

## GROUNDWATER PROTECTION PROGRAM OPEN MEETING

April 7, 2003  
1 p.m.  
1200 Jadwin, Room 1C1  
Richland, WA

### Agenda & Upcoming Events Calendar

#### PROGRAM REPORT

- Status Report (Dick Wilde)
- Program Updates
  - Web Site (Carl Connell)
  - DQO (Roy Bauer)
  - Groundwater Project Field Status and Findings (Jane Borghese)
  - Pipeline Leak (Jane Borghese)
  - Waste Site Investigations Field Status and Findings (Bruce Ford/Larry Hulstrom)
  - Gable Mountain Pond/B Pond/200 North FS/PP (Mary Todd)
  - 618-10 & 11 Workshop (Larry Hulstrom)
  - EMSP Workshop (Tom Page)
  - HAB Feedback (Morse)
  - N Springs Workshop (Mike Thompson)
  - ORP Field Activities (Rob Yasek)
  - N Process Pond Findings (RL)

#### ECOLOGY REPORT

- Ecology Update (Dib Goswami)

#### GROUNDWATER PROTECTION PROGRAM CALENDAR

*April, May and June 2003*

<b>April 7</b>	Groundwater Protection Program Open Meeting (1-3 p.m., Richland, WA)
<b>May 5</b>	Groundwater Protection Program Open Meeting (1-3 p.m., Richland, WA)
<b>June 5-6</b>	HAB Meeting (Hanford House, Richland, WA)



# **Evolution of the Data Quality Objectives Concept**



# Origin of the DQO Process

- EPA saw unfavorable trends in environmental remediation projects
  - Very high analytical costs that were escalating
  - Erroneous remedial decisions were being made



# EPA QAMS-005/80

- DQO concept first defined in terms of the **PARCC** parameters:
  - Precision
  - Accuracy
  - Representativeness
  - Completeness
  - Comparability

*Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans,*  
EPA, QAMS-005/80, February 1983

# EPA/540/G-87/003

1987

- Defined DQOs as:
  - “...qualitative and quantitative statements which specify the quality of the data required to support the Agency decisions during remedial response activities”
- Analytical Levels I - IV
- PARCC Parameters
- Three stages process:
  - Stage 1: Identify decision types
  - Stage 2: Identify data uses and needs
  - Stage 3: Design data collection program

*Data Quality Objectives for Remedial Response Activities, EPA/540/G-87/003, March 1987*

*Data Quality Objectives for Remedial Response Activities: Example Scenario, EPA/540/G-87/004, March 1987*

# EPA QA/G-4

1994

■ Defined DQOs as:

“...a systematic planning tool based on the Scientific Method for establishing criteria for data quality and for developing data collection designs”

## 7 Step Process:

Step 1: State the Problem

Step 2: Identify Decisions

Step 3: Identify Inputs

Step 4: Specify Boundaries

Step 5: Define Decision Rules

Step 6: Specify Error Tolerances

Step 7: Optimize Sample Design



# EPA QA/G-4

## 2000

Step 1: State the Problem

Step 2: Identify Decisions

Step 3: Identify Inputs

Step 4: Specify Boundaries

Step 5: Define Decision Rules

Step 6: Specify Error Tolerances

Step 7: Optimize Sample Design



# Misconception

- The term Data Quality Objectives is misleading since “data quality” is only one component of the DQO Process

- This underplays the role of DQOs as a *Planning Process*

- More appropriate terms would be:

- Planning Quality Objectives (PQOs)
- Systematic Planning Objectives (SPOs)
- Decision-Making Objectives (DMOs)

~~DQOs~~

PQOs SPOs

DMOs



# EPA Order 5360.1

- “EPA organizations covered by the scope of this order shall develop, complement, and maintain a quality system that...provides for the following:
  - Use of a systematic planning approach to develop acceptance or performance criteria for all work covered by this order (see Section 3.3.8 of the EPA Quality Manual for Environmental Programs).”

EPA Order 5360.1 A2,  
May 5, 2000, Section 6A(6)



# EPA 5360.1 Manual

- “EPA has developed a systematic planning process called the data quality objective process. This process is the recommended planning approach for many EPA data collection activities.”

