

DONALDSON STATION NO. 4, CRUDE PUMP HOUSE  
(War Emergency Pipeline)  
Inch Line Historic District  
Pump Station Road  
Donaldson  
Hot Spring County  
Arkansas

HAER AR-59  
*HAER AR-59*

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
U.S. Department of the Interior  
1849 C Street NW  
Washington, DC 20240-0001

## HISTORIC AMERICAN ENGINEERING RECORD

DONALDSON STATION NUMBER 4,  
CRUDE PUMP HOUSE  
WAR EMERGENCY PIPELINE

HAER No. AR-59

**LOCATION:** Texas Eastern Transmission Corporation Donaldson Station No. 4, Pump Station Road, Donaldson, Hot Spring County, Arkansas

USGS Round Hill, AR, Quadrangle;  
UTM Coordinates: 15.515960.3780530

**DATE OF CONSTRUCTION:** 1942-1943

**ENGINEERS:** Charles P. Cathers, Defense Plants Corporation; Oscar Wolfe, War Emergency Pipelines, Inc.

**CONTRACTORS:** War Emergency Pipelines, Inc. (WEP)

**BUILDER:** United States Government

**PRESENT OWNER:** Texas Eastern Transmission Corporation (TETCO), Houston, Texas

**ORIGINAL USE:** Operations support building at pipeline pumping station

**PRESENT USE:** Same, abandoned

**SIGNIFICANCE:** The Crude Pump House at Station No. 4 is a representative example of one of the original steel pump houses constructed along the first segment of the Big Inch Pipeline. The building retains a high level of integrity with respect to materials and floor plan, although original equipment has been removed.

**PROJECT INFORMATION:** The Inch Lines were recorded under the provisions of a Programmatic Agreement among the Federal Energy Regulatory Commission (FERC), the Advisory Council on Historic Preservation, and the State Historic Preservation Offices of Texas, Arkansas, Missouri, Illinois, Indiana, Ohio, West Virginia, Pennsylvania, and New Jersey for the Big Inch and Little Big Inch pipelines. The documentation was prepared for Texas Eastern Transmission Corporation by the Cultural Resource Group of Louis Berger & Associates, Inc. (Berger). The written documentation was prepared by Richard M. Casella, Berger Senior Architectural Historian, and Ingrid Wuebber, Berger Senior Research Historian. Berger Senior Photographer Rob Tucher served as Project Photographer.

## DESCRIPTION

The Inch Lines Crude Pump House located at Station No. 4, Donaldson, Arkansas, consists of a one-story, prefabricated, steel-frame building with a gable roof and concrete-slab foundation. The building is rectangular, measuring 60'-4"x36'-8" overall. A small front-gable entrance foyer, measuring 11'-6" wide and 7'-0" deep, which houses a vestibule and office, is located roughly at the midpoint of the southern side. The roof and walls of the building are covered with corrugated galvanized steel sheet. The entrance foyer has asbestos-shingle roofing and asbestos panel (Transite) siding, which is original to the building. The walls and roof are framed with steel angles, channels, and I-section posts and beams. The entrance foyer is wood-framed. Three large metal ventilators, originally connected to blowers on the motors, are mounted on the south-facing roof. A sheet-metal ridge-vent runs the length of the roof.

The pump house retains its original windows, which are metal-frame and include several types: 9-light total with 6-light pivoting sash mounted over a 3-light fixed sash; 16-light total with 4-light pivoting sash in the center; 12-light total with 6-light pivoting sash in the center; and 8-light total with 4-light pivoting sash in the center. On the gable-end walls, the original paired out-swinging metal garage doors (two on each end) have been replaced with modern metal overhead garage doors. The building's original pedestrian entrance doors have been replaced with flush metal doors.

On the interior, the original sheet-metal and wire-glass partition wall is present and continues to serve as a fire-resistant barrier wall dividing the length of the building between the motor room and pump room. A small office and telephone room, original to the building, is located in the corner of the motor room. Electric motors, motor controls, and pumps, mostly dating from the facilities' conversion to natural gas, remain in use in the building.

## FUNCTION

The 24-inch-diameter crude pump houses are simple, utilitarian buildings constructed to shelter the pipeline's pumps, motors, and associated equipment and controls at each of the pipeline stations. At Station Nos. 1 (Longview) through 10 (Lick Creek), the crude pump houses were prefabricated steel-frame buildings; at Station Nos. 11 (Norris City) through 26 (Lambertville) they were of wood-frame and asbestos shingle and panel construction; and at Station No. 27 (Linden) it was of steel-frame and asbestos panel construction. A "fire-proof" wall, either of sheet-metal or wood-and-asbestos construction (depending on the overall building construction) ran the length of the building, extending from the floor to the peak of the gable roof, to isolate the motors and pumps in separate rooms.

