

SEP 1 9 1989

Ms. Eileen Tana U.S. Nuclear Regulatory Commission Division of High-Level Waste Management Mail Stop 4H3 Washington, DC 20555

Dear Ms. Tana:

In response to your recent telephone request, enclosed are the Department of Energy presentations to the Nuclear Waste Technical Review Board on September 14, 1989.

If you desire further information, please let us know.

Sincerely,

James H. Carlson, Chief Program Relations Branch Office of Civilian Radioactive Waste Management

Enclosures

8909200146 890919 PDR WASTE FDC



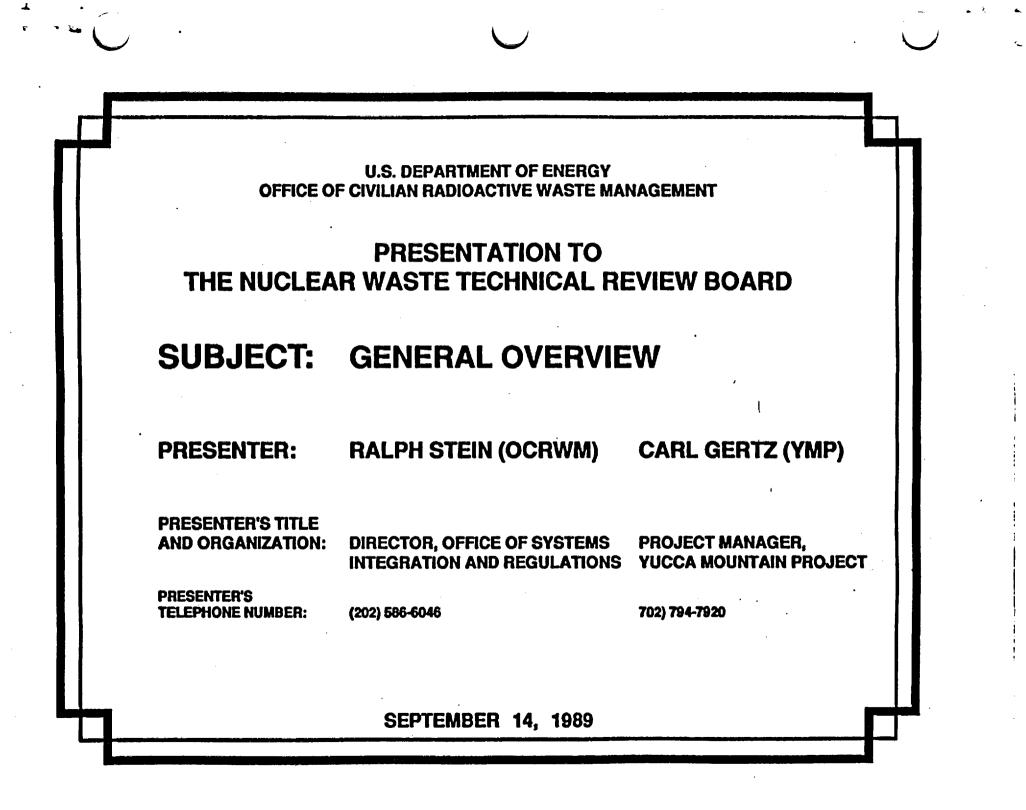
NUCLEAR WASTE TECHNICAL REVIEW BOARD

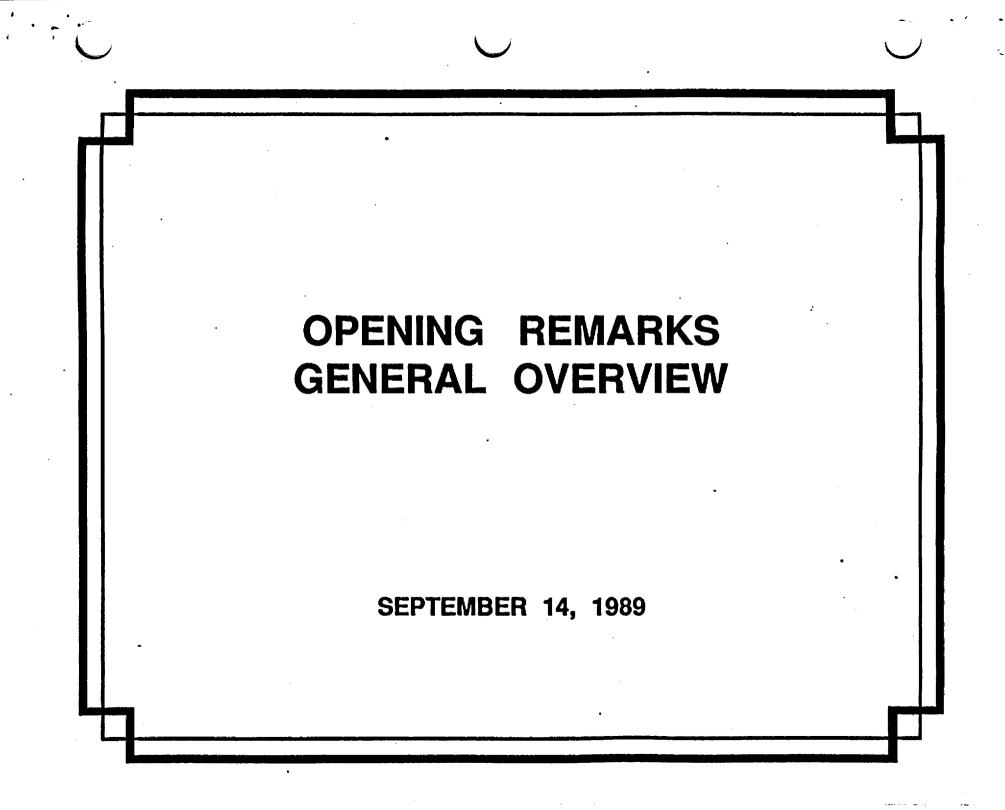
1111 18th Street, N.W., Suite 801 Washington, D.C. 20036

> AGENDA September 14, 1989

Opening Remarks 8:00 - 8:05 Dr. Melvin W. Carter - NWTRB 8:05 - 8:45 General Overview Ralph Stein - DOE Carl Gertz - DOE . 8:45 - 10:15 Water and Water Resources Gregory Fasano - SAIC Otto Moosburner - USGS 10:15 - 10:30Break 10:30 - 11:45Air Quality/Meteorology Monica Dussman - SAIC Grover Prowell - SAIC 11:45 - 1:15Lunch 1:15 - 2:15 **Biological Resources** Thomas O'Farrell - EG&G Ted Doerr - EG&G 2:15 - 3:15Cultural Resources Lonnie Pippin - DRI David Rhode - DRI 3:15 - 3:30Break 3:30 - 5:00 40 CFR 191: Ray Clark - EPA Bob Browning - NRC Steve Gomberg - DOE

Telephone: 202-254-4792 Fax: 202-254-4803



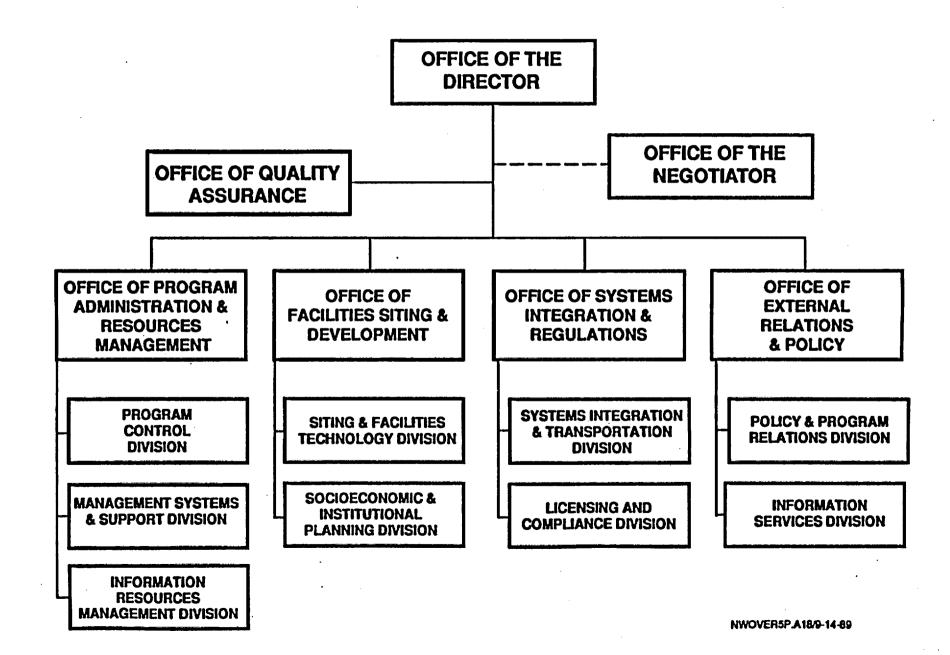


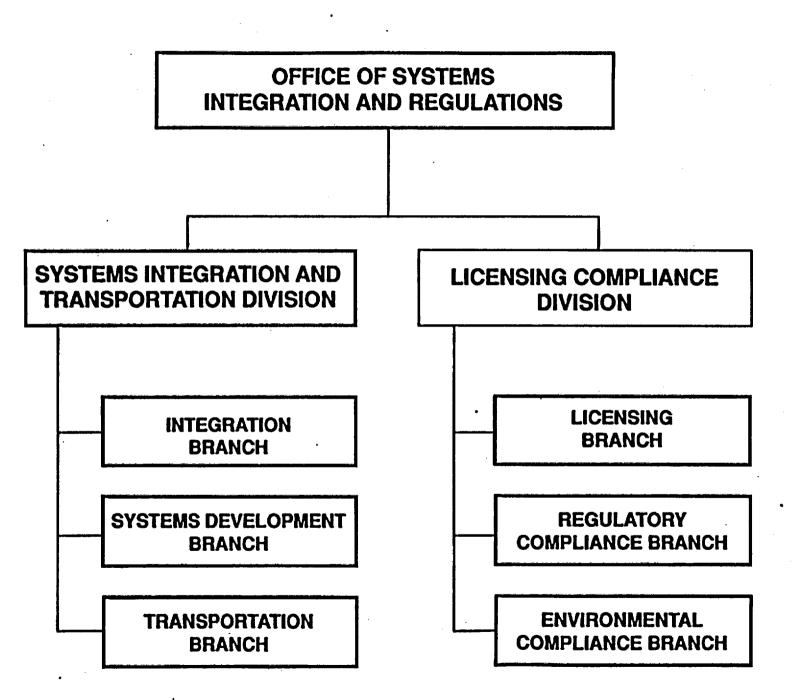
TOPICS

ENVIRONMENTAL PROGRAM ORGANIZATIONAL STRUCTURE AND PARTICIPANTS

- OVERVIEW OF ENVIRONMENTAL PROGRAM
- ENVIRONMENTAL PERMITTING SUMMARY
- FORMAT OF TECHNICAL PRESENTATIONS

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT (OCRWM)





ENVIRONMENTAL PROGRAM HQ PARTICIPANTS

DOE OFFICE

OFFICE OF GENERAL COUNSEL (GC)

ASSISTANT SECRETARY FOR ENVIRONMENT, SAFETY AND HEALTH (EH)

ASSISTANT SECRETARY FOR CONGRESSIONAL, INTERGOVERNMENTAL AND PUBLIC AFFAIRS (CP)

FUNCTION

- LEGAL ASSISTANCE
- GUIDANCE ON ENVIRONMENTAL
 LAW INTERPRETATION
- CONCURRENCE ON MAJOR ENVIRONMENTAL DOCUMENTS
- ENVIRONMENTAL ASSISTANCE
 AND GUIDANCE
- REVIEW AND APPROVE MAJOR
 RW ENVIRONMENTAL DOCUMENTS
- ISSUE EIS DOCUMENTS
- HANDLES RELATIONS WITH CONGRESS, OTHER FEDERAL AGENCIES AND THE PUBLIC
- CONCURRENCE ON MAJOR ENVIRONMENTAL DOCUMENTS

ENVIRONMENTAL PROGRAM HQ CONTRACTORS

CONTRACTOR

WESTON

FUNCTION

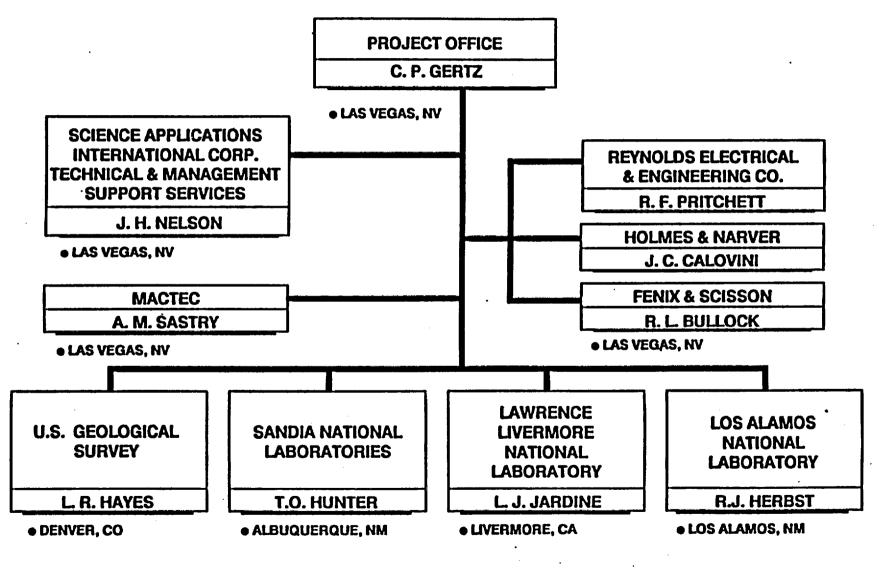
 ENVIRONMENTAL REGULATORY COMPLIANCE PLANNING

SRA/CDM

ARGONNE NATIONAL LABORATORY

- REPOSITORY EIS PLANNING
- RECLAMATION PLANNING

YUCCA MOUNTAIN PROJECT

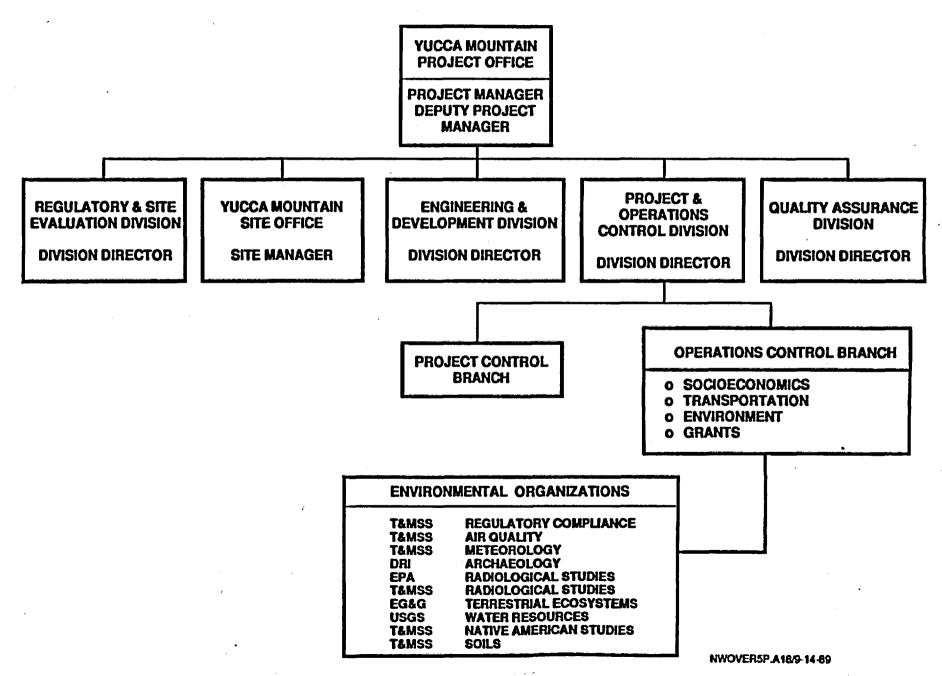


PROJECT DIRECTION

QACG.CPG/4-28-89

YMP ORGANIZATIONAL STRUCTURE

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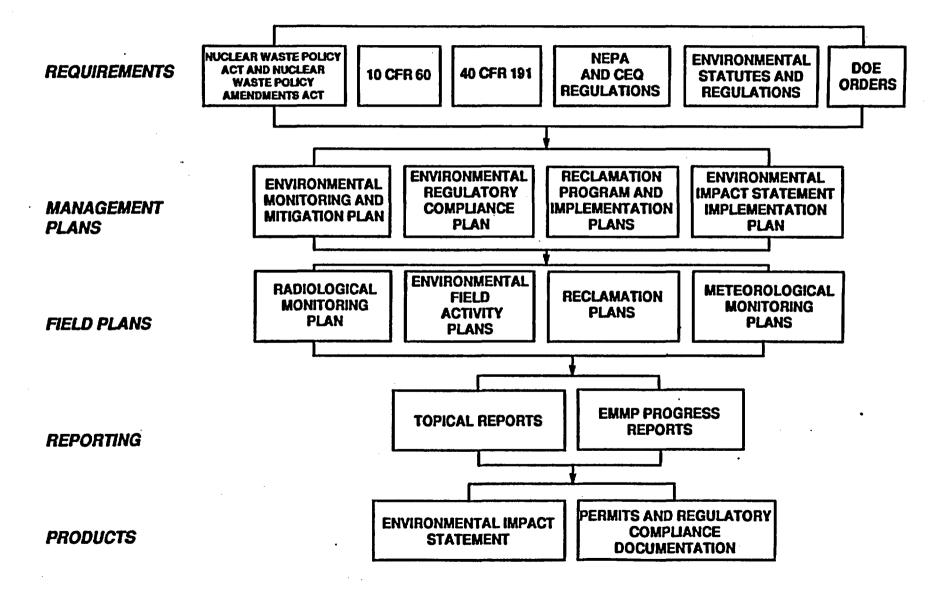


YUCCA MOUNTAIN PROJECT OFFICE ENVIRONMENTAL SUPPORT ORGANIZATIONS

- SCIENCE APPLICATIONS INTERNATIONAL CORPORATION (SAIC)
 - MANAGEMENT AND INTEGRATION OF TECHNICAL STUDIES
 - TECHNICAL RESPONSIBILITY FOR <u>AIR QUALITY/METEOROLOGY</u> AND NATIVE AMERICAN CONCERNS
- DESERT RESEARCH INSTITUTE (DRI)
 - TECHNICAL RESPONSIBILITY FOR <u>CULTURAL RESOURCES</u> (ARCHAEOLOGICAL COMPONENT)
- EDGERTON, GERMESHAUSEN AND GRIER (EG&G)
 - TECHNICAL RESPONSIBILITY FOR <u>BIOLOGICAL RESOURCES</u> STUDIES
 - TECHNICAL RESPONSIBILITY FOR RECLAMATION FEASIBILITY STUDIES
 - SUPPORT TO RADIOLOGICAL MONITORING
- US GEOLOGICAL SURVEY (USGS)
 - TECHNICAL RESPONSIBILITY FOR WATER RESOURCES STUDIES