Quality Manual for Environmental Programs,

EPA Order 5360 A1, May 5, 2000



# DOE-HQ

September 7, 1994

## ■ Thomas Grumbly memo:

*“...it is the policy of...(EM) to apply up-front planning...to ensure safer, better, faster, and cheaper environmental sampling...It is EM policy that the...(DQO) process be used in all environmental projects...”*

United States Government Department of Energy

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## memorandum

DATE: SEP 07 1994  
APPLY TO: EM-263 (Carter: 301-427-1677)  
ATTN OF:

SUBJECT: Institutionalizing the Data Quality Objectives Process for EM's Environmental Data Collection Activities

Distribution

To balance Department of Energy (DOE) environmental sampling and analysis costs with the need for sound environmental data that address regulatory requirements and stakeholder concerns, the Department must implement approaches to streamline procedures, minimize time requirements, and eliminate unnecessary costs associated with current environmental sampling and analysis activities. Accordingly, it is the policy of the Office of Environmental Management (EM) to apply up-front planning, where practical, to ensure safer, better, faster, and cheaper environmental sampling and analysis programs for all EM projects and operations. Specifically, it is EM policy that the Data Quality Objectives (DQO) process be used in all environmental projects where there may be a need to collect significant environmental data. The DQO process has already been adapted to site characterization and remediation in DOE's Streamlined Approach for Environmental Restoration (SAFER) program. In addition, the Office of

*Institutionalizing the Data Quality Objectives Process,  
DOE Letter, DOE EM-263 to all Field Offices, September 1994*