The buildings' original pumps, which pumped the crude oil through the 24-inch-diameter pipeline, consisted of three 16"x12", 8,750-gallon-per-minute (GPM), double-suction, single-stage, centrifugal pumps with a working pressure of 257 pounds per square inch (psi). The pumps were connected in series to maintain a total working pressure of 750 psi and provide a delivery volume of 315,000 to 325,000 barrels daily. The pumps were manufactured by either Allis-Chalmers or Ingersoll-Rand (RFC 1946).

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Each of the three pumps was connected with flexible couplings to a 1,500-horsepower, 1,800-rpm, 2,300-volt, three-phase, squirrel-cage, induction-type electric motor. The motors were manufactured by either General Electric or Westinghouse (RFC 1946). The motors and pumps were separated by a fire wall of either metal or asbestos construction to prevent sparking from the motors from igniting fumes, vapor, or oil spills which were sometimes present in the pump room. Despite this precaution, several buildings were destroyed by fire following conversion of the system to natural gas transport. Cooling of the motors was provided by a 1-horsepower exhaust fan mounted above each motor which drew air upward around the motors and out special metal exhaust ducts exiting the pump house roof. This arrangement, which was a departure from the normal practice of discharging air downward along the sides of the motors, eliminated the possibility of recirculating warm cooling air through adjacent motors, particularly the center motor, which in turn might cause overheating (Reed 1943:178, 182).

#### BIBLIOGRAPHY

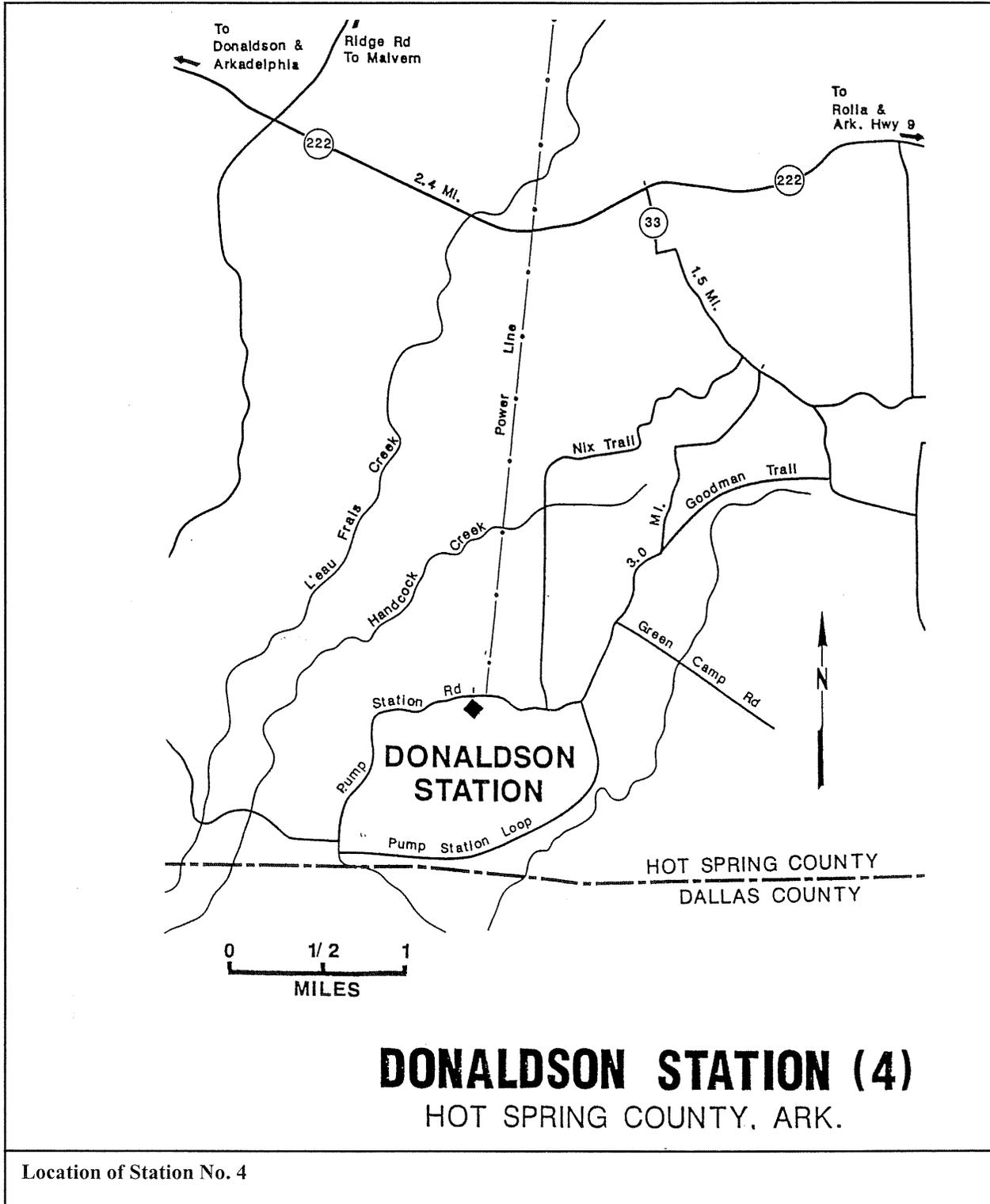
Reconstruction Finance Corporation [RFC]