THE ENVIRONMENTAL PROGRAM PROCEEDS THROUGH A HIERARCHICAL APPROACH THAT IDENTIFIES REGULATORY REQUIREMENTS, DEVELOPS MANAGEMENT PLANS, IMPLEMENTS FIELD STUDIES, AND GENERATES NECESSARY DELIVERABLES

ENVIRONMENTAL PLANNING AND IMPLEMENTATION PROCESS



ENVIRONMENTAL PERMITS ARE NEEDED BEFORE NEW SURFACE DISTURBING SITE CHARACTERIZATION ACTIVITIES CAN BEGIN

- EPA REGULATORY AUTHORITY FOR PERMITS DELEGATED TO STATE OF NEVADA
- FOUR DOE PERMIT APPLICATIONS FILED
 - AIR QUALITY REGISTRATION PERMIT FOR LAND DISTURBANCE
 - MODIFICATION REQUEST OF NTS AIR QUALITY PERMIT FOR PROTOTYPE ACTIVITIES
 - UNDERGROUND INJECTION CONTROL PERMIT FOR USE OF TRACERS
 - WATER APPROPRIATIONS PERMIT FOR USE OF WATER FROM J-13
- NO PERMITS HAVE BEEN ISSUED. AT LEAST 15 PERMITS WILL BE REQUIRED (SEE PERMIT STATUS TABLE DETAILS)

COMPLIANCE WITH STATE ENVIRONMENTAL LAWS THAT ARE NOT DERIVED FROM FEDERAL LAWS IS A MATTER OF COMITY. DOE HAS PLANNED TO COMPLY WITH THESE STATE ENVIRONMENTAL LAWS IF NOT INCONSISTENT WITH NWPA, ATOMIC ENERGY ACT, AND OTHER FEDERAL STATUTES

- ONLY 3 PERMITS OUT OF 15 ARE A MATTER OF COMITY
 - WATER APPROPRIATIONS PERMIT
 - WATER POLLUTION CONTROL PERMIT
 - SANITARY AND SEWAGE COLLECTION PERMIT
- NEVADA STATE LAW (A.B. 222) EFFECTIVE 7/6/89 PROHIBITS HIGH LEVEL NUCLEAR WASTE STORAGE IN NEVADA; MAY AFFECT PERMITTING PROCESS

STATUS OF PERMIT APPLICATIONS IN PROCESS

AIR QUALITY REGISTRATION CERTIFICATE FOR LAND DISTURBANCE WAS FILED ON 1/20/88

- THIS PERMIT IS REQUIRED FOR ANY NEW LAND DISTURBING ACTIVITIES SUCH AS CONSTRUCTION OF NEW ROADS, DRILL PADS AND TRENCHES
- STATE DOES NOT CONSIDER APPLICATION COMPLETE
- DOE 7/11/89 LETTER TO STATE ASSERTS THAT APPLICATION IS COMPLETE AND REQUESTED THAT STATE TAKE IMMEDIATE ACTION

STATUS OF PERMIT APPLICATIONS IN PROCESS

(CONTINUED)

• **OTHER PERMITS IN PROCESS**

- <u>GROUND WATER APPROPRIATION PERMIT</u> APPLICATION FILED 7/21/88, RULED COMPLETED 10/19/88, STATE ENGINEER HAS NOT SCHEDULED HEARING DATE, STATE LAW REQUIRES ACTION WITHIN ONE YEAR FROM 12/30/88 DEADLINE FOR PUBLIC COMMENTS
- UNDERGROUND INJECTION CONTROL PERMIT APPLICATION FILED 4/6/89, STATE LAW REQUIRES DETERMINATION OF COMPLETENESS WITHIN 30 DAYS. ADDITIONAL INFORMATION REQUESTED ON 6/27/89, DOE NOW COMPILING SUPPLEMENTAL INFORMATION
- NTS AIR QUALITY OPERATING PERMIT MODIFICATION APPLICATION FILED 5/5/89, STATE MADE 5 REQUESTS FOR MORE INFORMATION, DOE HAS PROVIDED ALL INFORMATION REQUESTED, STATE HAS NOT ACTED
 - * STATE BELIEVES PERMIT MODIFICATION NECESSARY FOR PROTOTYPE TESTING

TECHNICAL PRESENTATIONS REQUESTED BY NUCLEAR WASTE TECHNICAL REVIEW BOARD

ADDRESS FOUR ENVIRONMENTAL DISCIPLINES

- WATER AND WATER RESOURCES
- AIR QUALITY AND METEOROLOGY
- BIOLOGICAL RESOURCES
- CULTURAL RESOURCES

• CONTENT OF PRESENTATIONS:

- REGULATORY FRAMEWORK
- TECHNICAL ISSUES
- POTENTIAL MITIGATION MEASURES

PERMIT STATUS TABLE

PERMITS FOR WHICH DOE MUST RECEIVE STATE APPROVAL FOR SITE CHARACTERIZATION (Federal Flow-Down Authority)

- Air registration certificate for land disturbance
- Underground injection control (UIC) permits (wells)
- UIC permit (shafts)
- Drinking water system permit
- National Pollutant Discharge Elimination System (NPDES) permit
- Air quality permit for ESF vents
- Air quality permit for batch plant
- Air quality permit for the gravel screening plant

PERMITS FOR WHICH DOE IS NOT REQUIRED TO RECEIVE STATE APPROVAL FOR SITE CHARACTERIZATION (Matter of Comity)

- Ground-water appropriation permit
- State water pollution control permit
- Sanitary sewage disposal permit

STATUS OF SIGNIFICANT ENVIRONMENTAL PERMITS/APPROVALS THAT POTENTIALLY COULD EFFECT EXPLORATORY SHAFT FACILITY SITE PREPARATION¹

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PERMIT/APPROVAL	AUTHORITY/ AGENCY	ACTIVITY AFFECTED	STATUS
Air registration certificate for land distur- bance	CAA/NDEP ²	Roads, parking lots, & drill pads (greater than 20 acres)	Filed 1/20/88; DOE letter to State on 7/11/89 requests immediate action
Floodplain regulation compliance	10 CFR Part 1022/ DOE	ESF support facilities, several drill holes, and trenching in floodplain	Public notice of involvement issued 2/9/89; Issue F/A in Sept; Complete F/W assessment in Oct; SOF sched. for end of year
Ground-water appropriation permit	State law/ NSE/matter of comity	Water use from well J-13, including dust suppression and ESF site prep.	Filed 7/21/88; Water monit. prog being dev. to satisfy NPS; State Engineer has not yet sched. hearing
Native American consultations & protection of cultural resources	AIRFA & NhPA/ACHP & BIA	All site char. activities	PA signed Dec. 15, 1988; Implementation has begun
Free-use permit	Materials Act/BLM	Use of public land resources, such as gravel, from borrow area	Application filed 7/11/89
RCRA ID (no approval required)	RCRA/NDEP ²	Generating hazardous waste	ID number NV789- 009-0023 assigned June 1989

1. Based upon YMPO July monthly report.

2. Administrative authority delegated by EPA to the state of Nevada. NDEP is the Nevada Division of Environmental Protection and NSE is the Nevada State Engineer.

STATUS OF SIGNIFICANT ENVIRONMENTAL PERMITS/APPROVALS THAT POTENTIALLY COULD EFFECT EXPLORATORY SHAFT FACILITY SITE PREPARATION¹ (CONT)

PERMIT/APPROVAL	AUTHORITY/ AGENCY	ACTIVITY AFFECTED	STATUS
Endangered Species Act Compliance	ESA/USFWS ²	Site characteriza- tion activities such as trenching, drilling, etc in desert tortoise areas	Consultation initiated 8/9/89. Biological assessment being pre- pared by YMPO.

1. Based upon YMPO July monthly report.

2. USFWS is the U.S. Fish and Wildlife Service

STATUS OF SIGNIFICANT ENVIRONMENTAL PERMITS/APPROVALS THAT POTENTIALLY COULD EFFECT EXPLORATORY SHAFT FACILITY UTILITY SYSTEMS¹

PERMIT/APPROVAL	AUTHORITY/ AGENCY	ACTIVITY AFFECTED	STATUS
NPDES permit	CWA/NDEP ²	Mine waste-water pond	TBD ³
Drinking water system permit	SDWA/NDH ² .	Construction & operation of drinking water supply system for ESF workforce	TBD ³
Sanitary sewage disposal permit	CWA/NDEP ² or state law/ NDCNR/ matter of comity	Construction of sewage lagoon or septic-tank system at ESF	TBD'
State water pollution control permit	State law/ NDEP/matter of comity	Impoundments: sewage lagoons, mine waste-water ponds, mud & cuttings pits	TBD ³

1. Based upon YMPO July monthly report.

- 2. Administrative authority delegated by EPA to the state of Nevada. NDCNR is the Nevada Department of Conservation and Natural Resources, NDEP is the Nevada Division of Environmental Protection, and NDH is the Nevada Division of Health.
- 3. To be determined; awaiting design information necessary to prepare permit applications

STATUS OF SIGNIFICANT ENVIRONMENTAL PERMITS/APPROVALS THAT POTENTIALLY COULD EFFECT CONSTRUCTION AND OPERATION OF THE EXPLORATORY SHAFTS¹

PERMIT/APPROVAL	AUTHOR ITY/ AGENCY	ACTIVITY AFFECTED	STATUS
UIC permit	SDWA/NDEP ²	Injection of tracers planned for shafts	TBD ³
Air quality permit for ESF vents	CAA/NDEP ² .	Construction & operation of ESF	TBD ⁴
Air quality permit for batch plant	CAA/NDEP ²	Construction of concrete batch plant	TBD ⁵
Air quality permi for gravel screening plant	t CAA/NDEP ²	Construction of ESF	TBD ⁵

1. Based upon YMPO July monthly report.

- 2. Administrative authority delegated by EPA to the state of Nevada. NDEP is the Nevada Division of Environmental Protection.
- 3. To be determined; waiting on information on the types of tracers to be used and method of injection.
- 4. To be determined; awaiting emission data for shaft vents.
- 5. To be determined; awaiting design information necessary to prepare permit applications.

STATUS OF SIGNIFICANT ENVIRONMENTAL PERMITS/APPROVALS THAT POTENTIALLY COULD EFFECT SURFACE-BASED SITE CHARACTERIZATION ACTIVITIES¹

PERMIT/APPROVAL	AUTHORITY/ AGENCY	ACTIVITY AFFECTED	STATUS
UIC permits	SDWA/NDEP ²	Injection of tracers	Application for c-complex wells filed 4/6/89; additional infor- mation requested 6/27/89
			Applications for others scheduled as needed
Floodplain regulation compliance	10 CFR Part 1022/ DOE	ESF support facilities, several drill holes, and trenching in floodplain	Public notice of involvement issued 2/9/89; Issue F/A in Sept; Complete F/W assessment in Oct; SOF sched. for end of year
Air registration certificate for land distur- bance	CAA/NDEP ² .	Roads, trenching, parking lots, & drill pads (greater than 20 acres)	Filed 1/20/88; DOE letter to State on 7/11/89 requests immediate action
Ground-water appropriation permit	State law/ NSE/matter of comity	Water use from well J-13, including dust suppression, drilling, and trenching	Filed 7/21/88; Water monit. prog being dev. to satisfy NPS; State Engineer has not yet sched. hearing
Native American consultations & protection of cultural resources	AIRFA & Nhpa/Achp & BIA	All site char. activities	PA signed Dec. 15, 1988; Implementation has begun

1. Based upon YMPO July monthly report.

2. Administrative authority delegated by EPA to the state of Nevada. NSE is the Nevada State Engineer and NDEP is the Nevada Division of Environmental Protection.

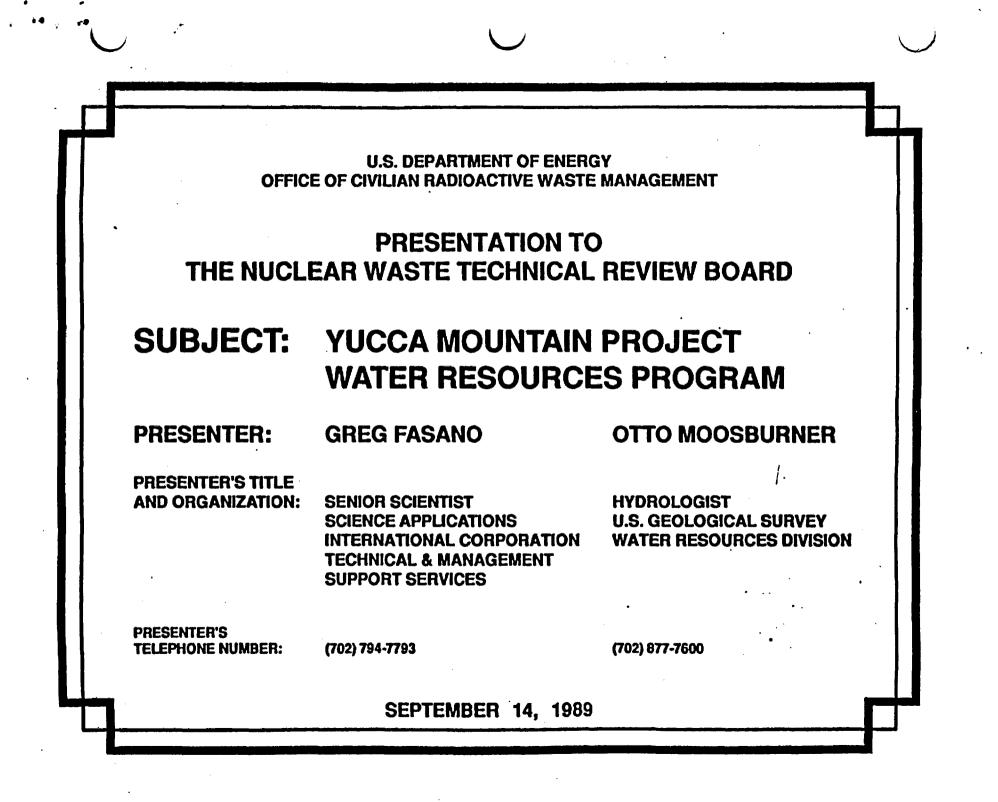
STATUS OF SIGNIFICANT ENVIRONMENTAL PERMITS/APPROVALS THAT POTENTIALLY COULD EFFECT SURFACE-BASED SITE CHARACTERIZATION ACTIVITIES¹ (CONT)

PERMIT/APPROVAL	AUTHORITY/ AGENCY	ACTIVITY AFFECTED	STATUS
Endangered Species Act Compliance	ESA/USFWS ²	Site characteriza- tion activities such as trenching, drilling, etc in desert tortoise areas	Consultation initiated 8/9/89. Biological assessment being pre- pared by YMPO.

1. Based upon YMPO July monthly report.

2. USFWS is the U.S. Fish and Wildlife Service

- ACHP Advisory Council on Historic Preservation
- AIRFA American Indian Religious Freedom Act
- BIA Bureau of Indian Affairs
- BLM Bureau of Land Management
- CAA Clean Air Act
- CWA Clean Water Act
- ESA Endangered Species Act
- ESF Exploratory Shaft Facility
- F/A Floodplain/Wetlands Notice of Availability of the draft Floodplain/Wetlands assessment for public comment, to be published in the <u>Federal</u> <u>Register</u>
- F/W Floodplain/Wetlands
- NHPA National Historic Presentation Act
- NPDES National Pollutant Discharge Elimination System
- NPS National Park Service
- PA Programmatic Agreement
- RCRA Resource Conservation and Recovery Act
- SDWA Safe Drinking Water Act
- SOF Statement of Findings to be published in the Federal Register
- UIC Underground Injection Control



WATER AND WATER RESOURCES

SEPTEMBER 14, 1989

WATER RESOURCES REGULATORY FRAMEWORK

FEDERAL REQUIREMENTS

- SAFE DRINKING WATER ACT*
- CLEAN WATER ACT*
- **RESOURCE CONSERVATION AND RECOVERY ACT***
- ENDANGERED SPECIES ACT

* ENFORCEMENT AUTHORITY DELEGATED TO THE STATE LEVEL

WATER RESOURCES REGULATORY FRAMEWORK

(CONTINUED)

STATE REQUIREMENTS

- SANITARY AND SEWAGE COLLECTION SYSTEM APPROVAL
- NEVADA WATER POLLUTION CONTROL LAW
- NEVADA STATE LAW: WATER APPROPRIATIONS
 PERMIT

