SITE DESCRIPTION AND MAP

Toad Suck Ferry Lock & Dam
Info for Spill Plan
Building Inventory and Description

A. Lock Control House

1. Area Description: The Lock Control House is a 2-story brick veneer building located adjacent to the landside lock wall, with approximate size of 27' X 56".
2. Substances Stored:
   a. Diesel Fuel; 20 gal (max in generator day-tank) - in equipment room upstairs
   b. Oil, 90 wt; 5 gal - in shop cabinet
   c. Oil, 2-cycle outboard; 1 gal - in shop cabinet
   d. Oil, Pump; 2 gal - in shop cabinet
3. Floor Drains: Floor drains are located throughout the building and will either be plugged with a plumber's ball or encircled with absorbent "pigs" to prevent accidental discharge of hazardous substances.
4. Largest Container: 20 gallon tank
5. Flow Direction in Event of Failure: SSW across parking lot, then WNW (downstream) along the lot and road to Arkansas River.
6. Estimate Flow Rate: Estimate 2 FPS for diesel fuel and 1 FPS for oils.
7. Distance to Nearest Waterway: Approximately 300' to Arkansas River.
8. Containment Method: Absorbent materials located at the facility.
9. Depth to groundwater: Unknown. Estimate 10'.

B.Oil Storage Building.

1. Area Description: The Oil Storage Building is a 1-story, brick veneer building located SE of the Lock Control House, with an approximate size of 12' X 18'.
2. Substances Stored:
   a. Oil (30W and 10W30);55 gal
   b. Grease, Lubrication Engineer; 7 gal
   c. Grease, EP0 and EP1; 30 gal
   d. Grease, Keystone: 5 gal
   e. Antifreeze; 13 gal
   f. Paint; 35 gal
   g. Solvent: 5 gal
   h. Gasoline; 15 gal
   i. Mineral Spirits; 12 gal
   j. Transmission fluid, Dexron II; 4 gal
3. Floor Drains: No floor drains in the building.
4. Largest Container: 55 gallon drum.
5. Flow Direction in Event of Failure: SSW across parking lot, then WNW (downstream)

Toad Suck Ferry Lock & Dam
Info for Spill Plan (Cont'd)

across lot and road to Arkansas River.

6. Estimate Flow Rate: Estimate 1 FPS for oil, 2 FPS for thinner and solvent, and 0.5 FPS for paint. Grease will not flow.
7. Distance to Nearest Waterway: Approximately 350' to Arkansas River.
8. Containment Method: Absorbent materials located at the facility.
9. Depth to groundwater: Unknown. Estimate 10'.

C. Lock Hydraulic System

1. Area Description: The Lock Hydraulic system consists of piping and pumps in the Lock Control House and Lock Galleries.
2. Substances Stored: Hydraulic fluid; about 3600 gal total.
3. Floor Drains: Floor drains are located throughout the building and will either be plugged with a plumber's ball or encircled with absorbent "pigs" to prevent accidental discharge of hazardous substances.
4. Largest Container: Hydraulic pump reservoir in control house has a capacity of approximately 250 gallons.
5. Flow Direction in Event of Failure: Failure of pump or reservoir - SSW across parking lot, then WNW along the lot and across the road to Arkansas River. Failure of piping in gallery - along gallery drain to sump pump pit which would be pumped into river.
6. Estimate Flow Rate: Estimate 1 FPS for Hydraulic fluid..
7. Distance to Nearest Waterway: Failure in the pump or reservoir - 300' to Arkansas River. Failure in gallery - 10' to 250'.
8. Containment Method: Absorbent materials located at the facility.
9. Depth to groundwater: Unknown. Estimate 10'.

D. Diesel Fuel Above-ground Storage Tank

1. Area Description: The Diesel Fuel storage tank is located NNW and about 10' from the Lock Control House.
2. Substances Stored: Diesel Fuel; 300 gal (max)
3. Floor Drains: N/A
4. Largest Container: 300 gallon
5. Flow Direction in Event of Failure: WNW across parking lot and road to Arkansas River.
6. Estimate Flow Rate: Estimate 2 FPS for diesel fuel
7. Distance to Nearest Waterway: Approximately 300' to Arkansas River.
8. Containment Method: Secondary Containment
9. Depth to groundwater: Unknown. Estimate 10'.

Toad Suck Ferry Lock & Dam
Info for Spill Plan (Cont'd)

E. Dam (Spillway Gate Control Gearboxes)

1. Area Description: The Dam is located NNE of the Lock. There are 16 tainter gates on the dam, and each gate has two gearboxes.
2. Substances Stored:Oil, Lubrication Engineers; 704 gal (32 boxes @ 22 gal each)
3. Floor Drains: N/A
4. Largest Container: 22 gallons
5. Flow Direction in Event of Failure: Across the machinery deck; down to the pier; and down the pier face into the Arkansas River.
6. Estimate Flow Rate: Estimate 1 FPS for oil.
7. Distance to Nearest Waterway: Approximately 30' to Arkansas River.
8. Containment Method: Absorbent material located onsite.
9. Depth to groundwater: N/A

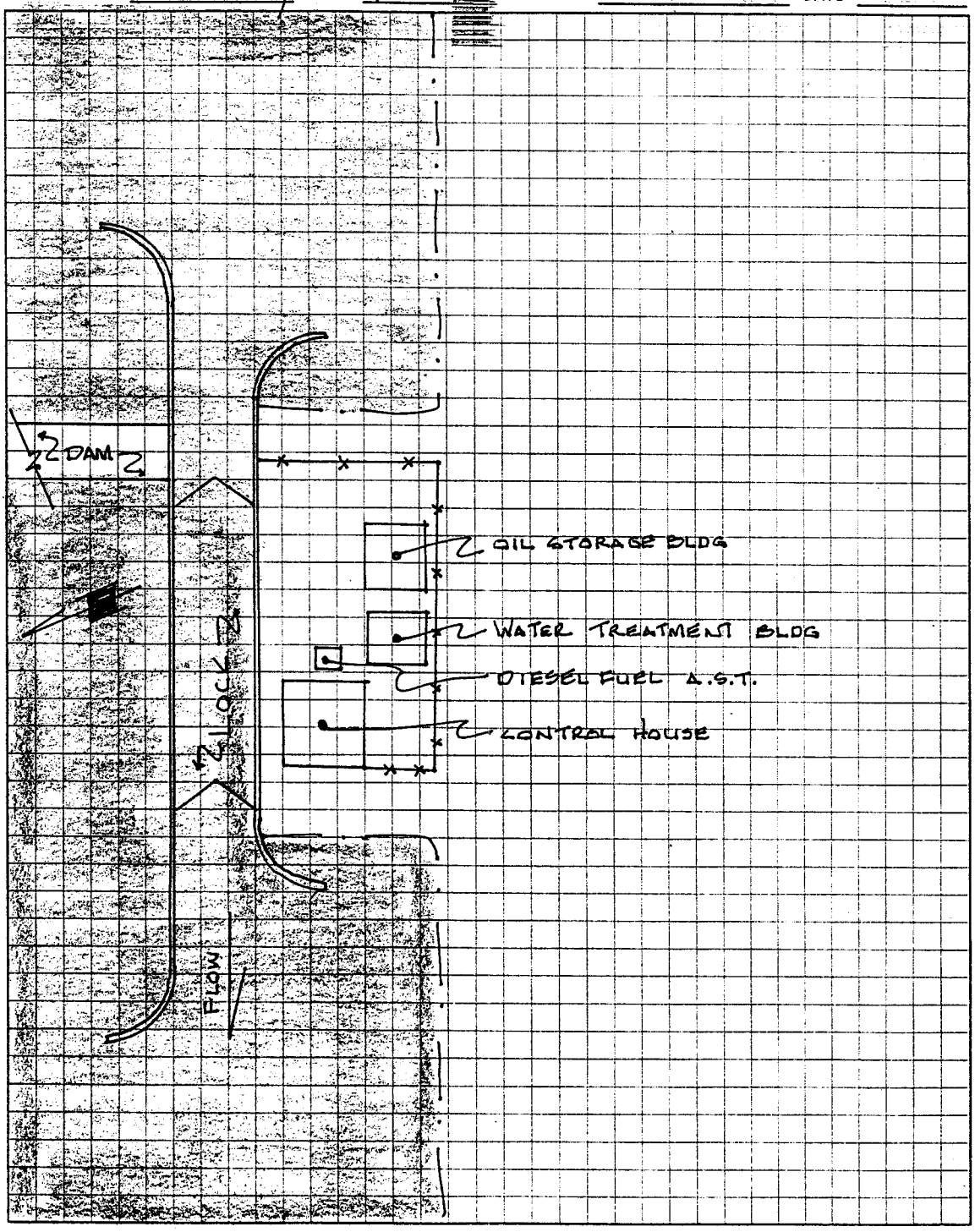
F. Riverside Lockwall at Dam Pier # 1

1. Area Description: The Dam is located NNE of the Lock. The materials are stored under the Hwy. 60 bridge.
2. Substances stored:
    a. Hydraulic Oil; 55 gal
    b. Used Oil; 35 gal max
    c. Oil, Lubrication Engineers (Red Oil); 55 gal
    d. Used Solvent; 30 gal max
3. Floor Drains: N/A
4. Largest Container: 55 gallons
5. Flow Direction in Event of Failure: Across the lock wall to the Arkansas River at Dam Pier # 1
6. Estimate Flow Rate: Estimate 1 FPS for oil and 2 FPS for solvent..
7. Distance to Nearest Waterway: Approximately 50' to Arkansas River.
8. Containment Method: Absorbent material located onsite.
9. Depth to groundwater: N/A

SUBJECT SPILL PLAN INFO FOR TOAD SUCK FERRY L & D

COMPUTATION SITE PLAN (N.T.S.) FILE NO.

COMPUTED BY BALGAVY DATE 9 DEC96 CHECKED BY DATE



PROJECT INFORMATION, CLIMATE AND SOIL DATA
TOAD SUCK FERRY LOCK AND DAM (NO. 8)

Project Information: Toad Suck Ferry Lock and Dam is located at navigation mile 155.9 of the McClellan-Kerr Arkansas River Navigation System. Its primary purpose is to provide a means of navigation for commercial and recreational vessels.

Climate: Toad Suck Ferry Lock and Dam is located in Faulkner County, Arkansas. The climate of Faulkner County is characterized by mild winters, warm to hot summers, and generally adequate rainfall. In summer the average daily temperature is about 80 degrees F, and the average winter temperature is 32 degrees. The total annual rainfall, about 49 inches, is well distributed throughout the year. Of the total annual precipitation, 25 inches, or 51 percent, usually falls in April through September. Snow falls nearly every winter, but snow cover lasts only a few days. Snowfall averages 5 inches per year, almost half of which falls in January. On the average, 1 day has at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year.

