

Route 3, Box 7
Gallup, New Mexico
87301

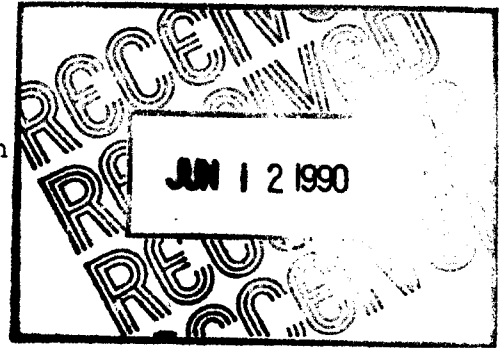
505
722-3833

June 11, 1990

David Boyer
Director
New Mexico Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

RE: RFI Workplans

XTM



Dear Mr. Boyer:

The enclosed documents are the EPA approved work plans for the Ciniza Refinery RCRA Facility Investigation. Sampling for the first phase of the investigation will begin on June 25, 1990.

If you have any questions, contact me at (505) 722-3833, ext. 217.

Sincerely,

Claud Rosendale
Claud Rosendale
Environmental Manager
Ciniza Refinery

cc: w/enclosures: Jack Ellvinger; Bureau Chief-NMEID
Kim Bullerdick; Corporate Counsel-
Giant Industries, Inc.

enclosures in magazine file; at Gordon 6/19/90

- ① EPA letter of May 31, 1990 approving workplan with enclosed revisions
- ② Data Mgt. Plan
- ③ Community relations plan
- ④ Waste and Limit Characterization Plan
- ⑤ Safety Execution Plan
- ⑥ Generic Release Investigation Workplan
- ⑦ SWMU Site-specific Facility Investigation Workplan
- ⑧ Generic Sampling Plan RCRA Facilities Investigation Project

SWMU SITE-SPECIFIC FACILITY
INVESTIGATION WORKPLAN
RCRA FACILITY INVESTIGATION
GIANT REFINERY
GALLUP, NEW MEXICO

A REPORT PREPARED FOR
GIANT INDUSTRIES, INC.
ROUTE 3, BOX 7
GALLUP, NEW MEXICO

AES PROJECT

DECEMBER 13, 1989
BY
APPLIED EARTH SCIENCES, INC.
8323 SOUTHWEST FREEWAY, SUITE 710
HOUSTON, TEXAS 77074
(713) 981-7140

REVISED
MAY 17, 1990
BY
GIANT INDUSTRIES, INC.

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1.0 INTRODUCTION

This document describes the site specific activities which will be conducted at each SMWU at the Giant Refinery. The methodology for each study is taken from EPA documents on RFI workplans and investigations (EPA 530/SW-87-001) and the permit conditions in HSWA Permit NMD000333211. A copy of the permit is attached as Appendix A.

Each investigation will follow a progression of logical events from an initial verification of release at the unit to characterization of the unit and contained waste constituents. At each SWMU a soil contamination characterization study will be initiated. Air studies will not be performed at this time. A surface water study will be conducted at the Railroad Rack Lagoon. A ground water contamination study will be completed to assist in the evaluation of the Evaporation ponds.