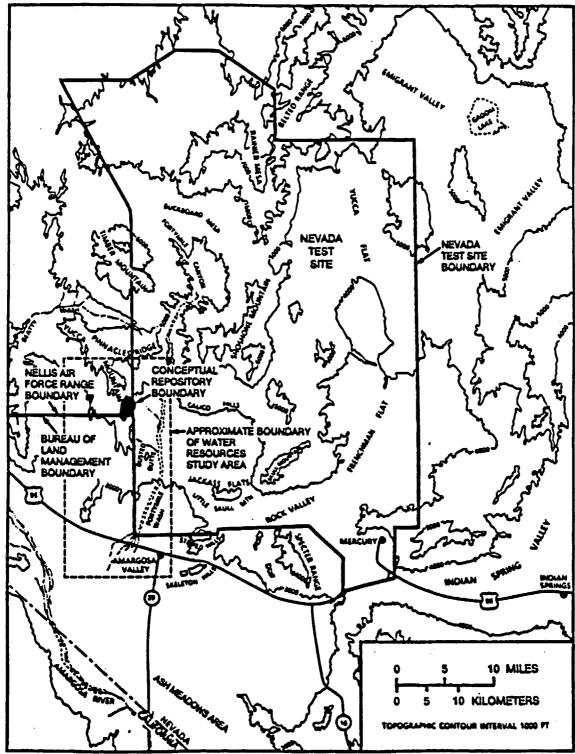
HYDROLOGIC OVERVIEW

• PRECIPITATION

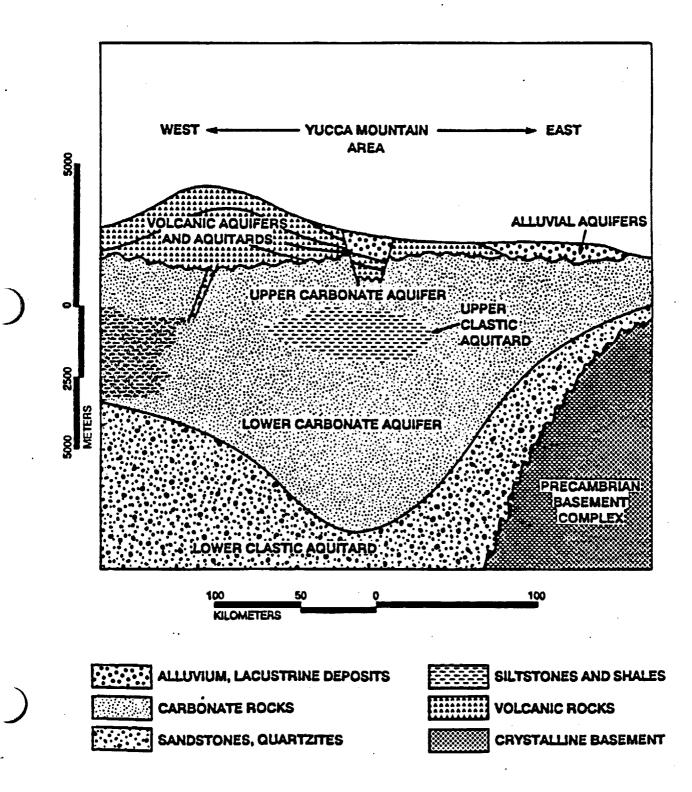
• FLOW AND FLOODS

• GROUNDWATER

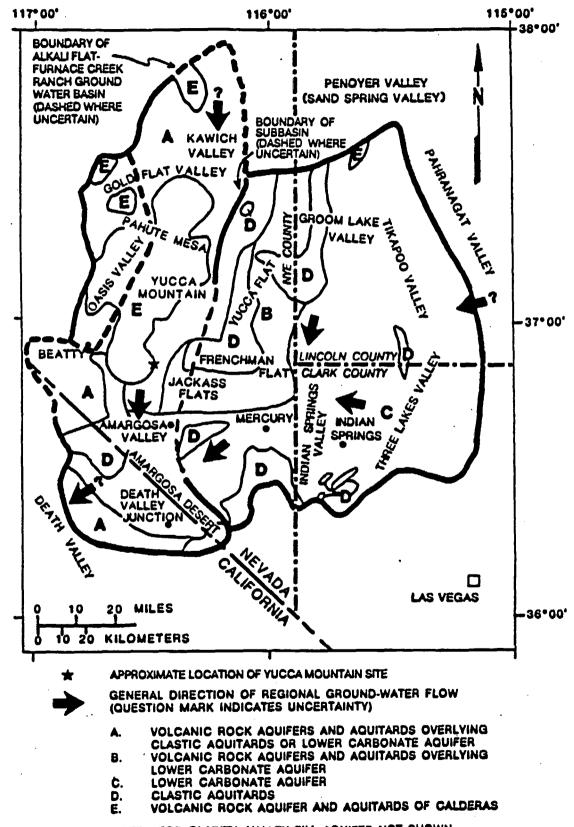
LOCATION OF WATER RESOURCES STUDY AREA AND VICINITY



STRATIGRAPHIC RELATIONSHIPS AMONG HYDROLOGIC UNITS



GEOGRAPHIC DISTRIBUTION AND GENERALIZED FLOW DIRECTIONS IN AND NEAR STUDY AREA



NOTE: FOR CLARITY, VALLEY FILL AQUIFER NOT SHOWN

SITE CHARACTERIZATION ACTIVITIES THAT HAVE THE POTENTIAL TO IMPACT WATER RESOURCES

- WELL AND BOREHOLE DRILLING
- USE OF TRACERS IN BOREHOLES
- AQUIFER TESTING
- SEPTIC AND SEWAGE DISPOSAL
- MUCK AND MINE WASTEWATER STORAGE
- INFILTRATION STUDIES
- DUST CONTROL ACTIVITIES
- STORAGE OF HAZARDOUS MATERIALS
- WATER WITHDRAWAL

GENERAL TECHNICAL GOALS AND PLANS FOR MONITORING WELLS AND SPRINGS

- NETWORK TO BE RESPONSIVE
 TO POTENTIAL SITE CHARACTERIZATION
 EFFECTS
- MONITOR SPECIFIC POTENTIALLY
 AFFECTED AQUIFERS

WATER RESOURCES TECHNICAL ISSUES

- 1. WHAT IS THE POTENTIAL FOR DEGRADATION OF WATER QUALITY IN THE YUCCA MOUNTAIN AREA?
- 2. WHAT IS THE POTENTIAL FOR REDUCTION OF WATER RESOURCES IN THE YUCCA MOUNTAIN AREA?
- 3. WHAT IS THE POTENTIAL FOR LOWERING OF WATER LEVELS AND DECREASES IN SPRINGFLOW ON DEATH VALLEY NATIONAL MONUMENT LANDS?

ISSUE 1. WHAT IS THE POTENTIAL FOR DEGRADATION OF WATER QUALITY IN THE YUCCA MOUNTAIN AREA?

TECHNICAL APPROACH

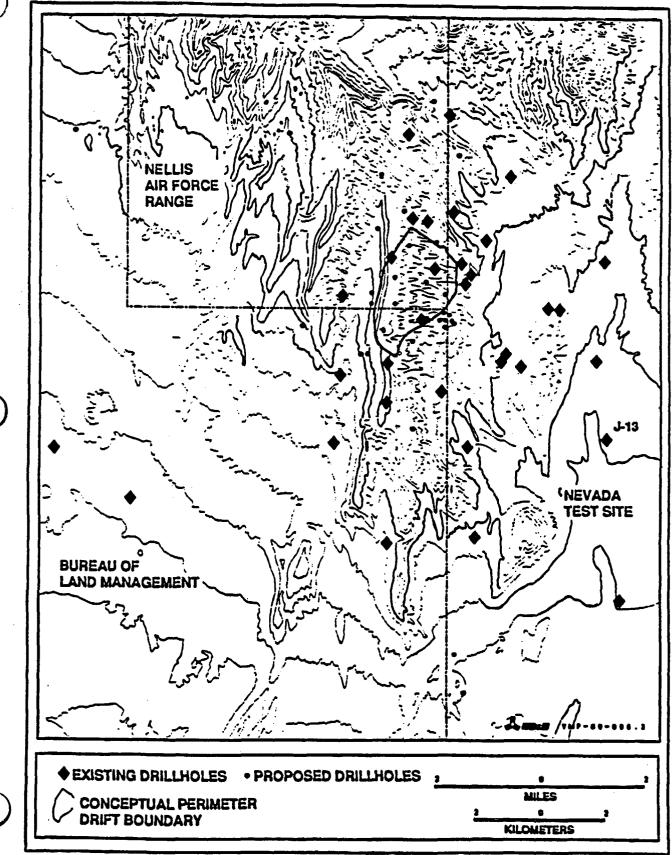
- COMPILATION OF AVAILABLE DATA ON GROUNDWATER AND SPRINGFLOW QUALITY
- NETWORK DESIGN
- WATER QUALITY MONITORING AND ANALYSIS
- IMPACT EVALUATIONS

NETWORK DESIGN

• WELLS AND SPRINGS CHOSEN BASED ON:

- DATA COMPILATION
- AQUIFER IDENTIFICATION FOR WELLS AND SPRINGS
- PROXIMITY TO SITE CHARACTERIZATION ACTIVITIES AND SUPPLY WELLS
- MODELING TECHNIQUES (WILL BE CONSIDERED FOR IDENTIFICATION OF DATA GAPS)

EXISTING AND PROPOSED DRILLHOLES AS CANDIDATES FOR INCLUSION IN WELL MONITORING NETWORK



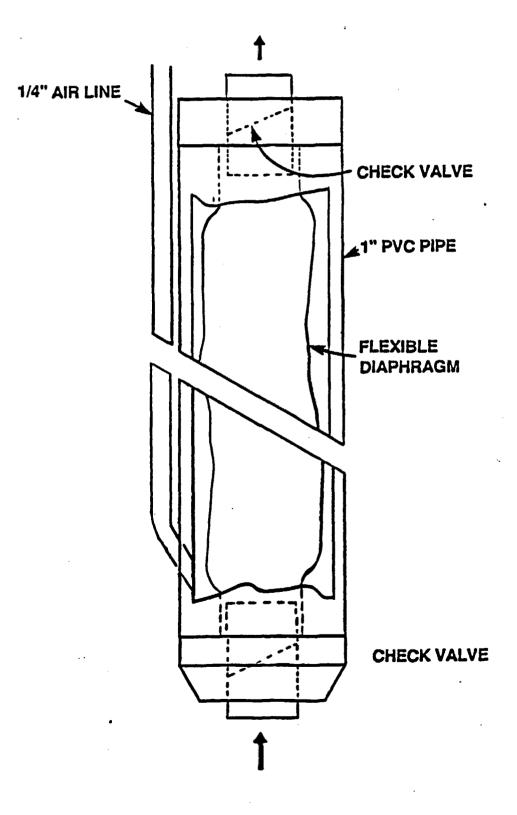
WATER QUALITY MONITORING AND ANALYSIS

- WATER QUALITY DATA WILL BE COLLECTED FROM THE WELLS AND SPRINGS SELECTED
- ANALYSES WILL IDENTIFY WATER CHEMISTRY PARAMETERS **NECESSARY FOR CHARACTERIZING WELL AND SPRING** WATERS (INCLUDING PRIMARY AND SECONDARY DRINKING WATER STANDARDS)
 - MAJOR DISSOLVED CONSTITUENTS (10)
 DISSOLVED TRACE ELEMENTS (11)

 - SOME RADIONUCLIDES (3)
 - INDUSTRIAL COMPOUNDS (55)
 - ORGANOCHLORINE PESTICIDES (19)
 - OTHER ORGANICS (8)
 - OTHER VARIABLES (11)
- WATER QUALITY WILL BE MONITORED FOR THE DURATION OF SITE CHARACTERIZATION AND BEYOND
- SAMPLING FREQUENCY WILL BE QUARTERLY (SELECTED SITES) AND ANNUALLY (ALL SITES IN NETWORK)
- SAMPLING FREQUENCY AND SUITE OF PARAMETERS MAY **BE ADJUSTED FOLLOWING REVIEW OF DATA**

NRWTR5P.A18/9-14-89

GAS-OPERATED SQUEEZE PUMP FOR COLLECTION OF WATER-QUALITY SAMPLES FROM WELLS



IMPACT EVALUATIONS

- WILL INCLUDE COMPLIANCE WITH ENVIRONMENTAL REGULATORY REQUIREMENTS AND PARAMETERS THEREIN
- WILL INCLUDE APPRAISAL OF EFFECTS ON WATER QUALITY FROM WITHDRAWALS, AQUIFER TESTING, DRILLING ACTIVITIES, WASTE DISPOSAL, AND OTHER SIGNIFICANT SITE CHARACTERIZATION ACTIVITIES
- INCREASES OR DECREASES OF 10 PERCENT OR MORE IN CONCENTRATIONS OF SELECTED PARAMETERS OVER TWO SUCCESSIVE SAMPLING PERIODS WILL INITIATE AN IN-DEPTH REVIEW
- MODELING TECHNIQUES MAY BE USED TO ASSIST IN IMPACT EVALUATIONS

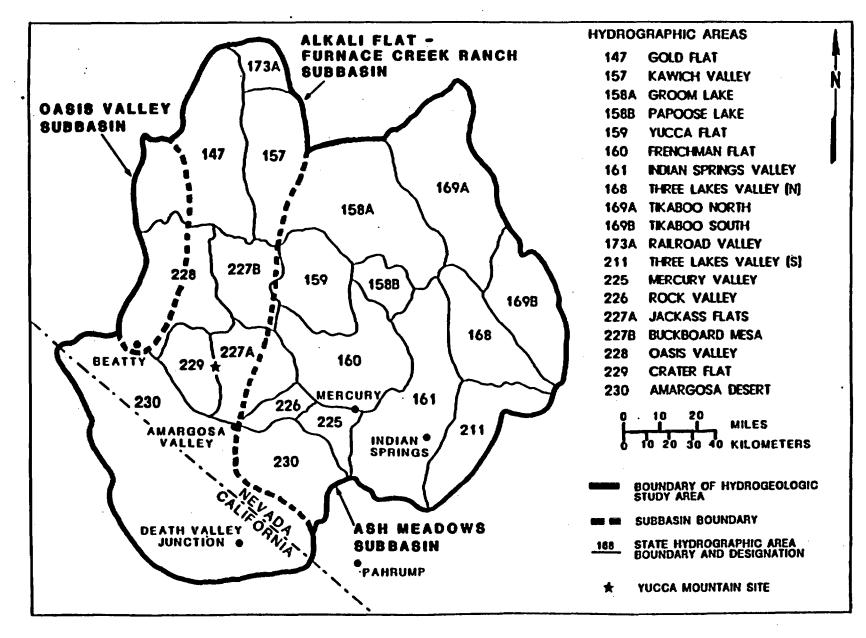
ISSUE 2. WHAT IS THE POTENTIAL FOR REDUCTION OF WATER RESOURCES IN THE YUCCA MOUNTAIN AREA?

TECHNICAL APPROACH

- COMPILATION OF AVAILABLE WATER LEVEL AND WELL
 AND SPRING DATA
- NETWORK DESIGN
- WATER QUANTITY MONITORING AND ANALYSIS
- IMPACT EVALUATIONS

NRWTR5P.A18/9-14-89

HYDROGRAPHIC SUBBASINS AND AREAS IN THE YUCCA MOUNTAIN VICINITY



NETWORK DESIGN

• WELLS AND SPRINGS CHOSEN BASED ON:

- DATA COMPILATION
- SPRING AND SEEP DETECTION/CLASSIFICATION
- WATER USE
- MAGNITUDE OF WELL AND SPRING DISCHARGE
- AQUIFER IDENTIFICATION FOR WELLS AND SPRINGS
- PROXIMITY TO SITE CHARACTERIZATION ACTIVITIES AND SUPPLY WELLS
- MODELING TECHNIQUES WILL BE CONSIDERED FOR IDENTIFICATION OF DATA GAPS

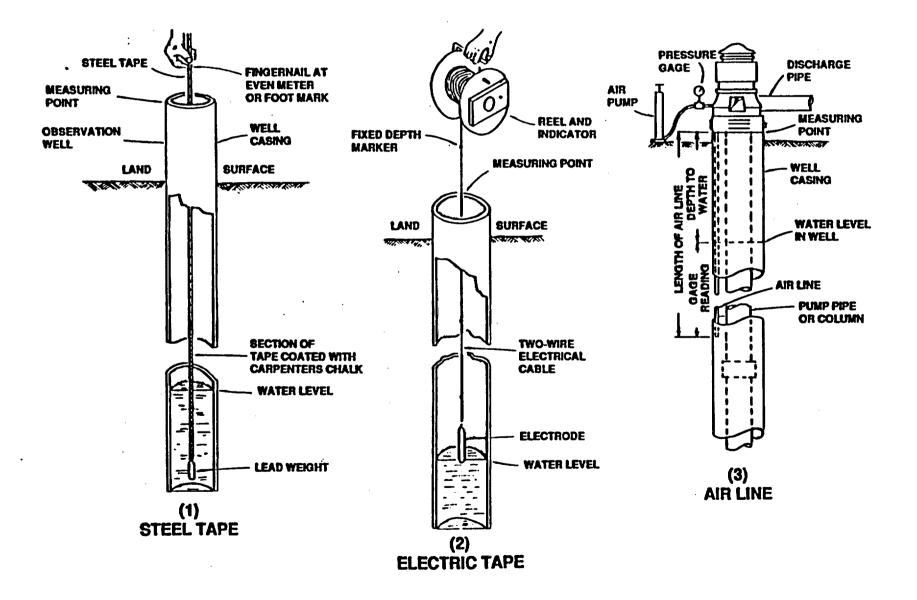
WATER QUANTITY MONITORING AND ANALYSIS

- WATER QUANTITY DATA WILL BE COLLECTED FROM SELECTED WELLS AND SPRINGS
- MEASUREMENT FREQUENCY WILL BE:
 - CONTINUOUSLY (DISCHARGE FOR SELECTED SPRINGS)
 - MONTHLY (WATER LEVELS IN WELLS)
 - QUARTERLY (DISCHARGE FOR SELECTED SPRINGS)
- WATER USE AND WATER DISCHARGE DATA COLLECTED BY OTHERS WILL BE EVALUATED FOR INCLUSION IN DATA BASE
- WATER QUANTITY WILL BE MONITORED FOR DURATION OF SITE CHARACTERIZATION AND BEYOND
- MEASUREMENT FREQUENCY MAY BE ADJUSTED FOLLOWING REVIEW OF DATA

NRWTR5P.A18/9-14-89

METHODS FOR MEASURING THE DEPTH TO WATER LEVEL IN WELLS

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MEASURING DISCHARGE FROM WELLS AND SPRINGS

• WELLS

- PRESSURE PIPE MEASUREMENTS USING VENTURI METERS, ORIFICE PLATES, AND NOZZLES
- TOTALIZING DISPLACEMENT FLOW METERS
- VOLUMETRIC
- OTHER PIPE METHODS

• SPRINGS

- VOLUMETRIC FOR SMALL FLOWS
- PORTABLE WEIRS
- PORTABLE FLUMES
- CURRENT METER
- OTHER

EXAMPLE OF DISCHARGE-MEASURING DEVICES

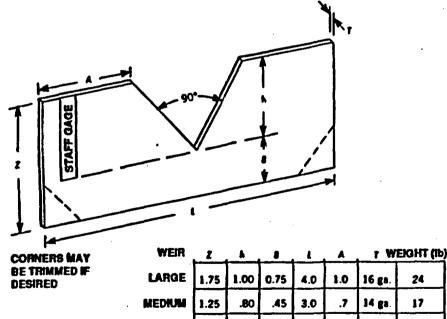
24

17

8

PORTABLE WEIR PLATE

ORIFICE PLATE



PREBSURE TAPPINGS FLOW

16 ga. 14 ga. SMALL .53 10 ga. .47 .28 2.0 .75 ALL DIMENSIONS, OTHER THAN T.

ARE IN FEET

IMPACT EVALUATIONS

- RESPONSE OF THE AQUIFER(S) TO WITHDRAWALS FROM WELL J-13 AND OTHER WELLS USED FOR SITE CHARACTERIZATION
- EFFECTS OF GROUNDWATER WITHDRAWALS ON SPRING DISCHARGES
- LOWERING OF THE WATER LEVEL BY ONE FOOT OR MORE AT A DISTANCE OF ONE MILE OR MORE FROM A SITE CHARACTERIZATION WELL WILL INITIATE AN IN-DEPTH REVIEW
- REGIONAL IMPACTS OF WITHDRAWALS MAY BE ESTIMATED BY UTILIZING OR MODIFYING GROUNDWATER FLOW MODELS DEVELOPED BY THE USGS

NRWTR5P_A18/9-14-89

ISSUE 3. WHAT IS THE POTENTIAL FOR LOWERING OF WATER LEVELS AND DECREASES IN SPRINGFLOW ON DEATH VALLEY NATIONAL MONUMENT LANDS?