Rainfall: Rainfall averages for the general area are as follows:

Jan - 3.77 inches	Jul - 3.39 inches
Feb - 3.59 inches	Aug - 2.84 inches
Mar - 4.95 inches	Sep - 4.53 inches
Apr - 4.90 inches	Oct - 3.02 inches
May - 5.16 inches	Nov - 4.56 inches
Jun - 3.85 inches	Dec - 4.10 inches

Soils: Soils in the area are a combination of McKamie silty clay loam, 3 to 8 percent slopes, severely eroded; Roxana very fine sandy loam; and Taft silt loam, 0 to 2 percent slopes. Descriptions of each are as follows:

McKamie silty clay loam, severely eroded. This deep, well drained, gently sloping soil is on dissected high stream terraces. Typically, the surface layer is yellowish red silty clay loam about 2 inched thick. Most of the original surface layer has been lost through erosion. The present layer is mostly subsoil material. The upper 6 inches of the subsoil is red silty clay. Below this is red clay that extends to 72 inches or more. Permeability is very slow.

Roxana very fine sandy loam. This deep, well drained, level to nearly level soil is on flood plains along the Arkansas River. Levees protect it from flooding. The slope is 0 to 2 percent. Typically, the surface layer is dark yellowish brown very fine sandy loam about 6 inches thick. The underlying material is stratified brown, strong brown, and yellowish red very fine sandy loam to a depth of 75 inches or more. Permeability is moderate.

Taft silt loam, 0 to 2 percent slopes. This deep nearly level, somewhat poorly drained soil is on stream terraces and in depressions. Typically, the surface layer is dark grayish brown silt loam about 1 inch thick. The subsurface layer is light olive brown, mottled silt loam about 5 inches thick. The upper 18 inches of the subsoil is pale brown and light yellowish brown, mottled silt loam and silty clay loam. The next 18 inches is mottled yellowish brown and gray silty clay loam. It is compact and brittle. Below this is mottled gray and yellowish brown silty clay loam that extends to 76 inches or more. Permeability is slow.

Groundwater: McKamie - depth to seasonal high water table is greater than 6 feet; Roxana - depth to seasonal high water table is 4 to 6 feet; and Taft - depth to seasonal high water table is 1 to 2 feet.

Source: Soil Survey of Faulkner County, Arkansas, U.S. Department of Agriculture Soil Conservation Service, Issued 1979.

SWLR 200-1-1
25 Sep 97

SPILL HISTORY - TOAD SUCK FERRY LOCK AND DAM

CESWL-CO-RV

21 August 1997
Mr. James/jjs/329-2986

MEMORANDUM FOR Ch, Con-Ops Division

SUBJECT: Spill History, Toad Suck Ferry Lock & Dam

1. Reference Memorandum CESWL-CO-E dated 16 October 1995, Subject: Spill History.

2. No significant spills have been reported at the Toad Suck Ferry Lock and Dam. Please contact Mr. Darrell Sitton at 354-8402 if you have questions or need additional information.

ROBERT J. MOIX
Resident Engineer

Copy furnished:
Toad Suck Ferry Field Ofc, Mr. James
Toad Suck Ferry L&D, Mr. Sitton

RECEIVED
AUG 27 1997

PETROLEUM AND HAZARDOUS SUBSTANCES SOURCE MATRIX
RUSSELLVILLE

Facility	Petroleum and Hazardous Substances	Approx. Quantity	Location	On/Off Shore	Spill Prevention Measures
Toad Suck Ferry Office Conway, AR	Diesel Aboveground Storage Tank	3,000 Gal	Compound	On	Secondary Containment
	Gasoline Aboveground Storage Tank	8,000 Gal	Compound	On	Secondary Containment
	Oil (30W and 10W30)	60 Gal	Storage Building	On	Sorbents
	Hydraulic Oil	30 Gal	Storage Building	On	Sorbents
	Lubrication Engineer Grease	8 Gal	Non-flammable Building	On	Sorbents
	Antifreeze	10 Gal	Storage Building	On	Sorbents
	Paint	20 Gal	Shop	On	Sorbents
	Paint Thinner	1 Gal	Shop	On	Sorbents
	Gasoline	8 Gal	Non-flammable Building	On	Sorbents

SITE DESCRIPTION AND MAP

TOAD SUCK FERRY PROJECT OFFICE AREA

A. Oil Storage building: (B-3)

1. 9" X 9" metal building with metal flooring and no drain.
2. Building has oils and solvents in storage.
3. No floor drains.
4. Largest container stored in 30 gal.
5. Flow direction is to the west. Distance to nearest watercourse is approximately 1500'.
6. Rate of flow - estimated .05 ft/sec.
7. Distance to nearest water way is approximately 1500'.
8. Absorbent materials near site.
9. Groundwater Depth - approximately 40'.

B. Maintance and Storage Building (B-7)

1. Approved OSHA storage cabinet.
2. Building has paint and solvents
3. No floor drains
4. Largest container stored is 5 gal.
5. Flow direction is to the west. Distance to nearest watercourse is approximately 1500'.
6. Rate of flow - estimated .05 ft/sec.
7. Distance to nearest water way is approximately 1500'.
8. Absorbent materials near site.
9. Groundwater Depth - approximately 40'.

C. Diesel Fuel Storage Tank:

1. 3000 gal. Above ground tank (elevated on concrete piers).

2. Diesel fuel stored in tank.

3. N.A.

4. Largest quantity stored is 3000 gal. of diesel fuel.

5. Flow direction is to the south (distance to nearest watercourse is approximately 1000').

6. Rate of flow - .05 ft/sec.

7. See # 5 above

8. Concrete containment with locked valve is present. Absorbent materials near site.

9. Groundwater Depth - approximately 40'.

D. Gasoline Storage Tank:

1. 8000 gal. Above ground tank.

2. Unleaded gasoline stored in tank.

3. N.A.

4. Largest quantity stored is 8000 gal. of unleaded gasoline.

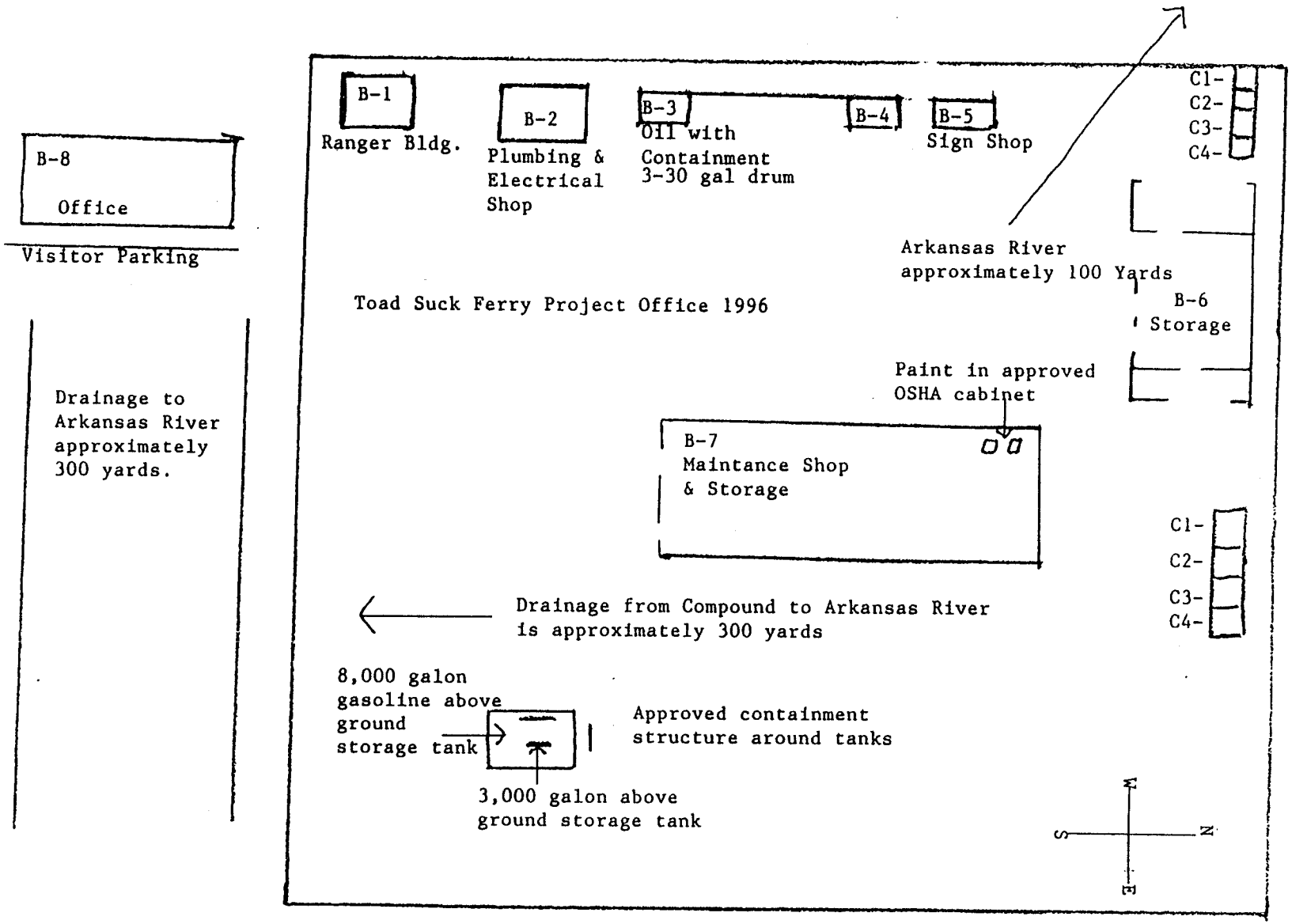
5. Flow direction is to the south. Distance to nearest water course is approximately 1000'.

6. Rate of flow - estimated .05 ft/sec.

7. See #5 above.

8. Concrete containment with locked valve is present. Absorbent materials near site.

9. Groundwater Depth - approximately 40'.


B-1
Ranger Bldg.
B-2
Plumbing & Electrical Shop
B-3
Oil with Containment 3-30 gal drum
B-4
B-5
Sign Shop
C1-
C2-
C3-
C4-
B-8
Office
Visitor Parking
Arkansas River approximately 100 Yards
Toad Suck Ferry Project Office 1996
B-6
Storage
Paint in approved OSHA cabinet
Drainage to Arkansas River approximately 300 yards.
B-7
Maintance Shop & Storage
C1-
C2-
C3-
C4-
Drainage from Compound to Arkansas River is approximately 300 yards
8,000 galon gasoline above ground storage tank
Approved containment structure around tanks
3,000 galon above ground storage tank
W
S
N
E

PROJECT INFORMATION, CLIMATE AND SOIL DATA
TOAD SUCK FERRY OFFICE

Project Information: Toad Suck Ferry Office is located off State Highway 286 north of Conway, Arkansas, near navigation mile 155.9 and Toad Suck Ferry Lock and Dam. Its primary purpose is to provide administrative and maintenance/operational support to the Arkansas River parks and recreational facilities.