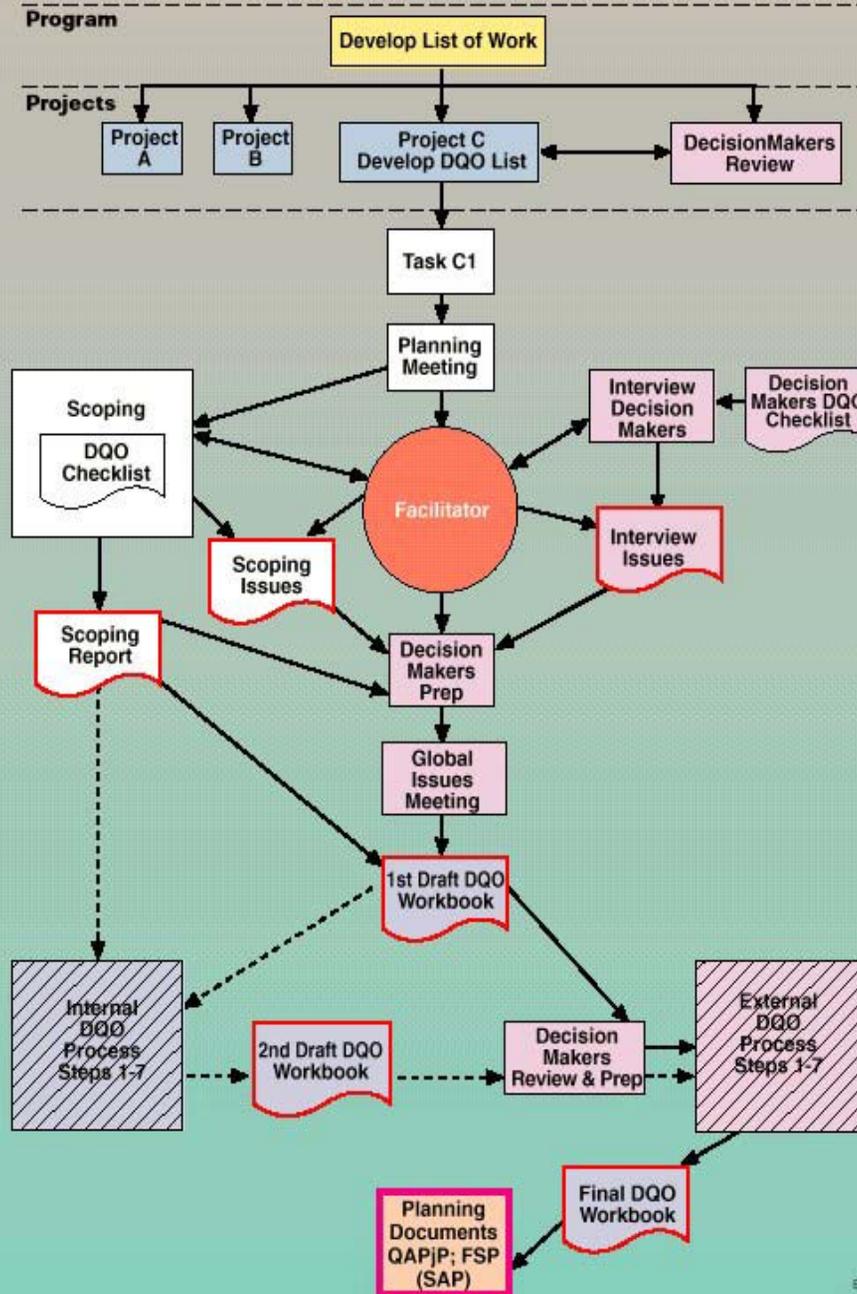
# DQO

## Implementation Process

- Highly structured tactical approach to implementing the 7 Steps.
- Begins with scoping - a key element.
- Gets early input from regulatory agencies and key decision makers.
- Coordinated by a facilitator.