TECHNICAL APPROACH

- COMPILATION OF AVAILABLE SPRING DISCHARGE AND WATER LEVEL DATA
- NETWORK DESIGN
- WATER LEVEL AND SPRING DISCHARGE MONITORING AND ANALYSIS
- IMPACT EVALUATIONS

NETWORK DESIGN

- ONGOING MONITORING PROGRAMS AT ASH
 MEADOWS AND FURNACE CREEK TO BE REVIEWED
- PROBABLE INTEGRATION WITH COMPREHENSIVE MONITORING NETWORK (ISSUE 2)

WATER LEVEL AND SPRING DISCHARGE MONITORING AND ANALYSIS

- WATER QUANTITY DATA WILL BE COLLECTED FROM SELECTED WELLS AND SPRINGS IN ASH MEADOWS AREA
- SUPPLEMENTARY WATER LEVELS AND SPRINGFLOW MAY BE MONITORED TO ADDRESS NATIONAL PARK SERVICE WATER SUPPLY CONCERNS
- MEASUREMENT FREQUENCY WILL BE:
 - CONTINUOUSLY (DISCHARGE FOR SELECTED SPRINGS)
 - MONTHLY (WATER LEVELS IN WELLS)
 - QUARTERLY (DISCHARGE FOR SELECTED SPRINGS)
- SPRINGS AND WELLS WILL BE MONITORED FOR DURATION OF SITE CHARACTERIZATION AND BEYOND

NRWTR5P.A18/9-14-89

IMPACT EVALUATIONS

- ALTHOUGH SITE CHARACTERIZATION ACTIVITIES MAY NOT ADVERSELY AFFECT THE WATER RESOURCES OF DEATH VALLEY NATIONAL MONUMENT LANDS, POTENTIAL IMPACTS WILL BE ASSESSED
- POTENTIAL WATER-RELATED IMPACTS TO ENDANGERED FISH SPECIES IN THE SPRINGS AT ASH MEADOWS WILL BE ASSESSED
- POTENTIAL IMPACTS OF NON-YUCCA MOUNTAIN PROJECT WATER WITHDRAWALS WILL BE ADDRESSED

SUMMARY OF TECHNICAL APPROACH

- GROUNDWATER QUALITY MONITORING (ISSUE 1)
- GROUNDWATER QUANTITY MONITORING (ISSUES 2 AND 3)
- SPRING AND SURFACE WATER EVALUATIONS (ISSUES 1 - 3)
- WATER USE MONITORING AND DATA GATHERING (ISSUES 2 AND 3)
- WASTE STORAGE AND SEWAGE DISPOSAL MONITORING (ISSUE 1)

POTENTIAL MITIGATION MEASURES

- SUSPEND, SCALE BACK, OR REDESIGN SITE CHARACTERIZATION IMPACT-CAUSING ACTIVITIES (ISSUES 1 - 3)
- DEVELOP ALTERNATE SOURCES OF WATER FOR THE REMAINDER OF THE SITE CHARACTERIZATION PHASE OF THE PROJECT (ISSUES 2 AND 3)
- REDESIGN WASTE AND SEWAGE DISPOSAL FACILITIES TO BE TOTALLY CONTAINED, AND DISPOSE OF WASTE APPROPRIATELY (ISSUE 1)
- ESTABLISH SITE CHARACTERIZATION SETBACK DISTANCES OR ZONES AROUND POTENTIALLY IMPACTED SPRINGS AND SEEPS (ISSUES 2 AND 3)
- NEGOTIATE PHASED WATER PUMPING PROGRAMS RELATIVE TO OTHER USERS IN THE AREA (ISSUES 2 AND 3)
- PURCHASE WATER RIGHTS FROM OTHER PERMIT HOLDERS IN THE AREA (ISSUE 2)

U.S. DEPARTMENT OF ENERGY OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

PRESENTATION TO THE NUCLEAR WASTE TECHNICAL REVIEW BOARD

SUBJECT: YUCCA MOUNTAIN PROJECT AIR QUALITY/METEOROLOGY STUDIES

GROVER PROWELL PRESENTER: MONICA DUSSMAN **PRESENTER'S TITLE** MANAGER. METEOROLOGIST AND ORGANIZATION: **ENVIRONMENTAL FIELD ENVIRONMENTAL FIELD PROGRAMS DIVISION PROGRAMS DIVISION** SCIENCE APPLICATIONS SCIENCE APPLICATIONS INTERNATIONAL CORP. INTERNATIONAL CORP. **TECHNICAL & MANAGEMENT TECHNICAL & MANAGEMENT** SUPPORT SERVICES SUPPORT SERVICES PRESENTER'S **TELEPHONE NUMBER:** (702) 794-7799 (702) 794-7234

SEPTEMBER 14, 1989



SEPTEMBER 14, 1989

AIR QUALITY REGULATORY FRAMEWORK

• FEDERAL REQUIREMENTS

- CLEAN AIR ACT*

• STATE REQUIREMENTS

- IMPLEMENTATION OF CLEAN AIR ACT THROUGH STATE STATUTES
- INAC 445.704 REQUIRES REGISTRATION CERTIFICATE AND OPERATING PERMIT FOR SURFACE DISTURBANCE
- OVERSIGHT BY NEVADA DEPARTMENT OF ENVIRONMENTAL PROTECTION (NDEP)

* ENFORCEMENT AUTHORITY DELEGATED TO THE STATE LEVEL

SITE CHARACTERIZATION ACTIVITIES THAT HAVE THE POTENTIAL TO IMPACT AIR QUALITY

- DRILL PAD CONSTRUCTION
- TRENCHING
- SHAFT EXCAVATION
- TRAVEL OVER UNPAVED ROADS
- MUCK HANDLING
- EMISSIONS FROM MACHINERY
- EMISSIONS FROM VEHICLES

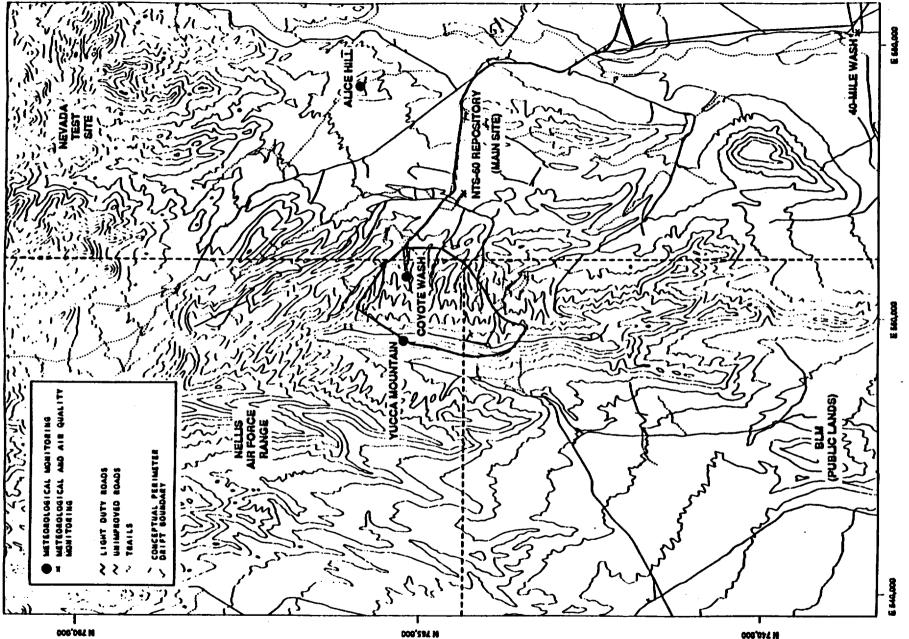
AIR QUALITY/METEOROLOGY TECHNICAL ISSUES

- 1. HOW AND WHERE ARE EMISSIONS FROM YUCCA MOUNTAIN DISPERSED BY THE WINDS?
- 2. WHAT EFFECT WILL SITE CHARACTERIZATION ACTIVITIES HAVE ON THE EXISTING CONCENTRATIONS OF PARTICULATES AND POLLUTANT GASES?
- 3. WHAT ARE THE MAGNITUDES OF STORMS THAT WILL AFFECT FACILITIES?
- 4. WHAT IS THE EFFECTIVE PRECIPITATION IN THE YUCCA MOUNTAIN AREA?

ISSUE 1: HOW AND WHERE ARE EMISSIONS FROM YUCCA MOUNTAIN DISPERSED BY THE WINDS?

TECHNICAL APPROACH

- ESTABLISH CONTINUOUS MONITORING OF METEOROLOGICAL PARAMETERS, I.E. WINDS, ATMOSPHERIC STABILITY
- DETERMINE THE DISPERSION PATTERNS
- PERFORM DETAILED ANALYSIS OF DISPERSION TRAJECTORIES



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PARAMETERS MONITORED

WIND SPEED AT 10 METERS & 60 METERS

WIND DIRECTION AT 10 METERS & 60 METERS

STANDARD DEVIATION OF WIND DIRECTION AT 10 METERS & 60 METERS

TEMPERATURE AT 10 METERS

DEWPOINT TEMPERATURE AT 10 METERS

TEMPERATURE DIFFERENCE BETWEEN 10 METERS & 60 METERS

STANDARD DEVIATION OF VERTICAL WIND SPEED AT 10 METERS

NET RADIATION (SOLAR & TERRESTRIAL)

BAROMETRIC PRESSURE

ATMOSPHERIC STABILITY

PRECIPITATION

Π

PARAMETERS MONITORED AT EACH OF THE REMOTE SITES

WIND SPEED

WIND DIRECTION

STANDARD DEVIATION OF WIND DIRECTION

TEMPERATURE

RELATIVE HUMIDITY

ATMOSPHERIC STABILITY

BAROMETRIC PRESSURE

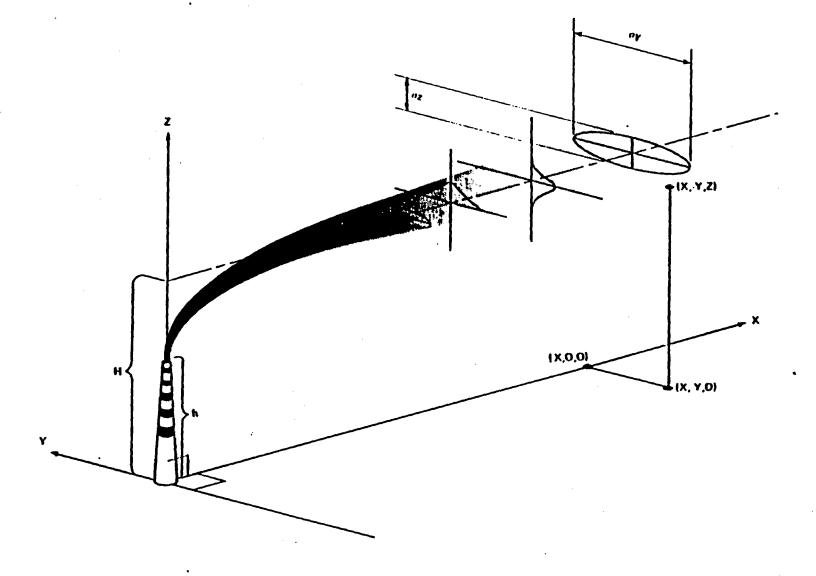
PRECIPITATION

DETERMINATION OF THE DISPERSION PATTERNS

• APPLY A SIMPLE DIFFUSION MODEL AS A "FIRST GUESS" OF A WORST-CASE EMISSION RELEASE

REFINE THE FIRST GUESS USING AN
 APPROPRIATE TERRAIN MODEL

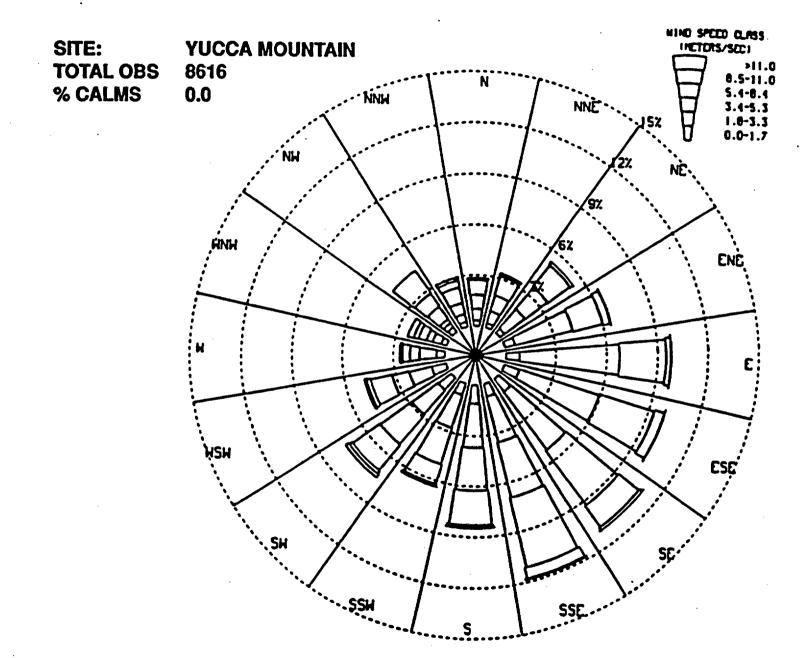
COORDINATE SYSTEM SHOWING GAUSSIAN DISTRIBUTION IN THE HORIZONTAL AND VERTICAL



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ANALYSIS OF DISPERSION TRAJECTORIES

- IDENTIFY WIND REGIMES THAT MAY TRANSPORT EMISSIONS TO POPULATED AREAS
- USE RECEPTOR MODELLING TO IDENTIFY SOURCES OF POLLUTANTS
- CORRELATE RECEPTOR MODEL RESULTS WITH WIND REGIME ANALYSIS



DECEMBER 1985 THROUGH NOVEMBER 1986

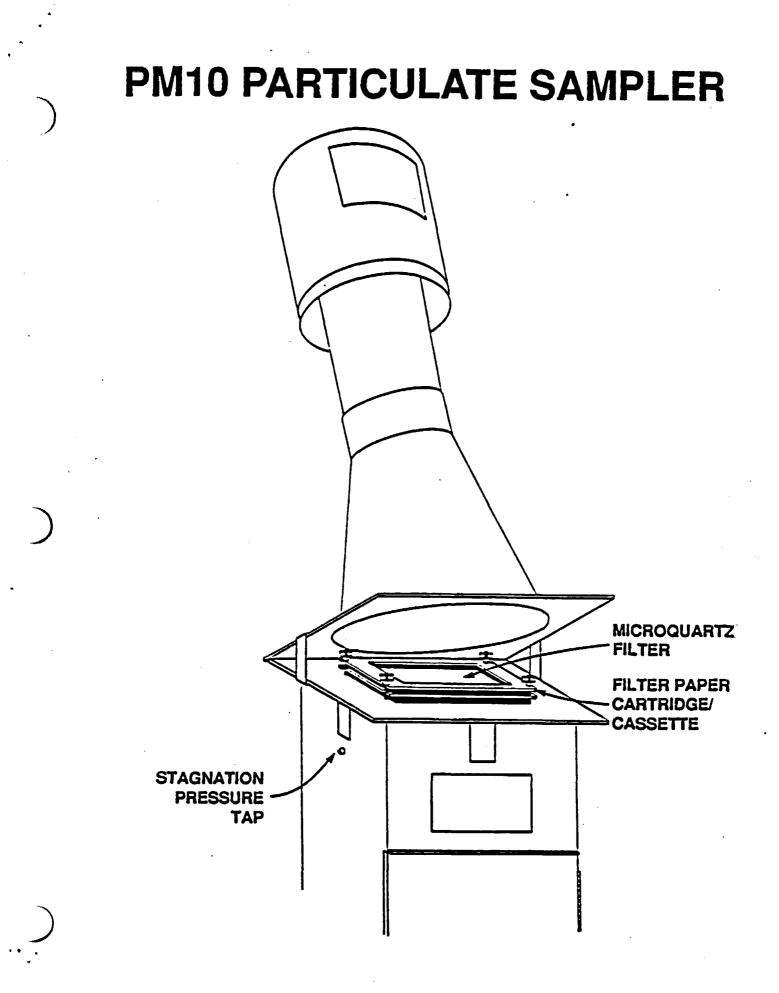
ISSUE 2: WHAT EFFECT WILL SITE CHARACTERIZATION ACTIVITIES HAVE ON THE EXISTING CONCENTRATIONS OF PARTICULATES AND POLLUTANT GASES?

TECHNICAL APPROACH

- DETERMINE EXISTING CONCENTRATIONS OF AIR POLLUTANTS
- CONTINUE MONITORING OF AIR POLLUTANTS THROUGHOUT SITE CHARACTERIZATION
- DETERMINE CONTRIBUTION BY SITE CHARACTERIZATION ACTIVITIES TO AIR POLLUTANT CONCENTRATIONS

AIR QUALITY MONITORING

- TOTAL SUSPENDED PARTICULATE MATTER (TSP)
- PARTICULATE MATTER LESS THAN 10 MICRONS IN AERODYNAMIC DIAMETER (PM₁₀)
- SULFUR DIOXIDE (SO_2)
- OXIDES OF NITROGEN (NO_x)
- CARBON MONOXIDE (CO)
- OZONE (O_3)



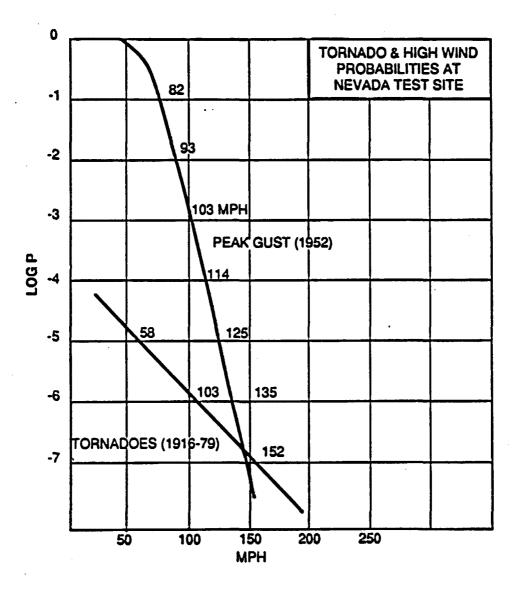
ISSUE 3: WHAT ARE THE MAGNITUDES OF STORMS THAT WILL AFFECT THE SITE?