Climate: Toad Suck Ferry Office is located in Faulkner County, Arkansas. The climate of Faulkner County is characterized by mild winters, warm to hot summers, and generally adequate rainfall. In summer the average daily temperature is about 80 degrees F, and the average winter temperature is 32 degrees. The total annual rainfall, about 49 inches, is well distributed throughout the year. Of the total annual precipitation, 25 inches, or 51 percent, usually falls in April through September. Snow falls nearly every winter, but snow cover lasts only a few days. Snowfall averages 5 inches per year, almost half of which falls in January. On the average, 1 day has at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year.

Rainfall: Rainfall averages for the general area are as follows:

Jan - 3.77 inches	Jul - 3.39 inches
Feb - 3.59 inches	Aug - 2.84 inches
Mar - 4.95 inches	Sep - 4.53 inches
Apr - 4.90 inches	Oct - 3.02 inches
May - 5.16 inches	Nov - 4.56 inches
Jun - 3.85 inches	Dec - 4.10 inches

Soils: Soils in the area are a combination of McKamie silty clay loam, 3 to 8 percent slopes, severely eroded; Roxana very fine sandy loam; and Taft silt loam, 0 to 2 percent slopes. Descriptions of each are as follows:

McKamie silty clay loam, severely eroded. This deep, well drained, gently sloping soil is on dissected high stream terraces. Typically, the surface layer is yellowish red silty clay loam about 2 inched thick. Most of the original surface layer has been lost through erosion. The present layer is mostly subsoil material. The upper 6 inches of the subsoil is red silty clay. Below this is red clay that extends to 72 inches or more. Permeability is very slow.

Roxana very fine sandy loam. This deep, well drained, level to nearly level soil is on flood plains along the Arkansas River. Levees protect it from flooding. The slope is 0 to 2 percent. Typically, the surface layer is dark yellowish brown very fine sandy loam about 6 inches thick. The underlying material is stratified brown, strong brown, and yellowish red very fine sandy loam to a depth of 75 inches or more. Permeability is moderate.

Taft silt loam, 0 to 2 percent slopes. This deep nearly level, somewhat poorly drained soil is on stream terraces and in depressions. Typically, the surface layer is dark grayish brown silt loam about 1 inch thick. The subsurface layer is light olive brown, mottled silt loam about 5 inches thick. The upper 18 inches of the subsoil is pale brown and light yellowish brown, mottled silt loam and silty clay loam. The next 18 inches is mottled yellowish brown and gray silty clay loam. It is compact and brittle. Below this is mottled gray and yellowish brown silty clay loam that extends to 76 inches or more. Permeability is slow.

<u>Groundwater:</u> McKamie - depth to seasonal high water table is greater than 6 feet; Roxana - depth to seasonal high water table is 4 to 6 feet; and Taft - depth to seasonal high water table is 1 to 2 feet.

Source: Soil Survey of Faulkner County, Arkansas, U.S. Department of Agriculture Soil Conservation Service, Issued 1979.

SPILL HISTORY - TOAD SUCK FERRY OFFICE

CESWL-CO-RV

21 August 1997
Mr. James/jjs/329-2986

MEMORANDUM FOR Ch, Con-Ops Division

SUBJECT: Spill History, Toad Suck Ferry Field Office

1. Reference Memorandum CESWL-CO-E dated 16 October 1995, Subject: Spill History.

2. No significant spills have been reported at the Toad Suck Ferry Field Office. Please contact Mr. Terry James at 329-2986 if you have questions or need additional information.

For ROBERT J. MOIX
Resident Engineer

Copy furnished:
Toad Suck Ferry Field Ofc, Mr. James

RECEIVED
AUG 27 1997
CON-OPS DIVISION

PETROLEUM AND HAZARDOUS SUBSTANCES SOURCE MATRIX
RUSSELLVILLE

Facility	Potential Hazardous Materials	Approx. Quantity	Location	On/Off Shore	Spill Prevention Measures
James W. Trimble Lock and Dam (Lock and Dam No. 13) Fort Smith, AR	Diesel Aboveground Storage Tank	300 Gal	Compound	On	Secondary Containment
	Hydraulic Fluid	3600 Gal	Lock System	Off	System Inspected Daily
	Hydraulic Fluid	55 Gal	Flammable Storage Building	On	Sorbents
	EP0 Grease	40 Gal	Flammable Storage Building	On	Sorbents
	EP1 Grease	40 Gal	Flammable Storage Building	On	Sorbents
	Lubrication Engineers Grease	20 Gal	Flammable Storage Building	On	Sorbents
	Oil, QE HDO 30	55 Gal	Flammable Storage Building	On	Sorbents
	Oil, LE	110 Gal	Flammable Storage Building	On	Sorbents
	Used Oil	40 Gal	Under Canopy Behind Flammable Storage	On	Sorbents

PETROLEUM AND HAZARDOUS SUBSTANCES SOURCE MATRIX
RUSSELLVILLE

Facility	Potential Hazardous Materials	Approx. Quantity	Location	On/Off Shore	Spill Prevention Measures
James W. Trimble Lock and Dam (No. 13) Fort Smith, AR (Continued)	Paint	35 Gal	Flammable Storage Building	On	Sorbents
	Thinner	20 Gal	Flammable Storage Building	On	Sorbents
	Solvent	55 Gal	Flammable Storage Building	On	Sorbents

SITE DESCRIPTION AND MAP

James W. Trimble Lock & Dam
Info for Spill Plan
Building Inventory and Description

A. Lock Control House

1. Area Description: The Lock Control House is a 2-story brick veneer building located adjacent to the landside lock wall, with approximate size of 27' X 56".
2. Substances Stored:
   a. Solvent; 25 gal in Safety Kleen parts washer - in lower level
   f. Diesel Fuel; 20 gal (max in generator day-tank) - in equipment room upstairs
3. Floor Drains: Floor drains are located throughout the building and will either be plugged with a plumber's ball or encircled with absorbent "pigs" to prevent accidental discharge of hazardous substances.
4. Largest Container: 25 gallon drum.
5. Flow Direction in Event of Failure: SSW across parking lot to small drain, then WNW along drain to Arkansas River.
6. Estimate Flow Rate: Estimate 2 FPS for solvent and diesel fuel.
7. Distance to Nearest Waterway: Approximately 450' to Arkansas River.
8. Containment Method: Absorbent materials located at the facility.
9. Depth to groundwater: Unknown. Estimate 10'.

B. Flammable Storage Building.

1. Area Description: The Flammable Storage Building is a 1-story, brick veneer building located WNW of the Lock Control House, with an approximate size of 12' X 12'.
2. Substances Stored:
   a. Hydraulic Fluid; 55 gal (max)
   b. EP-0 grease; 40 gal
   c. EP-1 grease; 40 gal
   d. Grease, Lubrication Engineers; 20 gal
   e. Oil, QE HDO 30; 55 gal (max)
   f. Oil, LE; 110 gal (max)
   g. Used Oil; 55 gal (max) - under canopy behind building
   h. Paint; 35 gal
   i. Thinner; 20 gal (max)
   j. Solvent; 55 gal (max)
3. Floor Drains: No floor drains in the building.
4. Largest Container: 55 gallon drum.
5. Flow Direction in Event of Failure: SSW across parking lot to small drain, then WNW

James W. Trimble Lock & Dam
Info for Spill Plan (Cont'd)

along drain to Arkansas River.

6. Estimate Flow Rate: Estimate 1 FPS for oil, 2 FPS for thinner and solvent, and 0.5 FPS for paint. Grease will not flow.
7. Distance to Nearest Waterway: Approximately 300' to Arkansas River.
8. Containment Method: Absorbent materials located at the facility.
9. Depth to groundwater: Unknown. Estimate 10'.

C. Lock Hydraulic System

1. Area Description: The Lock Hydraulic system consists of piping and pumps in the Lock Control House and Lock Galleries.
2. Substances Stored: Hydraulic fluid; about 3600 gal total.
3. Floor Drains: Floor drains are located throughout the building and will either be plugged with a plumber's ball or encircled with absorbent "pigs" to prevent accidental discharge of hazardous substances.
4. Largest Container: Hydraulic pump reservoir in control house has a capacity of approximately 250 gallons.
5. Flow Direction in Event of Failure: Failure of pump or reservoir - SSW across parking lot to small drain, then WNW along drain to Arkansas River. Failure of piping in gallery - along gallery drain to sump pump pit which would be pumped into river.
6. Estimate Flow Rate: Estimate 1 FPS for Hydraulic fluid..
7. Distance to Nearest Waterway: Failure in the pump or reservoir - 450' to Arkansas River. Failure in gallery - 10' to 250'.
8. Containment Method: Absorbent materials located at the facility.
9. Depth to groundwater: Unknown. Estimate 10'.

