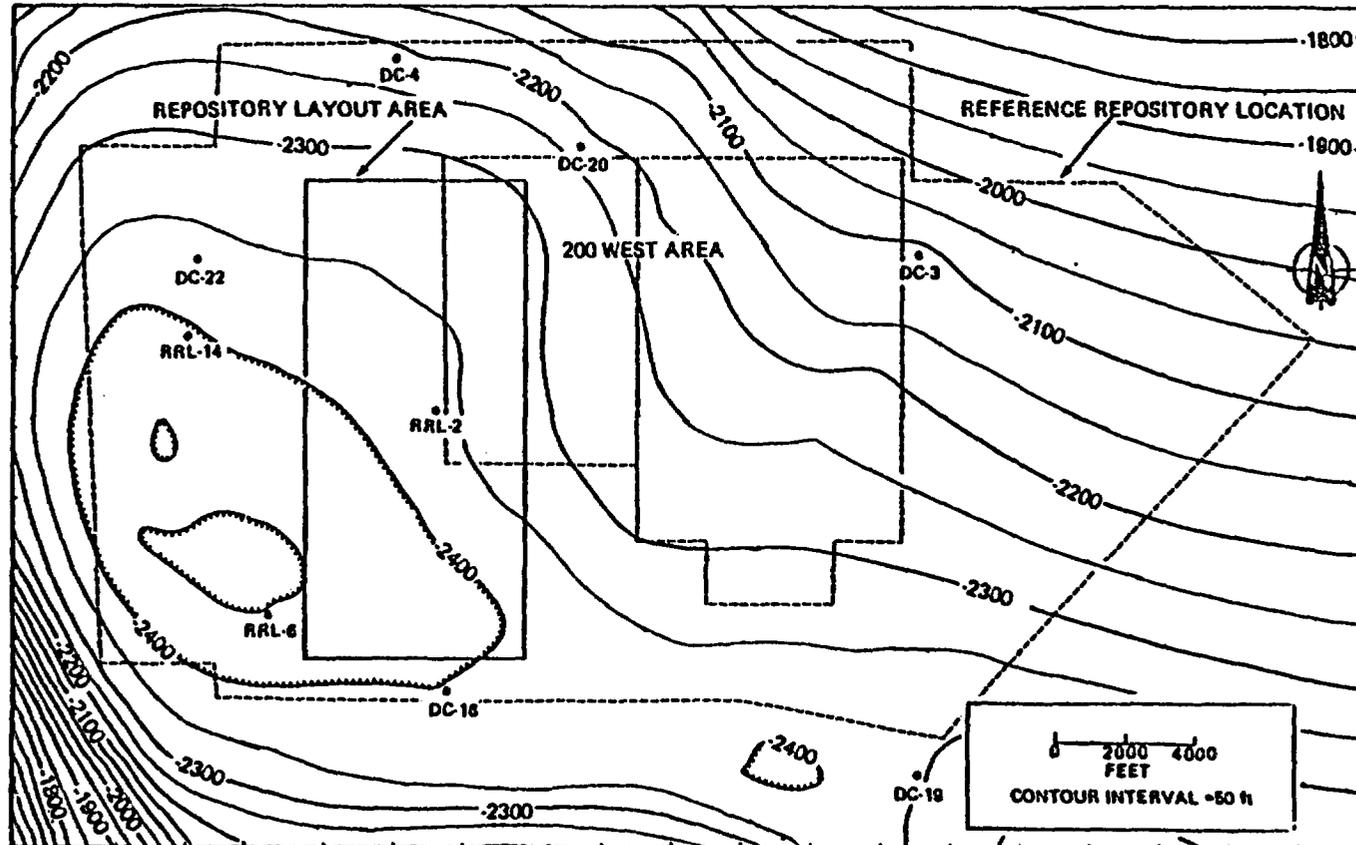
NO VERTICAL EXAGGERATION

PRELIMINARY STRATIGRAPHIC AND STRUCTURAL MODEL OF THE REFERENCE REPOSITORY LOCATION HANFORD SITE, WASHINGTON





TOP OF THE COMASSETT FLOW



CONCLUSIONS

THE MODEL:

- PROVIDES A THREE-DIMENSIONAL REPRESENTATION OF THE GEOLOGIC FRAMEWORK OF THE REFERENCE REPOSITORY LOCATION BASED ON AVAILABLE DATA
- CAN BE USED FOR INPUT TO GEOLOGIC, HYDROLOGIC, PERFORMANCE ASSESSMENT, AND DESIGN ACTIVITIES
- CAN BE USED TO PREDICT THE STRATIGRAPHY IN NEW BOREHOLES
- CAN BE READILY UPDATED AS NEW BOREHOLE INFORMATION BECOME AVAILABLE

LARGE-SCALE HYDRAULIC STRESS TEST PLANNING STATUS

**MIKE THOMPSON, HYDROLOGIST,
GEOSCIENCE AND TECHNOLOGY BRANCH**

U.S. DEPARTMENT OF ENERGY – RICHLAND

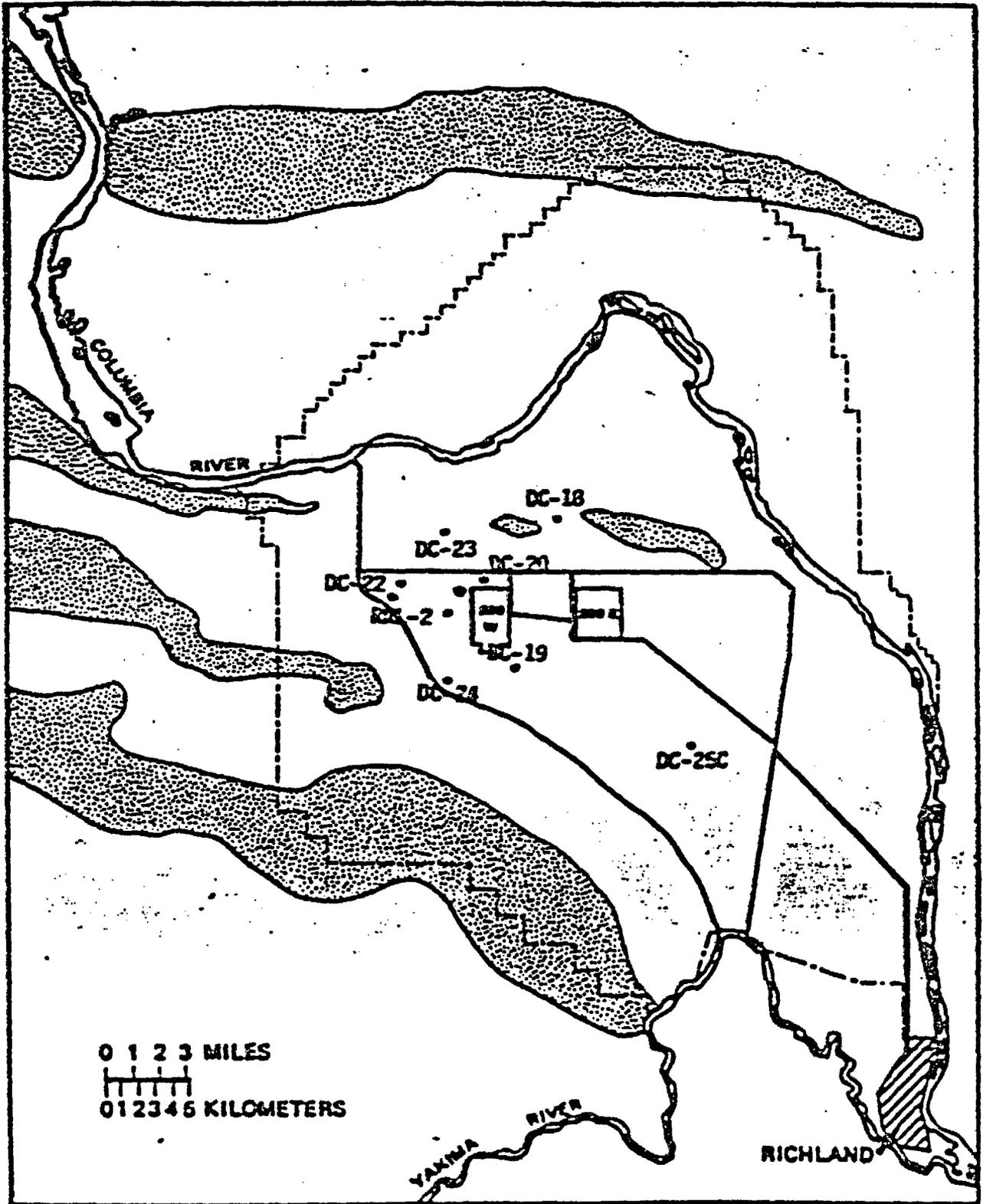
**U.S. DEPARTMENT OF ENERGY/
U.S. NUCLEAR REGULATORY
COMMISSION MEETING
(DECEMBER 9 AND 10, 1985)**

**U.S. NUCLEAR REGULATORY COMMISSION (NRC) OBSERVATIONS
PERTINENT TO TESTING PLANS:**

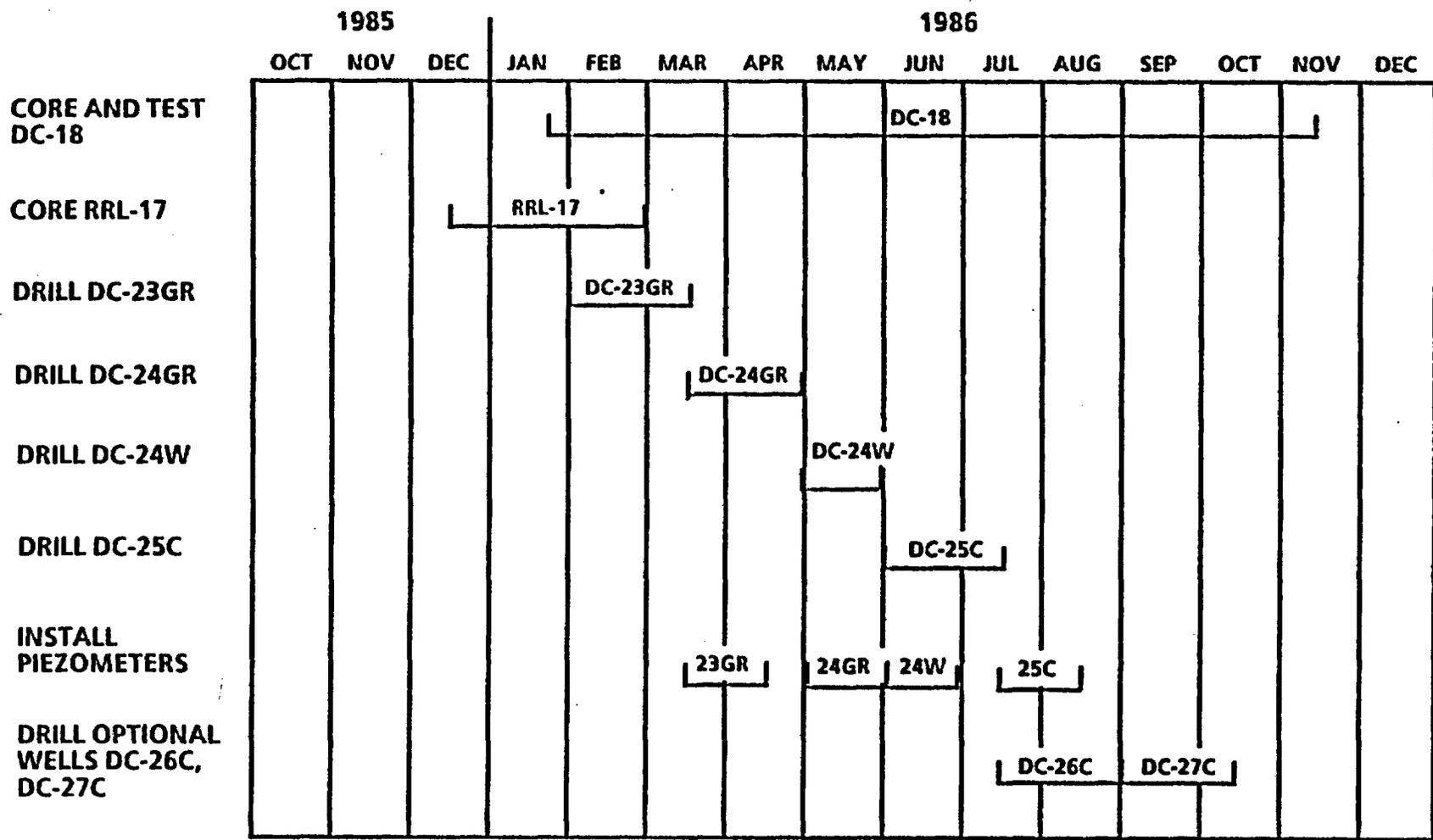
- **ASPECTS OF TESTING PROGRAM ARE NOT CONSISTENT WITH STP.1.1**
- **U.S. DEPARTMENT OF ENERGY (DOE) HYDROLOGIC CHARACTERIZATION STRATEGY IS DIFFERENT, ALTHOUGH NOT NECESSARILY LESS VALID, DOE NEEDS TO DOCUMENT STRATEGY**
- **THE NRC CANNOT ASSESS PRUDENCE OF INITIATION OF TESTS WITHOUT VIEWING OVERALL STRATEGY**

NEAR-TERM HYDROLOGY ACTIVITIES

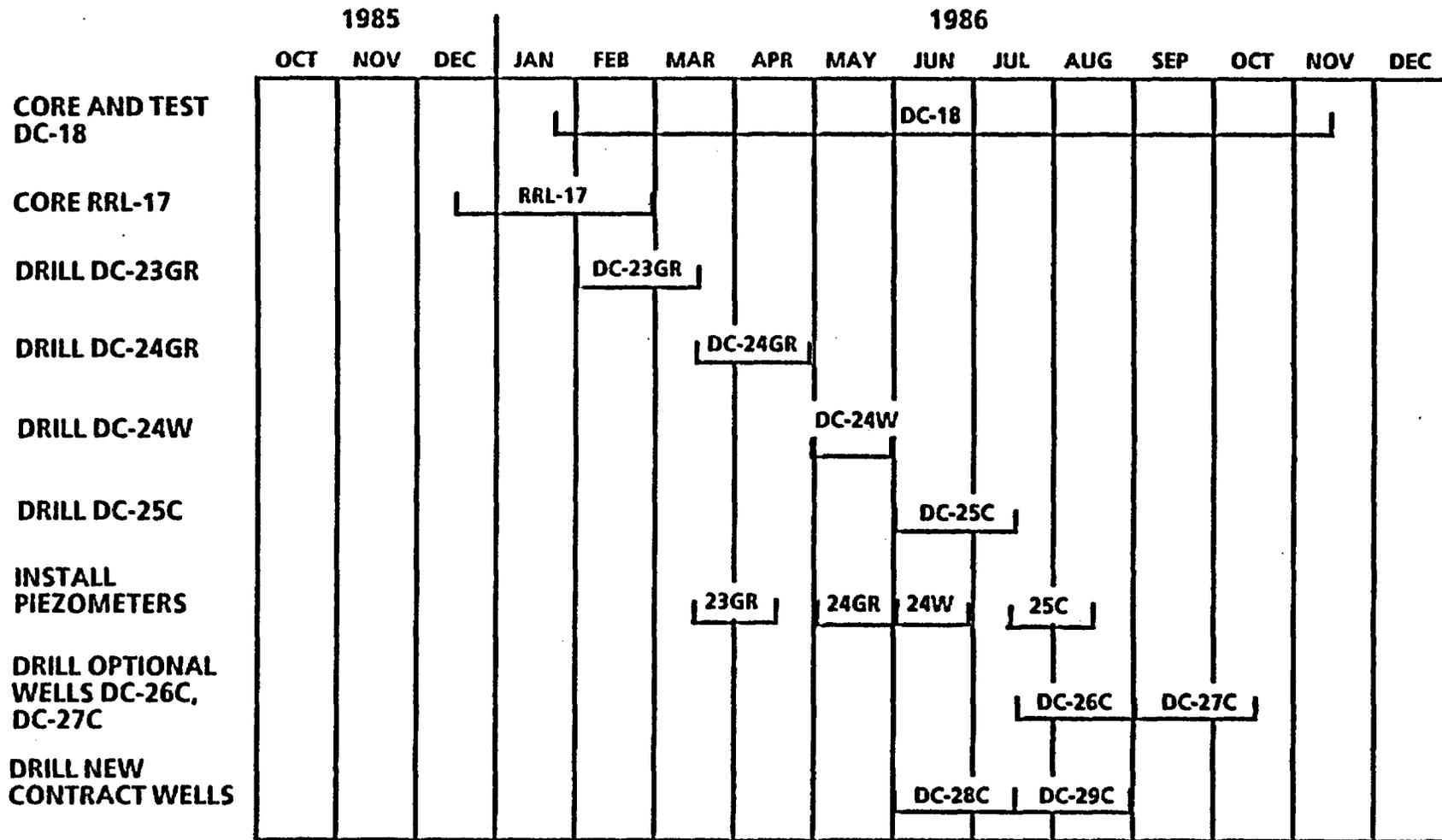
1. **INSTALL ADDITIONAL MONITORING FACILITIES**
 - DC-23GR
 - DC-24GR
 - DC-24W
 - DC-25C
2. **ASSESS BENEFITS OF CONTRACTING SECOND DRILL RIG FOR ADDITIONAL FACILITIES**
 - FOUR ADDITIONAL FACILITIES (DC-26 THROUGH -29)
3. **FINISH CORING RRL-17 AND INSTALL GR-5 PIEZOMETER**
4. **DRILL AND TEST DC-18 (HYDROCHEMISTRY/GEOLOGY/HYDROLOGY)**
5. **FINISH LHS TEST PLAN FOR ROCKY COULEE TEST**
6. **PROCEED WITH QUALITY ASSURANCE PLAN AND READINESS REVIEW FOR ROCKY COULEE TEST**
7. **DOCUMENT HYDROLOGY CHARACTERIZATION STRATEGY**
8. **REEVALUATE LHS TEST STARTING DATE**