TECHNICAL APPROACH

- REVIEW PAST NEVADA TEST SITE STUDIES ON STORMS
- CLASSIFY STORMS BY INTENSITY
- DETERMINE THE PROBABILITIES OF THESE STORM INTENSITIES AT YUCCA MOUNTAIN

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PROBABILITY OF HIGH WINDS AT NEVADA TEST SITE



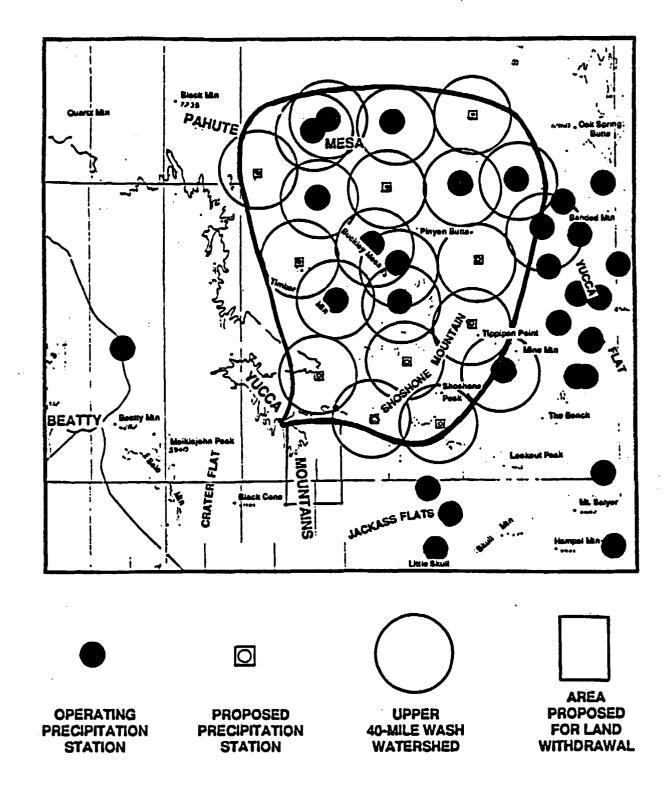
SOURCE: T.J. FUJITA, "TORNADO AND HIGH WIND HAZARDS AT THE NEVADA TEST SITE, NEVADA," 1981

ISSUE 4: WHAT IS THE EFFECTIVE PRECIPITATION IN THE YUCCA MOUNTAIN AREA?

TECHNICAL APPROACH

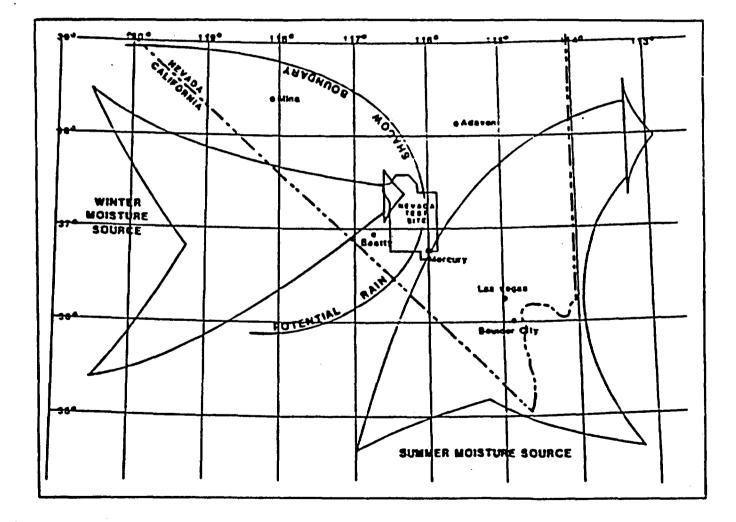
- ASSIST USGS IN DESIGNING, PROCURING, AND INSTALLING AN EXPANDED PRECIPITATION MONITORING NETWORK
- PROVIDE ANALYSIS AND INTERPRETATION SUPPORT TO USGS FOR PRECIPITATION DATA

OPERATING AND PROPOSED PRECIPITATION STATIONS

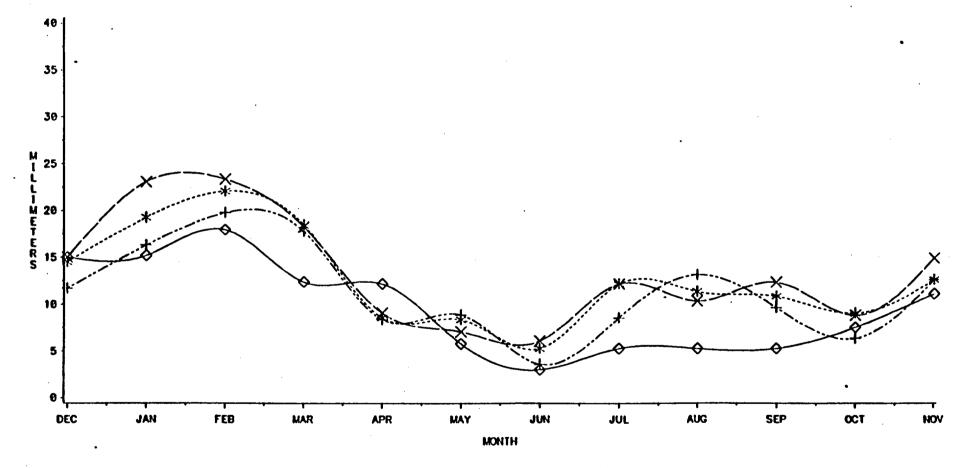


SUMMER AND WINTER MOISTURE FOR SOUTHERN NEVADA

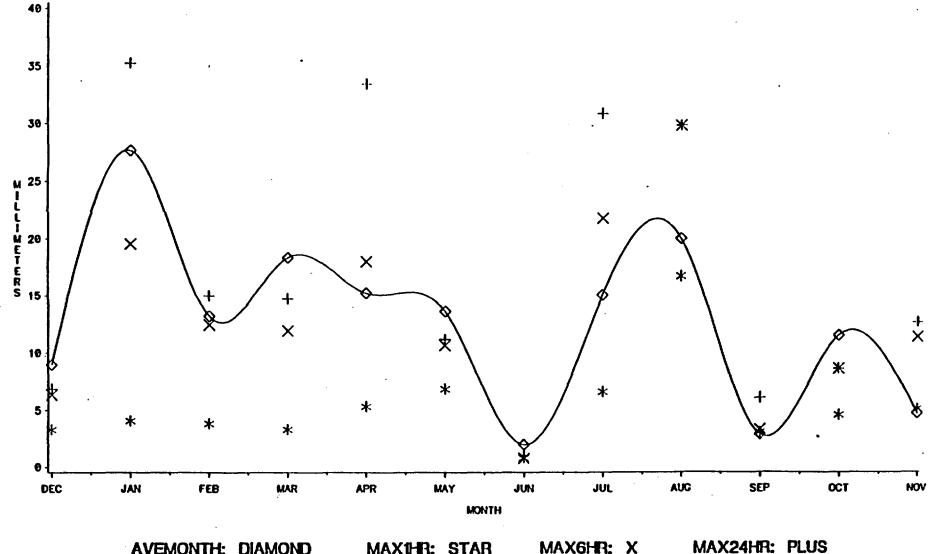
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MONTHLY AVERAGE PRECIPITATION AT SELECTED SITES IN THE VICINITY OF YUCCA MOUNTAIN



DIAMOND = BEATTY (1931 TO 1960) STAR = BJY (1960 TO 1981) CROSS = YUCCA FLAT (1962 TO 1971) PLUS = DESERT ROCK (1963 TO 1981) **MAIN SITE PRECIPITATION DECEMBER 1985--NOVEMBER 1988**



AVEMONTH: DIAMOND

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·* ;

MAX1HR: STAR

MAX24HR: PLUS

SUMMARY OF TECHNICAL APPROACH

- CONTINUOUS MONITORING OF METEOROLOGICAL AND AIR QUALITY PARAMETERS
- DETERMINATION OF DISPERSION PATTERNS
- DETERMINATION OF BACKGROUND AIR POLLUTANT CONCENTRATIONS
- PROBABILITY ASSESSMENTS OF STORM MAGNITUDES
- ASSISTANCE TO USGS IN DETERMINING PRECIPITATION FREQUENCIES, DURATIONS, AND INTENSITIES

POTENTIAL MITIGATION MEASURES

- REDUCE PROJECT-RELATED TRAFFIC OR DEVELOP SCHEDULES FOR ROAD USAGE (ISSUE 2)
- WATER, OIL, OR PAVE ROADS (ISSUE 2)

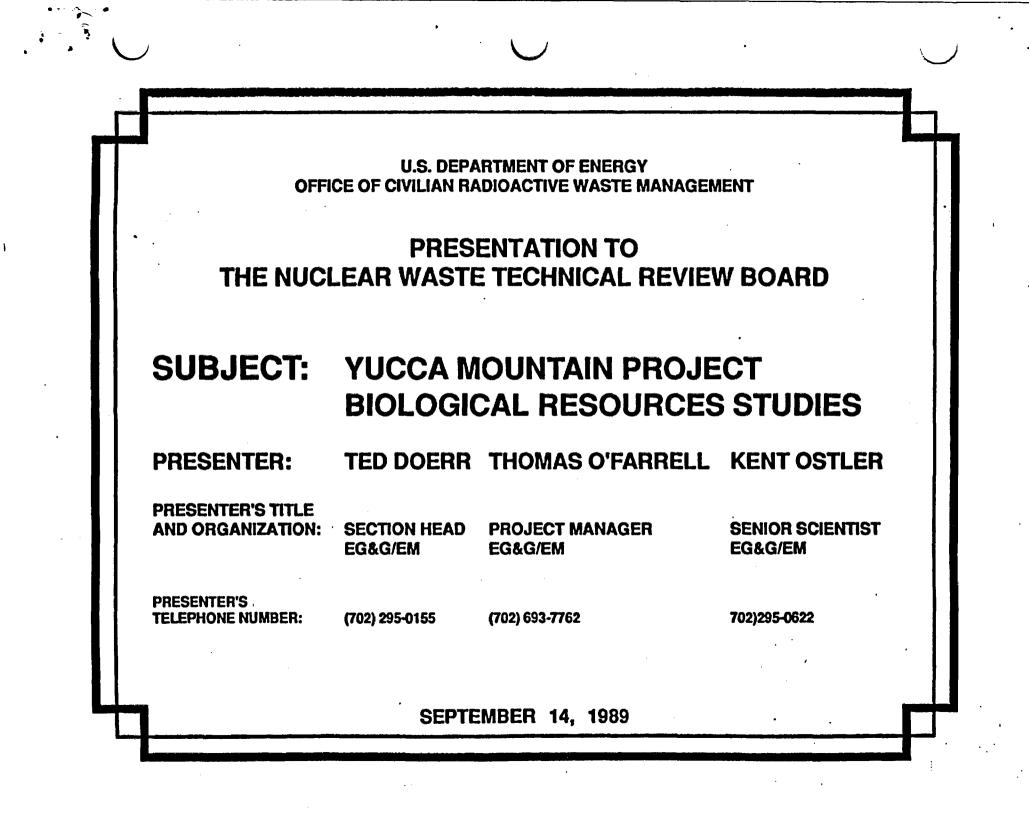
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- TREAT MUCK PRIOR TO DISPOSAL AND WATER MUCK PILE (ISSUE 2)
- **RESTRICT GENERATOR OPERATION (ISSUE 2)**
- WATER DRILL PAD AND TRENCHING GROUND SURFACES (ISSUE 2)

AESTHETICS

- ENVIRONMENTAL ASSESSMENT FOR YUCCA MOUNTAIN CONTAINED A BRIEF ANALYSIS
- NO SIGNIFICANT ADVERSE IMPACTS
 POSTULATED

• FURTHER STUDIES WILL NOT BE INITIATED UNTIL AFTER EIS SCOPING



BIOLOGICAL RESOURCES

SEPTEMBER 14, 1989

BIOLOGICAL RESOURCES REGULATORY FRAMEWORK

• FEDERAL REQUIREMENTS

- ENDANGERED SPECIES ACT
- MIGRATORY BIRD TREATY ACT
- BALD AND GOLDEN EAGLE PROTECTION ACT
- WILD HORSE & BURRO ACT

• STATE OF NEVADA REQUIREMENTS

- WILDLIFE CONSERVATION LAWS
- PLANT CONSERVATION LAWS

SITE CHARACTERIZATION ACTIVITIES THAT HAVE THE POTENTIAL TO IMPACT BIOLOGICAL RESOURCES

• PRIMARY

- TRENCHES
- MINE SPOILS PILE
- PONDING STUDIES
- SURFACE PAVEMENT STUDIES
- SEISMIC STUDIES

• PRIMARY & SECONDARY

- ESF FACILITY
- ROADS/TRAFFIC
- DRILL PADS

• OTHER

- RADIONUCLIDE SOURCES

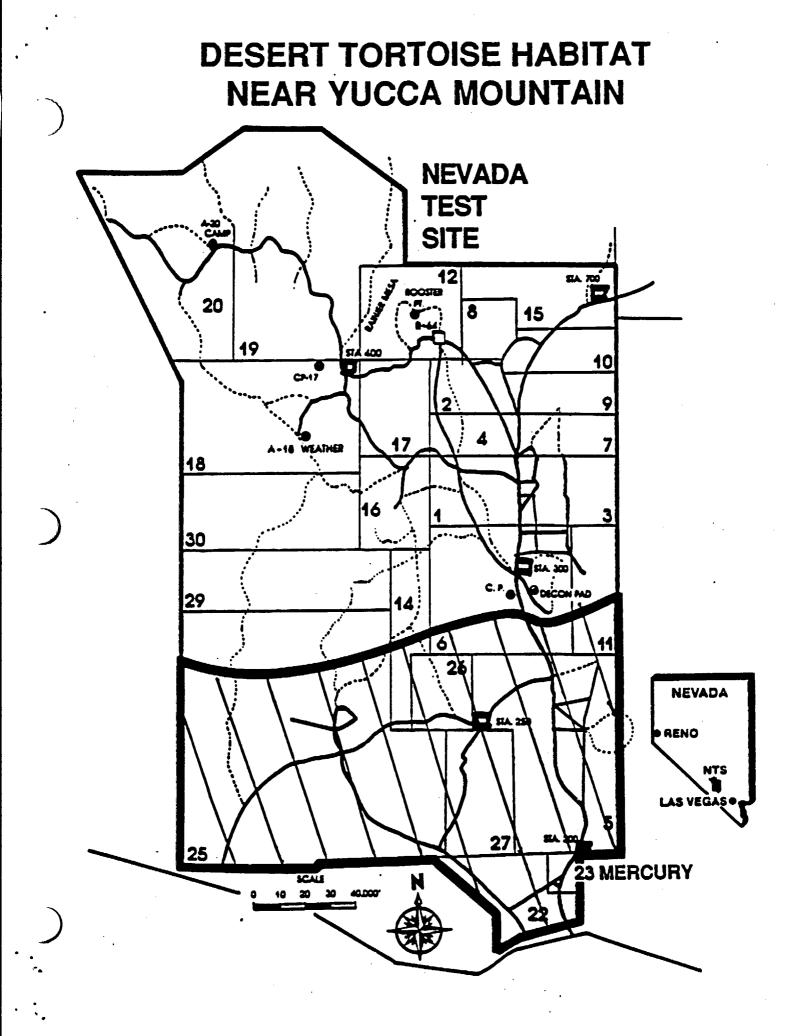
BIOLOGICAL RESOURCES TECHNICAL ISSUES

- 1. WHAT ARE THE IMPACTS OF SITE CHARACTERIZATION ACTIVITIES TO THREATENED AND ENDANGERED SPECIES?
- 2. WHAT ARE THE IMPACTS OF SITE CHARACTERIZATION ACTIVITIES TO OTHER SENSITIVE/PROTECTED SPECIES?
- 3. WHAT ARE THE IMPACTS OF SITE CHARACTERIZATION ACTIVITIES TO COMMUNITY ATTRIBUTES AFFECTING SENSITIVE SPECIES?
- 4. WHAT ARE THE POTENTIAL PATHWAYS OF RADIATION TO MAN AND THE ENVIRONMENT?
- 5. WHAT ARE THE RECLAMATION TECHNIQUES NEEDED TO RECLAIM HABITATS DISTURBED BY SITE CHARACTERIZATION ACTIVITIES?

ISSUE 1. WHAT ARE THE IMPACTS OF SITE CHARACTERIZATION ACTIVITIES TO THREATENED AND ENDANGERED SPECIES?

TECHNICAL APPROACH

- PREACTIVITY/POSTACTIVITY SURVEYS
- DESERT TORTOISE STUDY
 - POPULATION ASSESSMENT
 - HABITAT EVALUATION/REMOTE SENSING
 - FOOD HABITS
 - HABITAT USE AND MOVEMENTS
 - PATHOLOGY
 - RELOCATION EFFICACY
 - ROADWAY MITIGATION EFFICACY
- ASH MEADOWS STUDY



DESERT TORTOISE ISSUE

- ON AUGUST 4, THE U.S. FISH AND WILDLIFE SERVICE (USF&WS) LISTED THE DESERT TORTOISE AS "ENDANGERED"
 - THE EMERGENCY ACTION WAS TAKEN BECAUSE OF AN OUTBREAK OF A RESPIRATORY DISEASE
 - LOCAL NEVADA DEVELOPERS IMMEDIATELY
 FILED FOR AN INJUNCTION WHICH WAS DENIED
 BY FEDERAL COURT

FORMAL CONSULTATIONS

• • ARE REQUIRED BECAUSE

- DESERT TORTOISE ARE PRESENT
- PROPOSED SITE CHARACTERIZATION ACTIVITIES MAY AFFECT DESERT TORTOISE HABITAT
- THE POTENTIAL FOR INCIDENTAL TAKE OF DESERT TORTOISE EXISTS
- INCIDENTAL TAKE PROVISIONS CAN BE ISSUED ONLY THROUGH FORMAL CONSULTATIONS

• FORMAL CONSULTATIONS REQUIRE A BIOLOGICAL ASSESSMENT

PENALTIES

- CIVIL AND CRIMINAL FINES FOR EACH OFFENSE COULD BE UP TO \$20,000 AND 1 YEAR IN JAIL
 - THESE PENALTIES COULD BE IMPOSED ON ANY INDIVIDUALS TAKING DESERT TORTOISE OR RESPONSIBLE FOR UNLAWFUL ACTIONS AGAINST THE DESERT TORTOISE AND THEIR HABITAT

DESERT TORTOISE ACTION PLAN

- NOTIFICATION OF RESTRICTION ON PROJECT ACTIVITIES
 - ON AUGUST 3, 1989, PROJECT ACTIVITIES WERE RESTRICTED TO VEHICLE TRAFFIC ON MAIN AND SECONDARY ROADS ONLY. CASUAL ACCESS WHICH WILL NOT DISTURB THE TORTOISE OR ITS HABITAT IS ALLOWED

INITIATION OF CONSULTATIONS WITH USF&WS

- ON AUGUST 9, 1989, PROJECT REPRESENTATIVES MET WITH THE USF&WS TO BEGIN CONSULTATIONS
- USF&WS COMPLEMENTED THE ACTION ALREADY BEING TAKEN BY THE PROJECT TO PROTECT THE TORTOISE
- USF&WS DOES NOT EXPECT YUCCA MOUNTAIN TO BE CRITICAL HABITAT FOR THE TORTOISE AND OFFERED TO WORK COOPERATIVELY WITH DOE TO AVOID SIGNIFICANT DELAYS

DESERT TORTOISE ACTION PLAN

(CONTINUED)

• PREPARATION OF BIOLOGICAL ASSESSMENT (BA)

- BA THAT ANALYZES PROJECT IMPACTS TO THE TORTOISE AND ITS HABITAT MUST BE PREPARED WITHIN 180 DAYS
- BA WILL INCLUDE THE PROJECT'S RECOMMENDATIONS ON ACTIONS TO BE TAKEN TO PROTECT THE DESERT TORTOISE
- WORK ON THE BA HAS BEGUN
- THE BA WILL BE COMPLETED ON SEPTEMBER 30, 1989

• DETERMINATION MADE BY USF&WS

- USF&WS HAS 90 TO 150 DAYS AFTER IT DETERMINES THE INFORMATION SUBMITTAL IS COMPLETE TO RENDER ITS OPINION

POSSIBLE REQUIREMENTS RESULTING FROM USF&WS DETERMINATION

- PRECONSTRUCTION SURVEYS
- RECLAMATION ACTIVITIES
- POPULATION MONITORING
- FIELD RESEARCH
- EMPLOYEE EDUCATION
- OPERATING GUIDELINES
 (i.e. NO OFF-ROAD TRAFFIC)

ALL OF THE ABOVE REQUIREMENTS ARE PRESENTLY PART OF PLANNED OR ONGOING DOE ACTIVITIES AT THE SITE (EMMP, EFAPs, RECLAMATION IP, etc.)