D. Diesel Fuel Above-ground Storage Tank

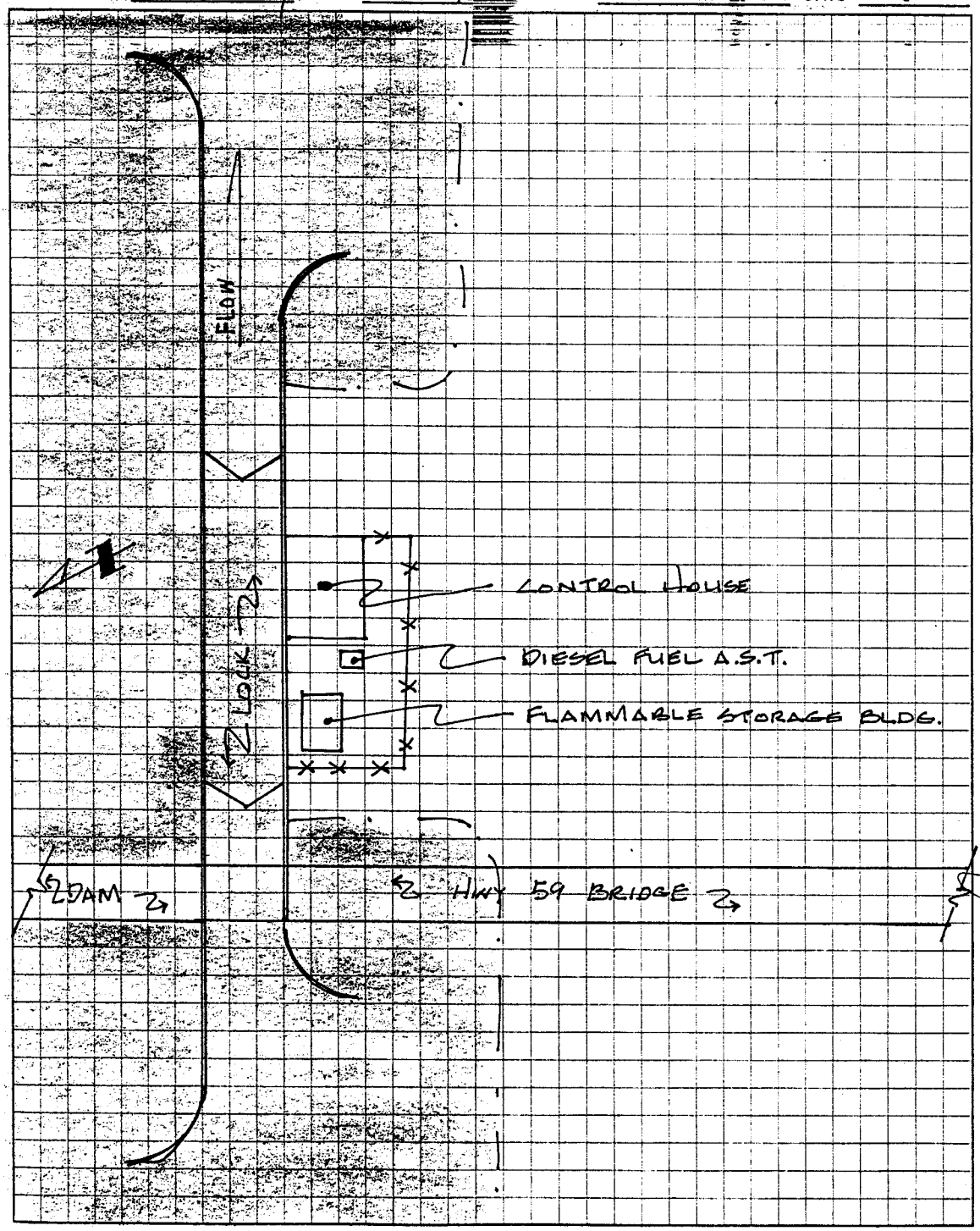
1. Area Description: The Diesel Fuel storage tank is located NNW and about 10' from the Lock Control House.
2. Substances Stored: Diesel Fuel; 300 gal (max)
3. Floor Drains: N/A
4. Largest Container: 300 gallon
5. Flow Direction in Event of Failure: NNE across esplanade to small drain, then ESE along drain to Arkansas River.
6. Estimate Flow Rate: Estimate 2 FPS for diesel fuel
7. Distance to Nearest Waterway: Approximately 300' to Arkansas River.
8. Containment Method: Secondary Containment
9. Depth to groundwater: Unknown. Estimate 10'.

James W. Trimble Lock & Dam
Info for Spill Plan (Cont'd)

E. Dam (Spillway Gate Control Gearboxes)

1. Area Description: The Dam is located NW of the Lock. There are 15 tainter gates on the dam, and each gate has two gearboxes.
2. Substances Stored: Oil, Lubrication Engineers; 660 gal (30 boxes @ 22 gal each)
3. Floor Drains: N/A
4. Largest Container: 22 gallons
5. Flow Direction in Event of Failure: Across the machinery deck; down to the pier; and down the pier face into the Arkansas River.
6. Estimate Flow Rate: Estimate 1 FPS for oil.
7. Distance to Nearest Waterway: Approximately 30' to Arkansas River.
8. Containment Method: Absorbent material located onsite.
9. Depth to groundwater: N/A

SUBJECT SPILL PLAN INFO FOR TRIMBLE LOCK & DAM
COMPUTATION SITE PLAN (N.T.S.) FILE NO.
COMPUTED BY BALGANY DATE 13NOV96 CHECKED BY DATE



PROJECT INFORMATION, CLIMATE AND SOIL DATA
JAMES W. TRIMBLE LOCK AND DAM (NO. 13)

Project Information: James W. Trimble Lock and Dam is located at navigation mile 292.8 of the McClellan-Kerr Arkansas River Navigation System. Its primary purpose is to provide a means of navigation for commercial and recreational vessels.

Climate: Trimble Lock and Dam is located in Sebastian County, Arkansas. Sebastian County is in western Arkansas adjacent to the State of Oklahoma. It is bounded on the north by the Arkansas River. To the south of the river flood plain, the terrain consists of broken hills separated by creeks and small rivers. The climate of the county is characterized by warm to hot summers, mild winters and abundant rainfall. Although the county is within reach of cold arctic outbreaks, these generally are of short duration. Winters are relatively free of severe cold, and outdoor work can be done during most of the winter. The average winter temperature is 50 degrees F, so outdoor work can be done during most of the winter. The total annual rainfall is about 42 inches. Winter is normally the driest season and spring in the wettest. The month of May usually receives the most rain. Snowfall averages 5 inches per year in the northern portion of the county, however, along the Arkansas River the snowfall is light.

Rainfall: Rainfall averages for the general area are as follows:

Jan - 2.38 inches	Jul - 3.24 inches
Feb - 3.20 inches	Aug - 2.91 inches
Mar - 3.52 inches	Sep - 3.31 inches
Apr - 4.74 inches	Oct - 3.47 inches
May - 5.48 inches	Nov - 3.08 inches
Jun - 3.93 inches	Dec - 2.89 inches

Soils: Soils in the area are a combination of Muskogee silt loam, 3 to 8 percent slopes and Crevasse soils. Descriptions of each are as follows:

Muskogee silt loam, 3 to 8 percent slopes. The Muskogee series consists of moderately well drained, gently sloping soils on high terraces along the Arkansas River. These soils formed in stratified loamy and clayey sediment brought in by the Arkansas River from prairies and mountains to the west. In a representative profile, the surface layer is dark-brown silt loam about 4 inches thick. The subsurface layer is brown silt loam about 5 inches thick. The subsoil extends to a depth of 72 inches or more. The upper 8 inches of the subsoil is yellowish-brown silt loam; the next 10 inches is yellowish-brown, mottled silty clay loam; the next 13 inches is light brownish-gray,

mottled silty clay; the next 15 inches is yellowish-red, mottled silty clay; and the lower 17 inches is reddish-yellow mottled silty clay. Permeability is slow.

Crevasse soils. The Crevasse series consists of excessively drained, level and nearly level soils on young natural levees along the Arkansas River. These soils formed in mixed sandy sediment brought in from the west by the Arkansas River. In a representative profile, the surface layer is dark-brown loamy fine sand about 8 inches thick. The underlying material is very pale brown, light yellowish-brown, and brown fine sand and sand. Permeability is rapid.

Groundwater: Depth to seasonal high water table is greater than 6 feet.

Source: Soil Survey of Sebastian County, Arkansas, U.S. Department of Agriculture Soil Conservation Service, Issued 1975.

SPILL HISTORY - TRIMBLE LOCK AND DAM

CESWL-CO-RV

21 August 1997
Mr. James/jjs/329-2986

MEMORANDUM FOR Ch, Con-Ops Division

SUBJECT: Spill History, J. W. Trimble Lock & Dam

1. Reference Memorandum CESWL-CO-E dated 16 October 1995, Subject: Spill History.

2. No significant spills have been reported at the J. W. Trimble Lock and Dam. Please contact Mr. Larry Johnson at 667-2127 if you have questions or need additional information.

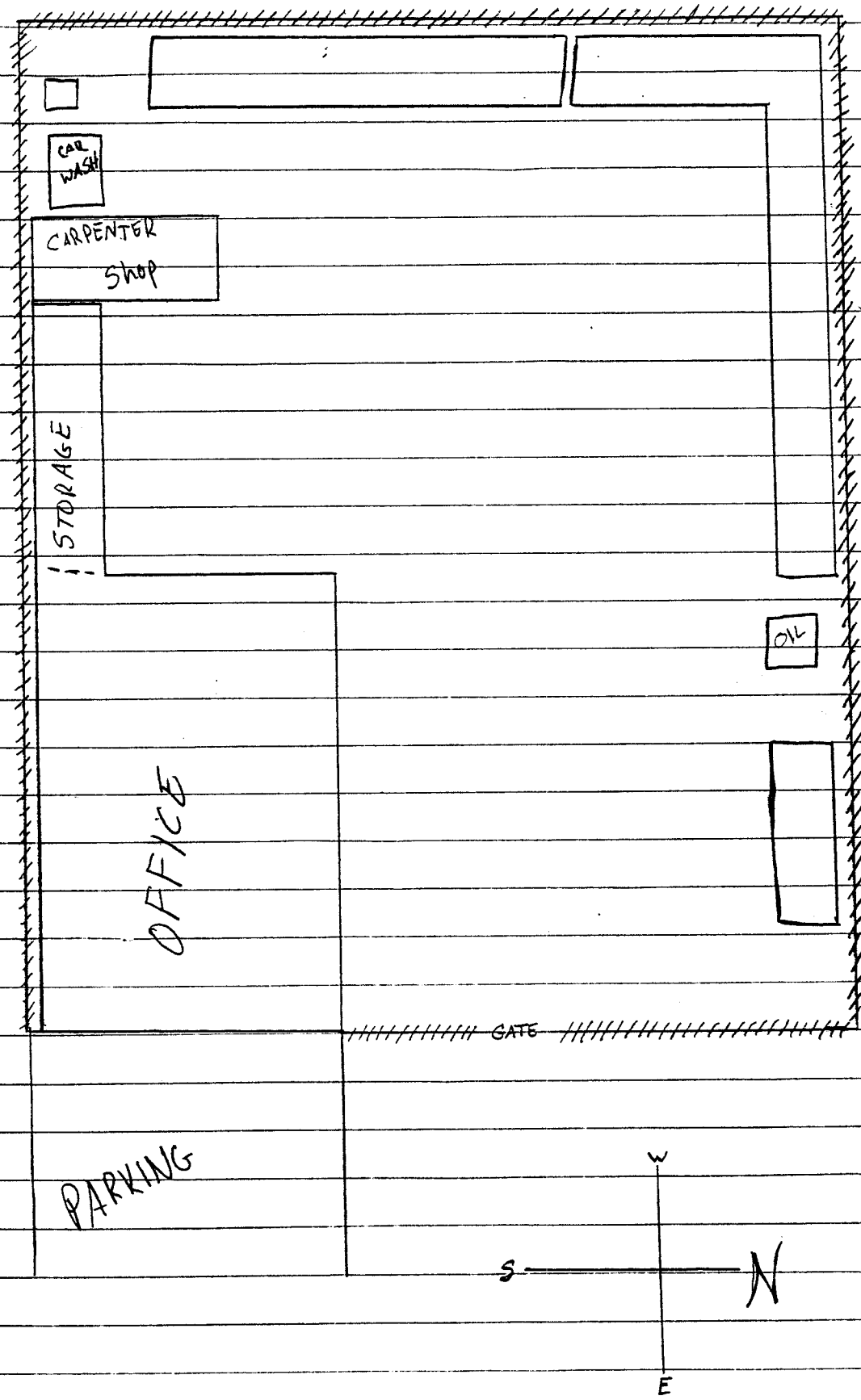
for ROBERT J. MOIX
Resident Engineer

Copy furnished:
Toad Suck Ferry Field Ofc, Mr. James
J. W. Trimble L&D, Mr. Johnson

PETROLEUM AND HAZARDOUS SUBSTANCES SOURCE MATRIX
UPPER WHITE RIVER

Facility	Petroleum and Hazardous Substances	Approx. Quantity	Location	On/Off Shore	Spill Prevention Measures
Beaver Lake Office, Rogers, AR	Paint	9 Gal	Carpenter Shop, Fire Proof Cabinet	On	Sorbents
	Paint	9 Gal	Oil Storage Building	On	Sorbents
	Paint Thinner	5 Gal	Oil Storage Building	On	Sorbents
	Gas, Chain-Saw	5 Gal	Oil Storage Building	On	Sorbents
	Oil, Two Cycle	55 Gal	Oil Storage Building	On	Sorbents

SITE MAP - BEAVER LAKE OFFICE



PROJECT INFORMATION, CLIMATE AND SOIL DATA
BEAVER LAKE OFFICE

Project Information: Beaver Lake Office provides administrative and shop facilities for the management and operation of Corps of Engineers' recreational facilities around Beaver Lake.