0 1 2 3 MILES
0 1 2 3 4 5 KILOMETERS



**CURRENT DRILLING SCHEDULE WITH OPTION
(CONTINGENCY PLANNING IF LHS TEST DELAYED)**



**PROPOSED DRILLING SCHEDULE WITH OPTION AND SECOND ROTARY RIG
(CONTINGENCY PLANNING IF LHS TEST DELAYED)**

READINESS REVIEW

- 1. SYSTEMATIC APPROACH TO DETERMINE STATUS OF AN ACTIVITY**
- 2. PROVIDES TO MANAGEMENT VISIBLE OBJECTIVE AND WELL-ORGANIZED EVIDENCE, DEMONSTRATING THE READINESS FOR INITIATION OF AN ACTIVITY**
- 3. PROVIDES FOR AN INDEPENDENT, THOROUGH FINAL REVIEW PRIOR TO ACTIVITY AUTHORIZATION**
- 4. PROVIDES FOR A MECHANISM TO IDENTIFY DEFICIENCIES THAT COULD RESULT IN DELAYS**

PRIMARY GOALS OF LARGE-SCALE HYDRAULIC STRESS TEST READINESS REVIEW

- 1. ASSURE DOE-RL THAT DATA GENERATED FROM LHS TESTING ARE SUITABLE FOR FUTURE LICENSING PURPOSES**
 - a. TECHNICALLY SOUND**
 - b. QUALITY ASSURANCE**
- 2. ASSURE DOE-RL THAT ALL NECESSARY ACTIVITIES AND ACTIONS HAVE BEEN SATISFACTORILY COMPLETED PRIOR TO AUTHORIZATION TO PROCEED**
- 3. TAILOR RR PLAN FOR GEOHYDROLOGIC INVESTIGATION; MOST RR EXPERIENCE IS FOR PROCESSES AND FACILITIES**

U.S. DEPARTMENT OF ENERGY- RICHLAND READINESS REVIEW

PLAN PROVIDES

- 1. DEFINITION OF ORGANIZATION AND FUNCTIONAL RESPONSIBILITIES, OBJECTIVES, AND DETAILED INSTRUCTIONS FOR CONDUCT OF RR**
- 2. DOE-RL STARTUP APPROVAL FOR LHS TEST**
- 3. DOE-RL READINESS REVIEW TEAM**
- 4. DOE-RL ASSURANCE OF READINESS BY AUDIT OF SELECTED ELEMENTS OF CONTRACTOR RR AND BY DIRECT CONCURRENT OBSERVATION OF CONTRACTOR RR ACTIVITIES**
- 5. DOE-RL REVIEW COORDINATOR TO ACT AS LIAISON BETWEEN DOE-RL AND CONTRACTOR**
- 6. AUDITABLE RECORD OF DOE-RL READINESS ACTIVITIES**

STATUS: SECOND DRAFT IS BEING WRITTEN

IMPORTANT BASALT WASTE ISOLATION PROJECT EVENTS (FOURTH QUARTER, 1985)

- **ENVIRONMENTAL ASSESSMENT**
 - FINAL REVIEW
 - RECONCILIATION
 - COMMENT RESPONSES

- **HIGH-LEVEL TECHNICAL REVIEWS**
 - WITH NRC ON LARGE-SCALE HYDRAULIC STRESS TEST
 - WITH USGS AND NRC ON GEOCHEMISTRY
 - WITH NRC ON EXPLORATORY SHAFT DESIGN
 - WITH NRC AS PARTICIPANT IN OCRWM SEISMIC-TECTONIC POSITION DEVELOPMENT
 - STATE OF WASHINGTON LEGISLATIVE REVIEW OF PROGRAM

IMPORTANT BASALT WASTE ISOLATION PROJECT EVENTS

(FOURTH QUARTER, 1985) (CONT.)

- **SITE CHARACTERIZATION PLAN - DEVELOPMENT OF STRATEGY TO ADDRESS ISSUES**
- **PROGRAM PLANNING LOGIC DEVELOPMENT**
- **BASALT WASTE ISOLATION PROJECT QUALITY ASSURANCE PROGRAM**

PERFORMANCE ASSESSMENT

TONY KNEPP, HYDROLOGIST (MODELING),
GEOSCIENCES

TECHNOLOGY BRANCH

U.S. DEPARTMENT OF ENERGY – RICHLAND

OUTLINE

WHAT IS PERFORMANCE ASSESSMENT?

WHO DOES IT?

HOW DOES IT FIT INTO THE BASALT WASTE
ISOLATION PROJECT (BWIP)?

STRATEGIES? WHY NOW?

PERFORMANCE ASSESSMENT

DEFINITION:

THE PROCESS OF DETERMINING HOW WELL THE VARIOUS FEATURES OF THE SITE AND REPOSITORY PERFORM AS COMPARED TO THE APPLICABLE REGULATIONS (10 CFR 60) AND STANDARDS (40 CFR 191)

MAJOR PERFORMANCE ASSESSMENT FUNCTIONS

- ④ ANALYSIS OF THE BWIP SAFETY AND ISOLATION FEATURES TO SHOW COMPLIANCE
- ④ GUIDE TESTING PROGRAM
 - STRATEGY DEVELOPMENT (PERFORMANCE ALLOCATION)

PERFORMANCE ASSESSMENT CRITERIA

POSTCLOSURE

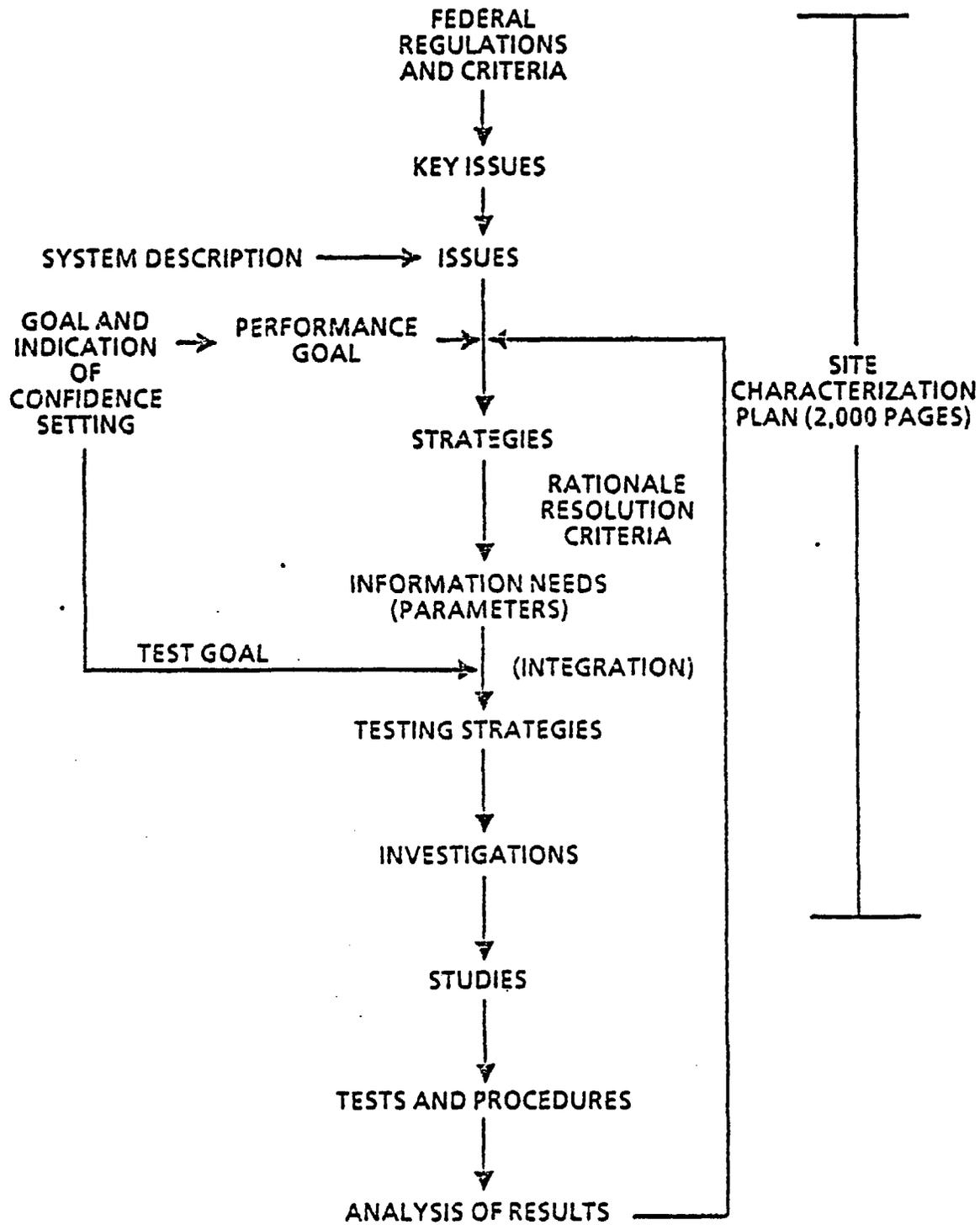
- ④ LIMIT CUMULATIVE RADIONUCLIDE RELEASE TO THE ACCESSIBLE ENVIRONMENT TO LESS THAN THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) LIMITS (40 CFR 191)
- ④ ENSURE A TRAVEL TIME OF GREATER THAN 1,000 YEARS FROM THE EDGE OF THE REPOSITORY TO THE ACCESSIBLE ENVIRONMENT (10 CFR 60)
- ④ ENSURE RADIONUCLIDE RELEASE FROM THE ENGINEERED BARRIER SYSTEM (EBS) OF LESS THAN ONE PART IN 100,000 PER YEAR OF THE 1,000-YEAR INVENTORY (10 CFR 60)
- ④ MAINTAIN CONTAINMENT WITHIN THE EBS FOR 1,000 YEARS (10 CFR 60)

PERFORMANCE ASSESSMENT CRITERIA (CONT.)

PRECLOSURE

- MAINTAIN PUBLIC SAFETY (10 CFR 60) (RELEASES LESS THAN 500 mrem)
- MAINTAIN OPERATOR SAFETY (10 CFR 20) (MHSA)

OVERVIEW OF ISSUE AND STRATEGY SETTING



KEY POINTS

- TEST PROGRAM IS ISSUE-ORIENTED, PERFORMANCE-DRIVEN
- ISSUES DERIVED FROM REGULATIONS AND SITE CONDITIONS
- ABILITY TO TRACK A REQUIREMENT FROM REGULATIONS TO TEST
- PERFORMANCE GOALS (NUMERIC AND NONNUMERIC) SET FOR EACH COMPONENT OF A BARRIER SYSTEM (INDICATION OF CONFIDENCE)
- TEST GOALS SET FOR THE RESULTS OF MOST TESTS

PERFORMANCE ALLOCATION

- ④ TO PERMIT THE U.S. NUCLEAR REGULATORY COMMISSION (NRC) AND OTHERS TO DETERMINE IF PLANNED TESTING WILL ADEQUATELY SUPPORT LICENSING
- ④ FOR EACH REGULATORY REQUIREMENT:
 - PRIMARY AND SECONDARY BARRIERS USED IN LICENSING
 - A LEVEL OF PERFORMANCE (GOAL) FOR EACH
 - AN INDICATION OF CONFIDENCE FOR THE GOAL
- ④ FOR MOST TESTS:
 - A TESTING GOAL
 - AN INDICATION OF CONFIDENCE

INFORMATION IN A STRATEGY

- ① ISSUE
- ① BACKGROUND
- ① APPROACH TO RESOLUTION
 - ALLOCATIONS (WHAT BARRIERS AND HOW SURE?)
 - AREAS OF TESTING
- ① INTERACTIONS WITH OTHER GROUPS
- ① RESOLUTION CRITERIA (HOW MUCH IS ENOUGH?)
 - TESTING
 - INTERNAL AND EXTERNAL PEER REVIEW
- ① SCHEDULE
- ① RESOURCES (TIME AND MONEY)

SUMMARY

- **THE BWIP PROGRAM IS ISSUE-ORIENTED, PERFORMANCE-DRIVEN**
- **PERFORMANCE ASSESSMENT ANSWERS ("HOW TO" AND "HOW WELL")**
- **RAPID DEVELOPMENT - CHANGES**
- **STRATEGY STATEMENTS WILL BE AN IMPORTANT ELEMENT OF PROGRAM REVIEW**

INFORMATION IN A TESTING STRATEGY

- ① ISSUE
- ② BACKGROUND
- ③ TESTING RATIONALE (STRATEGY)
- ④ DESCRIPTIONS
 - TYPES
 - INFORMATION ACQUIRED
 - DOCUMENTATION
- ⑤ SUFFICIENCY CRITERIA
- ⑥ SCHEDULE (SEQUENCE AND DURATION)
- ⑦ SCALE
- ⑧ DATA ANALYSES
- ⑨ DATA APPLICATION

ELECTRONIC

BULLETIN

BOARD

January 22, 1986

OBJECTIVE

AN ELECTRONIC BULLETIN BOARD FOR ACCESS BY THE
AFFECTED INDIAN TRIBES AND STATES TO INCLUDE:

- SCHEDULE OF MEETINGS
 - NRC
 - DOE
- COMMUNICATIONS LISTINGS
- BWIP ACTIVITIES LISTING
- LISTING OF DATA AVAILABILITY

TEMPORARY SYSTEM

- DISCUSSION HELD WITH CRYSTALLINE OFFICE ABOUT THEIR SYSTEM
- INSTALLATION OF TELEPHONE LINES AND MODEMS
- ACCESS CODES ASSIGNED
- TRAINING
- ON-LINE BY APRIL 1986

PERMANENT SYSTEM

- NO INTERRUPTION OF SERVICE
- MEETING TO BE SCHEDULED WITH HEADQUARTERS TO
 - FINALIZE GUIDELINES
 - FINALIZE CONFIGURATION
 - SCHEDULE IMPLEMENTATION
- INVESTIGATE HARDWARE SYSTEMS AND ACCESS
 - USE OF CURRENT ONSITE COMPUTER
 - USE OF NEW COMPUTER
 - USE OF COMMERCIAL SERVICE
- INFORMATION RESOURCE MANAGEMENT PLAN IN PREPARATION

ACCESS PROCEDURE

- **LOAD TERMINAL EMULATOR**
- **ACCESS DEFENDER SYSTEM (NOT SHOWN IN DEMO)**
 - **CALL IN**
 - **ANSWER RETURN CALL**
- **SELECT DESIRED INFORMATION**

HARDWARE / SOFTWARE NEEDED FOR ACCESS

**(LETTER WILL BE SENT PROVIDING DETAILS INCLUDING
FUNDING INFORMATION)**

- **IBM PC**
- **MODEM**
- **TERMINAL EMULATION PACKAGE**
- **TELEPHONE**

BASALT WASTE ISOLATION PROJECT

**Key Activities Before Issuance
of the Site Characterization Plan**

**PRESENTATION TO
QUARTERLY MEETING OF STATES AND TRIBES**

by

Jim Mecca

BASALT WASTE ISOLATION PROJECT ENGINEERING

REPOSITORY:

- **CONTINUE CONCEPTUAL DESIGN STUDIES**
- **CONTINUE SEALS DEVELOPMENT**
- **CONTINUE CODE DEVELOPMENT FOR TESTING HIGH IN-SITU ROCK STRESSES**

EXPLORATORY SHAFT:

- **CONTINUE DETAILED DESIGN**
- **CONTINUE DEVELOPMENT OF EQUIPMENT AT THE NEAR-SURFACE TEST FACILITY, TO BE USED FOR TESTING AT-DEPTH**
- **ISSUE TEST PLAN (4/86)**

BASALT WASTE ISOLATION PROJECT REGULATORY AND INSTITUTIONAL ACTIVITIES

- **CONTINUE INTERACTIONS WITH THE:**
 - STATE OF WASHINGTON
 - AFFECTED INDIAN TRIBES
 - STATE OF OREGON
 - LOCAL GOVERNMENTS (CITIES, COUNTIES, ETC.)
 - THE PUBLIC
 - OTHERS
- **CONTINUE TECHNICAL EXCHANGE:**
 - U.S. NUCLEAR REGULATORY COMMISSION
 - U.S. GEOLOGICAL SURVEY
 - U.S. BUREAU OF MINES
 - MINE SAFETY & HEALTH ADMINISTRATION
 - NATIONAL ACADEMY OF SCIENCE
 - ACRS - ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
 - TECHNICAL REVIEW GROUP

BASALT WASTE ISOLATION PROJECT SITE EVALUATIONS

- **CONTINUE SITE TECTONIC/SEISMIC MONITORING**
- **INITIATE LARGE-SCALE PUMP TESTS (2/86)**
- **CONTINUE COREHOLE/BOREHOLE DRILLING & TESTING**
- **CONTINUE WASTE PACKAGE/BASALT/WATER INTERACTION TESTING**

BASALT WASTE ISOLATION PROJECT WASTE PACKAGE

- **CONTINUE HOT CELL TESTING OF WASTE/ROCK/WATER INTERACTIONS**
- **CONTINUE WASTE PACKAGE ADVANCED CONCEPTUAL DESIGN**
- **CONTINUE LABORATORY TESTING:**
 - **WASTE PACKAGE MATERIALS**
 - **WASTE PACKAGE BACKFILL**

BASALT WASTE ISOLATION PROJECT SYSTEMS

- **CONTINUE DEVELOPMENT OF PERFORMANCE ASSESSMENTS CODES AND PERFORMANCE ANALYSIS**
- **CONTINUE DATA MANAGEMENT AND DOCUMENT DISTRIBUTION**

BASALT WASTE ISOLATION PROJECT PROJECT MANAGEMENT

- **CONTINUE DEVELOPMENT OF QA PROCEDURES AND IMPLEMENT**
- **CONTINUE PROJECT BUSINESS MANAGEMENT SYSTEM UPGRADE**

**BASALT WASTE ISOLATION PROJECT
SITE, ENGINEERED BARRIERS, AND
GEOMECHANICS DEPARTMENT ACTIVITIES (CONT)**

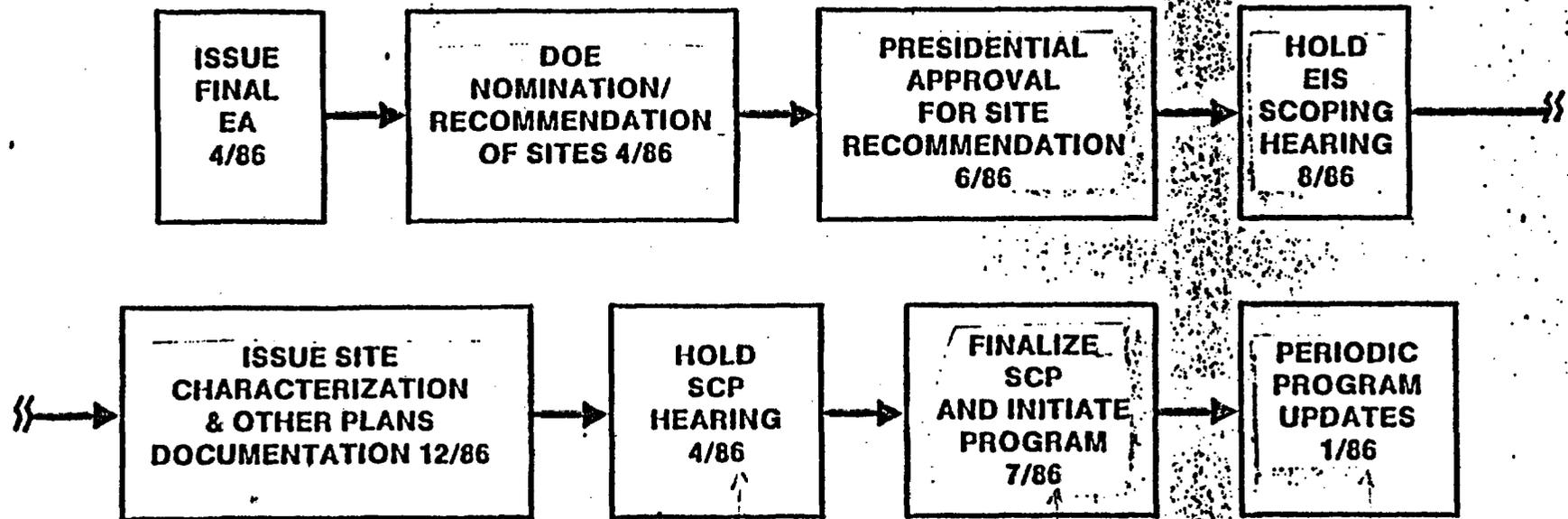
<u>ACTIVITIES</u>	<u>DATE</u>	<u>REV.*</u>
SOLUTION CHEMISTRY LABORATORY (CONTINUED)		
• METHODS DEVELOPMENT FOR MEASUREMENT OF DISSOLVED HYDROGEN (H ₂) IN AQUEOUS SAMPLES FROM AUTOCLAVES IN THE NON-RADIOACTIVE HYDROTHERMAL LABORATORY	ONGOING	11
• ANALYZE SOLUTIONS FROM EXPERIMENTS ON SORPTION PHENOMENA OF FLOW TOP MATERIALS BEING DONE AT PNL	ONGOING	
MICROCHARACTERIZATION (SOLIDS) LABORATORY		
SCANNING TRANSMISSION ELECTRON MICROSCOPE -		
• ANALYSIS OF FLOW-THROUGH RUN PRODUCTS	ONGOING	11
• ANALYSIS OF DICKSON AUTOCLAVE RUN PRODUCTS	ONGOING	
• INITIATE CORING OF RRL-17	12/02-31/85	
• INITIATE DRILLING OF DC-18	12/11/85-09/30/86	
• INITIATE ROTARY DRILLING OF DC-24	12/09/85-01/10-86	
• CONDUCT GEOLOGIC FIELD MAPPING	11/08-20/85	
X-RAY DIFFRACTOMETER -		
• ANALYSIS OF McCOY CANYON, UMTANUM AND HIGH-Mg FLOW TOPS		
• ANALYSIS OF FLOW-THROUGH RUN PRODUCTS	COMPLETE	
• ANALYSIS OF DICKSON AUTOCLAVE RUN PRODUCTS	ONGOING	
• ANALYSIS OF FAULT GOUGE	COMPLETE	
• ANALYSIS OF SEDIMENTARY INTERBED MINERALS	SEPTEMBER 1986	
• ANALYSIS OF CORROSION WATER SURFACE COATINGS	ONGOING	
ELECTRON MICROPROBE -		
• ANALYSIS OF ROCKY COULEE FLOW TOPS	COMPLETE	
• ANALYSIS OF DICKSON AUTOCLAVE RUN PRODUCTS	ONGOING	
• ANALYSIS OF OXIDE MINERALS IN ROCKY COULEE/COHASSET FLOW TOPS	COMPLETE	
RADIOACTIVE HYDROTHERMAL LABORATORY		
• BASALT AND SYNTHETIC GROUNDWATER TESTS IN FLOW-THROUGH AUTOCLAVE	ONGOING	
• RADIONUCLIDE-DOPED SIMULATED SAVANNAH RIVER PLANT DEFENSE GLASS + BASALT AND SYNTHETIC GROUNDWATER	ONGOING	
• EXPERIMENTS USING FULLY RADIOACTIVE WASTE FORMS IN THE PRESENCE OF VARIOUS WASTE PACKAGE COMPONENTS (METAL, BARRIERS, AND/OR BASALT)	APRIL 1986	
• EXPERIMENTS ON THE BEHAVIOR OF SPECIFIC RADIONUCLIDES, INTRODUCED INDIVIDUALLY WITH GROUNDWATER, IN THE PRESENCE OF PACKING MATERIAL AT LOW TEMPERATURES	ONGOING	

**BASALT WASTE ISOLATION PROJECT
SITE, ENGINEERED BARRIERS, AND
GEOMECHANICS DEPARTMENT ACTIVITIES (CONT)**

<u>ACTIVITIES</u>	<u>DATE</u>	<u>REV.*</u>
NON-RADIOACTIVE HYDROTHERMAL LABORATORY		
• HYDROTHERMAL TESTS ON BASALT + BENTONITE + GROUNDWATER	ONGOING	
• LONG-TERM HYDROTHERMAL TESTS (1-5 YEARS) ON BASALT + GROUNDWATER	ONGOING	
• DETERMINE THE SOLUBILITY OF SELENIUM UNDER HYDROTHERMAL CONDITIONS SIMULATING THE NEAR-FIELD ENVIRONMENT	ONGOING	
• EVALUATE REDOX CONDITIONS IN A HYDROTHERMAL EXPERIMENT SIMULATING A NEAR-FIELD ENVIRONMENT	ONGOING	
• DEHYDRATION EXPERIMENTS	ONGOING	
WASTE PACKAGE PACKING INVESTIGATORY TESTING		
• UNIAXIAL COMPRESSION	50 TESTS	COMPLETE
• BRAZILLIAN TENSION	50 TESTS	COMPLETE
• DIRECT SHEAR	50 TESTS	COMPLETE
• 4-POINT FLEXURE	40 TESTS	COMPLETE
• DENSITY	100 TESTS	COMPLETE
CONCRETE TESTING LABORATORY		
• PREFABRICATED PACKING TESTING - DEVELOPMENTAL	COMPLETE	
• NEAR-SURFACE TESTING FACILITY REMEDIAL SHOTCRETE	ONGOING	
BACKFILL TESTING LABORATORY		
• HYDRAULIC CONDUCTIVITY TESTS	ONGOING	
• START SWELLING, PRESSURE PERMEAMETER AND TRIAXIAL TESTS	ONGOING	
• STARTED (2) LONG-TERM FLOW THROUGH PERMEAMETER TESTS	ONGOING	11
GEOMECHANICS TESTING AT NEAR-SURFACE TEST FACILITY		
• OVERCORING DEVELOPMENTAL TESTING WITH CSIRO TRIAXIAL CELL	BEGIN 12/85	
• DEVELOPMENT TESTING OF A PROTOTYPE THERMAL CONDUCTIVITY PROBE	BEGIN 12/85	11
ROCK MECHANICS LABORATORY		
• THERMAL CONDUCTIVITY/THERMAL EXPANSION DEVELOPMENT TESTING	11/85-01/86	11

* CHANGES IN THIS SCHEDULE FROM THAT LAST ISSUED ARE INDICATED BY A REVISION BAR AND REVISION NUMBER. ITEMS WILL REMAIN ON LISTING FOR A TWO MONTH PERIOD AFTER COMPLETION.

POSSIBLE LOGIC PROGRAM



**QUALITY ASSURANCE REQUIREMENTS
FOR SITE CHARACTERIZATION**

**PIERRE SAGET, ACTING CHIEF, QUALITY
ASSURANCE BRANCH**

U.S. DEPARTMENT OF ENERGY – RICHLAND

**BWIP
QUALITY ASSURANCE (QA) PROGRAM**

- **QA REQUIREMENTS FOR SITE CHARACTERIZATION**
- **STATUS OF BWIP QA PROGRAM IMPLEMENTATION**

**THE BWIP IS COMMITTED TO PROVIDING A "FULLY QUALIFIED"
QA PROGRAM PRIOR TO ISSUANCE OF THE SITE
CHARACTERIZATION PLAN (SCP).**

QA REQUIREMENT DOCUMENTS

- 10 CFR 60, PART G
 - 10 CFR 50, APPENDIX B
 - ANSI/ASME NQA-1-1983 "QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR NUCLEAR FACILITIES"
 - NRC REVIEW PLAN: QUALITY ASSURANCE PROGRAMS FOR SITE CHARACTERIZATION OF HIGH-LEVEL NUCLEAR WASTE REPOSITORIES
 - DOE/HQ QA PLANS AND REQUIREMENTS DOCUMENTS
 - DOE ORDERS
- } BWIP QUALITY ASSURANCE REQUIREMENTS DOCUMENT (BQARD)

BQARD

- **COMBINES BASE REQUIREMENTS INTO A SINGLE DOCUMENT**
- **INSURES CONSISTENT IMPLEMENTATION OF REQUIREMENTS AMONG PROJECT PARTICIPANTS**
- **PROVIDES BASIS FOR "FULLY QUALIFIED" QA PROGRAM**
- **USES 18 CRITERIA FORMAT**

KEY ACTIVITIES OF PARTICIPANTS QA PROGRAMS

- **BQARD ISSUANCE**
- **QA PLANS**
- **IMPLEMENTING PROCEDURES**
- **PERSONNEL TRAINING**
- **VERIFICATION PROGRAMS (AUDIT/SURVEILLANCE)**
- **READINESS REVIEWS**
- **Q-LIST/GRADED QA**
- **SITE CHARACTERIZATION PLAN (SCP) ISSUANCE**

PROGRAM LOGIC

QA PLANS



QA PROCEDURES



TRAINING



BWIP VERIFICATION
PROGRAM



DOE/HQ VALIDATION
AUDIT



NRC VALIDATION
AUDIT



AUDIT FINDINGS
RESOLUTION



SCP
ISSUANCE



BQARD ISSUANCE

- **BQARD ISSUED TO ALL PROJECT PARTICIPANTS IN JANUARY 1986**
- **PROJECT PARTICIPANTS GENERATING BQARD IMPLEMENTATION PLANS**

QA PLANS

- **QA PLANS FOR ALL PROJECT PARTICIPANTS ARE CURRENTLY APPROVED**
- **QA PLANS ARE BEING REVIEWED AGAINST BQARD TO ASSESS NEEDS FOR REVISION**

IMPLEMENTING PROCEDURES

- **PROJECT PARTICIPANTS IMPLEMENTING PROCEDURES ARE NEARING COMPLETION**
- **PROCEDURES TO BE REVIEWED AGAINST BOARD REQUIREMENTS TO ASSESS NEEDS FOR FURTHER REVISION**
- **PROCEDURES TO BE AUDITED FOR ACCEPTABILITY OF IMPLEMENTATION BY SEPTEMBER 30, 1986**

PERSONNEL TRAINING

- **PROJECT PARTICIPANTS DEVELOPING AND IMPLEMENTING TRAINING PROGRAMS**
- **ALL TRAINING PROGRAMS TO BE AUDITED FOR ACCEPTABILITY PRIOR TO SEPTEMBER 30, 1986**
 - **TRAINING PLANS**
 - **TRAINING STANDARDS**
 - **TRAINING RECORDS**

VERIFICATION PROGRAM

- **DOE/RL AUDIT/SURVEILLANCE PLANS IN DRAFT**
- **ROCKWELL AUDIT/SURVEILLANCE PLANS BEING APPROVED**
- **PROJECT PARTICIPANTS GENERATING AN INTEGRATED QA VERIFICATION PLAN/PROGRAM**
- **DOE/HQ AND NRC AUDITS PRIOR TO ISSUANCE OF SCP**

READINESS REVIEWS

- **SYSTEMATIC APPROACH FOR DETERMINING THE STATUS OF A FACILITY, PROCESS, SYSTEM, OR ACTIVITY**
- **READINESS REVIEWS CURRENTLY IDENTIFIED FOR THE FOLLOWING BWIP ACTIVITIES:**
 - **START OF LARGE HYDROLOGIC STRESS (LHS) TEST**
 - **START OF EXPLORATORY SHAFT (ES) DRILLING**

Q-LIST

- **METHODOLOGY FOR GENERATING THE LIST OF STRUCTURES, SYSTEMS, COMPONENTS AND ACTIVITIES IMPORTANT TO SAFETY OR WASTE ISOLATION**
- **DOE/HQ DIRECTIONS ON METHODOLOGY DUE BY END OF JANUARY**