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ISSUE 2. WHAT ARE THE IMPACTS OF SITE CHARACTERIZATION ACTIVITIES TO OTHER SENSITIVE/PROTECTED SPECIES?

TECHNICAL APPROACH

- PREACTIVITY/POSTACTIVITY SURVEYS
- **RANGING STUDIES**
 - WILD HORSE/BURROS
 - DEER
 - BIRDS
 - BATS
- SUPPORT STUDIES
 - FURBEARERS
 - GAMEBIRDS
 - RABBITS

ISSUE 3. WHAT ARE THE IMPACTS OF SITE CHARACTERIZATION ACTIVITIES TO COMMUNITY ATTRIBUTES AFFECTING SENSITIVE/PROTECTED SPECIES?

TECHNICAL APPROACH

• PREACTIVITY/POSTACTIVITY SURVEYS

• **RANGING STUDIES**

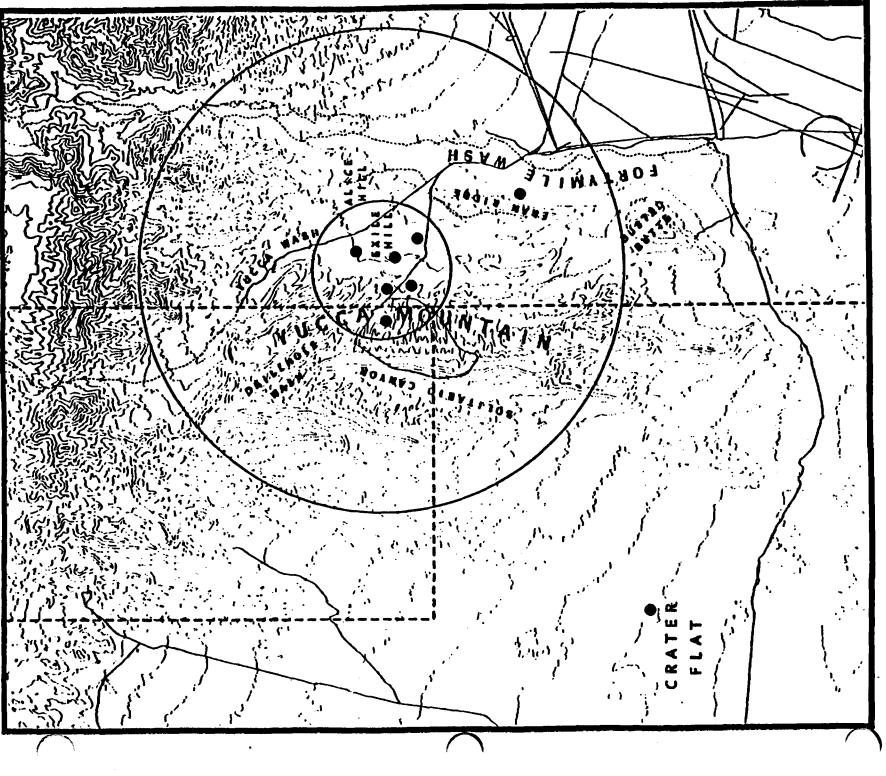
- VEGETATION STUDIES
- SMALL MAMMAL STUDIES
- **REPTILE STUDIES**
- INVERTEBRATE STUDIES
- MICROSITE DISTURBANCE & METEOROLOGICAL MONITORING

ISSUE 4. WHAT ARE THE POTENTIAL PATHWAYS OF RADIATION TO MAN AND THE ENVIRONMENT?

TECHNICAL APPROACH

• SUPPORT STUDIES

- SMALL MAMMALS
- DEER/CATTLE FORAGE
- GAMEBIRD
- LAGOMORPHS
- DEER TELEMETRY
- FURBEARERS



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ISSUE 5. WHAT ARE THE RECLAMATION TECHNIQUES NEEDED TO RECLAIM HABITAT DISTURBED BY SITE CHARACTERIZATION ACTIVITIES?

TECHNICAL APPROACH

- PREACTIVITY/POSTACTIVITY SURVEY
- SITE PREPARATION RECLAMATION INSTRUCTIONS
 - TOPSOIL STOCKPILING SPECIFICATIONS
 - EROSION CONTROL SPECIFICATIONS

• **RECLAMATION FEASIBILITY STUDIES**

- LITERATURE REVIEW
- SUCCESSIONAL STUDIES
- TOPSOIL STOCKPILE STUDIES
- MINE SPOIL STUDIES
- **REVEGETATION STUDIES**

INTEGRATED BIOLOGICAL PROGRAM

MEASURE LOCAL/REGIONAL SITE CHARACTERIZATION IMPACTS

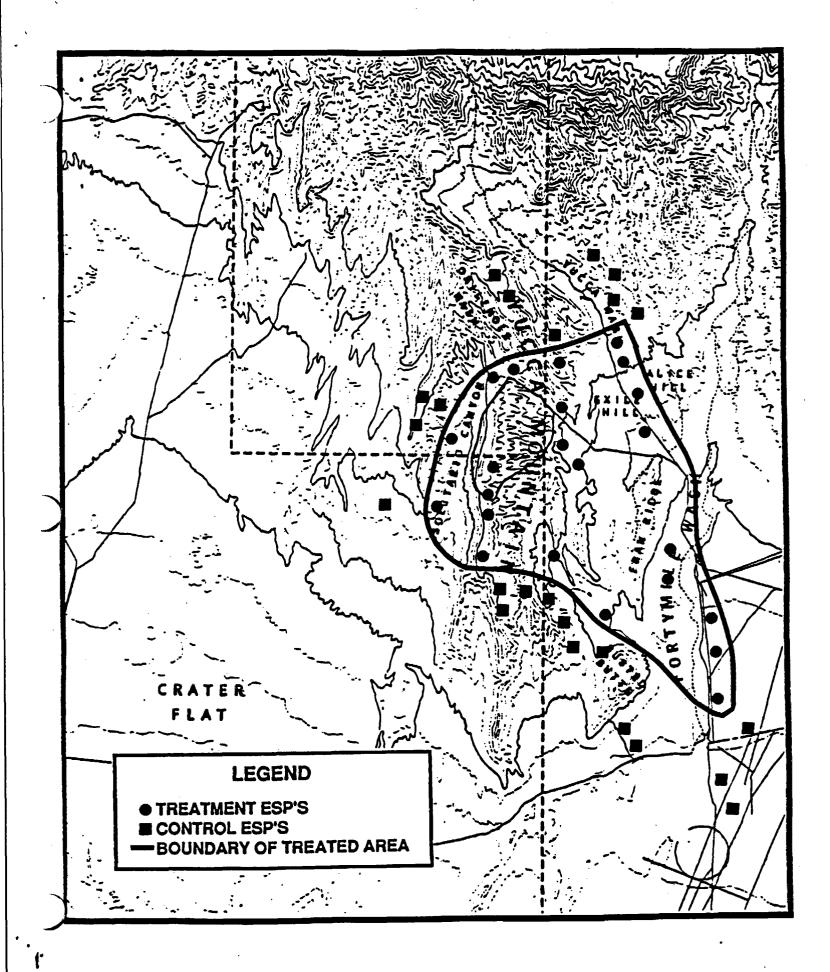
- PRIMARY
- SECONDARY

DISCRIMINATE NATURAL VARIATION FROM IMPACTS

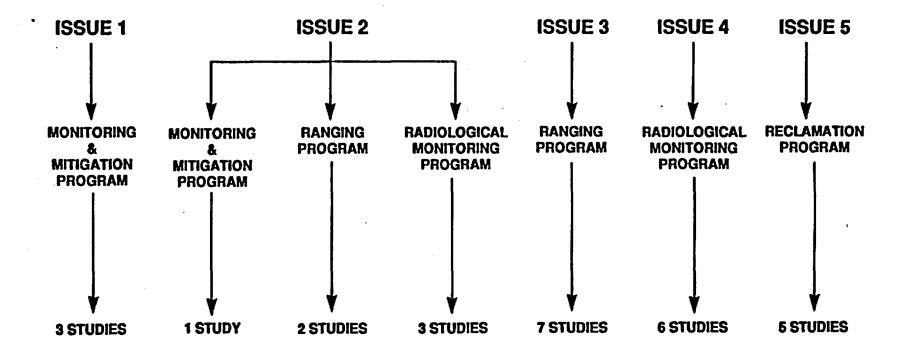
- CONTROL VS. TREATED
- PRE-VS. POST-ACTIVITY SAMPLE PERIODS
- LOCAL VS. REGIONAL

MONITOR IMPACTS THROUGH ECOSYSTEM TROPHIC LEVELS

- SIMILAR SAMPLE LOCATIONS
- SIMILAR SCALE OF MEASURE



SUMMARY OF TECHNICAL APPROACH



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POTENTIAL MITIGATION MEASURES

• DESERT TORTOISE

- PREACTIVITY SURVEYS
- REDESIGN OR RELOCATE ACTIVITY
- CLOSELY MONITOR IMPACTED SPECIES NEAR DISTURBANCES
- AUGMENT HABITAT TO TEMPORARILY REPLACE HABITAT LOST TO DISTURBANCE
- MOVE AFFECTED ANIMALS TO SUITABLE HABITATS AT NEARBY LOCATIONS
- MOVE AFFECTED ANIMALS TO SUITABLE HABITATS AT DISTANT LOCATIONS

• DISTURBED HABITAT

- PREACTIVITY SURVEYS
- REDESIGN OR RELOCATE ACTIVITY
- SALVAGE, PRESERVE AND REUSE TOPSOIL
- PROTECT SITES FROM EROSION
- **RECLAIM DISTURBANCES WITH SUITABLE PLANT SPECIES**

CULTURAL RESOURCES TECHNICAL ISSUES

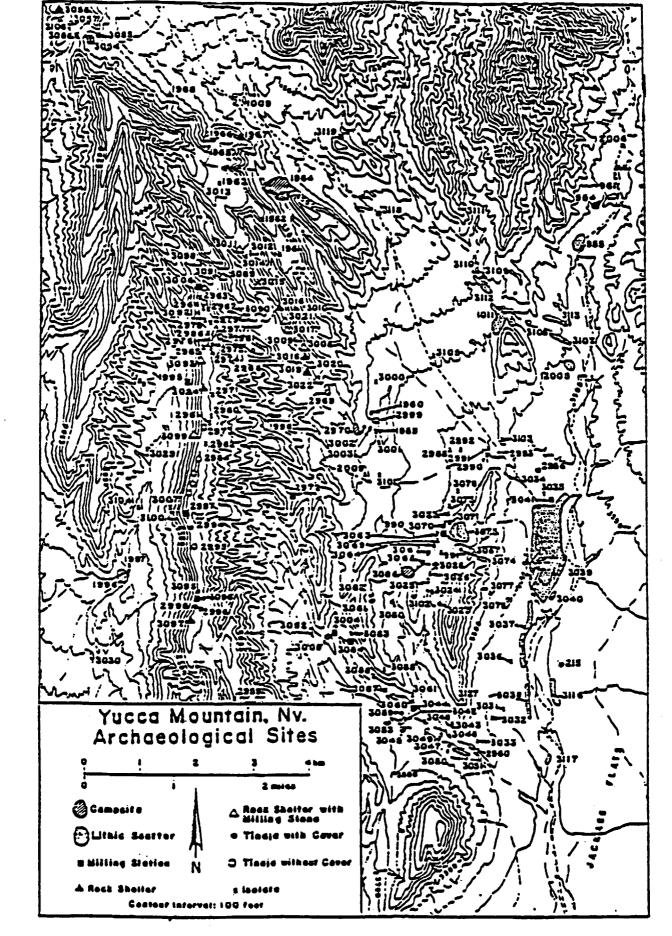
- 1. WHAT ARE THE POTENTIALLY AFFECTED HISTORICAL PROPERTIES?
 - 2. WHAT ARE THE VALUES OF KNOWN HISTORICAL PROPERTIES?
 - 3. WHAT ARE THE POTENTIAL EFFECTS OF SITE CHARACTERIZATION ACTIVITIES ON HISTORICAL PROPERTIES?
 - 4. WHAT ARE THE POTENTIAL EFFECTS OF SITE CHARACTERIZATION ACTIVITIES ON NATIVE AMERICANS?

ISSUE 1: WHAT ARE THE POTENTIALLY AFFECTED HISTORICAL PROPERTIES?

TECHNICAL APPROACH

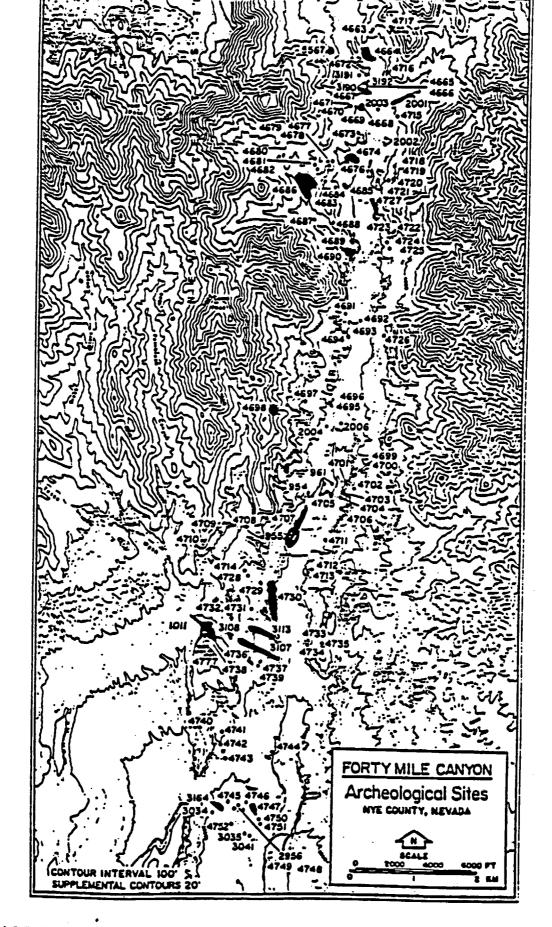
- LITERATURE REVIEW
- CULTURAL RESOURCE OVERVIEW
- PRE-ACTIVITY SURVEYS IN AREAS SPECIFICALLY TARGETED FOR DISTURBANCE

 CONDUCT ADDITIONAL SAMPLE SURVEYS IN AREAS THAT MAY BE INDIRECTLY AFFECTED BY SITE-SPECIFIC ACTIVITIES



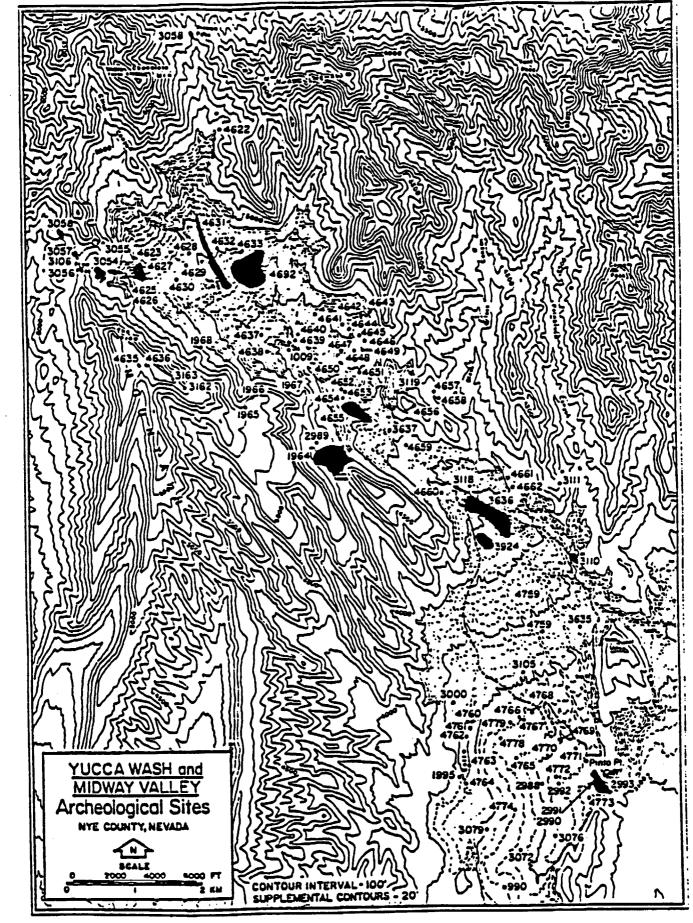
MAP OF THE YUCCA MOUNTAIN PROJECT AREA SHOWING THE LOCATION OF KNOWN CULTURAL RESOURCES

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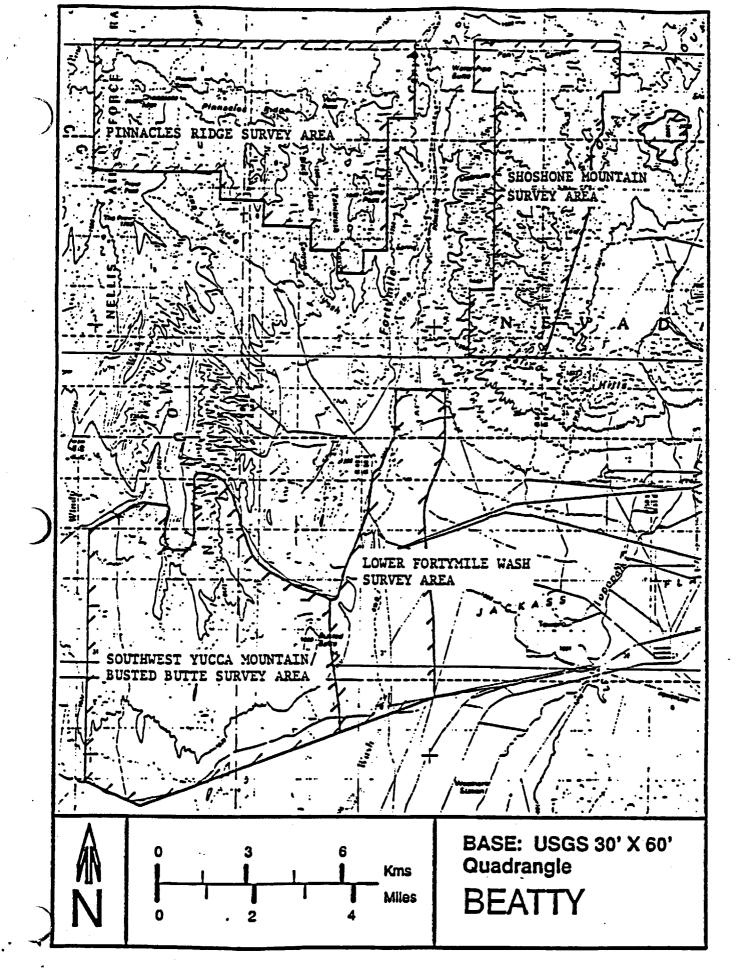


LOCATION OF ARCHAEOLOGICAL SITES FOUND DURING THE SAMPLE RECONNAISSANCE OF FORTYMILE CANYON., NYE COUNTY, NEVADA

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LOCATION OF ARCHAEOLOGICAL SITES FOUND DURING THE RECONNAISSANCE OF MIDWAY VALLEY AND SAMPLE RECONNAISSANCE OF YUCCA WASH, NYE COUNTY, NEVADA



LOCATION OF THE FOUR SAMPLE SURFACE SURVEY AREAS PROPOSED FOR THE YUCCA MOUNTAIN PROJECT

ISSUE 2: WHAT ARE THE VALUES OF KNOWN HISTORICAL PROPERTIES?