Climate: Beaver Lake Office, located in Benton County, Arkansas, is generally characterized by relatively warm summers and mild winters. The climate is mainly continental, although warm, humid maritime air from the Gulf of Mexico covers the area at frequent intervals throughout the year. Occasional incursions of Arctic air during the winter account for the low temperature extremes. Winters are relatively free of severe cold, although lows below zero are not uncommon in January, the coldest month. Extremely cold temperatures generally do not persist for more than a few days at a time. Snow falls every winter in Benton County and averages 8 to 9 inches per year. Heavy snowfall is experienced occasionally. Summers are warm, and high temperatures are often accompanied by high humidity. In July and August the average daily temperature is about 78 degrees and the high often exceeds 100 degrees.

Rainfall: Rainfall averages for the general area are as follows:

Jan - 2.16 inches	Jul - 3.54 inches
Feb - 2.64 inches	Aug - 3.48 inches
Mar - 3.44 inches	Sep - 4.19 inches
Apr - 4.80 inches	Oct - 3.67 inches
May - 6.27 inches	Nov - 2.82 inches
Jun - 5.12 inches	Dec - 2.48 inches

Precipitation is fairly well distributed throughout the year and averages nearly 45 inches per year. About 16.2 inches, or about 36 percent of the annual total, generally falls in April, May and June. May is the wettest month, averaging slightly more than 6 1/4 inches of rain. Winter is the dry season. December, January and February have average precipitation of about 2 1/2 inches.

Soils: Soils in this area consists of Captina silt loam, 1 to 3 percent slope. It consists of moderately well drained, nearly level soils on broad uplands and ridges, and on stream terraces. These soils formed in loamy material overlying cherty limestone or siltstone. Representative profile reflects the surface layer as very dark grayish-brown and brown silt loam about 7 inches thick. The upper part of the subsoil is strong-brown silty clay loam about 14 inches thick. Below this is a firm, brittle fragipan about 27 inches thick. the upper 9 inches of the fragipan is strong-brown, mottled silty clay loam, and the lower part is strong-brown, mottled cherty silt clay loam. The underlying material is fractured chert that has strong-brown and

slow. The fragipan in the subsoil restricts root penetration and slows the movement of water through the soil. Depth to bedrock is greater than 42 inches.

<u>Groundwater:</u> Depth to seasonal high water table is at 1.5 - 2 feet.

Source: Soil Survey of Benton County, Arkansas, U.S. Department of Agriculture Soil Conservation Service and Forest Service, Issued 1977.

SPILL HISTORY - BEAVER LAKE OFFICE

CESWL-CO-UW 17 November 1995

MEMORANDUM FOR: Chief, CESWL-CO-E

SUBJECT: Spill History

1. Reference CESWL-CO-E memorandum dated 16 October 1995, subject as above.

2. We have completed a survey of facilities at Beaver Project, Beaver Powerhouse, Table Rock Project, and Table Rock Powerhouse and have no spill history to report.

Kenneth Foersterling
Lake Manager
Acting Project Manager

PETROLEUM AND HAZARDOUS SUBSTANCES SOURCE MATRIX
UPPER WHITE RIVER

Facility	Petroleum and Hazardous Substances	Approx. Quantity	Location	On/Off Shore	Spill Prevention Measures
Beaver Powerhouse and Dam Eureka Springs, AR	Diesel Fuel Aboveground Storage Tank	200 Gal	Dam, Southwest building end, Generator Room	Off	Drains to stilling basin plugged. Room is bermed and sorbents are available.
	Insulation Oil - 2 each Aboveground Storage Tanks at 6750 Gals	13500 Gal	Powerhouse, Insulation Oil Storage Room, Elevation 944.5	Off	Drains to Powerhouse sump where it may be recovered.
	Lube Oil - 2 each Aboveground Storage Tanks at 4000 Gals	8000 Gal	Powerhouse, Lube Oil Storage Room, Elevation 931.5	Off	Drains to Powerhouse sump where it may be recovered.
	Lube Oil - 2 each Generator Unit Bearing Systems at 1900 Gals	3800 Gal	Powerhouse, Generator and Turbine Areas	Off	Drains to Powerhouse sump where it may be recovered.
	Lube Oil - 2 each Governor Systems at 1100 Gals	2200 Gal	Powerhouse, Generator and Turbine Areas	Off	Drains to Powerhouse sump where it may be recovered.
	Insulating Oil for Oil Circuit Breakers - 2 each Aboveground Storage Tanks at 3000 Gals	6000 Gal	Powerhouse, Insulating Oil Storage Room, Elevation 944.5	Off	Drains to Powerhouse sump where it may be recovered.

PETROLEUM AND HAZARDOUS SUBSTANCES SOURCE MATRIX
UPPER WHITE RIVER

Facility	Petroleum and Hazardous Substances	Approx. Quantity	Location	On/Off Shore	Spill Prevention Measures
Beaver Powerhouse and Dam Eureka Springs, AR (Continued)	Insulating Oil in Oil Circuit Breakers - 4 each Aboveground Circuit Breaker-Interruption Tanks at 4200 Gals	16800 Gal	Switchyard, Elevation 964.5	On	Oil Circuit Breakers are located within 100 yards of tailwater - oil may be recovered by booms.
	Insulating Oil - 2 each Transformers at 5600 Gals	11200 Gal	Transformer Deck	Off	Drains to chilling sump, then to stilling basic - where it may be recovered by booms.
	Hydraulic Fluid Aboveground Storage Tank	500 Gal	Dam Operating Gallery, Slide Gate Alcove	Off	Drains to Dam sump where it may be recovered.
	Used Oil - 4 each 55 gallon drums	220 Gal	Powerhouse Oil Purification Room, Elevation 930.5	Off	Drains to Powerhouse sump where it may be recovered.
	Paint	50 Gal	Paint Room, Elevation 945.0	Off	Drains to Powerhouse sump where it may be recovered.
	Solvent	20 Gal	Mechanical Shop, Elevation 945.0	Off	Drains to Powerhouse sump where it may be recovered.

SITE DESCRIPTION AND SITE MAP
BEAVER POWERHOUSE AND DAM

PROJECT OFFICES PLEASE PROVIDE THE FOLLOWING INFORMATION ON ALL FACILITIES:

A. A SITE MAP OF FACILITIES. (NOT REQUIRED TO BE TO SCALE)

1. IDENTIFY OF ALL BUILDINGS, STRUCTURES (INCLUDING ABOVEGROUND & UNDERGROUND STORAGE TANKS), TRANSFORMERS, OIL CURCUIT BREAKERS (OCBs) AND ANY OTHER AREAS WHERE HAZARDOUS SUBSTANCES ARE STORED AND/OR UTILIZED.

2. IDENTIFY NEARBY WATERCOURSES (100 YDS OR CLOSER)

3. MAKE YOU SITE MAP 8 1/2" X 11"

4. IDENTIFY NAME OF FACILITY & DATE OF SITE MAP

5. INDICATE DIRECTION AND APPROXIMATE DISTANCE BETWEEN BUILDINGS & WATERCOURSES

B. PROVIDE A DESCRIPTION OF EACH BUILDING, SHED, TRANSFORMER YARD, OR OTHER SIMILIAR STRUCTURE (INCLUDING ABOVEGROUND AND UNDERGROUND STORAGE TANKS) WHERE OIL OR HAZARDOUS SUBSTANCES ARE STORED AND/OR UTILIZED.

1. IDENTIFY SIZE AND TYPE OF BUILDING OR STRUCTURE

2. CORRELATE DESCRIPTION WITH SUBSTANCES STORED AS SHOWN IN APPENDIX C OF THE DRAFT SPILL PLAN (ENCLOSED)

3. IDENTIFY FLOOR DRAINS AND SUMPS IN BUILDINGS. INDICATE WHETHER FLOOR DRAINS ARE SEALED OR MAY BE SEALED BY USING PLUMBER'S PLUGS, SPILL MATS, ETC.

4. LARGEST CONTAINER OF OIL OR HAZARDOUS SUBSTANCE STORED IN THE BUILDING OR LOCALITY

5. FLOW DIRECTION SHOULD A FAILURE OCCUR

6. ESTIMATE RATE OF FLOW (WORST CASE SCENARIO)

7. DISTANCE TO NEAREST WATERWAY (I.E., LAKE, RIVER, STREAM, POND, ETC.)

8. LIST TYPE OF CONTAINMENT AND/OR DIVERSIONARY STRUCTURES OR EQUIPMENT TO PREVENT DISCHARGED OIL OR HAZARDOUS SUBSTANCES FROM REACHING A WATERCOURSE. IN ADDITION, LIST ABSORBENT MATERIALS LOCATED NEARBY. NOTE: ABSORBENT MATERIALS ARE REQUIRED TO BE STORED NEAR WHERE SPILLS MAY OCCUR.

9. DEPTH TO GROUNDWATER.

BEAVER HYDRO POWER

3. a. Site Map & Prints Included

b. 1) Two transformers full of oil - 5,600 gal. ea.

12 tanks for oil circuit breakers - 1400 gal. ea.

Transformers are located on the deck between the powerhouse and dam. A spill would drain into the stilling basin.

Oil circuit breakers are located in the switchyard. A spill in this area could or would get to tail race by ground run off.

3) All storage tanks in the powerhouse drain to a sump. Floor drains can be plugged or covered with mats. Sump can be pumped or spill.

4) Transformer on deck - 5,600 gal. ea. Containment could be stopped by plugging the drain in the pit.