1946 War Emergencies Pipe Lines: "Big Inch" Plancor 1226, "Little Big Inch" Plancor 1680. Folio-size, folded pamphlet published by Reconstruction Finance Corporation, Washington, D.C., not paginated. Located in Box #70074-3. Westheimer Office Building, Panhandle Eastern Corporation, Westheimer, Texas.

Reed, Paul

1943 Pumping Stations on the WEP 24-Inch Crude Line. *Oil & Gas Journal*, September 23, 1943:178, 182.

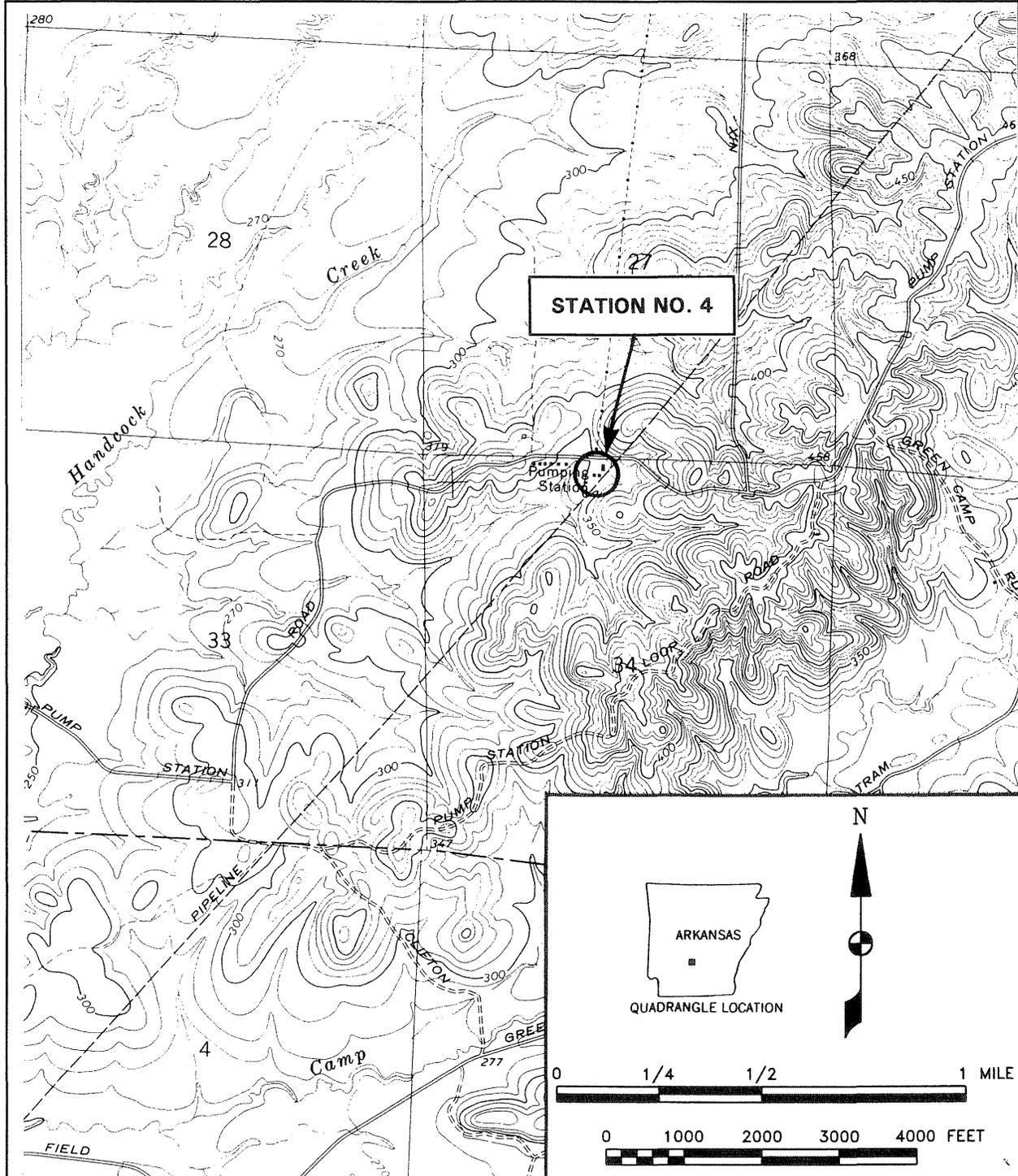
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**DONALDSON STATION (4)**  
HOT SPRING COUNTY, ARK.