GRADED QA

- **SELECTIVE APPLICATION OF QA REQUIREMENTS ON THE ITEM OR ACTIVITY TO BE PERFORMED, CONSISTENT WITH THE EXTENT OF THEIR IMPORTANCE TO SAFETY, WASTE ISOLATION, AND THE ACHIEVEMENT OF PROGRAM SUCCESS**
- **3-LEVEL APPROACH**
- **DOE/HQ DIRECTIONS ON DETAILED APPLICATION DUE BY END OF JANUARY**

SITE CHARACTERIZATION PLAN (SCP) ISSUANCE

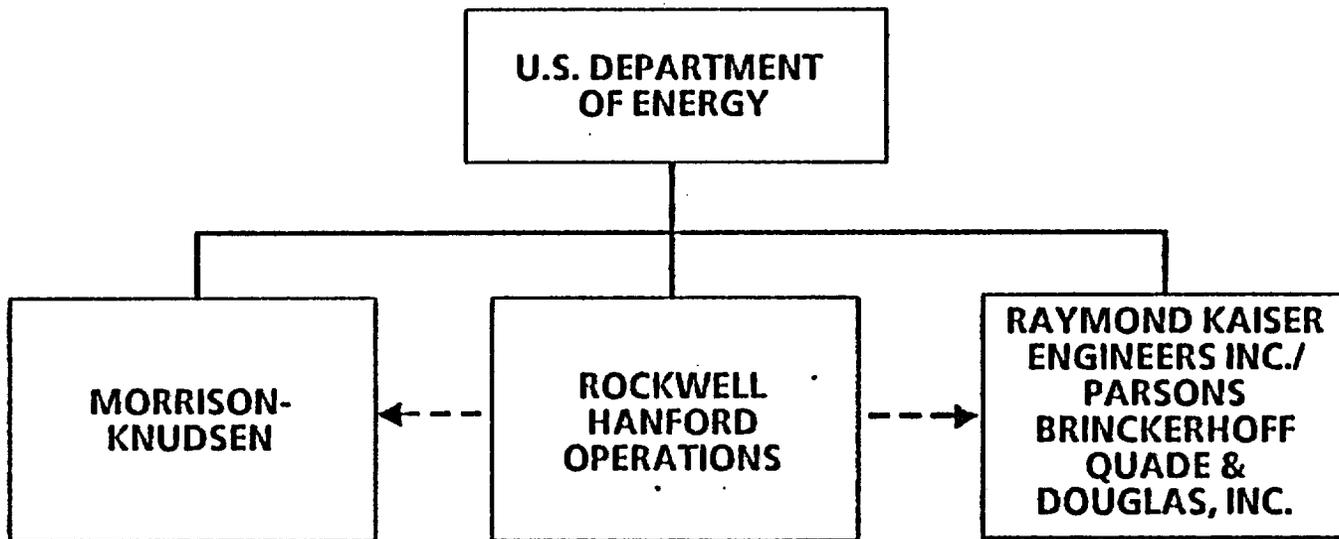
- **SCP ISSUANCE BEING DELAYED. DATE OF ISSUANCE BEING ASSESSED**
- **PROJECT PARTICIPANTS DIRECTING EFFORTS TO HAVE "FULLY QUALIFIED" QA PROGRAMS IN PLACE BY SEPTEMBER 30, 1986. DOE AND NRC ASSESSMENTS TO FOLLOW**

**ENGINEERING AND CONSTRUCTION –
OVERVIEW OF ACTIVITIES AND
PROGRAMS**

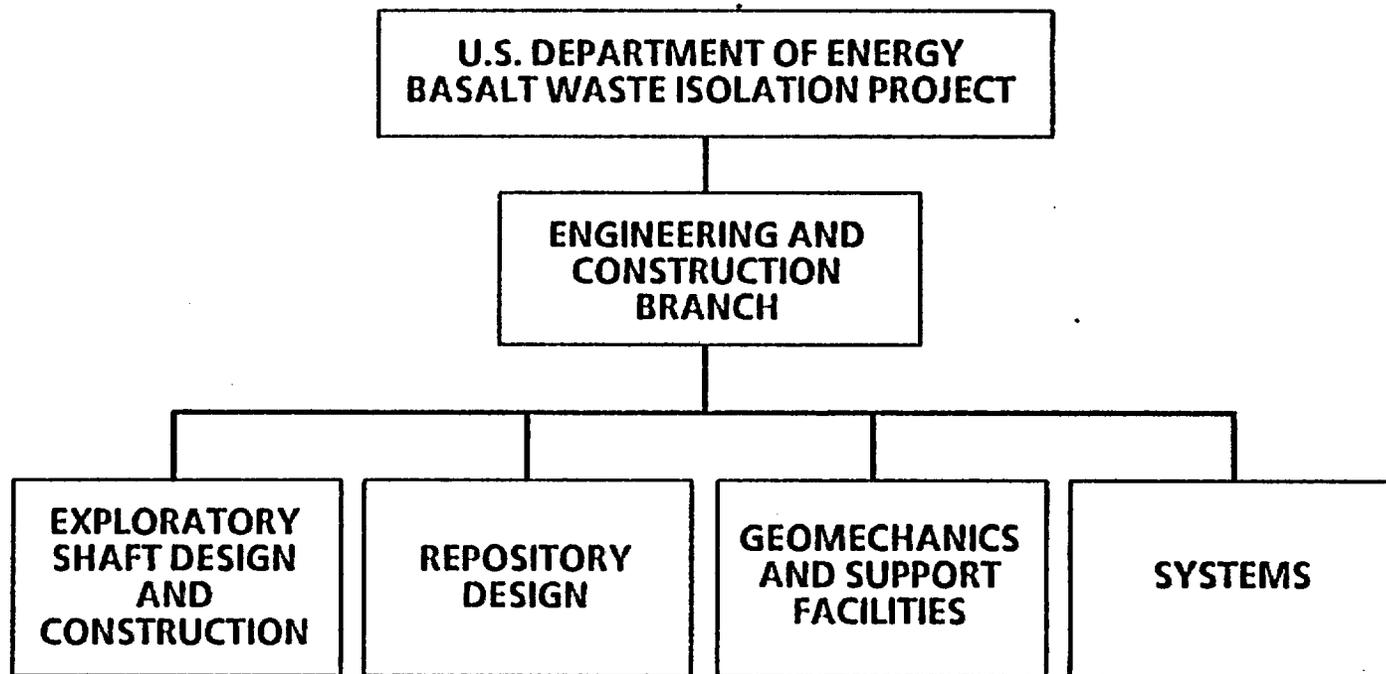
**BRUCE NICOLL, ACTING CHIEF,
ENGINEERING AND CONSTRUCTION BRANCH**

U.S. DEPARTMENT OF ENERGY – RICHLAND

ENGINEERING AND CONSTRUCTION TEAM



U.S. DEPARTMENT OF ENERGY ENGINEERING AND CONSTRUCTION ORGANIZATION



2-7

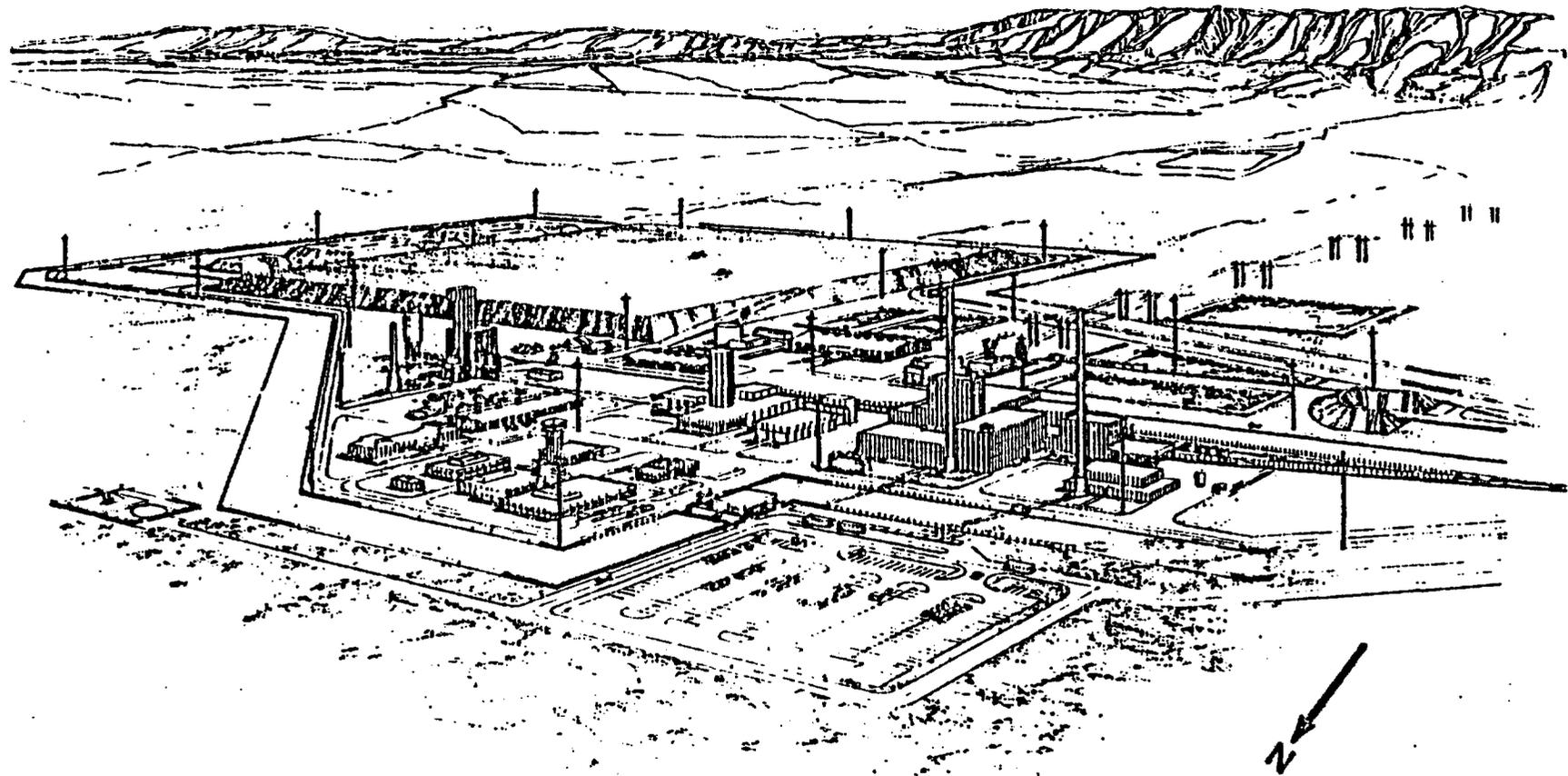
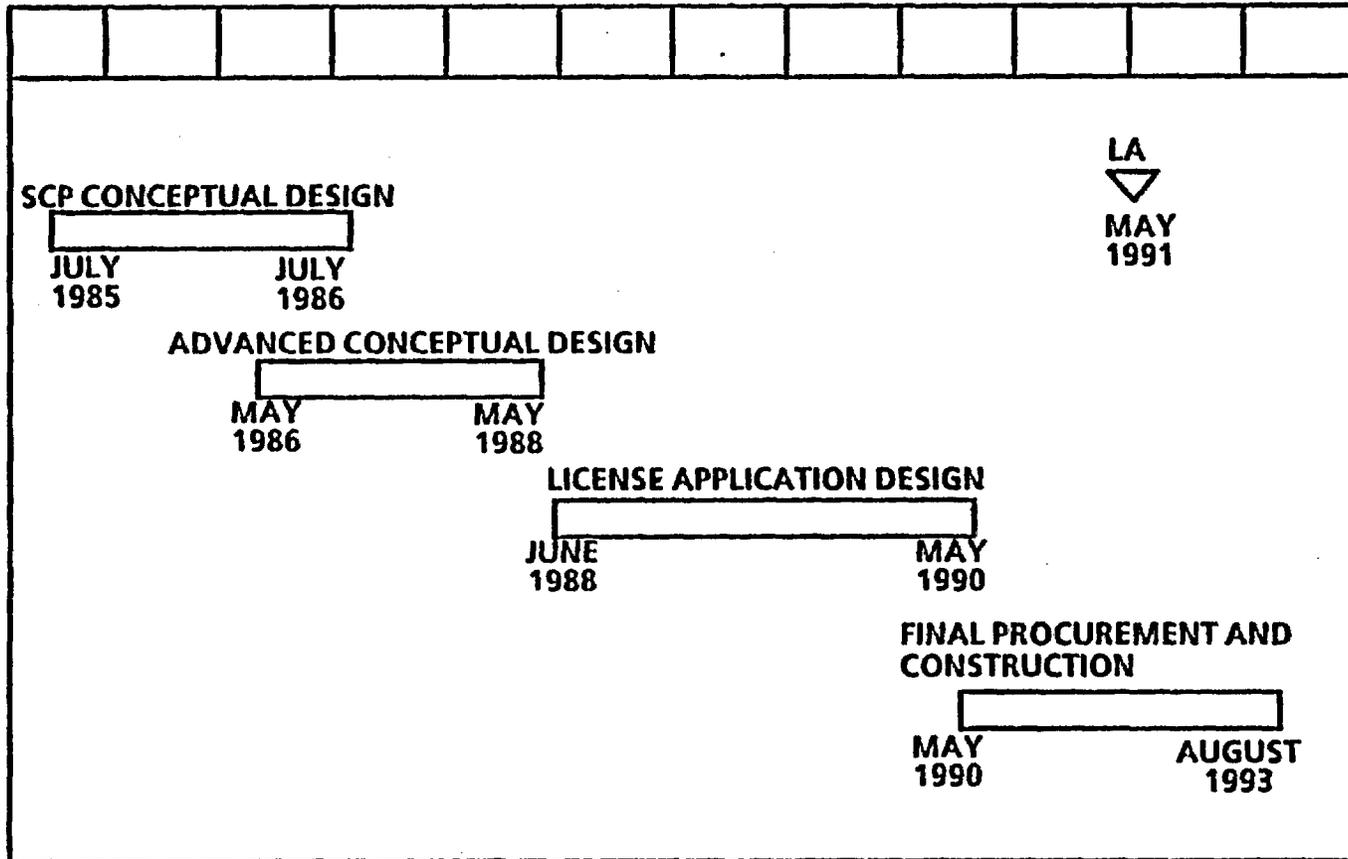


FIGURE 2-1. Surface Facilities of the NWRB.