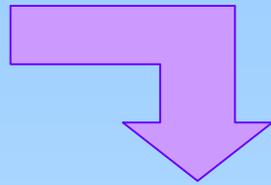
# ERC DQO IMPLEMENTATION PROCESS



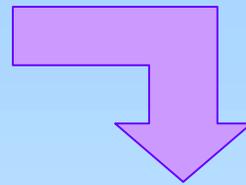


# History Summary

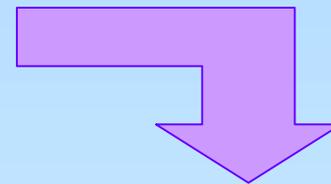
PARCC



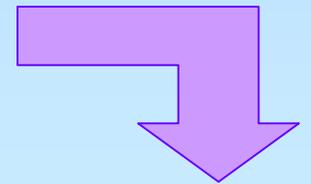
3-Stage Process



7-Step Process



DOE DQO Implementation Process



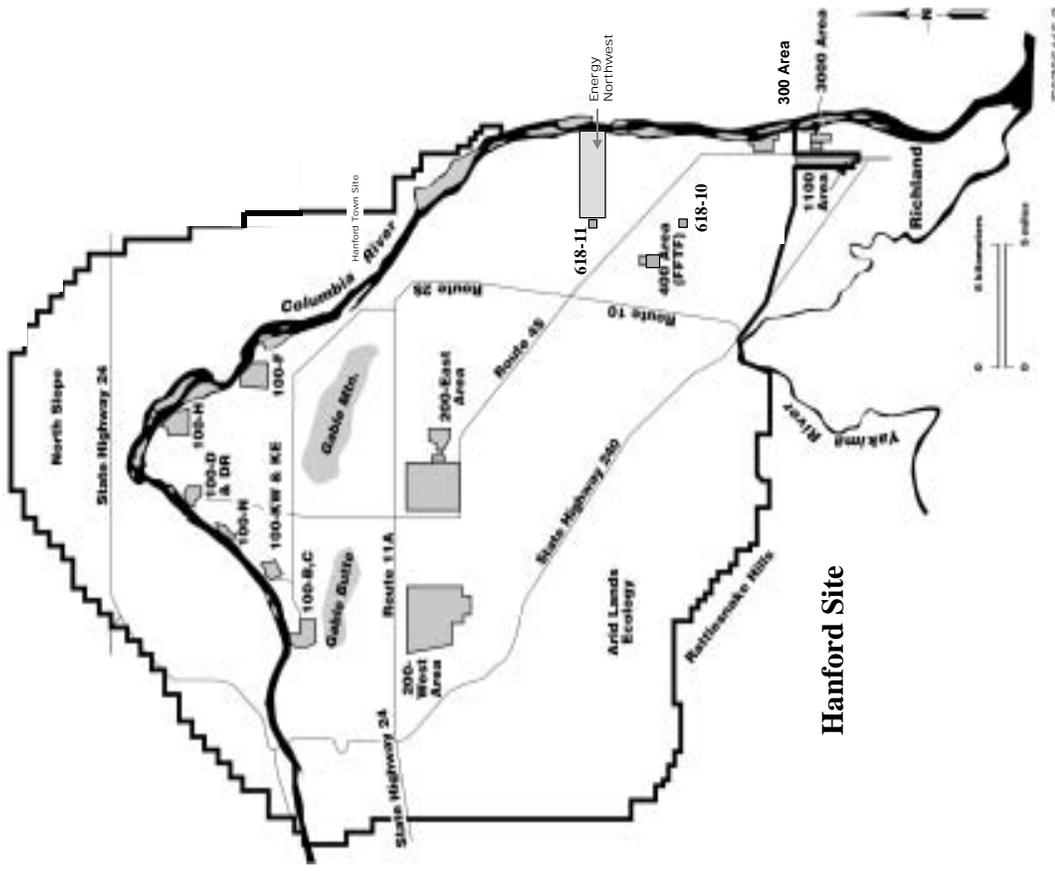
DOE DQO Tools

# 618-10/618-11 Burial Grounds

Open Project Meeting

April 7, 2003

# Location of 618-10 and 618-11 Burial Grounds



**618-10 Burial Ground (1983 after Surface Stabilization)**



# 618-11 Burial Ground in 2002

**Hanford's 618-11 Contaminated Waste Burial Ground  
Near the Energy Northwest Complex**



# FY03 Scope

- Preparation of a Documented Safety Analysis for Compliance with 10CFR830
- Generation of an Update to the 300 Area Remedial Design Report/Remedial Action Work Plan
- Hosting a Remedial Design/Lessons Learned Workshop (June 9 – 12, 2003)

# Remedial Design/ Lessons Learned Workshop

- Gather technical experts from both onsite and off the Hanford Site that have experience in dealing with TRU waste
- Discuss full range of subjects including excavation methods, stabilization techniques, retrieveability and handling, characterization, packaging and transportation, health and safety, treatment requirements, final disposal, and compliance with regulatory requirements.

## Remedial Design/ Lessons Learned Workshop

- Results of the workshop will be documented in a final report which will be reviewed by participants
- Results will be incorporated into the master schedule for the burial grounds.
- Incorporate into FY04 Remedial Design Activities

**200-PW-2/200-PW-4**  
**Field Operations Status**

**Open Project Meeting**

**April 7, 2003**

## 200-PW-2/PW-4 Field Operations

- Field Work was initiated on April 1
- Work Includes Installation of 5 Drive Casings at 216-A-10 Crib for RLS logging to identify the subsequent borehole location
- Includes boreholes at 5 waste site locations (216-A-19 Trench, 216-A-10 Crib, 216-A-37-1 Crib, 216-A-36B Crib, 216-B-12 Crib)