Location of Station No. 4

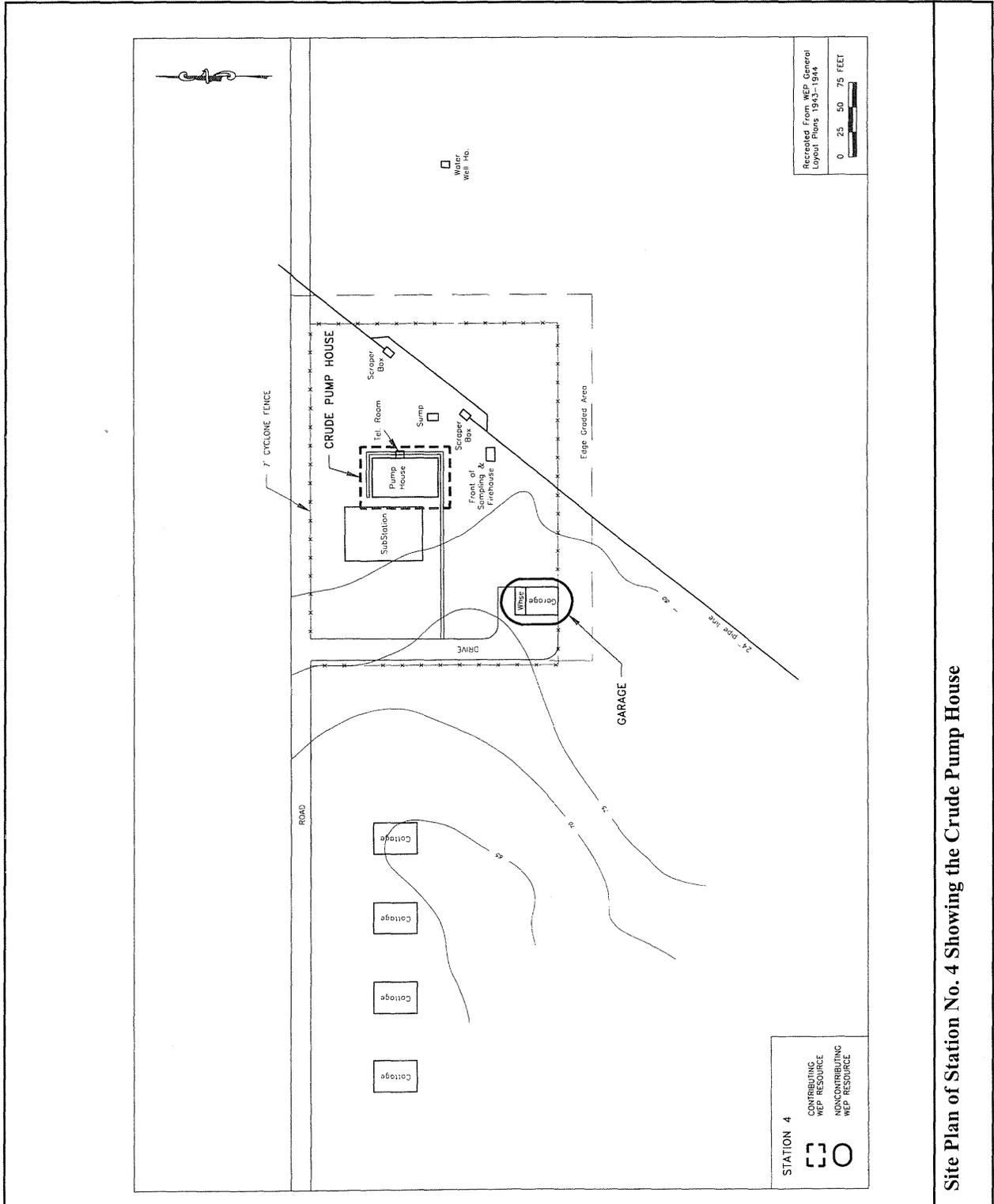
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Topographic Setting of Station No. 4

SOURCE: USGS 7.5 Minute Quadrangle, Round Hill, AR 1965  
 (Photorevised 1984)

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Site Plan of Station No. 4 Showing the Crude Pump House