SD-BMI-SD-005 VOL I
REV 0-0

REPOSITORY DESIGN SCHEDULE



MAJOR REPOSITORY DOCUMENTS COMPLETED BY BWIP

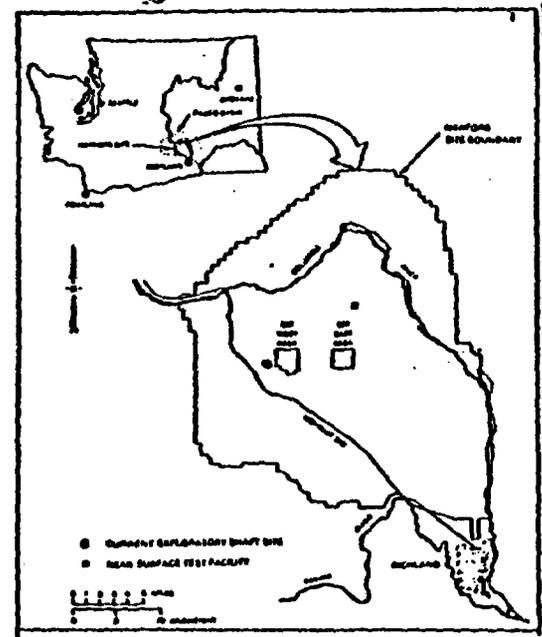
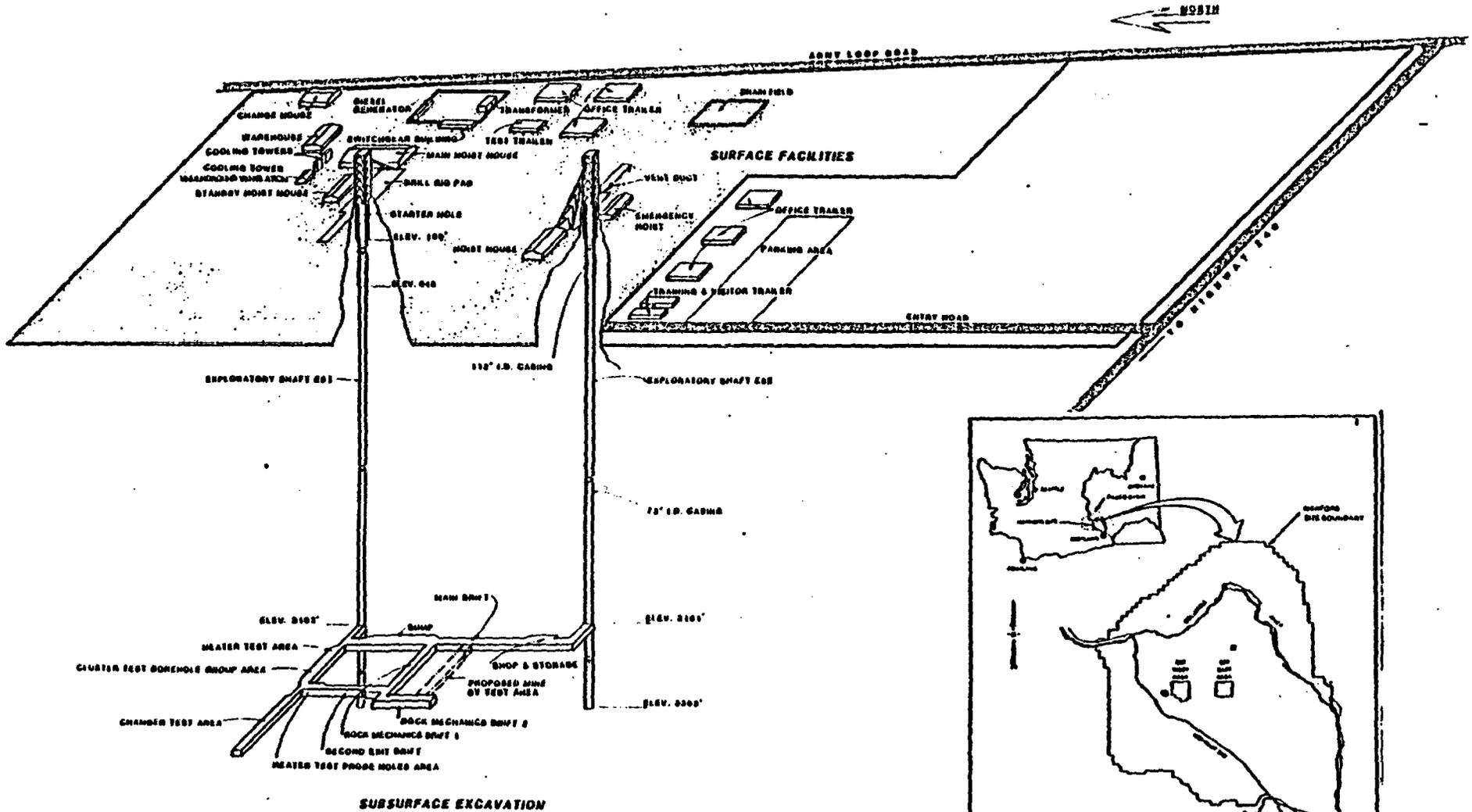
APRIL 1983	CONCEPTUAL SYSTEM DESIGN DESCRIPTION, NUCLEAR WASTE REPOSITORY IN BASALT
JULY 1984	TWO-PHASE FEASIBILITY STUDY
JULY 1984	ENGINEERING STUDY NO. 5, SHAFT OPTIMIZATION
MAY 1984	ENGINEERING STUDY NO.6, TUNNEL OPTIMIZATION
JUNE 1984	ENGINEERING STUDY NO. 7, WASTE EMPLACEMENT OPTIMIZATION
JUNE 1984	ENGINEERING STUDY NO. 8, IN SITU INSTRUMENTATION
JANUARY 1985	ENGINEERING STUDY 9, UNDERGROUND REPOSITORY LAYOUT
DECEMBER 1985	ENGINEERING STUDY 12, INTEGRATED MRS/REPOSITORY COMPARATIVE STUDY

MAJOR ACTIVITIES FOR FIRST HALF OF 1986

- **COMPLETE SITE CHARACTERIZATION PLAN -
CONCEPTUAL DESIGN**
- **ONGOING ACTIVITIES**
 - **PREPARATIONS FOR START OF ADVANCED CONCEPTUAL
DESIGN IN MAY**
 - **DEVELOPMENT OF SITE-SPECIFIC RETRIEVABILITY POSITION
PAPER**
 - **INITIATE A STUDY ON ROD CONSOLIDATION IN CONCERT
WITH DOE-HQ AND OTHER REPOSITORY SITES**

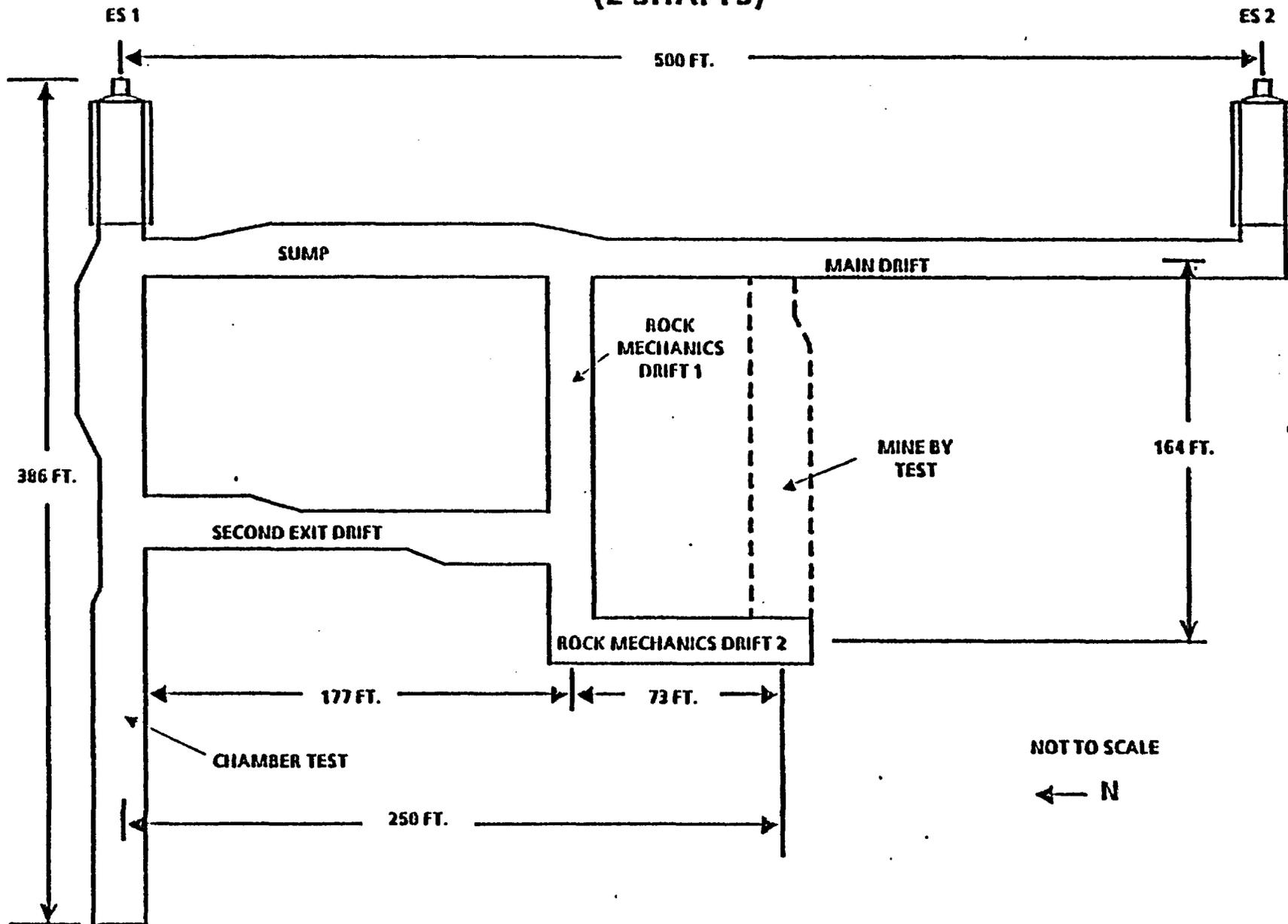
7(c)

BASALT WASTE ISOLATION PROJECT EXPLORATORY SHAFT

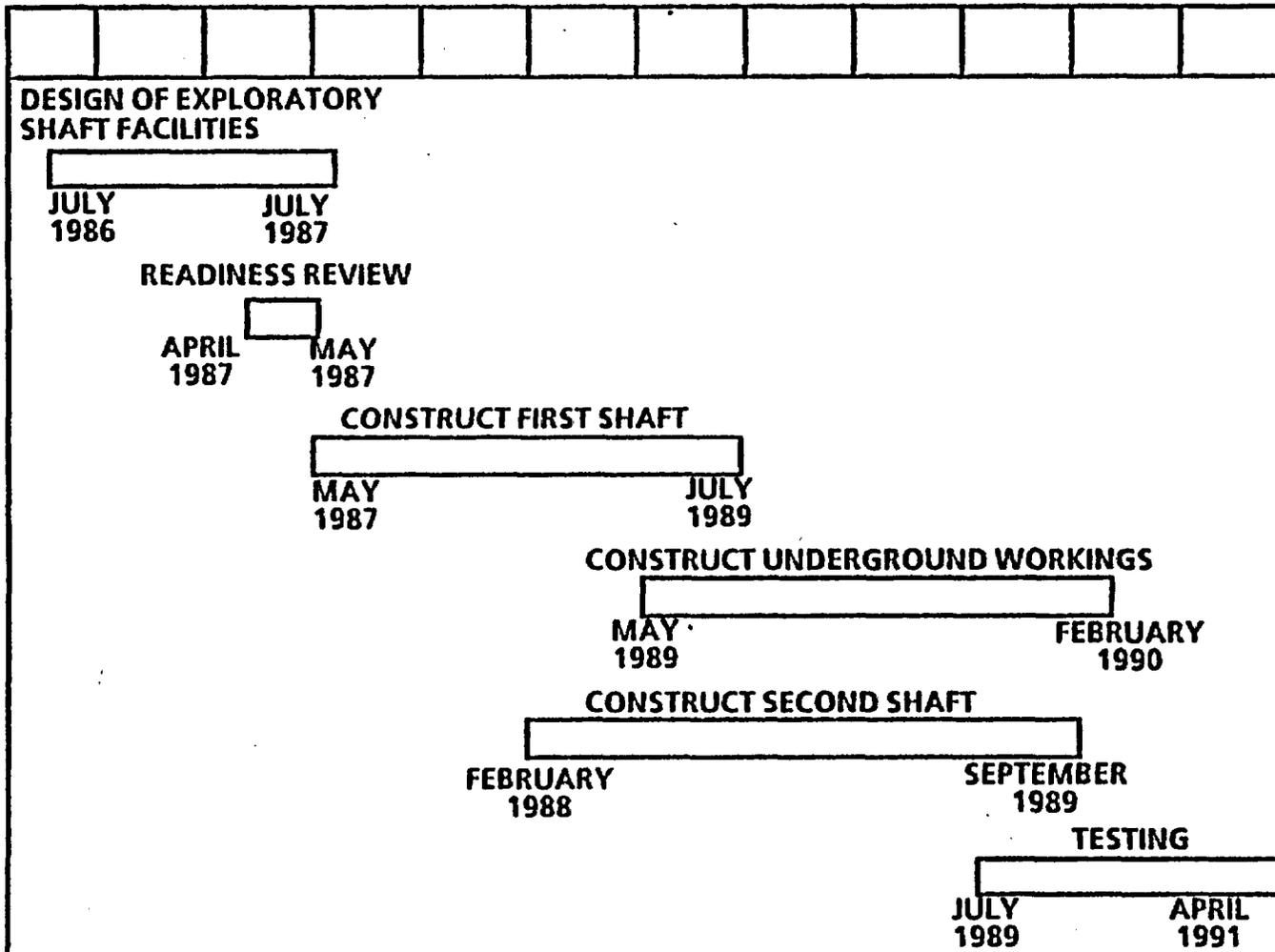


7bi

EXPLORATORY SHAFT - UNDERGROUND ARRANGEMENT (2 SHAFTS)



EXPLORATORY SHAFT



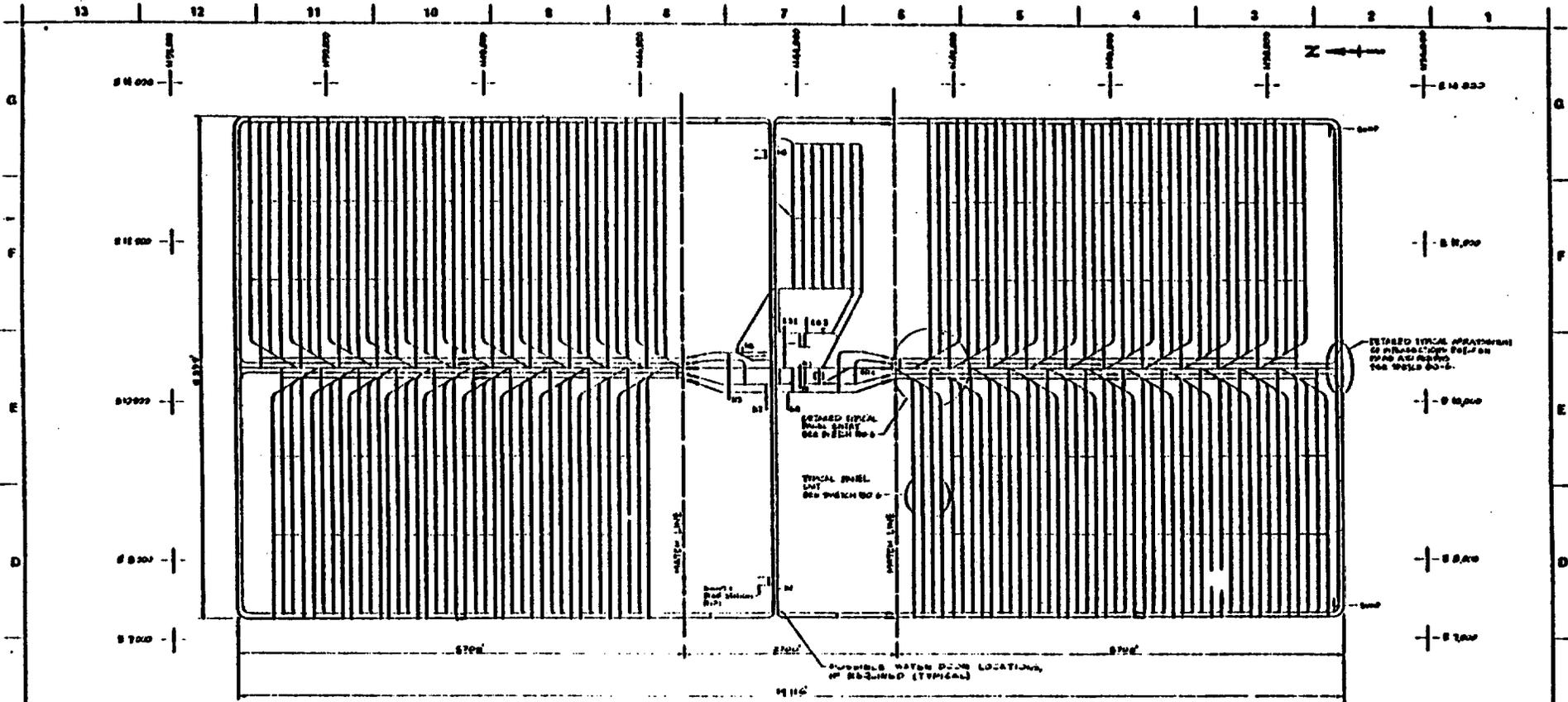
EXPLORATORY SHAFT STATUS

ACTIVITIES COMPLETED

- DEFINITIVE DESIGN FOR PHASE I
- MAIN HOIST PROCUREMENT
- SHAFT LINER FOR FIRST SHAFT
- SITE WORK
- ONE-HUNDRED-FOOT STARTER HOLE
- DRILL RIG ON SITE

MAJOR EXPLORATORY SHAFT GOALS FOR FIRST QUARTER OF 1986

- **COMPLETE CONCEPTUAL DESIGN FOR PHASE II
(JANUARY 1986)**
- **COMPLETE DESIGN OF HIGHWAY 240 ACCESS
ROAD (FEBRUARY 1986)**



SHAFT LEGEND:

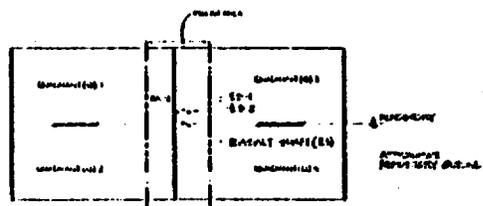
- R1 SERVICE SHAFT (REVELOPMENT SHAFT) 10'
- R2 DEVELOPMENT SERVICE SHAFT, 10'
- R3 BASALT SHAFT (REVELOPMENT SHAFT), 10'
- R4 DEVELOPMENT SERVICE SHAFT, 10'
- R5 WASTE SHAFT, 10'
- R6 CONFINEMENT SERVICE SHAFT, 10'
- R7 CONFINEMENT SERVICE SHAFT, 10'
- R8 CONFINEMENT SERVICE SHAFT, 10'
- R9 CONFINEMENT SERVICE SHAFT, 10'
- R10 EMERGENCY SHAFT NO. 1, 10'
- R11 EMERGENCY SHAFT NO. 2, 10'

UNDERGROUND PLAN

1" = 500'

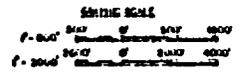
NOTES:

1. DETAILED ARRANGEMENT FOR AREA BETWEEN MATCH LINES (PILLAR AREA) SEE SHEET 100-2.
2. DETAILED ARRANGEMENT OF PIPES IN UNDER PILLAR AREA, SEE SHEET 100-2.
3. COORDINATE SYSTEM IS BASED ON WASHINGTON AND ACTUAL NORTH COORDINATES ARE APPROX. GREATER, AND EAST COORDINATES ARE APPROX. GREATER THAN TRUE SHAFT.