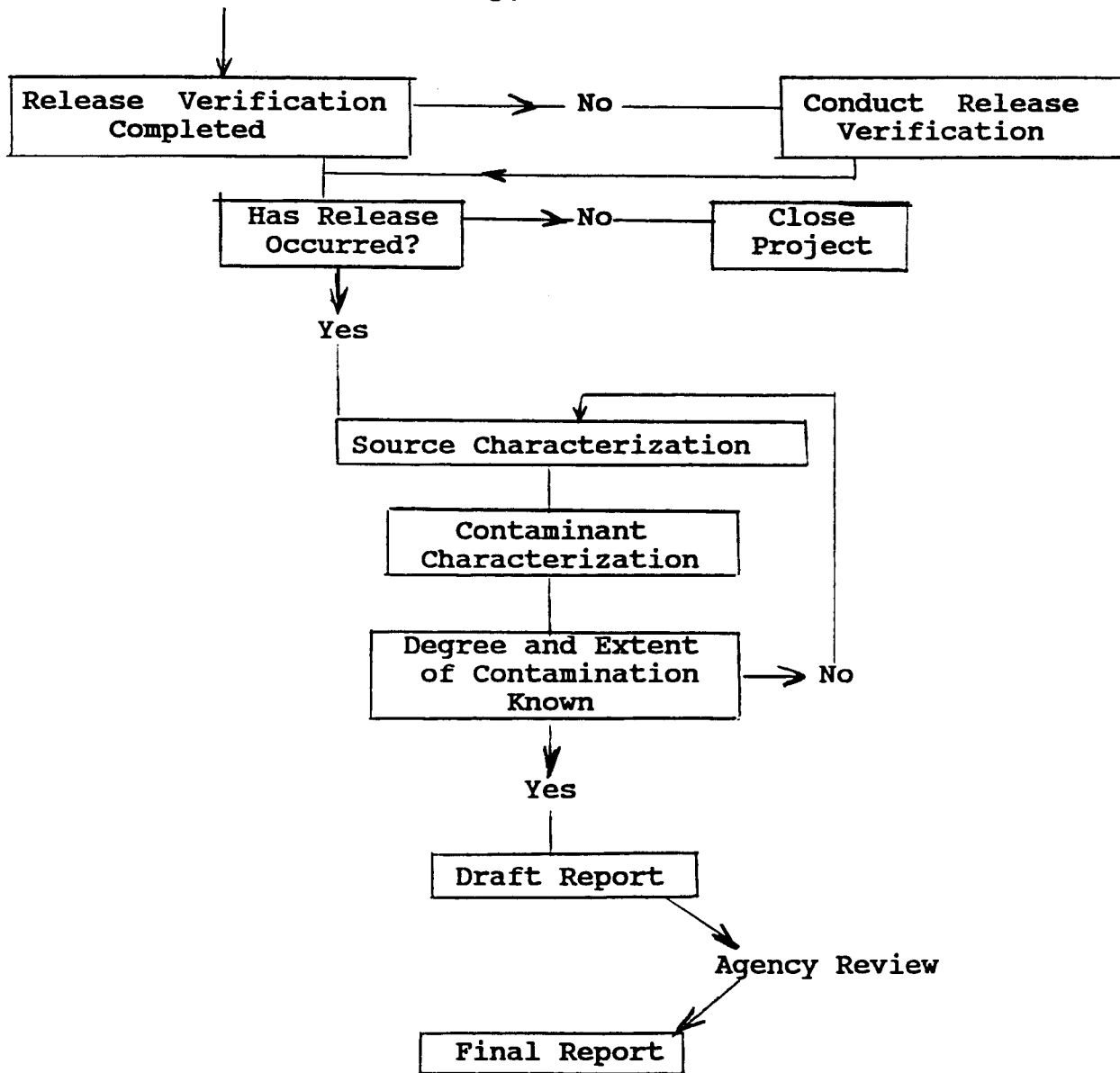
The analyses chosen for each SWMU is determined based upon the type of media and suspected contaminant. The main classes of analyses are the skinner list of organics, BTEX and metals. The skinner list organics encompasses the compounds typically found in refinery wastes. EPA Methods 8240 and 8270 analyses will also be conducted in conjunction with the skinner list organics and metals on sludge and water samples. BTEX is used as an indicator for the potential release of hydrocarbons. A list of metals have been analyzed onsite as part of the land treatment demonstration. These metals, hereafter called background metals, will be analyzed at certain SWMU's and statistically compared to the background data.

The analysis of metals was selected in those SWMU's where the possibility existed for refinery wastes.

Following assessment, the information will be analyzed to evaluate whether the SWMU has been adequately characterized. If additional assessment is warranted, a second phase of sampling will be developed and completed. Figure 1 is a flow chart of the proposed activities of a SWMU.