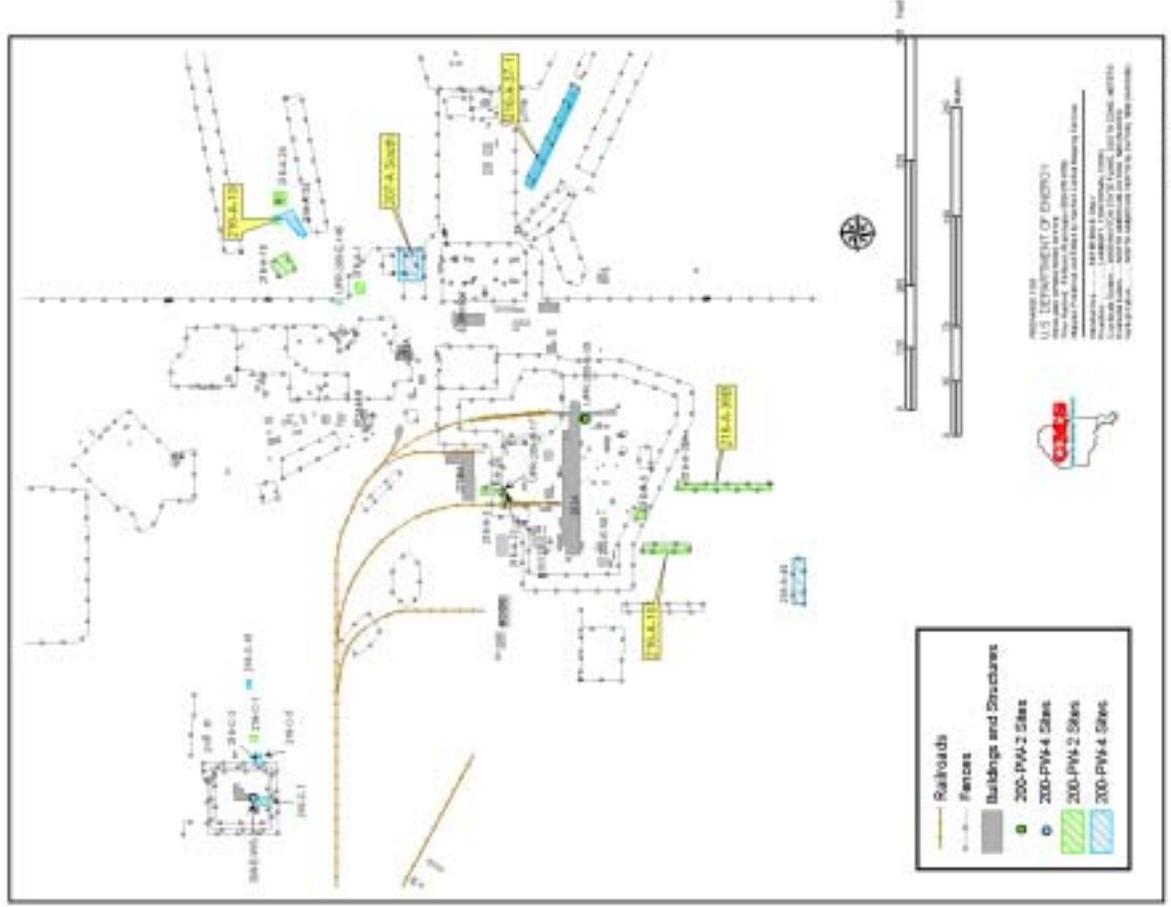
## 200-PW-2/PW-4 Field Operations (continued)

- Field work includes up to 4 shallow (20 ft) Geoprobe borings at the 207-A South Retention Basin
- Mockup Testing was conducted at the 216-A-19 Trench on April 1, actual drilling at the site was initiated April 4
- Work proceeding from medium to high risk

# 200-PW-2/PW-4 Field Operations (continued)

- Equipment Setup
  - Designed to increase safety to workers
  - Minimizes risk of contamination spread
  - Simplifies PPE requirements with enhanced engineering controls
  - Designed to simplify decon work
  - Should reduce overall schedule