5) Stilling basin

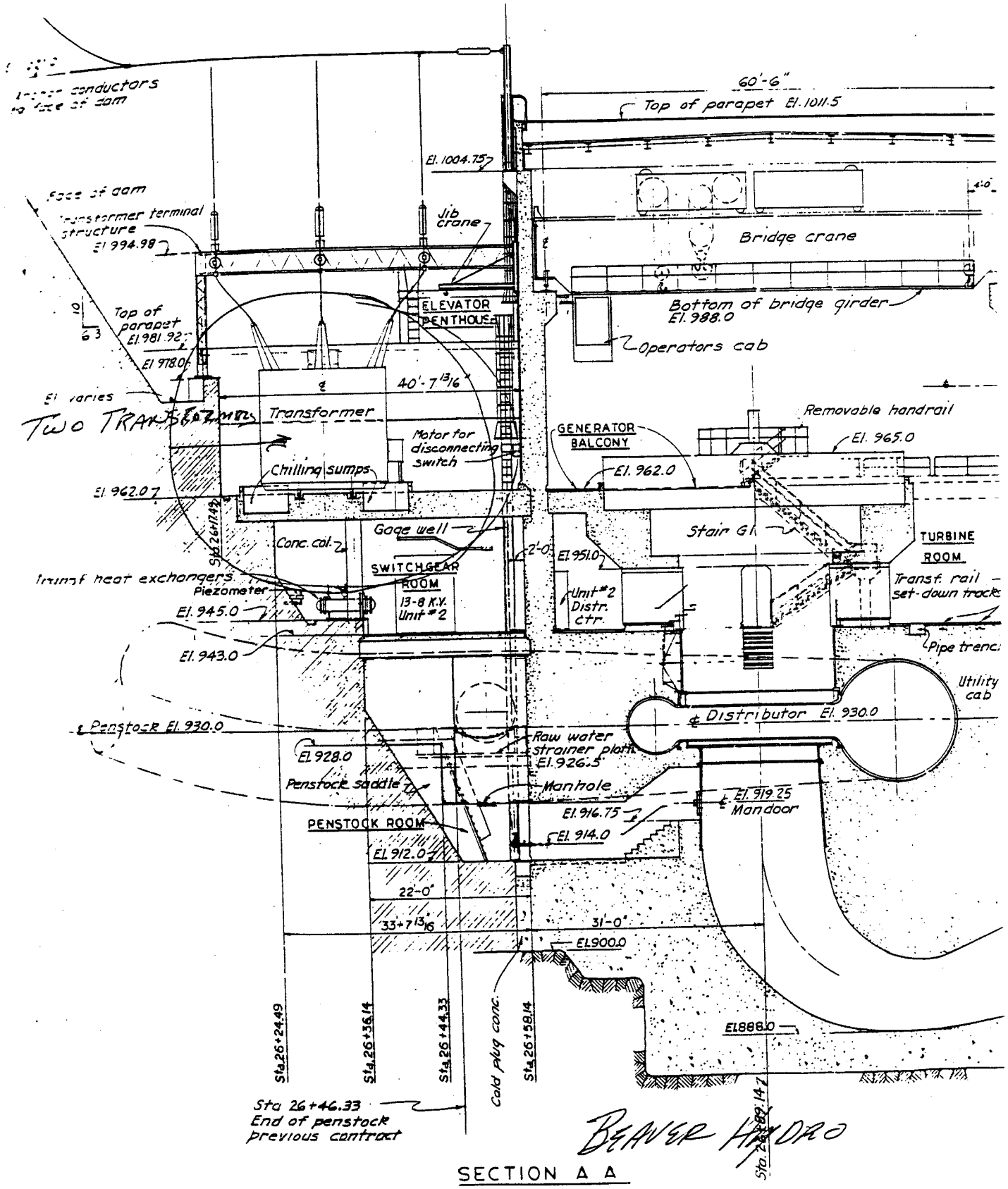
6) Unknown

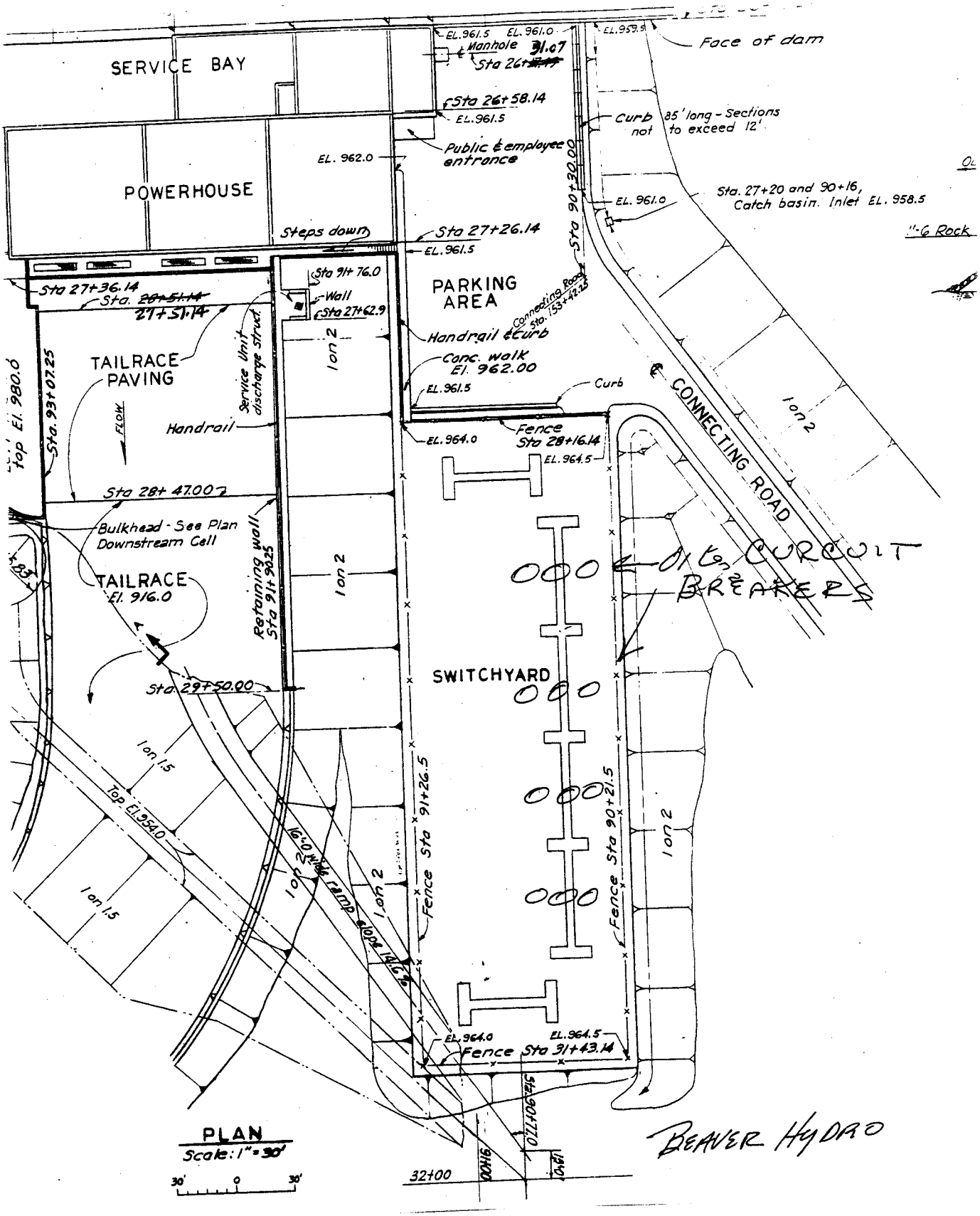
7) Eighty (80) feet - approximate

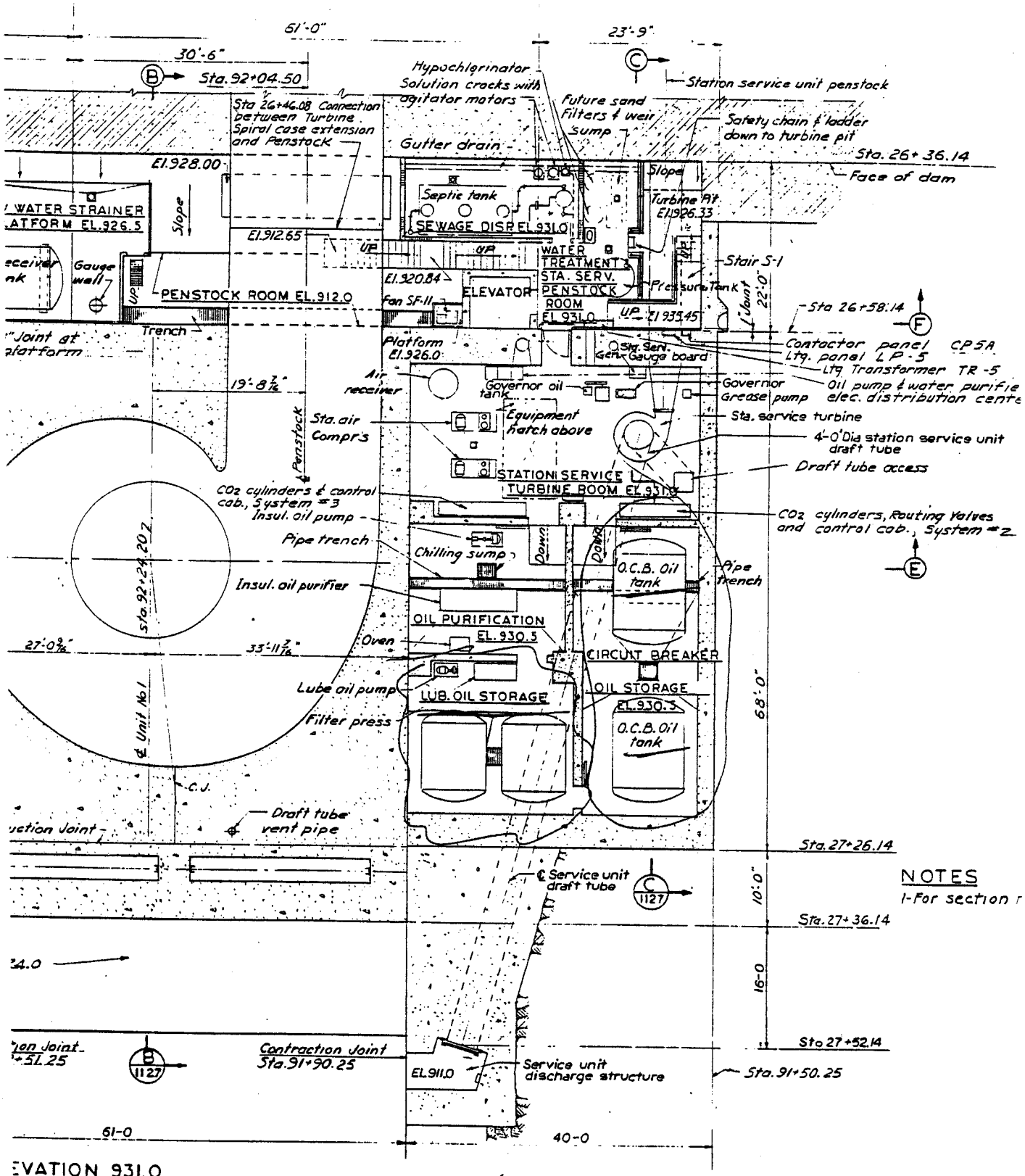
8) Have on hand:
10 - 8" X 12" sorbent socks
100 - 18" X 18" X 3/8 sorbent pads
4 - 10′ booms
1 - 3′ X 150′ roll sorbent mat

Beaver Dam has two (2) sluice gate tanks and storage of approximately 520 gal. of oil.