RFI

Assessment Flow Chart
Giant Refinery
Gallup, New Mexico



2.0 SOLID WASTE MANAGEMENT UNITS

An EPA Preliminary Review (PR) and Visual Site Inspection (VSI) report completed in January 1987 listed fourteen solid waste management units (SWMU). The units are listed below:

- ° Aeration Basin
- ° Evaporation Ponds
- ° Tank Farm
- ° Fire Training Area
- ° Empty Container Storage Area
- ° Railroad Rack Lagoon
- ° Four (4) Landfills
- ° Burn Pit
- ° Two (2) Sludge Pits
- ° Inactive Land Treatment Area
- ° Secondary Oil Skimmer and Associated Drainage Ditch
- ° Contact Wastewater Collection System
- ° Drainage Ditch near the Inactive Land Treatment Ditch*
- ° Drainage Ditch between APIS Evaporation Ponds and Neutralization Tank Evaporation Ponds

* The Permit lists the Inactive Land Treatment area and Ditch as separate SWMU's, however, the proximity of the two units (10 to 20 feet) suggest that they be studied together.

3.0 FACILITY INVESTIGATION

Each SWMU Facility Investigation will follow the Generic RFI workplans.

The investigations will be conducted to verify if a release has occurred, define the source of contamination, and the degree and extent of contamination. The following outline will be used for the assessment.

3.1 Release Verification

Sufficient data will be collected to identify the location and sources of suspected releases associated with the SWMU. The data shall be of adequate technical quality and detail to support the development of unit or source specific plans to further characterize any confirmed releases.

3.2 Source Characterization

Each investigation will include a program to collect data to characterize the wastes and the areas where wastes have been placed, including: type; quantity; physical form; disposition (containment or nature of deposits); and

facility characteristics affecting release (e.g., facility security, and engineered barriers).

3.2.1 Unit/Disposal Area Characteristics

- Location of unit/disposal area;
- Type of unit/disposal area;
- Design features;
- Operating practices (past and present);
- Period of operation;
- Age of unit/disposal area;
- General physical conditions; and
- Method used to close the unit/disposal area.

3.2.2 Waste Characteristics

- Type of waste placed in the unit;
- Physical and chemical characteristics; and
- Migration and dispersal characteristics of the waste.

3.3 Contamination Characterization

Studies will be conducted to define the extent, origin, direction, and rate of movement of contaminant

plumes in the media as specified in HSWA permit NMD000333211
C.5(a)(1).

3.3.1 Soil Contamination

An investigation will be completed to characterize the contamination of the soil and rock units in the vicinity of the contaminant release. The investigation will include the following information:

- ° A description of the vertical and horizontal extent of contamination.
- ° A description of contaminant and soil chemical properties within the contaminant source area and plume.
- ° Specific contaminant concentrations.
- ° The velocity and direction of contaminant movement.
- ° An extrapolation of future contaminant movement.

3.3.2 Ground Water Contamination

A ground water investigation will be completed to characterize any plumes of contamination in the aquifer underneath the facility. This investigation will at a minimum provide the following information:

- ° A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;

- ° The horizontal and vertical direction of contamination movement;
- ° The velocity of contaminant movement;
- ° The horizontal and vertical concentration profiles of Appendix IX constituents in the plume(s);
- ° An evaluate of factors influencing the plume movement; and
- ° An extrapolation of future contaminant movement.

3.3.3 Surface-Water Contamination

Surface-water investigation will be conducted to characterize contamination in surface-water bodies resulting from contaminant releases at the facility. The investigation shall include the following:

- ° A description of the horizontal and vertical extent of any immiscible or dissolved plumes originating from the facility, and the extent of contamination in underlying sediments.
- ° The horizontal and vertical direction and velocity of contaminant movement;
- ° An evaluation of the physical, biological, and chemical factors influencing contaminant movement;
- ° An extrapolation of future contaminant movement; and
- ° A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, and specific contaminant concentrations.

3.3.4 Air Contamination

An investigation to characterize the particulate and

gaseous contaminants released into the atmosphere may be conducted at a later date. If the investigation is conducted it shall provide the following information:

- ° A description of the horizontal and vertical direction and velocity of contaminant movement;
- ° The rate and amount of release; and
- ° The chemical and physical composition of the contaminant(s) released, including horizontal and vertical concentration profiles.