REFORMER KEY PLAN

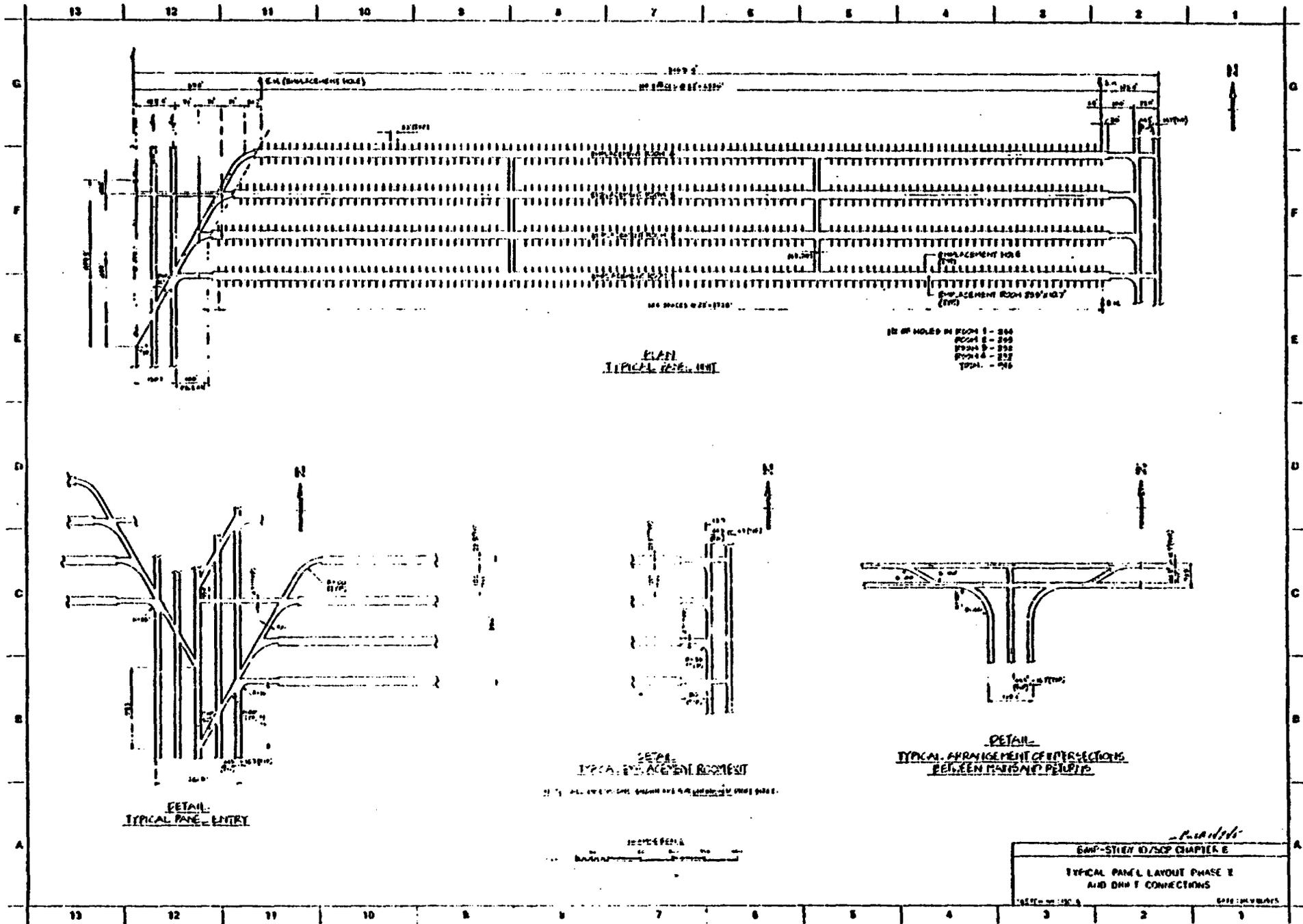
1" = 500'

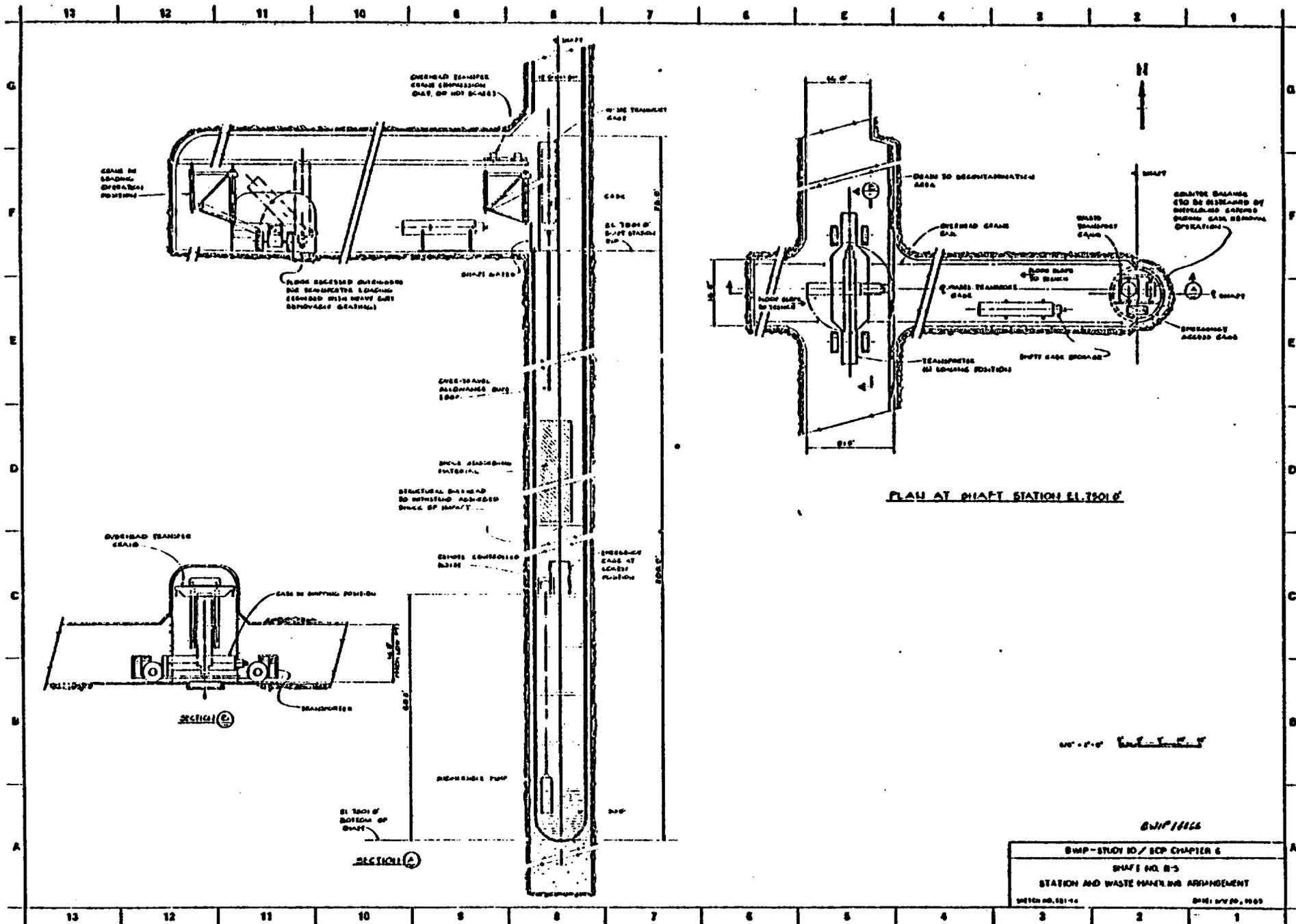


BWP-2710 / SCP CHAPTER 6

UNDERGROUND FACILITY LAYOUT

SHEET NO. 100-1 DATE: 1960-10-10





PLAN AT SHAFT STATION EL. 1750.0'

BWP-1166	
BWP-STUDY 10 / ECP CHAPTER 6	
SHAFT NO. B-5	
STATION AND WASTE HANDLING ARRANGEMENT	
SHEET NO. 101-10	DWG. BY NO. 0000

AVAILABLE GEOCHEMISTRY REPORTS

REFERENCED IN QUARTERLY BRIEFING TO THE AFFECTED INDIAN TRIBES
AND THE STATE OF WASHINGTON OF 1/22-23/86

These reports can be obtained through:

Jo Ludwick
Rockwell Hanford Company
Attention: BWIP
P. O. Box 800
Richland, Washington, 99352

Jo Ludwick's phone number is (509) 376-5385. Other reference reports will be made available as soon as they have gone through the editing process.

- Effect of Alpha and Gamma Radiation on the Near-Field Chemistry and Geochemistry of High-Level Waste Packages, RHO-BW-SA-406 P., December 1985.
- Examination of Solids from 200°C, Hydrothermal Tests with Spent Fuel. SD-BWI-TI-283, September 1985.
- Analysis of Solids from Initial 200°C, 30MPa Hydrothermal Tests with "Fully-Radioactive" Waste Glass and Spent Fuel. SD-BWI-TI-278, September 1985.
- Determining the Reversibility of Oxidation-Reduction Reactions in Groundwater. SD-BWI-TI-309, December 1985.

QUESTIONS RAISED OF
BASALT WASTE ISOLATION PROJECT
/AFTER PRESENTATIONS ON QUARTERLY MEETING WITH THE
STATE OF WASHINGTON AND THE AFFECTED INDIAN TRIBES

January 22-23, 1986

1. State of Washington: Is the Basalt Waste Isolation Project (BWIP) following up on the latest data showing the permeability of bentonite to be temperature sensitive?

Response: Yes, BWIP is giving the study due consideration.

2. State of Washington: We would like to see a draft of the Site Characterization Plan (SCP) before it comes out for the 120-day review. This would facilitate our review and comment process.

Response: The BWIP should be able to accommodate you. The size and format of the SCP should be set by mid-February 1986, after which time some decisions can be made.

3. State of Washington and affected Indian tribes: We want to see more communication with BWIP on upcoming activities that significantly contribute to the release of reports.

Response: Department of Energy-Richland Operations Office (DOE-RL) will keep you informed on a regular basis, as we currently do with ongoing activities. We will look into further identification of which activities might generate data and subsequent reports.

4. Consultants to the affected Indian tribes: We would like access to the electronic bulletin board from our home offices instead of being forced to go to our client's office.

Response: The DOE-RL will discuss this with the parties and come to a decision as to which consultants, if any, can be accommodated.

5. State of Washington: Will the State be able to input documents and lists of issues into the electronic bulletin board memory?

Response: This is under serious consideration. It would be nice to see correspondence sent from the State to Department of Energy-Headquarters (DOE-HQ) put into the system, because DOE-RL does not always see it. The DOE-RL will be sending a letter out on use and interface with the bulletin board. In the meantime, please make comments on the system that we will be setting up, including any suggestions for input to the file system that might work.

6. Yakima representative: How is the Q-List to be issued?

Response: The release format has not yet been established; Department of Energy (DOE) will take the action to respond.

7. State of Washington and affected Indian tribes: Regarding research testing directed by affected states and Indian tribes, do the programs have to meet DOE Quality Assurance (QA) requirements?

Response: At least some would; those that do not (if they dealt with critical data collection) would have to be repeated by DOE or be of limited use. Consequently, if the data is important, then the test could not be done without a proper QA program acceptable to DOE and reviewers like the Nuclear Regulatory Commission (NRC).

8. State of Washington: Will trains be used for most of the waste hauling to the BWIP repository?

Response: It has not yet been decided, but it appears that it is most likely. Currently, most transportation analysis is handled through the DOE-HQ group.

9. State of Washington: Regarding the Exploratory Shaft test shaft, is it true that it will be drilled at a rate of approximately 15 feet per day?

Response: Yes, 15 feet per day is the projection based upon our drilling experience.

10. State of Washington: Are the costs of constructing the repository, transporting the waste, and handling the waste to be split in some manner between the commercial and defense programs?

Response: This still must be worked out. The impact of the defense waste on the overall cost is not currently seen as a large fraction.

11. State of Washington: Who will decide that the hydrologic baseline is complete?

Response: We cannot answer that today, but DOE will accept comments from the State and NRC on such programs. In the end, it will be the NRC who will have to approve the construction permit.

12. Nez Perce representative: Do your Waste Package people integrate their design with your Repository Design people?

Response: Yes, the biggest input that they have is on the heat generated by waste packages.

13. Nez Perce representative: Are you assuming a 5 or 10 year old fuel basis?

Response: We are taking both cases into account. Assuming the Monitored Retrievable Storage (MRS) is completed, we might get some 5 year old fuel toward the end of the program.