TECHNICAL APPROACH

- NATIONAL REGISTER OF HISTORIC PLACES
 - CRITERIA OF ELIGIBILITY
 - METHODS OF EVALUATION
- HISTORIC AND SCIENTIFIC SIGNIFICANCE
 - EARLY HUMAN OCCUPATION IN THE REGION (10,000 6000 BC)
 - MIDDLE AND LATE PERIOD PRE-HISTORIC OCCUPATION (6,000 BC - AD 1000)
 - ADAPTATIONS OF HISTORIC NATIVE AMERICANS (AD 1000 - PRESENT)
 - HISTORIC EURO-AMERICAN OCCUPATION (AD1850 PRESENT)

CRITERIA OF ELIGIBILITY (36 CFR 60.6)

- SIGNIFICANT CULTURAL RESOURCES ARE THOSE PROPERTIES THAT POSSESS INTEGRITY OF LOCATION, DESIGN, SETTING, MATERIALS, WORKMANSHIP, FEELING, ASSOCIATION, AND;
 - THAT ARE ASSOCIATED WITH SIGNIFICANT HISTORICAL EVENTS
 - THAT ARE ASSOCIATED WITH SIGNIFICANT HISTORICAL PEOPLE
 - TYPIFY TYPES, PERIODS OR METHODS OF CONSTRUCTION, OR REPRESENT THE WORK OF A MASTER, OR POSSESS HIGH ARTISTIC VALUE, OR REPRESENT A SIGNIFICANT ENTITY WHOSE COMPONENTS MAY LACK INDIVIDUAL DISTINCTION
 - HAVE A POTENTIAL TO YIELD INFORMATION IMPORTANT IN PREHISTORY OR HISTORY

METHODS OF EVALUATION

- IDENTIFICATION OF SETTLEMENT TYPES
- TEST EXCAVATIONS
- SURFACE MAPPING AND COLLECTION OF ARTIFACTS
- ASSESSMENT OF RESEARCH POTENTIAL RELATED TO SIGNIFICANT PROBLEMS IN REGIONAL PREHISTORY AND HISTORY
 - DEVELOPMENT OF LONG-TERM STUDY PROGRAM TO ADDRESS THOSE SIGNIFICANT PROBLEMS

ISSUE 3: WHAT ARE THE POTENTIAL EFFECTS OF THE SITE CHARACTERIZATION ACTIVITIES ON HISTORICAL PROPERTIES?

TECHNICAL APPROACH

- DETERMINING EXTENT OF DIRECT EFFECTS DUE TO SITE-SPECIFIC GROUND-DISTURBING ACTIONS
- DETERMINE EXTENT OF INDIRECT EFFECTS
 - UNAUTHORIZED AND ILLEGAL COLLECTION OF ARTIFACTS
 - INADVERTENT USE OF ARTIFACTS FOR CONSTRUCTION MATERIALS
 - INCREASED ACCESSIBILITY TO ARCHAEOLOGICAL SITES
 - CHANGES IN SURFACE RUNOFF AND EROSION OF ARCHAEOLOGICAL SITES

ISSUE 4: WHAT ARE THE POTENTIAL EFFECTS OF SITE CHARACTERIZATION ACTIVITIES ON NATIVE AMERICANS?

TECHNICAL APPROACH

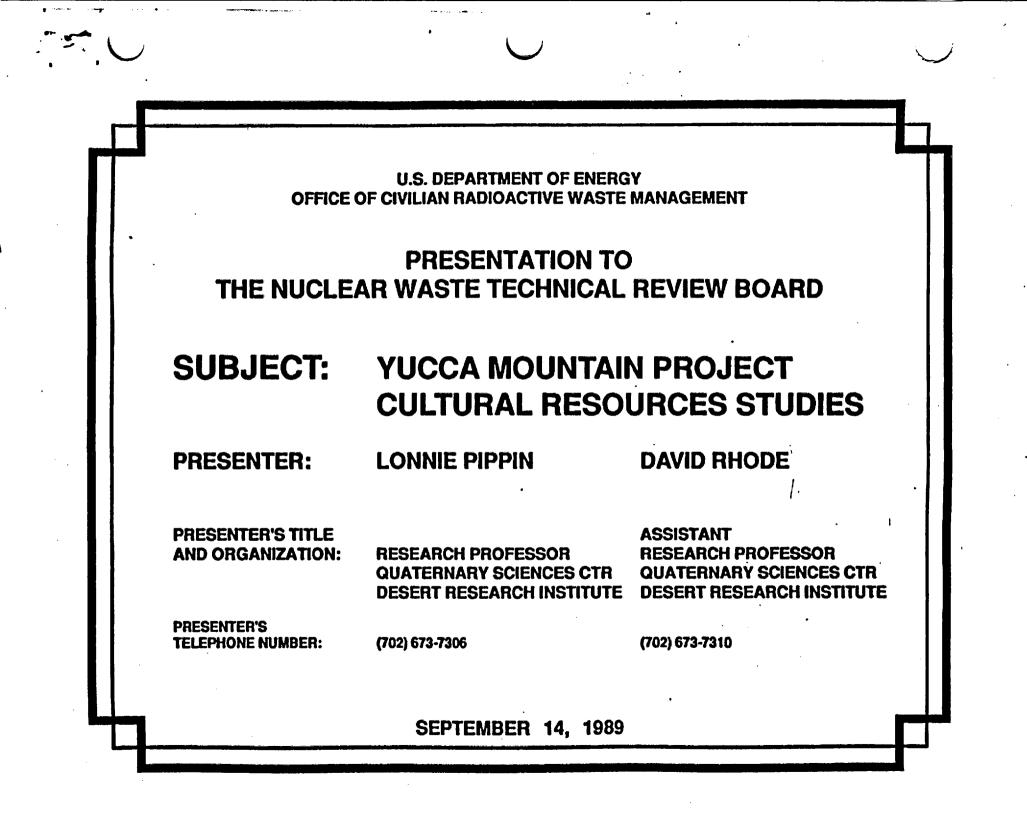
- LITERATURE REVIEW
- CONSULTATIONS
 - OFFICIAL TRIBAL CONTACTS OR REPRESENTATIVES
 - KEY CULTURAL EXPERT
 - SITE VISITS
- RECOMMENDATIONS FOR MINIMIZING EFFECTS ON TRADITIONAL CULTURAL VALUES

SUMMARY OF TECHNICAL APPROACH

- IDENTIFICATION OF HISTORICAL PROPERTIES
 (ISSUE 1)
- EVALUATION OF SIGNIFICANCE OF HISTORICAL PROPERTIES (ISSUE 2)
- ASSESSMENT OF POTENTIAL ADVERSE EFFECTS TO PROPERTIES (ISSUE 3)

POTENTIAL MITIGATION MEASURES

- AVOIDANCE (ISSUE 3)
- DATA RECOVERY PROJECTS (ISSUES 2 AND 3)
- LONG TERM STUDY PROGRAM (ISSUES 1, 2, AND 3)
- WORKER EDUCATION PROGRAM (ISSUES 3 AND 4)
- MONITORING OF POTENTIAL ADVERSE IMPACTS (ISSUES 1 AND 3)



CULTURAL RESOURCES SEPTEMBER 14, 1989

CULTURAL RESOURCE: ANY MATERIAL ITEM MADE, MODIFIED IN FORM OR LOCATION, OR HELD TO BE CULTURALLY SIGNIFICANT BY PEOPLE

CULTURAL RESOURCES REGULATORY FRAMEWORK

FEDERAL REQUIREMENTS

- PRESIDENTIAL EXECUTIVE ORDER 11593
- NATIONAL HISTORIC PRESERVATION ACT
 - 36 CFR 800
 - 1. PROCEDURES FOR CONSULTATION 2. DOCUMENTATION OF EFFECTS
 - 36 CFR 60 GUIDELINES FOR NOMINATIONS
 - 56 CFR 4727 GUIDELINES FOR HISTORICAL AND ARCHAEOLOGICAL RESOURCE MANAGEMENT
- PROGRAMMATIC AGREEMENT
- AMERICAN INDIAN RELIGIOUS FREEDOM ACT

PROGRAMMATIC AGREEMENT STIPULATIONS

- CONSULTATION WITH STATE HISTORIC PRESERVATION OFFICE
- IDENTIFICATION OF EFFECTS OF SITE CHARACTERIZATION ACTIVITIES ON HISTORICAL PROPERTIES
- PREPARATION OF RESEARCH ISSUES AND ARCHAEOLOGICAL DATA RECOVERY PROGRAM
- IMPLEMENTATION OF MEASURES TO MINIMIZE SIGNIFICANT ADVERSE EFFECTS
- ESTABLISH A WORKER EDUCATION PROGRAM
- CONSULT WITH NATIVE AMERICAN GROUPS CONCERNING PROPERTIES IMPORTANT TO THOSE GROUPS

SITE CHARACTERIZATION ACTIVITIES THAT HAVE THE POTENTIAL TO IMPACT CULTURAL RESOURCES

- EXPLORATORY SHAFT CONSTRUCTION
- ROAD AND POWERLINE CONSTRUCTION
- GEOLOGIC TRENCHING
- MONITORING STATION EMPLACEMENTS
- OFF-ROAD VEHICLE AND FOOT TRAFFIC
- HUMAN INTRUSION

CULTURAL RESOURCES TECHNICAL ISSUES

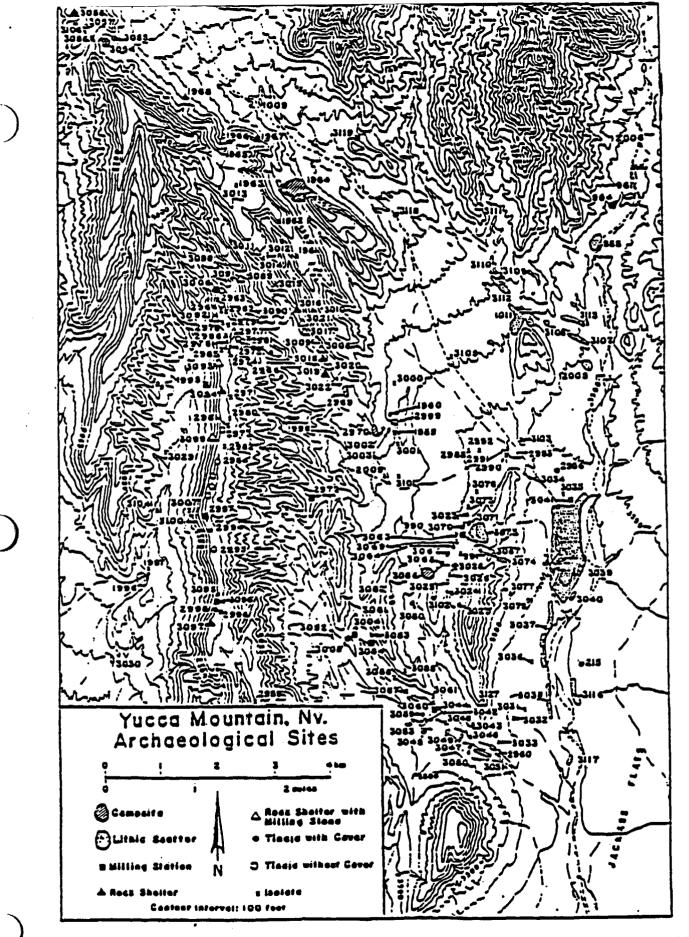
- 1. WHAT ARE THE POTENTIALLY AFFECTED HISTORICAL PROPERTIES?
 - 2. WHAT ARE THE VALUES OF KNOWN HISTORICAL PROPERTIES?
 - 3. WHAT ARE THE POTENTIAL EFFECTS OF SITE CHARACTERIZATION ACTIVITIES ON HISTORICAL PROPERTIES?
 - 4. WHAT ARE THE POTENTIAL EFFECTS OF SITE CHARACTERIZATION ACTIVITIES ON NATIVE AMERICANS?

ISSUE 1: WHAT ARE THE POTENTIALLY AFFECTED HISTORICAL PROPERTIES?

TECHNICAL APPROACH

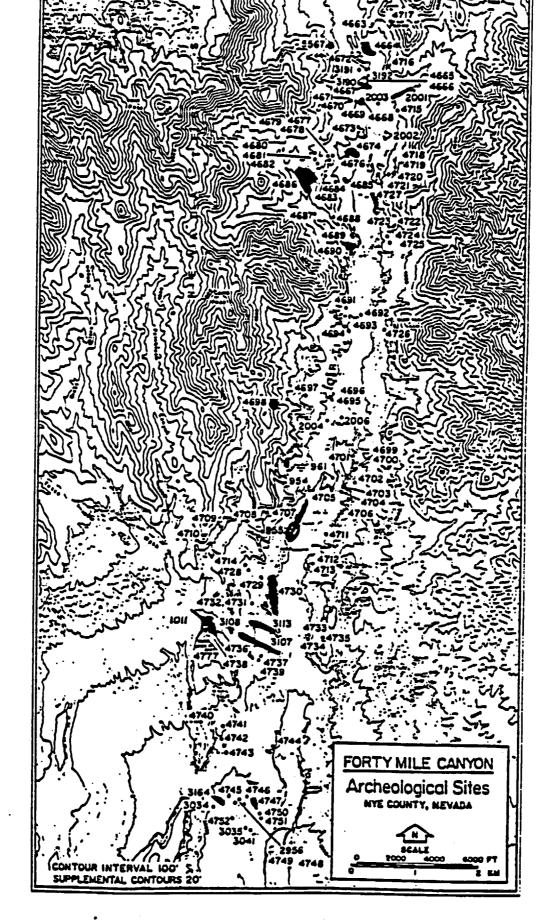
- LITERATURE REVIEW
- CULTURAL RESOURCE OVERVIEW
- PRE-ACTIVITY SURVEYS IN AREAS SPECIFICALLY TARGETED FOR DISTURBANCE

• CONDUCT ADDITIONAL SAMPLE SURVEYS IN AREAS THAT MAY BE INDIRECTLY AFFECTED BY SITE-SPECIFIC ACTIVITIES



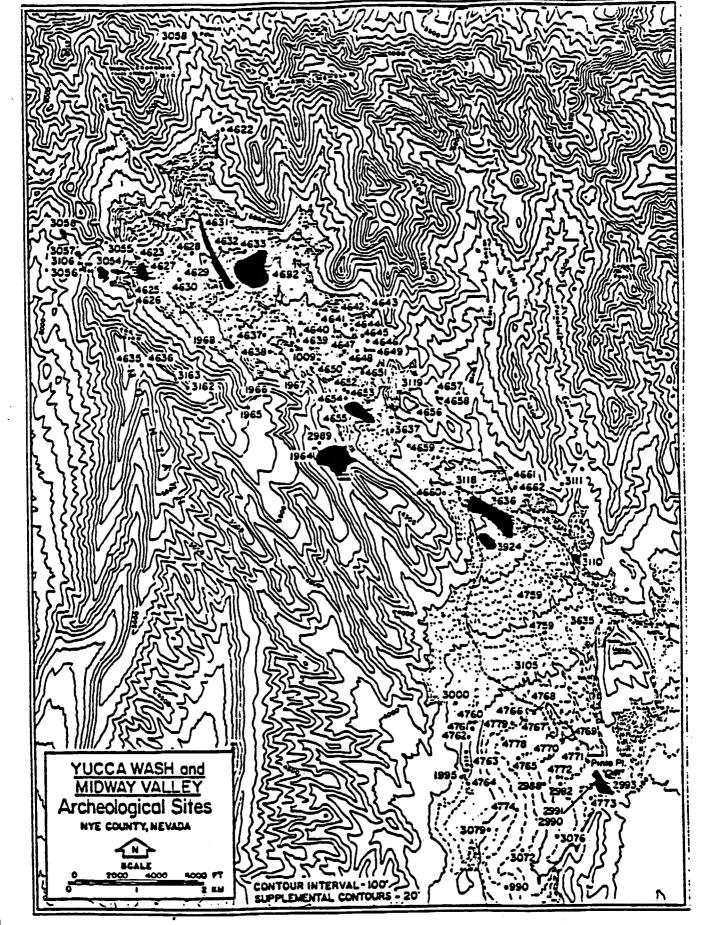
Man² OF THE YUCCA MOUNTAIN PROJECT AREA SHOWING THE LOCATION OF KNOWN CULTURAL RESOURCES

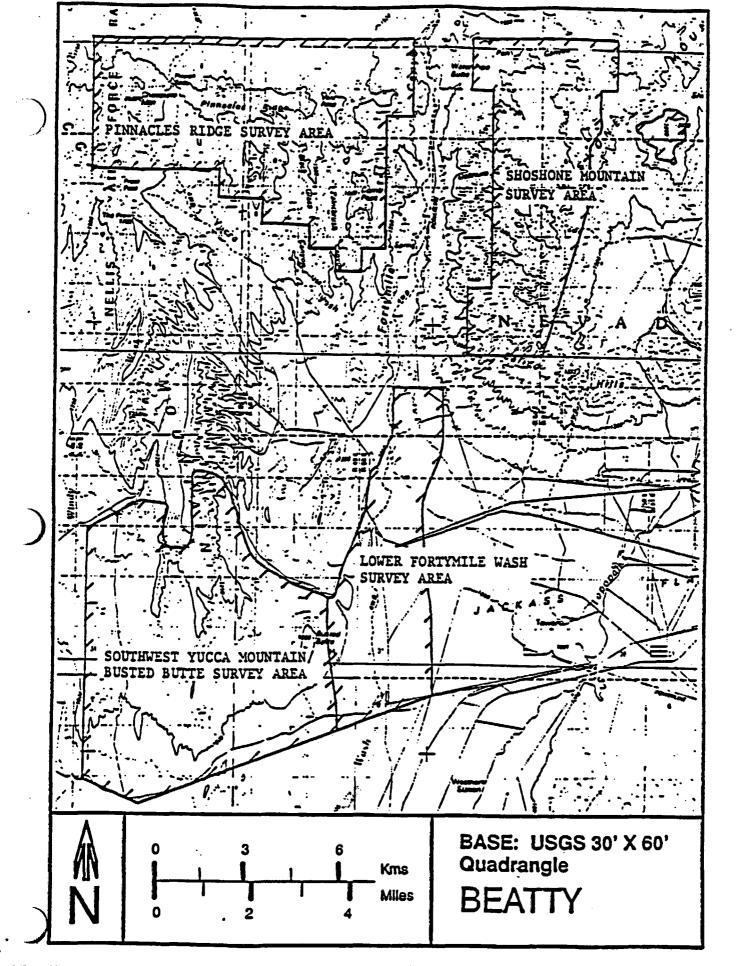
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LOCATION OF ARCHAEOLOGICAL SITES FOUND DURING THE SAMPLE RECONNAISSANCE OF FORTYMILE CANYON., NYE COUNTY, NEVADA







LOCATION OF THE FOUR SAMPLE SURFACE SURVEY AREAS PROPOSED FOR THE YUCCA MOUNTAIN PROJECT

ISSUE 2: WHAT ARE THE VALUES OF KNOWN HISTORICAL PROPERTIES?