# 200-PW-2/PW-4 Location Map





**PW-2 Mock-Up  
Staging Drill Rig**

4.1.03



**PW-2 Mock-Up  
Drill Head Ventilation**

4.1.03



**PW2 Mock-Up**

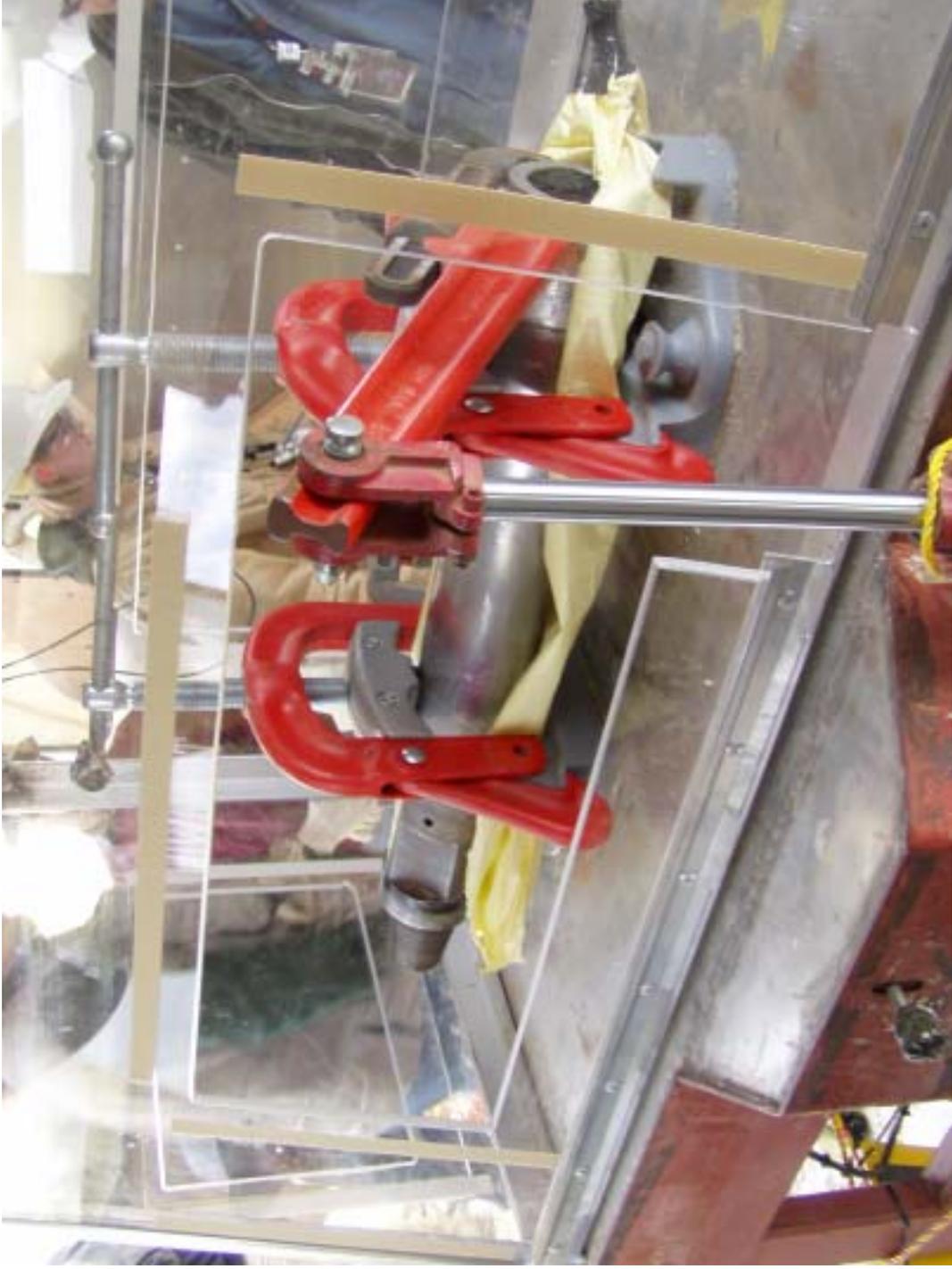
**Knock-out drum**

**4.1.03**



**PW-2 Mock-Up**  
**Depositing spoils in knock-off drum**

**4.1.03**



**PW2 Mock-Up**  
**Split Spoon Sample mounted in enclosure**  
**4.1.03**



**PW-2 Mock-Up  
Exhaust Equipment Enclosure**

**4.1.03**



200-CS-1 OU FY03  
Drilling Characterization Activities

April 2003

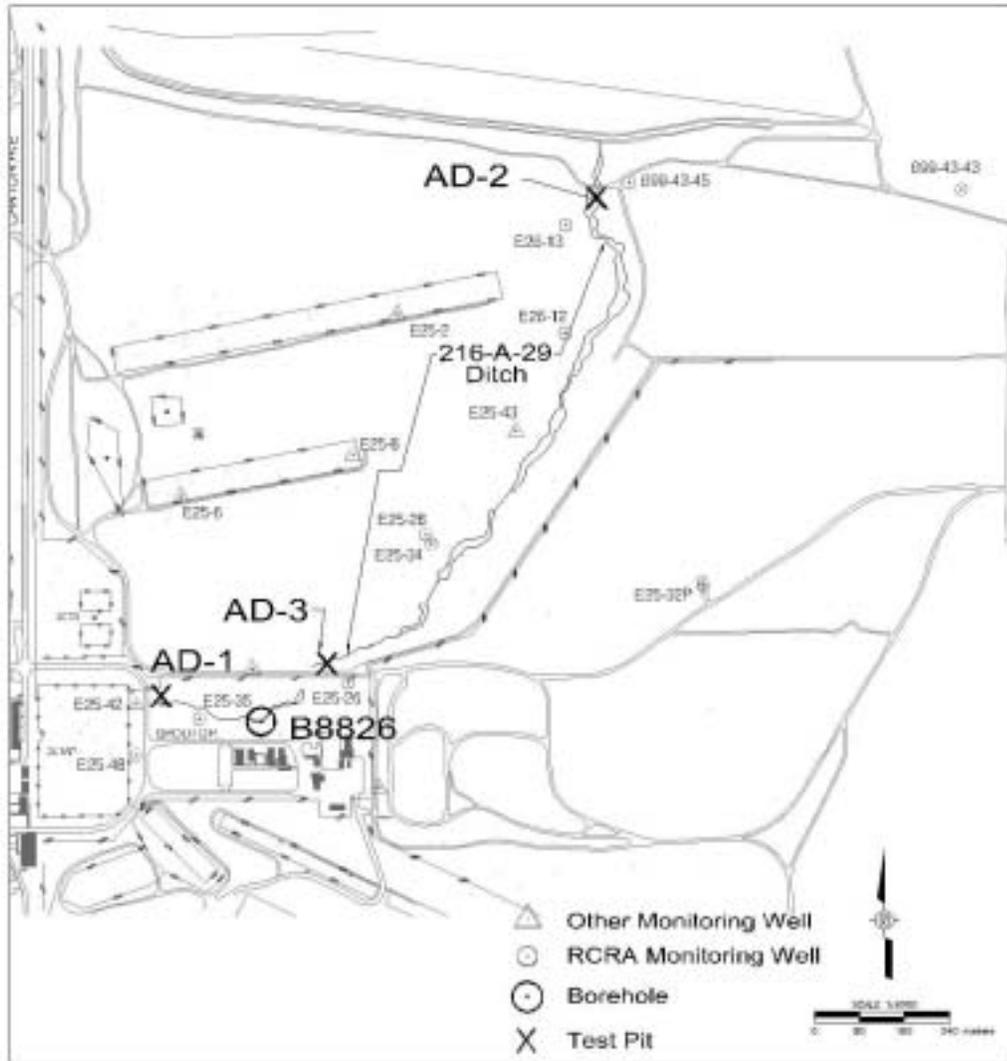


## Drilling Characterization Summary

- 216-S-10 Ditch (B8828/299-W26-14)
  - Nine (9) samples collected in vadose zone to a depth of 222 ft bgs.
  - Boring completed as monitoring well and currently being developed.
  - No significant radiological or chemical contamination detected
- 216-B-63 Trench Borehole (B8827)
  - Nine (9) samples collected in vadose zone to a depth of 100 ft bgs.
  - No significant radiological or chemical contamination detected
- 216-A-29 Ditch Borehole (B8826)
  - Boring initiated on 4/7/03.
  - Thirteen (13) samples are planned to a depth of 274 ft bgs.
- 216-S-10 Pond Borehole/Monitoring Well (B8817/299-W26-13)
  - Completed in December 1999.
  - Seven (7) samples collected in vadose zone to a depth of 200 ft bgs.
  - Boring completed as monitoring well.
- Integration of borings/monitoring wells providing significant cost savings for both projects.