3.4 Potential Receptors

Information describing the human populations and environmental systems that may be susceptible to contaminant exposure from the facility will be developed. Information may include:

- ° Existing and possible future use of ground water, including the type of use (e.g., municipal and/or residential drinking water, agricultural, domestic/non-potable and industrial);
- ° Location of ground water users, including wells and discharge areas;
- ° Existing and possible future uses of surface waters draining the facility, including domestic and municipal uses (e.g., potable and lawn/gardening watering), recreational (e.g., fishing and swimming), agricultural, industrial and environmental (e.g., fish and wildlife populations) uses;

- ° Human use of or access to the facility and adjacent lands, including recreational, hunting, residential, commercial, zoning, and the relationship between population locations and prevailing wind direction;
- ° A description of the biota in surface water bodies on, adjacent to, or which can be potentially affected by the release;
- ° A description of the ecology on and adjacent to the facility;
- ° A demographic profile of the human population who use or have access to the facility and adjacent land, including age, sex, sensitive subgroups (e.g., schools, nursing homes), and other factors as appropriate; and
- ° A description of any endangered or threatened species near the facility.

4.0 SITE SPECIFIC RFI WORKPLAN WORKSHEETS

The methods for assessment of the fourteen SWMU's listed in HSWA Permit NMDO00333211 are contained in this chapter.

Release Investigation and Waste and Unit Characterization methods are documented in the Giant RFI Generic Plans, which are submitted as part of the workplan.

Sampling techniques for contamination characterization are documented in the Giant RFI Generic Sampling Plan, which is submitted as part of the workplan.

Health and Safety criteria are presented in the Safety Execution Plan.

SITE SPECIFIC RFI WORKPLAN
RCRA Facilities Investigation
Giant Refinery
Gallup, New Mexico

SWMU: Aeration Basin

LOCATION: Figure 1, No. 8

A. RELEASE VERIFICATION:

A study will be conducted at each SWMU listed for release verification in HSWA Permit NMD000333211 C.5(a)(1).

Has a known release been documented at this unit ___ yes X no

If yes, state facts _____

If no, detail plans to check for release:

- 1) Record search to determine if release has occurred.
- 2) Interview plant personnel.
- 3) Visual inspection.
- 4) Soil contamination characterization.
- 5) Statistical comparison of background metals.
- 6) Air contamination assessment.

Methodology for release verification and source characterization:

Release verification will be accomplished by a complete review of facility records to confirm that no release has occurred and the implementation of field investigations to evaluate the nature and extent of possible releases. Workplan C describes the field investigation in detail. The unit characterization is described in Workplan B, Section 1(b). The waste characterization will be accomplished by sampling the waste and identifying its analytical constituents. Plans for additional waste characterization are described in Workplan B, Section 2(b).

SITE SPECIFIC RFI WORKPLAN
RCRA Facilities Investigation
Giant Refinery
Gallup, New Mexico

SWMU: Aeration Basin

LOCATION: Figure 1, No. 8

B. SOURCE CHARACTERIZATION:

1. Type of unit - Aeration Basin

(a) Is unit history accurately known X yes no

(b) Discuss plans for additional data collection:

Record search to determine the unit location, type, design features, operating practices, period of operation, age, and general physical conditions.

2. Type(s) of wastes in unit:

Bacteria and nutrients needed for biological degradation, dissolved solids, oil and grease.

(a) Is waste history accurately known X yes no

(b) If no, discuss plans for additional waste characterization:

(c) List potential indicator parameters for wastes:

EPA 8240 and 8270 priority pollutants; background metals

**SITE SPECIFIC RFI WORKPLAN
RCRA Facilities Investigation
Giant Refinery
Gallup, New Mexico**

SWMU: Aeration Basin

LOCATION: Figure 1, No. 8

C. CONTAMINATION CHARACTERIZATION:

Assessment of the SWMU will pertain to the specified media listed in HSWA Permit NMD000333211 C.5. (a)(1). All sampling and analytical methods are listed in Generic RFI workplan.

Soil Ground Water Air Surface-Water

Methodology for assessment of vertical and horizontal extent of contamination:

Four vertical soil borings will be collected to a depth of $14\frac{1}{2}$ feet below ground surface. The samples will be collected by the methods described in the Generic Sampling Plan. Samples will be collected at the following intervals:

4 - $4\frac{1}{2}$
9 - $9\frac{1}{2}$
11 - $11\frac{1}{2}$
14 - $14\frac{1}{2}$

Additionally, two angle borings will be attempted. The anticipated angle of drilling will be from 60° to 45° from vertical. The actual angle will be based upon field conditions and design construction of the drilling rig. The same sampling depth and interval as the vertical borings will be used.