STATUS REPORT
UMATILLA CONFEDERATED TRIBES
NUCLEAR WASTE PROGRAM

1. TRIBAL SOCIOCULTURAL CHARACTERISTICS
 & VALUE SYSTEMS
2. PRIMARY TRIBAL CONCERNS RE. BWIP
3. TRIBAL PROGRAM PURPOSE & SCOPE
4. IMPLEMENTATION STRATEGY
5. PROJECT TASKS
6. PROGRAM MANAGEMENT
7. PROGRAM ACCOMPLISHMENTS
8. PUBLIC INFORMATION OBJECTIVES
9. PUBLIC INFORMATION ACTIVITIES
10. C & C AGREEMENT

1- TRIBAL SOCIOCULTURAL CHARACTERISTICS & VALUE SYSTEMS

(from prehistoric times through present)

◎ LANGUAGES

◎ FISH CONSUMPTION

◎ INTER-TRIBAL / COMMON USE
OF FISHERIES LINK TRIBES,
ENCOURAGE COMMUNICATIONS,
TRIBAL INTERMARRIAGES

◎ CHRISTIAN MISSIONARY MOVEMENT

◎ COMPLEX POLITICAL /
JURISDICTIONAL PATTERNS

◎ HIGH, CHRONIC UNEMPLOYMENT

◎ IMPORTANCE OF HUNTING /
FISHING

PRIMARY TRIBAL CONCERNS
REGARDING BWIP:

FISHERIES

CULTURE

TRANSPORTATION

3-

TRIBAL PROGRAM

PURPOSE AND SCOPE

COMPREHENSIVE PROGRAM PLAN

UMATILLA NUCLEAR WASTE PROGRAM

- ⑥ ESTABLISH MAJOR PROJECTS AND ACTIVITIES DURING SITE CHARACTERIZATION AND SELECTION PHASE
- ⑥ DETERMINE POLICY AND TECHNICAL OBJECTIVES
- ⑥ SET FORTH PRIORITIES FOR PROJECTS AND ACTIVITIES
- ⑥ DETERMINE TRIBAL AND OTHER RESOURCES (PERSONNEL, EQUIPMENT, FUNDING, ETC.) REQUIRED FOR PROGRAM IMPLEMENTATION
- ⑥ PROVIDE GUIDANCE IN PREPARATION OF SPECIFIC PROJECT PLANS, FISCAL YEAR PLANS, AND GRANT PROPOSALS
- ⑥ IDENTIFY KEY MILESTONES AND DECISION POINTS
- ⑥ AID TRIBAL LEADERS IN POLICY PLANNING AND DECISION-MAKING

4-

IMPLEMENTATION STRATEGY:
CTUIR NUCLEAR WASTE PROGRAM

- ① ADOPT AN ACTIVE, ANTICIPATORY MODE (AS COMPARED WITH A PASSIVE, REACTIVE APPROACH) WHICH IDENTIFIES NEED FOR SPECIFIC TRIBAL PROJECTS AND ESTABLISHES COOPERATIVE PARTICIPATION IN FEDERAL PLANNING
- ② ESTABLISH TRIBAL PROGRAM PLANNING AND MANAGEMENT STRUCTURE WITH INVOLVEMENT AT:
 - POLICY LEVEL (BOARD OF TRUSTEES)
 - PROGRAM REVIEW & PLANNING (OVERSIGHT COMMITTEE)
 - PROGRAM STAFF AND DEPARTMENT SUPPORT
- ③ ACQUIRE AND MAINTAIN TECHNICAL AND PROFESSIONAL SUPPORT AS NECESSARY VIA CONTRACTORS (CERT, ETC.)
- ④ SEEK OPTIMUM USE OF EXISTING TRIBAL PERSONNEL
- ⑤ CARRY OUT AN EFFECTIVE TRIBAL/PUBLIC INFORMATION PROGRAM
- ⑥ IMPLEMENT PROJECTS ORIENTED TO BOTH TRIBAL AND FEDERAL NEEDS FOR INFORMATION AND EVALUATION
- ⑦ ORIENTED TOWARD SITE SELECTION DECISION

5-

PROJECT

<u>Code #</u>	<u>TASKS</u>
06-01-00	 <u>PROGRAM MANAGEMENT</u>
06-01-01	A - Management and Administration
06-01-02	B - Management Training and Education Seminars
06-01-03	C - Program Plan
06-02-00	 <u>ACTIVITIES LEADING TO C & C AGREEMENT</u>
06-03-00	 <u>REVIEW AND COMMENT</u>
06-04-00	 <u>MONITORING, ANALYSIS AND STUDIES</u>
06-04-01	A - Tribal Plan for Environmental Impact Assessment
06-04-02	B - Tribal Plan for Socio-economic and Cultural Impact Assessment
06-04-03	C - Preliminary Risk Assessment Methodology Development
06-04-04	D - System Study on MRS
06-04-05	E - Participation in EIS Scoping Process and Site Characterization Monitoring and Mitigation Planning
06-04-06	F - On-Site Coordination etc.
06-05-00	 <u>TRIBAL PUBLIC INFORMATION</u>
06-06-00	 <u>COORDINATION OF INTERGOVERNMENTAL ACTIVITIES</u>

FY '86 BUDGET - \$1,025,000

PROGRAM MANAGEMENT

- PROGRESS REPORTING TO BOT AND DOE — MSR QUARTERLY REPORTS
- BRIEFINGS AND EDUCATIONAL SEMINARS
- OVERVIEW OF NUCLEAR WASTE MANAGEMENT TECHNOLOGIES
 - GEOLOGIC REPOSITORIES
 - INTERIM STORAGE
 - MONITORED RETRIEVABLE STORAGE
 - TRANSPORTATION AND LOGISTICS
- ENVIRONMENTAL, HEALTH, AND SOCIO-CULTURAL IMPLICATIONS OF NUCLEAR WASTE MANAGEMENT STRATEGIES
 - RADIATION PROTECTION MEASURES (NATURAL AND ENGINEERED BARRIERS, OCCUPATIONAL AND PUBLIC HEALTH PROTECTIVE SYSTEMS, FEDERAL STANDARDS, MONITORING, ETC.)
 - POTENTIAL ON-SITE AND OFF-SITE EMISSIONS OF RADIONUCLIDES AND OTHER POLLUTANTS
 - ENVIRONMENTAL EFFECTS ON PUBLIC HEALTH AND THE ENVIRONMENT
 - IMPACT MITIGATION MEASURES
- GOVERNMENTAL RESPONSIBILITIES UNDER THE NUCLEAR WASTE POLICY ACT
 - U.S. DEPARTMENT OF ENERGY (LEAD AGENCY)
 - U.S. NUCLEAR REGULATORY COMMISSION (REGULATORY)
 - U.S. DEPARTMENT OF TRANSPORTATION
 - OTHER FEDERAL (EPA, BUREAU OF INDIAN AFFAIRS)
 - AFFECTED INDIAN TRIBES AND STATES
 - REVIEW AND DISCUSS SIGNIFICANCE AND MANAGEMENT OF TRIBAL-FEDERAL COOPERATIVE ACTIVITIES DURING MAJOR NWPA PROGRAM PHASES
 - REVIEW MAJOR PROGRAM MILESTONES
 - OTHER MAJOR ELEMENTS OF THE NWPA AND THEIR SIGNIFICANCE IN PLANNING AND MANAGING TRIBAL NUCLEAR WASTE PROGRAMS UNDER THE NWPA

7-

ACCOMPLISHMENTS TRIBAL WASTE PROGRAM

FY '85

- TRIBE HIRED CERT
- COMPREHENSIVE ANALYSIS
OF C + C NEGOTIATION ISSUES
- DRAFT PROGRAM PLAN
- MISSION PLAN
- GEOTECHNICAL REPORT

FY '86

- NEW DIRECTOR HIRED
- PUBLIC INFORMATION BEGUN
- 2-DAY SEMINAR TO EDUCATE
NEW BOARD MEMBERS,
OTHER TRIBAL OFFICIALS
AND DEPARTMENT HEADS

8-

OBJECTIVES

TRIBAL PUBLIC INFORMATION PROGRAM

TO PROVIDE TIMELY INFORMATION TO TRIBAL MEMBERS AND RESIDENTS CONCERNING BWIP

- MAINTAINING A REFERENCE LIBRARY AND PUBLIC DOCUMENT ROOM AT THE CTUIR HEADQUARTERS WHICH IS ACCESSIBLE TO TRIBAL RESIDENTS ON A CONTINUOUS BASIS
- CONTINUE TO ACQUIRE AND MAINTAIN PERTINENT TECHNICAL, PROGRAMMATIC AND OTHER LITERATURE PREPARED BY THE CTUIR, DOE AND OTHER FEDERAL AGENCIES, AND OTHER ORGANIZATIONS, PARTICULARLY MATERIALS SUITABLE FOR DISSEMINATION TO LAY TRIBAL RESIDENTS
- PREPARE AND DISSEMINATE TO TRIBAL MEMBERS AND OTHER RESIDENTS TECHNICAL "BRIEFS," STATUS REPORTS, PROJECT SUMMARY INFORMATION, PERTINENT DOE AND OTHER LITERATURE IN A FORM READILY UNDERSTANDABLE BY LAY TRIBAL MEMBERS. THIS WILL INCLUDE ISSUANCE OF PERIOD NEWSLETTERS, ARTICLES IN NEWSPAPERS AND OTHER PRINTED MEDIA, AND/OR BROCHURES, PAMPHLETS, TEC.
- CONDUCT SPECIAL PUBLIC INFORMATION MEETINGS AT APPROPRIATE INTERVALS TO FOSTER UNDERSTANDING OF THE BWIP AND THE CTUIR PARTICIPATION PROGRAMS AND TO TRAIN TRIBAL MEMBERS IN EFFECTIVE PUBLIC PARTICIPATION TECHNIQUES
- PREPARE VIDEOTAPES FOR REGIONAL TELEVISION BROADCASTS, SLIDE PRESENTATIONS, FILM STRIPS, AND/OR OTHER AUDIO-VISUAL AIDS
- PARTICIPATE IN PUBLIC INFORMATION CONFERENCES, REGIONAL RADIO AND T.V. BROADCASTS, AND OTHER APPROPRIATE PUBLIC INFORMATION EVENTS SPONSORED BY OTHER ORGANIZATIONS

PUBLIC INFORMATION PROGRAM

CURRENT ACTIVITIES

DONE

PUBLIC INFORMATION OFFICER HIRED

- illustrated article on BWIP and tribal involvement delivered to tribal health newsletter
- 3-article series of news releases delivered for official tribal review

BEGUN

- preparing first bi-monthly newsletter originating from tribal waste officer
- establishing a public information center on reservation
- preparing slides for tribal/public presentations
- working with tribal education dept. on exhibits for legislators meeting and Expo '86

COOPERATION
CONSULTATION AND ~~COORDINATION~~ AGREEMENT

- CONTINUE NEGOTIATIONS TOWARD DEVELOPING A C&C AGREEMENT AS AUTHORIZED UNDER SECTION 117 OF THE NUCLEAR WASTE POLICY ACT
- PROVIDE A FORMAL MECHANISM TO RESOLVE DIFFERENCES AND FOR TRIBAL PARTICIPATION
- RESEARCH LEGISLATIVE BACKGROUND AND INTENT PERTAINING TO LEGAL RIGHTS OF TRIBE IN THE NWPA
- DEVELOP LEGAL POSITION AND ISSUE ANALYSIS
- PREPARE DRAFT C&C AGREEMENTS AND RELATED DOCUMENTATION IN SUPPORT OF NWOC
- BRIEF NWOC AND PROGRAM STAFF TO EXPLORE AND DEFINE LEGAL AND PROGRAMMATIC ISSUES

NEZ PERCE TREATY
JUNE 11, 1855

FEB 26 1986



TRIBAL EXECUTIVE COMMITTEE

Box 305
LAPWAI, IDAHO
83540

(208) 843-2253

February 19, 1986

Mr. Max Powell, Operations Administrator
Basalt Waste Isolation Project Office
Richland Operations Office
DOE
P.O. Box 550
Richland, Wa 99352

Dear Mr. Powell:

Per your request I am sending you a copy of the material which I used in NP-NWPA presentation on January 23, 1986 at Rivershore when the Affected Tribes were providing a report to your office and other grantees in attendance.

Enclosed are Summary Sheets entitled

- Fiscal Year 1985 - NP-NWPA Program Highlights
- Fiscal Year 1986 - Highlights
- Scoping Studies for Tribal Nuclear Waste Program
- Affected Tribes Ceded Lands
- Candidate Sites for The First Geologic Repository
- Regions Under Consideration for The Second Geologic Repository

I did not have prepared remarks or written narrative as I spoke extemporaneously. Hope that this material is what you requested.

Sincerely,

Ronald T. Halfmoon, Manager

RTH:ceg

Encls.

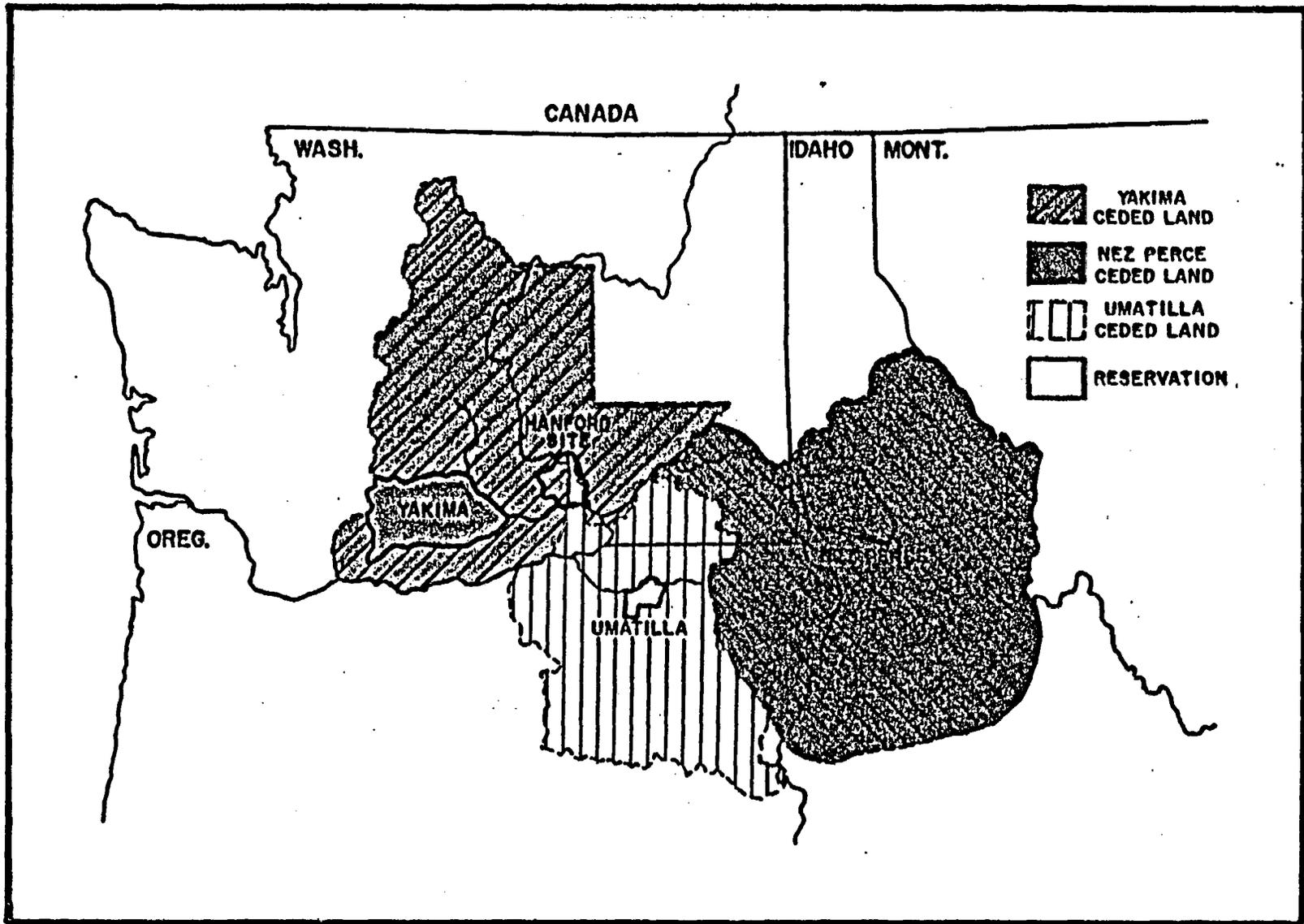
**NEZ PERCE TRIBE - N.W.P.A. PROGRAM
HIGHLIGHTS - FISCAL YEAR 1985**

- **ESTABLISH TRIBAL PROGRAM ORGANIZATION AND STAFF**
- **CONDUCT SCOPING STUDY**
- **INITIATE PUBLIC INFORMATION PROGRAM**
- **REVIEW AND COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT (DEA) FOR HANFORD CANDIDATE SITE**
- **CREATE TRIBAL NUCLEAR WASTE BOARD TO PREPARE FOR NEGOTIATIONS TOWARD A "C & C" AGREEMENT**
- **ACQUIRE TECHNICAL AND LEGAL CONTRACTUAL SERVICES TO SUPPORT TRIBAL PROGRAM STAFF**
- **INITIATE LONG-RANGE PROGRAM PLANNING**

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AFFECTED TRIBES CEDED LANDS

NOTES OF THE EWA'S PRESENTATION
(CONSULTANTS TO THE YAKIMA INDIAN NATION)

by Georges Abi-Ghanem

Objectives of Earth, Water, Air (EWA):

- o Examine data
- o Investigate scientific procedures
- o Evaluate design and development
- o Interface

Scope of Work:

- o Geochemistry
- o Exploratory Shaft Test Facility (ESTF)
- o Engineered Barrier System
- o Repository Design

Geochemistry:

- o Sampling and analytical techniques
- o Sorption
- o Solubility
- o Computer modeling
- o Secondary mineral phases
- o Geochemistry sealing potential
- o Transport mechanisms

ESTF:

- o Construction
- o Test plans; looking at data and level of detail required

Engineered Barrier System:

- o Design and Performance Assessment

Repository Design:

- o Rock characteristics
- o Conceptual models/computer codes (ANSYS, UDEC, ADINA, etc.)

- o Subsurface layout

Waste Packages:

- o Waste form
- o Cansiters
- o Packing and backfill materials (elastic deformation, etc.)
- o Performance Assessment

Seismic/Tectonic Investigation:

- o Review structural and tectonic models
- o Geophysical data/methods assessment
- o Geodetic data
- o Seismic data

Structural Features of the Columbia Plateau:

- o Yakima Fold Belt
- o tectonic models: regional and local scale
- o Issues in modeling: degree of basement involvement, relation between folding and faulting, etc.

Geophysical Surveys:

- o Borehole logging
- o Seismic deflection

Seismicity:

- o Historical
- o Recent: deep and shallow (swarms) events

Discussion:

The EWA has generated a series of reports that can be obtained from Russel Jim of the Yakima Indian Nation.