Harlan Petter


60'-6"
Top of parapet El. 1011.5
El. 1004.75
Face of dam
Transformer terminal structure
El 994.98
Jib crane
Bridge crane
Top of parapet El. 981.92
El 978.0
ELEVATOR PENTHOUSE
Bottom of bridge girder El. 988.0
Operators cab
40'-7 13/16"
El. varies
TWO TRANSFORMERS
Transformer
Removable handrail
GENERATOR BALCONY
El. 965.0
Motor for disconnecting switch
Chilling sumps
El. 962.0
El. 962.0
Gage well
Conc. col.
Stair G
TURBINE ROOM
2'-0"
El. 951.0
SWITCHGEAR ROOM
13-8 K.V. Unit #2
Transf. heat exchangers
Piezometer
Unit #2 Distr. ctr.
Transf. rail set-down track
El. 945.0
El. 943.0
Pipe trenc
Utility cab
Distributor El. 930.0
Penstock El. 930.0
Raw water strainer platf. El. 926.5
El. 928.0
Penstock saddle
Manhole
El. 919.25 Mandoor
El. 916.75
PENSTOCK ROOM
El. 914.0
El. 912.0
22'-0"
33+7 13/16
31'-0"
EL 900.0
Sta. 26+24.49
Sta. 26+36.14
Sta. 26+44.33
Cold plug conc.
Sta. 26+58.14
EL 888.0
Sta 26+46.33
End of penstock
previous contract
BEAVER HYDRO
SECTION A A


SERVICE BAY
POWERHOUSE
EL. 961.5
EL. 961.0
Manhole
Sta 26+31.07
Face of dam
Sta 26+58.14
EL. 961.5
Curb 35' long - Sections not to exceed 12'
Public & employee entrance
EL. 962.0
Sta 90+30.00
EL. 961.0
Sta. 27+20 and 90+16, Catch basin. Inlet EL. 958.5
Steps down
Sta 27+26.14
EL. 961.5
Sta 91+76.0
Wall
Sta 27+62.9
PARKING AREA
Connecting Road Sta. 153+42.25
Handrail & curb
Conc. walk El. 962.00
EL. 961.5
Curb
Sta 27+36.14
Sta. 27+51.14
TAILRACE PAVING
Service Unit discharge struct.
1 on 2
Top El. 980.0
Sta. 93+07.25
FLOW
Handrail
EL. 964.0
Fence Sta 28+16.14
EL. 964.5
CONNECTING ROAD
Sta 28+47.00
Bulkhead - See Plan Downstream Cell
TAILRACE El. 916.0
Retaining wall Sta 91+90.25
SWITCHYARD
Sta 29+50.00
1 on 1.5
Top El. 954.0
16'-0" wide ramp slope 14.6%
Fence Sta 91+26.5
Fence Sta 90+21.5
EL. 964.0
EL. 964.5
Fence Sta 31+43.14
PLAN
Scale: 1" = 30'
30' 0 30'
32+00
BEAVER HYDRO



NOTES

1-For section

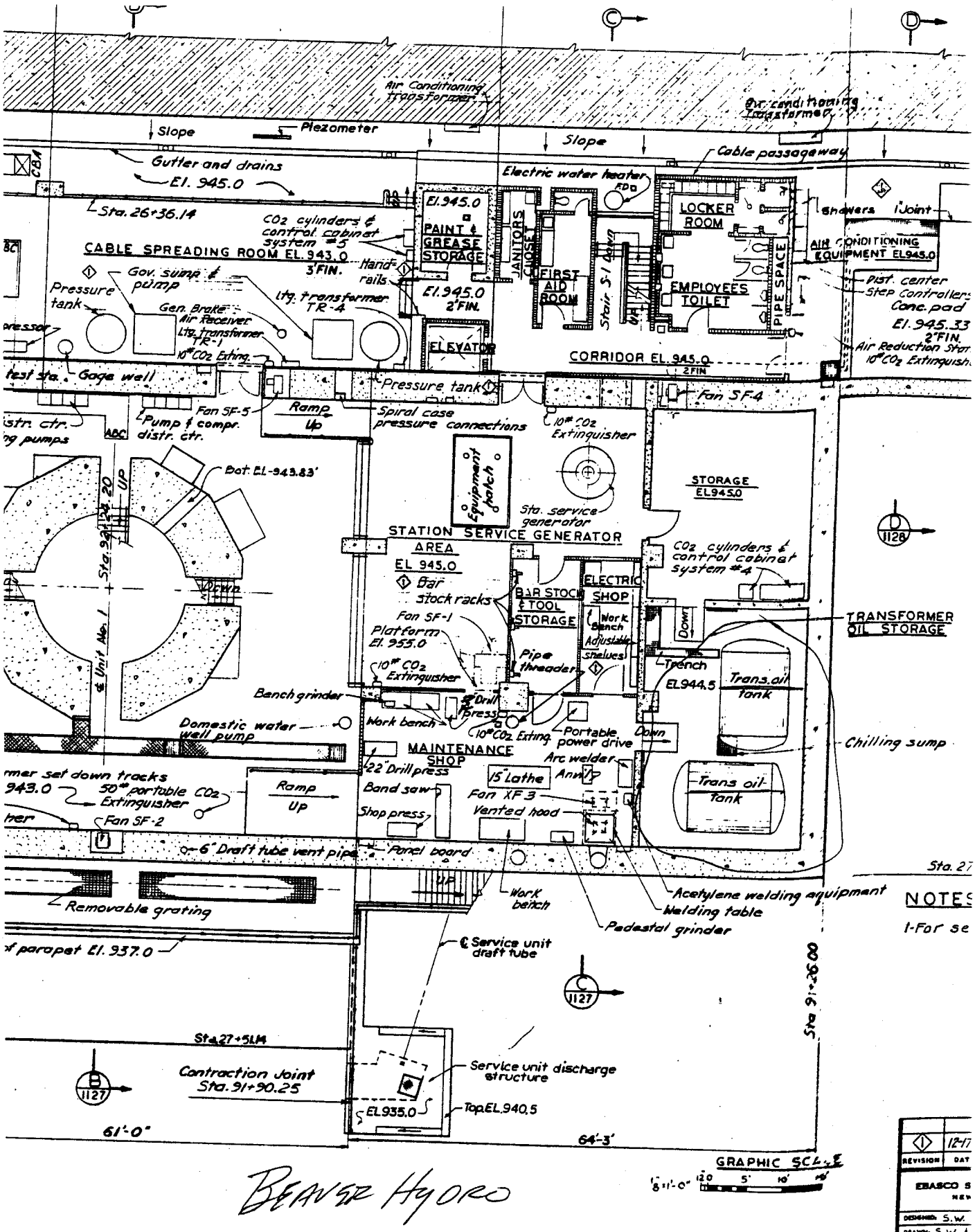
EVATION 931.0

BEAVER HYDRO

GRAPHIC SCALE

EBASCO SERVICE NEW YORK

DESIGNED: S.W.



BEAVER HYDRO

PROJECT INFORMATION, CLIMATE AND SOIL DATA
BEAVER DAM & POWERHOUSE

Project Information: Beaver Dam and Powerhouse is located off of State Highway 187 in Northwest Arkansas, approximately 5 miles from Missouri. Primary purposes for the project include flood control, generation of hydroelectric power and water supply. Hydroelectric power is sold to municipalities, rural electric cooperatives, and public and private utilities in Arkansas, Missouri, Oklahoma, Louisiana and eastern Texas. Beaver Lake provides municipal and industrial water for Benton, Boone, Carroll, Madison and Washington counties in northwest Arkansas. Additional storage has been provided in the lake to meet future needs. Three water intake structures in the lake provide a continuous water supply for the growing northwest Arkansas region.

Climate: Beaver Dam and Powerhouse are located in Carroll County, Arkansas. Carroll County is hot in summer and moderately cool in winter. Rainfall is fairly heavy and well distributed throughout the year. Snow falls nearly every winter, but snow cover lasts only a few days. In winter the average temperature is 40 degrees F, and the average daily minimum temperature is 29 degrees. In summer the average temperature is 77 degrees, and the average daily maximum temperature is 88 degrees. The total annual precipitation is 43 inches. Of this, 26 inches (65 percent) usually falls in April through September. Average seasonal snowfall is 14 inches.

Rainfall: Rainfall averages for the general area are as follows:

Jan - 1.94 inches	Jul - 4.20 inches
Feb - 2.21 inches	Aug - 3.46 inches
Mar - 2.85 inches	Sep - 4.05 inches
Apr - 4.18 inches	Oct - 3.73 inches
May - 5.47 inches	Nov - 3.79 inches
Jun - 4.58 inches	Dec - 2.99 inches

Soils: Soils in this area consists of Arkana-Moko complex, 8 to 20 percent slopes. It is moderately deep and shallow, moderately sloping to very steep, well drained, very cherty and very stony soil that formed in residuum of limestone or dolomite. Arkana and Moko soils in most places are intermingled on the same landscape. Arkana soils are moderately deep and Moko soils are shallow. Arkana soils have a very dark gray very cherty silt loam surface layer (approximately 5 inches thick) and a very dark grayish brown very cherty silt loam subsurface layer (approximately 4 inches thick.) The upper part of the subsoil is yellowish red clay (approximately 15 inches thick), and the lower part is strong brown, mottled clay (approximately 14 inches thick.) It is underlain by hard dolomitic bedrock at a depth of

about 38 inches. Permeability is very slow.

Moko soils have a very dark gray very stony silt loam surface layer (approximately 3 inches) and a very dark gray very stony silty clay loam subsurface layer (approximately 8 inches thick.) The subsurface layer is underlain by hard dolomitic bedrock at a depth of about 11 inches. Permeability is moderate.

Groundwater: **Depth to seasonal high water table is greater than 6 feet.**

Source: Soil Survey of Carroll County, Arkansas, U.S. Department of Agriculture Soil Conservation Service, Issued 1984.

SWLR 200-1-1
25 Sep 97

SPILL HISTORY - BEAVER POWERHOUSE AND DAM

CESWL-CO-UW 17 November 1995

MEMORANDUM FOR: Chief, CESWL-CO-E

SUBJECT: Spill History

1. Reference CESWL-CO-E memorandum dated 16 October 1995, subject as above.

2. We have completed a survey of facilities at Beaver Project, Beaver Powerhouse, Table Rock Project, and Table Rock Powerhouse and have no spill history to report.