A detailed sampling procedure is outlined in the Generic Sampling Plan and is referenced below:

Section 3.4 Soil Sampling Techniques
Section 4.0 Sample Labeling
Section 5.0 Decontamination Procedures
Section 6.0 Sample Custody
Section 7.0 Analytical Procedures

Proposed Number of Samples:

Four vertical borings and two angle borings to a depth of $14\frac{1}{2}$ feet with four sample intervals in each boring.

**SITE SPECIFIC RFI WORKPLAN
RCRA Facilities Investigation
Giant Refinery
Gallup, New Mexico**

SWMU: Aeration Basin

LOCATION: Figure 1, No. 8

C. CONTAMINATION CHARACTERIZATION: (continued)

Sample Location (and depth):

Locations are shown on the attached figures. A photograph of the SWMU is also attached. Exact sampling location will be based on field observations. Recognizable points of discharge will be based on such criteria as:

- 1) stained soil
- 2) stressed vegetation
- 3) significant discharge patterns

Sample Collection Methods:

Five foot CME Tubes, backhoe and/or hand augers.

Contaminant Description; specific constituents to be quantified:

EPA 8240 and 8270 priority pollutants; background metals

Plans if contamination is not adequately characterized after initial sampling and analysis:

If extent of contamination is not fully defined after initial sampling, additional sampling locations will be proposed.

SITE SPECIFIC RFI WORKPLAN
RCRA Facilities Investigation
Giant Refinery
Gallup, New Mexico

SWMU: Aeration Basin

LOCATION: Figure 1, No. 8

C. CONTAMINATION CHARACTERIZATION:

Assessment of the SWMU will pertain to the specified media listed in HSWA Permit NMD000333211 C.5.(a)(1). All sampling and analytical methods are listed in Generic RFI workplan.

_____ Soil X Ground Water _____ Air _____ Surface-Water

Methodology:

A ground water contamination characterization study will not be completed at this time. There are no wells located in the vicinity of a SWMU that could indicate whether or not a release has occurred. Therefore, a more thorough soil sampling program will be utilized to determine whether a release has occurred. If the soil sampling results indicate a significant release then the installation of wells adjacent to a specific SWMU may be required.

**SITE SPECIFIC RFI WORKPLAN
RCRA Facilities Investigation
Giant Refinery
Gallup, New Mexico**

SWMU: Aeration Basin

LOCATION: Figure 1, No. 8

C. CONTAMINATION CHARACTERIZATION:

Assessment of the SWMU will pertain to the specified media listed in HSWA Permit NMD000333211 C.5.(a)(1). All sampling and analytical methods are listed in Generic RFI workplan.

Soil Ground Water Air Surface-Water

Methodology:

An air contamination characterization study will not be completed at this time.

**SITE SPECIFIC RFI WORKPLAN
RCRA Facilities Investigation
Giant Refinery
Gallup, New Mexico**

SWMU: Aeration Basin

LOCATION: Figure 1, No. 8

D. LIST OF PARTICIPANTS:

Giant Industries Project Manager: Environmental Manager

Onsite Safety Coordinator: Safety Director

Contract Laboratory: ENSECO

Other Contractors: Any changes will be noted in subsequent reports.