NOTES OF GEOTRANS' PRESENTATION
(CONSULTANTS TO THE YAKIMA INDIAN NATION)

by Lisa August

Role - Technical Assistance

Tasks:

- o Bibliographic and hydrogeologic databases
- o Hydrochemistry review
- o Attendance at important events
- o Observation of important work

Objectives - Review of Activities (Environmental Assessment, etc.)

Bibliographic Database:

- o Track documents requested and received
- o Over 700 documents
- o Obtain documents from Basalt Waste Isolation Project

Hydrogeologic Database:

- o Work in progress
- o Purpose: organize data and indicate data deficiencies
- o Database in four different types of files
- o (Have not yet evaluated the quality of data)

Problems Identified: Significant Features Associated with the Cohasset Flow:

- o We expect the vesicular zone in the flow to be a migration pathway. There is an inconsistency with the conductivity data collected from DC-19. After analyzing the data and reports, we have determined the dense interior to be 49-feet thick.
- o An unnamed flow between the Cohasset and the Rocky Coulee flow ends in a terminal zone. This is expected to result in a vertical pathway.

Problems Identified During Review of Hydrochemical Data:

- o Data from certain well samples was averaged, instead of reporting ranges.

Meetings:

- o Attended the seismic/tectonic meeting on December 3-4, 1985
- o Attended the Quality Assurance meeting on December 4-5, 1985
- o Attended the Large-Scale Hydraulic Stress test meeting on Decmeber 9-10, 1985
- o Want to observe the multiple well hydraulic test

NOTES OF THE STATE OF WASHINGTON'S DEPARTMENT OF ECOLOGY PRESENTATION

by Terry Husseman and Marta Wilder

Observations and Focus:

- o The preliminary determination of site suitability should be done after site characterization.
- o The affected states need to participate in the ranking of sites.
- o The Department of Energy (DOE) should be site neutral and take steps to eliminate public perceptions of bias.
- o The DOE needs to include all affected states throughout the process so that in the end, the chosen state cannot claim unfair bias.
- o The liability issues (strict liability, full compensation, and holding states blameless) has brought the Consultation and Cooperation negotiations to a standstill. If transportation of nuclear wastes is safe, then the federal government should take over liability responsibilities.

Projects:

- o Trying to get funding to review the Environmental Impact Statement, as it relates to the siting process.
- o The State is pushing to get a health effects study on Hanford; wants it to be a joint effort with the affected tribes.
- o Will get funding to study socioeconomic effects through the State; eventually public hearings to be held in the Tri-Cities and Spokane.
- o Will continue to work on transportation issues, such as emergency response with Kurt Eschels.

Staffing Plan:

- o Contingent upon Hanford being chosen as one of the sites for site characterization.
- o To include expertise in geology, hydrology (computer modeling), radiation health physics, and public involvement staff.
- o Will hire onsite representative to inform State technical staff of upcoming events.

Discussion

- o The State would like better communication with Basalt Waste Isolation Project (BWIP). It, therefore, applauds the proposed electronic bulletin board.

Public Involvement Program (Marta Wilder):

- o A bi-monthly newsletter is published with a circulation of 9,000.
- o Slide shows on the State program are available.
- o The State has a technical library.
- o A 2-year public Outreach Program Plan is being developed.
- o May be conducting opinion surveys of the general public and of public officials.
- o The Umatilla's asked if Marta has approached the CBS 60 Minutes TB show. She replied that they've thought about it, but haven't done so.
- o Channel 9 out of Seattle will probably be doing a documentary on BWIP.

FEB 10 1986

WASHINGTON STATE INSTITUTE FOR PUBLIC POLICY

Max Powell

The Evergreen State College

Olympia, Washington 98505

Telephone (206) 866-6000, ext. 6380

Science and Technology ext. 6454

February 4, 1986

Mr. Jim Mecca
Basalt Waste Isolation Project (BWIP)
U. S. Department of Energy
Richland Operations Office
Post Office Box 550
Richland, Washington 99352

Dear Jim:

Enclosed is the outline for my presentation on our program at the January 22 and 23, 1985 BWIP meeting with grantees. I've also included some graphics that I hope will help attendees' understanding. We appreciate the opportunity to exchange information with other grantees.

Sincerely,

Max Powell

Max S. Power, Principal Investigator
Science and Technology Project

MP/kmc86-13

cc: Legislative Members, Nuclear Waste Board
Russ Lidman
Terry Husseman

Enclosure

1986 Washington Legislative Grant Program
Washington State Institute for Public Policy
Presented at Richland, Washington
January 23, 1986

Objective

Build toward an informed Notice of Disapproval (116(b)) decision.

Major Activities

- 1) Develop an information base among all legislators.
 - must overcome:
 - short-term focus
 - member, leadership turnover
 - conflicting demands on legislator time
 - Support legislators in their roles as community opinion leaders.
 - help them respond out of knowledge and confidence, not ignorance
 - Make information easily accessible; digest and condense.
 - newsletters
 - information reports
 - clippings
 - regional briefings
- 2) Develop a record (institutional memory) as to how the legislature deals with the repository issue over several years--provide continuity.
- 3) Provide special support to 8 legislative members of the Nuclear Waste Board and to House and Senate Energy and Utilities Committees, who have jurisdiction.
 - Committee briefings.
 - Additional information (e.g. reports of meetings, summaries of milestone documents).
 - Travel and involvement with other states (e.g. USDOE quarterly meetings, NCSL).

4) Provide independent policy analysis.

- Can identify strategic issues, take long-term view, since legislature needn't respond to each milestone document.
- Examples:
 - Draft EA ranking methodology
 - proposed study on risk of economic loss

5) Contact and involve academic and technical resources.

- Develop peer review panels to independently assess State's work.
- Seek out special resource people for specific projects (e.g. potential economic loss).

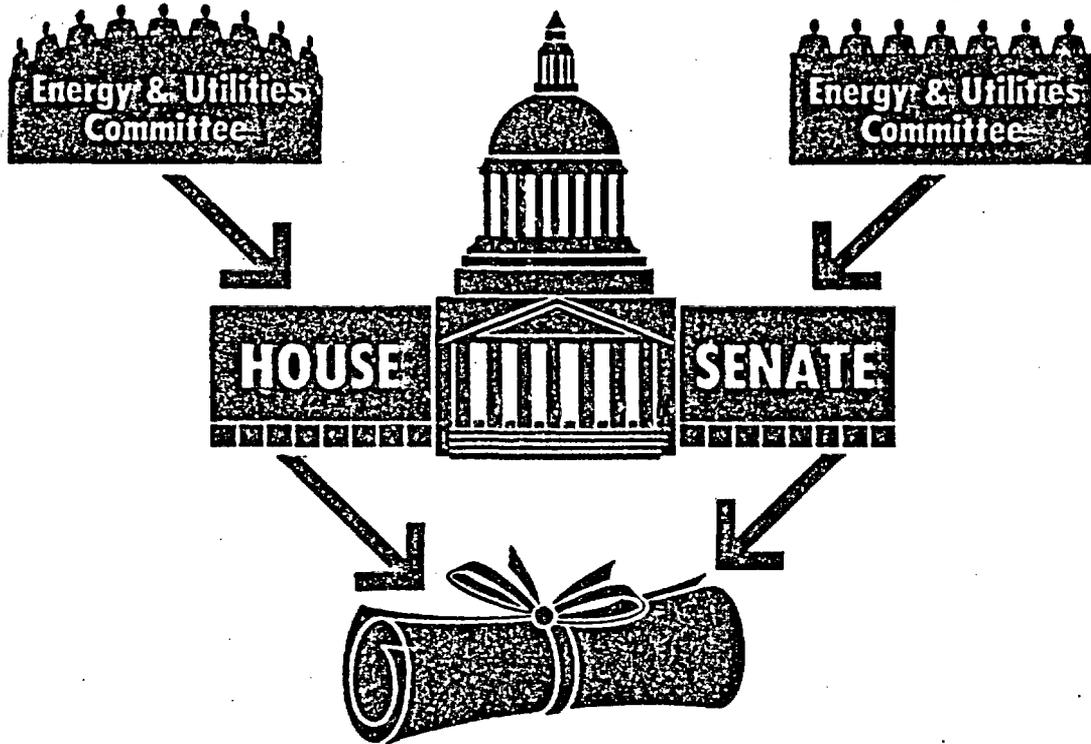
6) Coordinate activities with Nuclear Waste Board, other states, Tribes.

Bottom line: An informed legislature that can make a credible decision and defend it either to Congress or the folks back home. A staff capable of independent, technically competent policy review that is acceptable to the legislature.

*

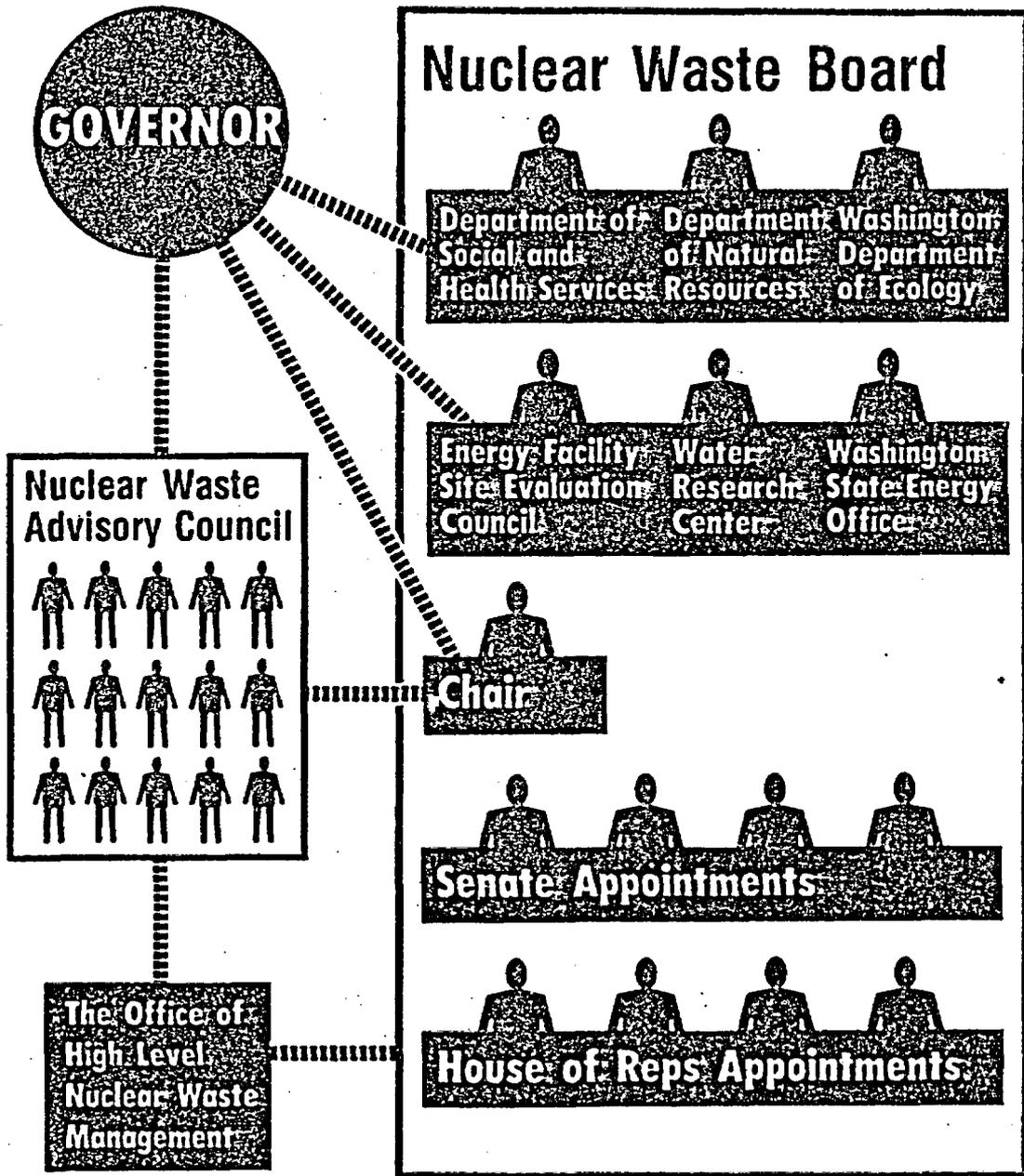
The attached graphics show the legislative role under NWPA, the legislature's relation to the Nuclear Waste Board, and the sources of information. The Nuclear Waste Board is advisory to the Governor and the Legislature. The 8 legislative members are ex officio and non-voting.

The Legislative Role

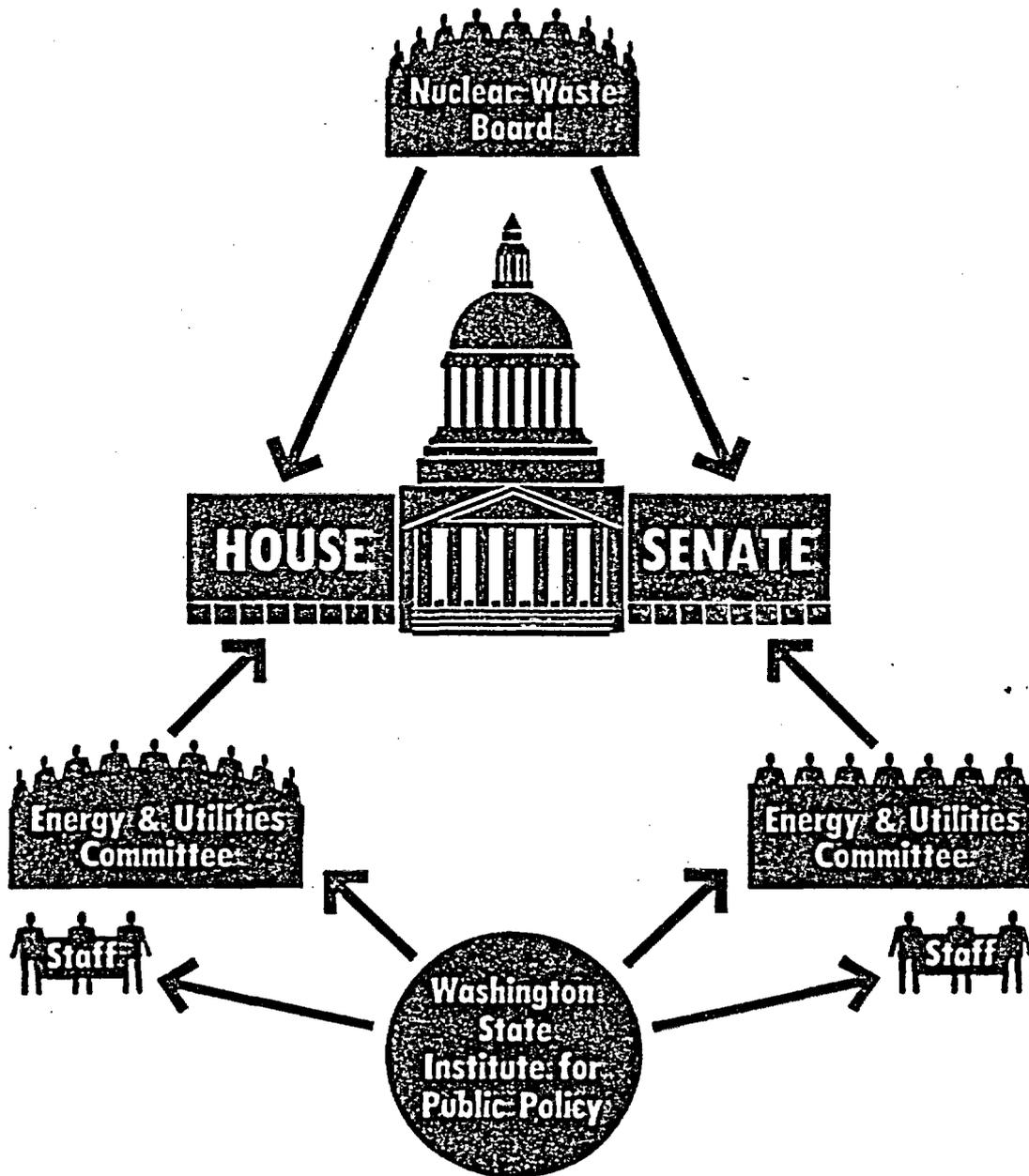


- ▶ *Consultation and cooperation agreement*
- ▶ *Information request*
- ▶ *Notice of disapproval*

How the Nuclear Waste Board Works



How the Legislature Finds Out



What's the Next Move?