# 216-A-29 Ditch

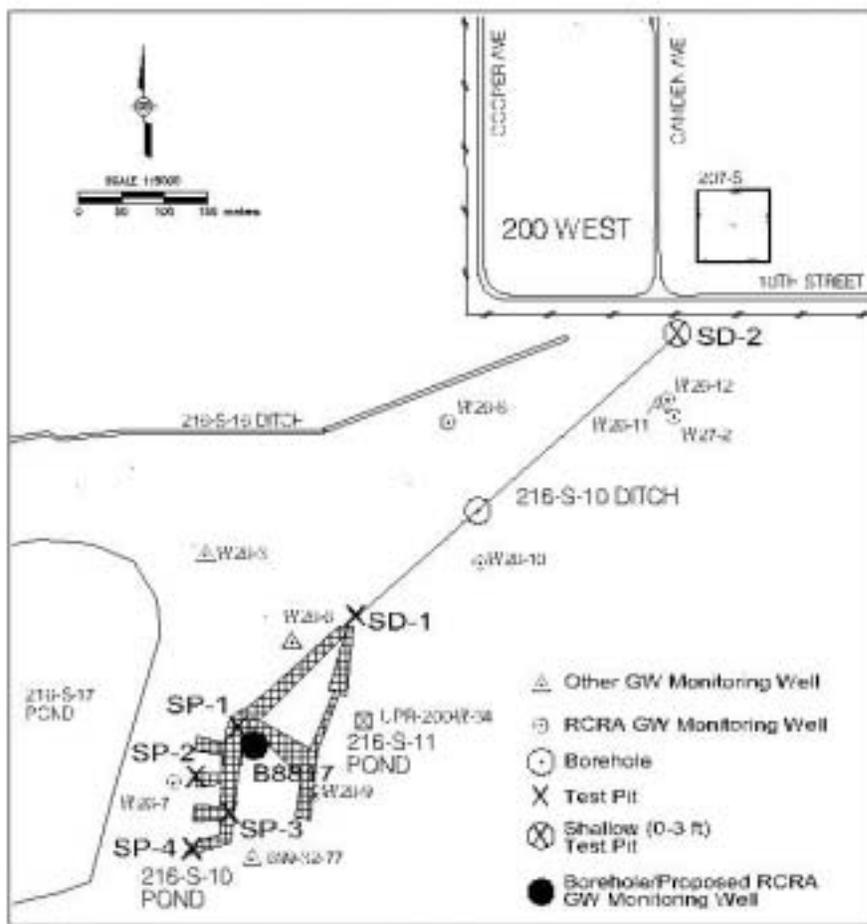


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# 216-B-63 Trench



# 216-S-10 Ditch



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## Cable Tool Drilling - Setup



## Cable Tool Drilling - Drive Barrel



## Split Spoon Sampling



## Soil Sample Bottle Set



# 100-N GROUNDWATER WORKSHOP

## PROPOSED AGENDA

Week of June 9, 2003 (?)

- Workshop Objective Statement - Provide sufficient information to formulate an informed position on human and environmental risk and remedial actions for the protection of groundwater, human health and the environment at 100-N
- Background
  - Operational History of the 100-N Reactor
  - Summary of discharges and waste disposal at 100-N
  - Previous RFI/CMS and RCRA Activities for 100-NR-01
  - Previous RFI/CMS and RCRA Activities for 100-NR-02

# 100-N GROUNDWATER WORKSHOP

## PROPOSED AGENDA - Continued

- Hanford Past Practice Strategy
- Records of Decision for 100-NR-01 and 100-NR-02
- Groundwater Contaminant Plumes, Past, Current and Predicted
- Summary of Clean-up Actions
  - Soil Removal Actions
  - Groundwater Pump-and-Treat
  - Observed Response to Cleanup Actions
- Summary of Environmental Exposure & Ecological Studies - Panel Discussion
  - SKYSHINE
  - NEAR-SHORE GROUNDWATER & SHORELINE SEEPS
  - TERRESTRIAL FLORA & FAUNA
  - AQUATIC FLORA & FAUNA

# 100-N GROUNDWATER WORKSHOP

## PROPOSED AGENDA - Continued

- Human Health Implications From Potential Consumptive Use of Water From 100-N Seeps
  - N-Springs - Do They Exist
  - Physical and Chemical (Radiological) Properties of the Seeps
  - Potential Acute and Chronic Doses Resulting From Seep Use
- Conceptual Model for 100-N, Post Soil Removal Actions
  - Inventory and Distribution of Sr-90 in Soils and the Aquifer
  - Leachability and Release of Sr-90 from the Soils and the Aquifer
  - Sr-90 Response in the Aquifer to River Stage vs. Precipitation Events
  - Aquifer/River Interactions
  - Predicted Area of the Sr-90 Plume that may Reach the River
  - Predicted Mass of Sr-90 that is Expected to be Released to the Columbia River

# 100-N GROUNDWATER WORKSHOP

## PROPOSED AGENDA - Continued

- Potential Soil and Groundwater Remedial Action Alternatives
  - Goals Achieved by Existing Soil and Groundwater Interim Actions
  - Goals for a Final ROD
    - Reduction of Sr-90 Mass Flux to the River
    - Cleaning-up the Aquifer
  - Remedial Action Alternatives Previously Assessed
    - Soil Removal
    - ITRD Groundwater Alternatives
  - Current Technologies Under Consideration
    - Phytoremediation
    - Apatite sequestration
  - Ecological & Human Health Studies Planned to Support Remedial Action Decisions