TECHNICAL APPROACH

- NATIONAL REGISTER OF HISTORIC PLACES
 - CRITERIA OF ELIGIBILITY
 - METHODS OF EVALUATION
- HISTORIC AND SCIENTIFIC SIGNIFICANCE
 - EARLY HUMAN OCCUPATION IN THE REGION (10,000 6000 BC)
 - MIDDLE AND LATE PERIOD PRE-HISTORIC OCCUPATION (6,000 BC - AD 1000)
 - ADAPTATIONS OF HISTORIC NATIVE AMERICANS (AD 1000 - PRESENT)
 - HISTORIC EURO-AMÉRICAN OCCUPATION (AD1850 PRESENT)

CRITERIA OF ELIGIBILITY (36 CFR 60.6)

- SIGNIFICANT CULTURAL RESOURCES ARE THOSE PROPERTIES THAT POSSESS INTEGRITY OF LOCATION, DESIGN, SETTING, MATERIALS, WORKMANSHIP, FEELING, ASSOCIATION, AND;
 - THAT ARE ASSOCIATED WITH SIGNIFICANT HISTORICAL EVENTS
 - THAT ARE ASSOCIATED WITH SIGNIFICANT HISTORICAL PEOPLE
 - TYPIFY TYPES, PERIODS OR METHODS OF CONSTRUCTION, OR REPRESENT THE WORK OF A MASTER, OR POSSESS HIGH ARTISTIC VALUE, OR REPRESENT A SIGNIFICANT ENTITY WHOSE COMPONENTS MAY LACK INDIVIDUAL DISTINCTION
 - HAVE A POTENTIAL TO YIELD INFORMATION IMPORTANT IN PREHISTORY OR HISTORY

NWCLT5P.A18/9-14-89

METHODS OF EVALUATION

- **IDENTIFICATION OF SETTLEMENT TYPES**
- TEST EXCAVATIONS
- SURFACE MAPPING AND COLLECTION OF ARTIFACTS
- ASSESSMENT OF RESEARCH POTENTIAL RELATED TO SIGNIFICANT PROBLEMS IN REGIONAL PREHISTORY AND HISTORY
 - DEVELOPMENT OF LONG-TERM STUDY PROGRAM TO ADDRESS THOSE SIGNIFICANT PROBLEMS

ISSUE 3: WHAT ARE THE POTENTIAL EFFECTS OF THE SITE CHARACTERIZATION ACTIVITIES ON HISTORICAL PROPERTIES?

TECHNICAL APPROACH

- DETERMINING EXTENT OF DIRECT EFFECTS DUE TO SITE-SPECIFIC GROUND-DISTURBING ACTIONS
- DETERMINE EXTENT OF INDIRECT EFFECTS
 - UNAUTHORIZED AND ILLEGAL COLLECTION OF ARTIFACTS
 - INADVERTENT USE OF ARTIFACTS FOR CONSTRUCTION MATERIALS
 - INCREASED ACCESSIBILITY TO ARCHAEOLOGICAL SITES
 - CHANGES IN SURFACE RUNOFF AND EROSION OF ARCHAEOLOGICAL SITES

ISSUE 4: WHAT ARE THE POTENTIAL EFFECTS OF SITE CHARACTERIZATION ACTIVITIES ON NATIVE AMERICANS?

TECHNICAL APPROACH

- LITERATURE REVIEW
- CONSULTATIONS

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- OFFICIAL TRIBAL CONTACTS OR REPRESENTATIVES
- KEY CULTURAL EXPERT
- SITE VISITS
- RECOMMENDATIONS FOR MINIMIZING EFFECTS ON TRADITIONAL CULTURAL VALUES

SUMMARY OF TECHNICAL APPROACH

- IDENTIFICATION OF HISTORICAL PROPERTIES
 (ISSUE 1)
- EVALUATION OF SIGNIFICANCE OF HISTORICAL PROPERTIES (ISSUE 2)
- ASSESSMENT OF POTENTIAL ADVERSE EFFECTS TO PROPERTIES (ISSUE 3)

POTENTIAL MITIGATION MEASURES

- AVOIDANCE (ISSUE 3)
- DATA RECOVERY PROJECTS (ISSUES 2 AND 3)
- LONG TERM STUDY PROGRAM (ISSUES 1, 2, AND 3)
- WORKER EDUCATION PROGRAM
 (ISSUES 3 AND 4)
- MONITORING OF POTENTIAL ADVERSE IMPACTS (ISSUES 1 AND 3)

U.S. DEPARTMENT OF ENERGY OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

PRESENTATION TO THE NUCLEAR WASTE TECHNICAL REVIEW BOARD

SUBJECT: 40 CFR PART 191 IMPLEMENTATION

PRESENTER:

STEVEN GOMBERG

PRESENTER'S ORGANIZATION:

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY

PRESENTER'S TELEPHONE NUMBER:

(202) 586-6497

- APPROACH TO IMPLEMENTATION
- CONCERNS WITH THE ORIGINAL RULE
- APPROACH TO REVIEW OF WORKING DRAFT 1
- OCRWM COMMENTS ON WORKING DRAFT 1

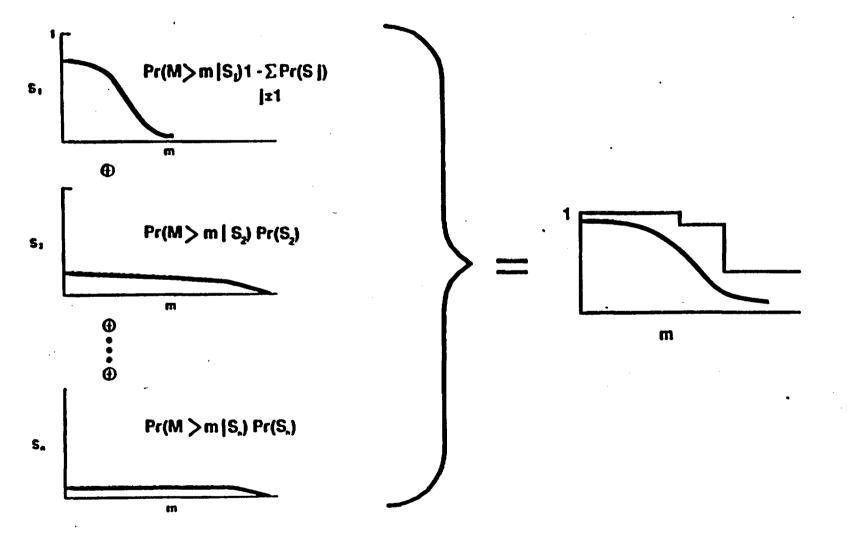
APPROACH TO IMPLEMEMTATION OF 40 CFR PART 191

- PERFORMANCE ASSESSMENTS (PA) TO BE CONDUCTED
 - PROBABILITY DISTRIBUTION OF RELEASES TO ACCESSIBLE ENVIRONMENT WILL BE CALCULATED
 - SCENARIOS FOR ANTICIPATED AND UNANTICIPATED PROCESSES AND EVENTS WILL BE TAKEN INTO ACCOUNT
 - DETERMINISTIC ANALYSES WILL BE PERFORMED TO ADDRESS PRE-CLOSURE AND UNDISTURBED PERFORMANCE

APPROACH TO PERFORMANCE ASSESSMENTS

- IDENTIFY ALL SIGNIFICANT PROCESSES AND EVENTS
- DEVELOP SET OF SCENARIOS; SPECIFY EFFECTS OF PROCESSES AND EVENTS ON REPOSITORY PERFORMANCE
- CALCULATE PROBABILITY OF RELEASES FOR EACH SCENARIO AND COMBINE INTO AN OVERALL COMPLEMENTARY CUMULATIVE DISTRIBUTION FUNCTION (CCDF)
- EVALUATE UNCERTAINTIES EXPLICITLY CONSIDERED IN CCDF
- COMPARISON OF CCDF WITH EPA STANDARD

CALCULATION OF OVERALL CCDF FROM SCENARIO CCDFs



A

OCRWM PA ACTIVITIES IN FY 90

- IDENTIFICATION AND EVALUATION OF SIGNIFICANT PROCESSES AND EVENTS
- SYSTEMATIC DEVELOPMENT OF SET OF SCENARIOS
- PRELIMINARY ESTIMATES OF CONSEQUENCES AND PROBABILITIES FOR SELECTED SCENARIOS
- DEVELOPMENT OF CODES AND MODELS FOR KEY SCENARIOS
- SENSITIVITY STUDIES

CONCERNS WITH ORIGINAL RULE (SUBPART B)

- SCENARIO QUANTIFICATION AND UNCERTAINTY REDUCTION MAY LIMIT THE POSSIBILITY OF PERFORMING A DEFENSIBLE CCDF CALCULATION AT ANY SITE
 - EXHAUSTIVE, MUTUALLY EXCLUSIVE SET OF SCENARIOS
 - SCENARIO PROBABILITIES
 - REDUCTION OF UNCERTAINTIES

CONCERNS WITH THE ORIGINAL RULE (CONTINUED)

• RELEASE LIMITS IN TABLE 1 ARE OVERLY CONSERVATIVE COMPARED TO CURRENT SCIENTIFIC AND REGULATORY CONSENSUS - UNDULY RESTRAINS REPOSITORY DESIGN - FOR EXAMPLE, CARBON-14

CARBON - 14 IN THE REPOSITORY

- APPROXIMATELY 100,000 CURIES IN 25,000 PACKAGES OF SPENT FUEL
- 5730 YEAR HALF-LIFE
- DISTRIBUTION AMONG CRUD, CLADDING AND FUEL MATRIX
 UNCERTAIN
- OXIDIZED AND RELEASED AS ¹⁴CO₂
- UP TO 1% MAY BE RAPIDLY RELEASED AFTER CONTAINER BREACH (FROM CRUD)
- 10% MAY BE RELEASED FOLLOWING CLADDING BREACH (FROM INSIDE GAS GAP)
- ADDITIONAL RELEASE AS FUEL MATRIX DEGRADES

IMPLICATIONS OF N_C AND EPA STANDAR_S FOR CONTROL OF CARBON—14 RELEASES

- NRC 10⁻⁵/YEAR RELEASE RATE LIMIT
 - LIMITS BREACH RATE OF WASTE PACKAGE CONTAINERS TO LESS THAN 25 PER YEAR PER 25,000 CONTAINERS
 - FURTHER LIMIT ON CONTAINER BREACH RATE DUE TO RELEASES FROM ROD FAILURES AND FUEL DEGRADATION AS 10,000 YEARS IS APPROACHED
- EPA 100 Ci/1000 MTHM CUMULATIVE RELEASE LIMIT
 - 7% OF INVENTORY FOR 70,000 MTHM.
 - RAPID RELEASE OF 1% FROM FAILURE OR ALL CONTAINERS WOULD MEET THE LIMIT AT WASTE PACKAGE BOUNDARY
 - 10% RELEASE FRACTION FROM CLADDING FAILURES WOULD RESTRICT WASTE PACKAGE FAILURE RATE OR REQUIRE TAKING CREDIT FOR RADIONUCLIDE RETARDATION BY GEOLOGIC SETTING
 - ISSUES ARE ADDRESSED IN SITE CHARACTERIZATION

HEALTH SIGNIFICANCE OF POTENTIAL CARBON-14 RELEASES FROM THE REPOSITORY

SOURCE		ANNUAL INDIVIDUAL DOSE RATE (mrem/yr)
REPOSITORY	PEAK	10,000YR AVERAGE
1% INVENTORY 100% INVENTORY	1x10 ⁻⁴ 1x10 ⁻²	4x10 ⁻⁶ 4x10 ⁻⁴
COSMOGENIC ¹⁴ C		1.25
WEAPONS TESTING		0.96 max. (1965) 0.37 (current)
NUCLEAR POWER PRODUCTION		less than 0.02

• PROJECTED DOSES (AND THE CORRESPONDING HEALTH RISKS) RESULTING FROM EXPOSURE TO RELEASES OF CARBON-14 FROM THE REPOSITORY, EVEN UNDER THE UNREALISTIC ASSUMPTION OF TOTAL RELEASE, ARE NEGLIGIBLE WHEN COMPARED WITH EXPOSURES FROM OTHER SOURCES AND MAY BE SMALLER THAN THE VARIABILITY IN THE COSMOGENIC ¹⁴C DOSE

CONCERNS WITH THE ORIGINAL RULE (CONTINUED)

- NRC IMPLEMENTATION OF EPA STANDARD NEEDS CLARIFICATION. FOR EXAMPLE:
 - UNDISTURBED PERFORMANCE VS. ANTICIPATED PROCESSES AND EVENTS
 - REASONABLE EXPECTATION VS. REASONABLE ASSURANCE
 - HUMAN INTRUSION INCORPORATION INTO OVERALL CCDF

APPROACH TO REVIEW OF WORKING DRAFT 1

- DOE/EH COORDINATING REVIEW BY OCRWM, HANFORD, NTS, AND WIPP
- DOE/OCRWM HAS REVIEWED WORKING DRAFT 1
- DOE WILL REVIEW EPA PERFORMANCE ASSESSMENT MODELS AS PART OF DEVELOPMENT AND REVIEW OF BACKGROUND INFORMATION DOCUMENT

PRELIMINARY OCRWM COMMENTS ON THE RULE (WORKING DRAFT 1)

- OPTION 2A WOULD REQUIRE ADDITIONAL EVALUATIONS OF ALL HIGH-YIELD AQUIFERS OUTSIDE THE CONTROLLED AREA
- OPTION 2B AND OPTION 2C WOULD REQUIRE ADDITIONAL ANALYSES OF CLASS II AND III AQUIFERS, SPECIFICALLY INTERCONNECTIVENESS OF ADJACENT GROUND WATERS
- THE DEFINITION OF "IMPLEMENTING AGENCY" SHOULD BE REVISED TO MAKE CLEAR THAT THE FEDERAL IMPLEMENTING AGENCY IS RESPONSIBLE FOR CLASSIFYING THE GROUND WATER (SEE P. 194 OF PREAMBLE TO DRAFT 40 CFR 193)

PRELIMINARY OCRWM COMMENTS ON THE RULE (CONTINUED)

- OPTION FOR ZERO DEGRADATION OF SPECIAL SOURCES OF GROUND WATER WITHIN THE CONTROLLED AREA MAY BE DIFFICULT TO DEMONSTRATE FOR A REPOSITORY WITHIN OR INTERCONNECTED TO A SPECIAL SOURCE
- INCREASING THE INDIVIDUAL AND GROUND-WATER REQUIREMENTS PERIOD TO 10,000 YEARS AFTER DISPOSAL WOULD REQUIRE EXTRAPOLATION OF DOSE PREDICTIONS TO 10,000 YEARS WHICH WOULD ALSO ADD UNCERTAINTY
- NO LANGUAGE IS INCLUDED TO CLARIFY THAT A REPOSITORY IS NOT AN UNDERGROUND INJECTION WELL

PRELIMINARY OCRWM COMMENTS ON THE RULE (CONTINUED)

- NEW PROPOSED REQUIREMENT INCREASES REGULATORY TIME FRAME FROM 10,000 TO 100,000 YEARS AFTER DISPOSAL
 - COURT DID NOT FIND THE 10,000 YEAR LIMIT TO BE ARBITRARY AND CAPRICIOUS
 - UNCERTAINTY WILL INCREASE DUE TO THE EXTRAPOLATION OF PREDICTIONS TO 100,000 YEARS
 - IT IS APPROPRIATE TO EVALUATE LONG-TERM (E.G., 100,000 YEAR) RELEASES FOR COMPARATIVE PURPOSES AND DOE ANTICIPATES EVALUATING LONG-TERM IMPACTS FOR THE EIS; HOWEVER, IT MAY BE INAPPROPRIATE FOR DEMONSTRATING REGULATORY COMPLIANCE

PRELIMINARY OCRWM COMMENTS ON THE RULE (CONTINUED)

- NEW PROPOSED REQUIREMENT INCREASES REGULATORY TIME FRAME FROM 10,000 TO 100,000 YEARS AFTER DISPOSAL (CONTINUED)
 - THE NEW PROPOSED REQUIREMENT REFERENCES RELEASE RATES ALLOWED BY SECTION 191.13.(A)(1) WHEREAS THAT SECTION ADDRESSES PROBABILITY OF CUMULATIVE RELEASES

PRELIMINARY OCRWM COMMENTS ON THE RULE (CONTINUED)

- UNDER OPTION 1B, ANY RELEASES FROM EMPLACED WASTE PACKAGES PRIOR TO PERMANENT CLOSURE COULD BE COUNTED TOWARDS THE CUMULATIVE RELEASE LIMIT
- "AS SMALL AS REASONABLY ACHIEVABLE" REQUIRE-MENTS ARE NOT APPLICABLE TO FACILITIES REGULATED BY 10 CFR 60. IT IS NOT CLEAR WHETHER OR NOT THESE WILL EVENTUALLY BE APPLIED TO THE REPOSITORY OR OVER WHAT TIME PERIOD THEY WILL APPLY (PRE- OR POST-CLOSURE)