E. SCHEDULE:

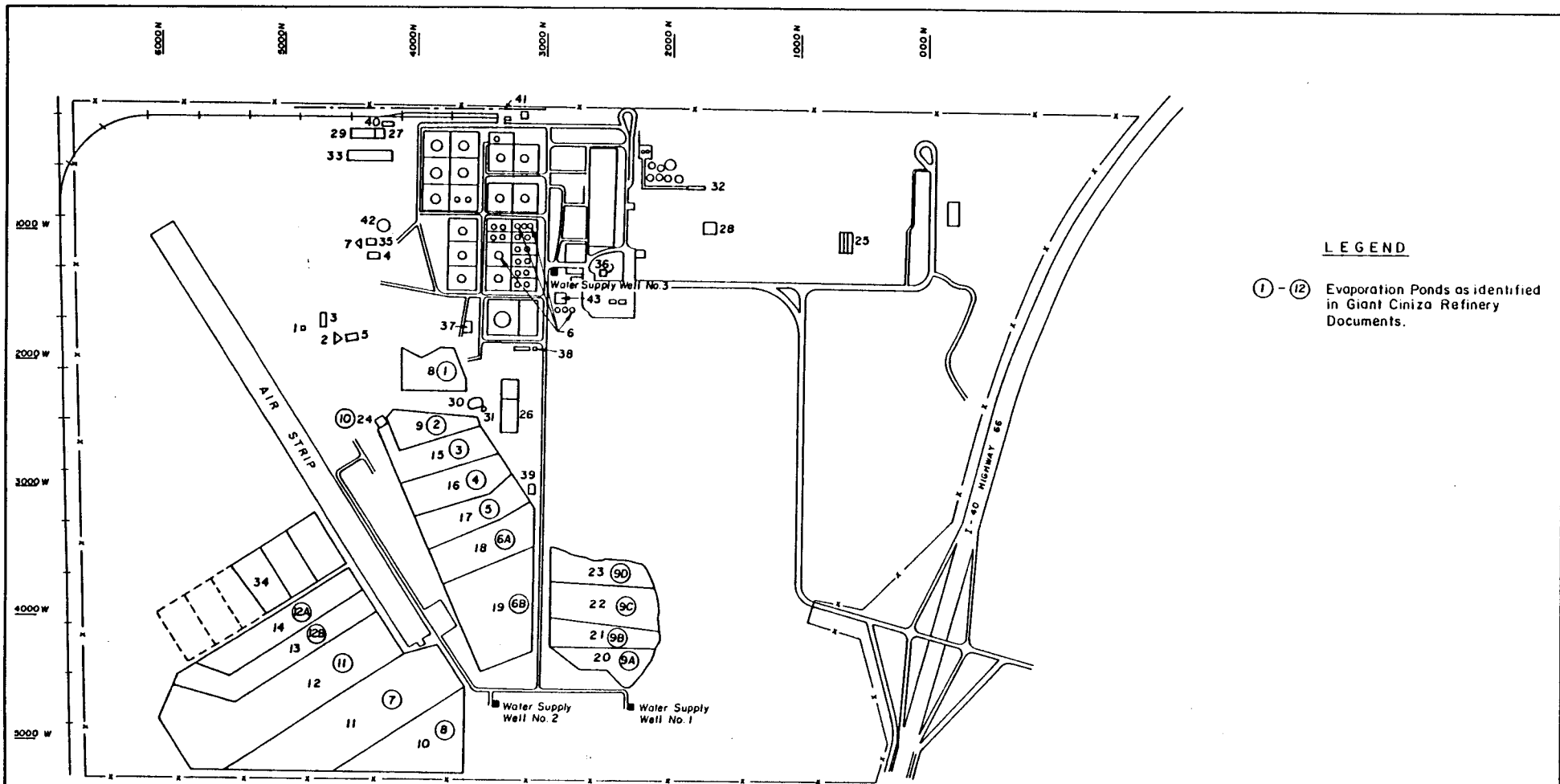
Completion of Release Verification - Six Months Following Recommended Sampling Schedule

Completion of Source Characterization - Six Months Following Recommended Sampling Schedule

Beginning Date of Contaminant Characterization - Will comply with attached schedule

Draft Report Date - Approximately Four Months after completion of Field Work

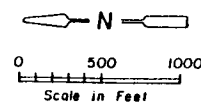
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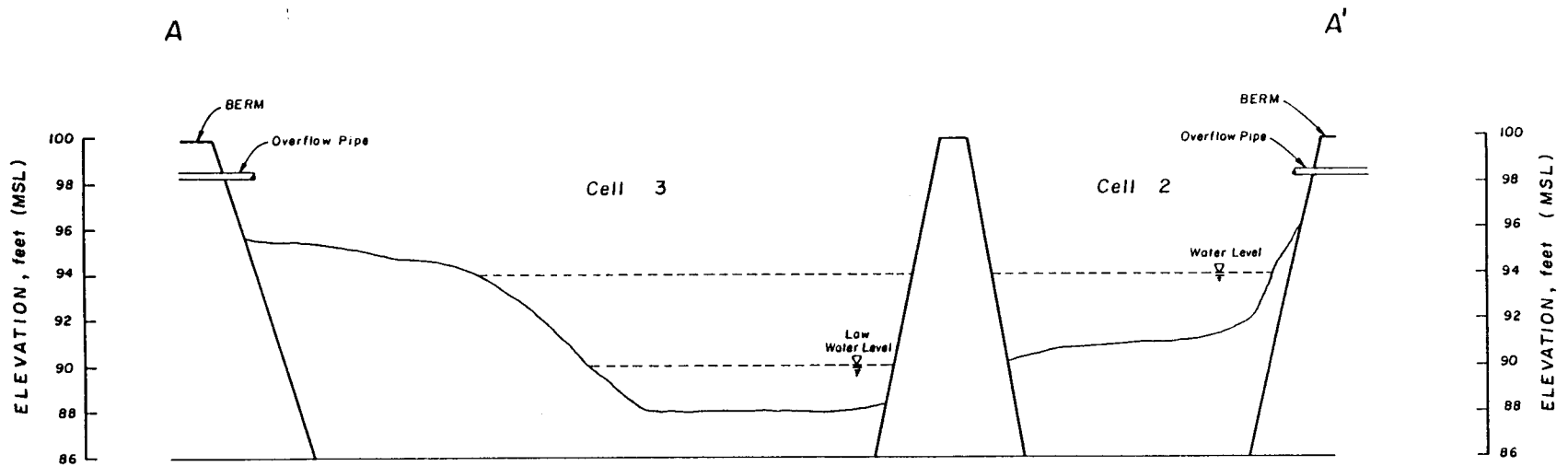
① - ⑫ Evaporation Ponds as identified in Giant Ciniza Refinery Documents.

- | | | | | | | |
|--------------|----------------------|----------------------|----------------------|--------------------------|--------------------------------|--------------------------------|
| 1. Landfill | 8. Aeration Basin | 15. Evaporation Pond | 21. Evaporation Pond | 27. Sewage Lagoon | 33. Inactive Land Treatment | 39. Secondary Oil Skimmer |
| 2. Landfill | 9. Evaporation Pond | 16. Evaporation Pond | 22. Evaporation Pond | 28. Sewage Lagoon | 34. Active Land Treatment | 40. Underground Storage Tanks |
| 3. Landfill | 10. Evaporation Pond | 17. Evaporation Pond | 23. Evaporation Pond | 29. Railroad Rack Lagoon | 35. Inactive Container Storage | 41. Drainage From Process Area |
| 4. Landfill | 11. Evaporation Pond | 18. Evaporation Pond | 24. Drainage Ditch | 30. Sludge Pit | 36. Active Container Storage | 42. Fire Training Area |
| 5. Landfill | 12. Evaporation Pond | 19. Evaporation Pond | 25. Sewage Lagoon | 31. Sludge Pit | 37. API Separator | 43. Empty Container Storage |
| 6. Tank Farm | 13. Evaporation Pond | 20. Evaporation Pond | 26. Sewage Lagoon | 32. Asphalt Pit | 38. Neutralization Tank | |
| 7. Burn Pit | 14. Evaporation Pond | | | | | |



Applied Earth Sciences		NAME	GIANT REFINERY Gallup, New Mexico	SITE MAP	FIGURE 1
FILE NO.	MADE BY: <i>R.G.</i>	DATE: <i>5-15-89</i>			
5202	CHECKED BY:	DATE:			

(1) I



HORIZONTAL SCALE 1" = 50'

Applied Earth Sciences		NAME	GIANT REFINERY Gallup, New Mexico	AERATION BASIN Cross-Section A-A' Cell 3 to Cell 2	FIGURE
FILE NO. 5202	MADE BY: R.G. DATE: 12-6-89 CHECKED BY: DATE:				

1(f)