Kenneth Foersterling
Lake Manager
Acting Project Manager

PETROLEUM AND HAZARDOUS SUBSTANCES SOURCE MATRIX
UPPER WHITE RIVER

Facility	Petroleum and Hazardous Substances	Approx. Quantity	Location	On/Off Shore	Spill Prevention Measures
Table Rock Powerhouse and Dam, Branson, MO	Diesel Abovegound Storage Tank	200 Gal	Dam, Tower, Generator Room, Elevation 929.5	Off	Drains to stilling basin plugged, causing oil to drain into dam sump where it may be recovered.
	Insulation Oil for Transformers - 4 each Aboveground Storage Tanks at 8700 Gals	34800 Gal	Powerhouse Insulation Oil Storage Room, Elevation 724.0	Off	Drains to Powerhouse sump where oil can be recovered.
	Insulation Oil for Oil Circuit Breakers - 2 each Aboveground Storage Tanks at 5900 Gals	11800 Gal	Powerhouse Insulation Oil Storage Room, Elevation 724.0	Off	Drains to Powerhouse sump where oil can be recovered.
	Insulation Oil - 2 each Transformers at 13500 Gals	27000 Gal	Switchyard, Elevation 755.0	On	* No secondary containment. Located within 100 yards of tailwater. Booms available.

*Funds have been budgeted to provide secondary containment.

PETROLEUM AND HAZARDOUS SUBSTANCES SOURCE MATRIX
UPPER WHITE RIVER

Facility	Petroleum and Hazardous Substances	Approx. Quantity	Location	On/Off Shore	Spill Prevention Measures
Table Rock Powerhouse and Dam, Branson, MO (Continued)	Insulation Oil - 2 each Oil Circuit Breakers at 1900 Gals	12800 Gal	Switchyard, Elevation 755.0	On	* No secondary containment. Located within 100 yards of tailwater. Booms available.
	Lube Oil - 2 each Aboveground Storage Tanks at 3300 Gals	6600 Gal	Powerhouse Lube Oil Storage Room, Elevation 724.0	Off	Drains to Powerhouse sump where oil may be recovered.
	Lube Oil - 4 each Aboveground Generator Bearing Systems at 2300 Gals	9200 Gal	Powerhouse Generator and Turbine Areas	Off	Drains to Powerhouse sump where oil may be recovered.
	Lube Oil - 4 each Aboveground Governor Systems at 1100 Gals	4400 Gal	Powerhouse Generator and Turbine Areas	Off	Drains to Powerhouse sump where oil may be recovered.
	Hydraulic Fluid Aboveground Storage Tank	500 Gal	Dam, Operating Gallery, Sluid Gate Alcove, Elevation 735.8	Off	Drains to stilling basin plugged, causing oil to drain into dam sump where it may be recovered.

PETROLEUM AND HAZARDOUS SUBSTANCES SOURCE MATRIX
UPPER WHITE RIVER

Facility	Petroleum and Hazardous Substances	Approx. Quantity	Location	On/Off Shore	Spill Prevention Measures
Table Rock Powerhouse and Dam, Branson, MO (Continued)	Used Oil - 3 each 55 gallon drums	165 Gal	Powerhouse Oil Filter Room, Elevation 724.0	Off	Drains plugged to Powerhouse sump - sorbents available for recovery.
	Paint	70 Gal	Powerhouse Paint Room, Elevation 724.0	Off	Drains plugged to Powerhouse sump - sorbents available for recovery,
	Solvent	150 Gal	Powerhouse Mechanical Shop, Elevation 724.0 and 741.0	Off	Drains plugged to Powerhouse sump - sorbents available for recovery.

SITE DESCRIPTION AND SITE MAP
BEAVER POWERHOUSE AND DAM

PROJECT OFFICES PLEASE PROVIDE THE FOLLOWING INFORMATION ON ALL FACILITIES:

A. A SITE MAP OF FACILITIES. (NOT REQUIRED TO BE TO SCALE)

1. IDENTIFY OF ALL BUILDINGS, STRUCTURES (INCLUDING ABOVEGROUND & UNDERGROUND STORAGE TANKS), TRANSFORMERS, OIL CURCUIT BREAKERS (OCBs) AND ANY OTHER AREAS WHERE HAZARDOUS SUBSTANCES ARE STORED AND/OR UTILIZED.

2. IDENTIFY NEARBY WATERCOURSES (100 YDS OR CLOSER)

3. MAKE YOU SITE MAP 8 1/2" X 11"

4. IDENTIFY NAME OF FACILITY & DATE OF SITE MAP

5. INDICATE DIRECTION AND APPROXIMATE DISTANCE BETWEEN BUILDINGS & WATERCOURSES

B. PROVIDE A DESCRIPTION OF EACH BUILDING, SHED, TRANSFORMER YARD, OR OTHER SIMILIAR STRUCTURE (INCLUDING ABOVEGROUND AND UNDERGROUND STORAGE TANKS) WHERE OIL OR HAZARDOUS SUBSTANCES ARE STORED AND/OR UTILIZED.

1. IDENTIFY SIZE AND TYPE OF BUILDING OR STRUCTURE

2. CORRELATE DESCRIPTION WITH SUBSTANCES STORED AS SHOWN IN APPENDIX C OF THE DRAFT SPILL PLAN (ENCLOSED)

3. IDENTIFY FLOOR DRAINS AND SUMPS IN BUILDINGS. INDICATE WHETHER FLOOR DRAINS ARE SEALED OR MAY BE SEALED BY USING PLUMBER'S PLUGS, SPILL MATS, ETC.

4. LARGEST CONTAINER OF OIL OR HAZARDOUS SUBSTANCE STORED IN THE BUILDING OR LOCALITY

5. FLOW DIRECTION SHOULD A FAILURE OCCUR

6. ESTIMATE RATE OF FLOW (WORST CASE SCENARIO)

7. DISTANCE TO NEAREST WATERWAY (I.E., LAKE, RIVER, STREAM, POND, ETC.)

8. LIST TYPE OF CONTAINMENT AND/OR DIVERSIONARY STRUCTURES OR EQUIPMENT TO PREVENT DISCHARGED OIL OR HAZARDOUS SUBSTANCES FROM REACHING A WATERCOURSE. IN ADDITION, LIST ABSORBENT MATERIALS LOCATED NEARBY. NOTE: ABSORBENT MATERIALS ARE REQUIRED TO BE STORED NEAR WHERE SPILLS MAY OCCUR.

9. DEPTH TO GROUNDWATER.

TABLE ROCK HYDRO POWER

3. a. Site Map & Prints Included

b. 1) Two transformers full of oil - 15,000 gal. ea.

21 tanks for oil circuit breakers - 1650 gal. oil ea.

No containment - above spills on ground in switchyard

3) All storage tanks in powerhouse drain to sump. Floor drains can be plugged or covered with mats.

4) Transformer in switchyard 15000 gal. oil (approximate)

5) Tail race

6) Unknown - How big is the leak???

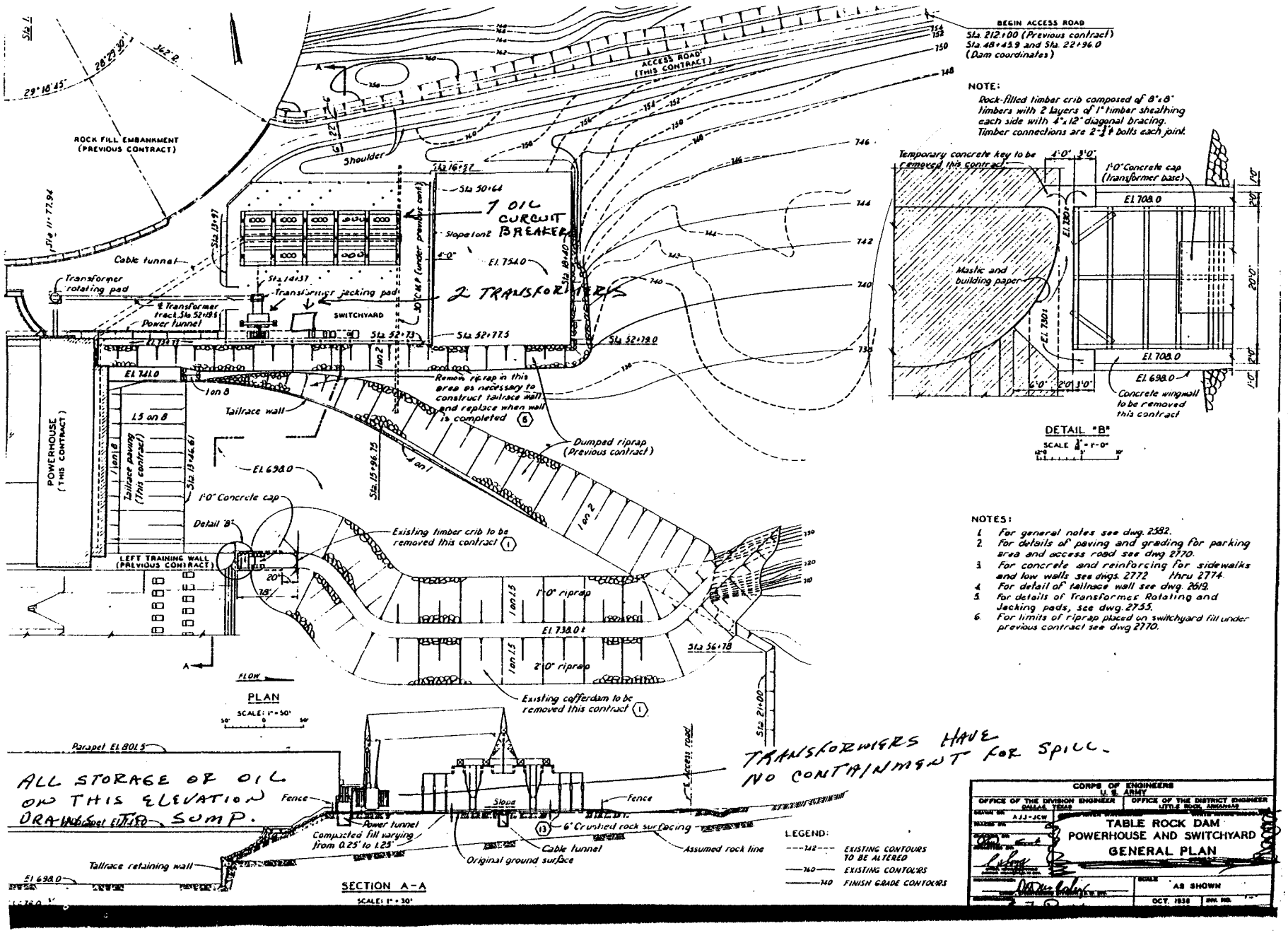
7) 200 Feet - Approximate

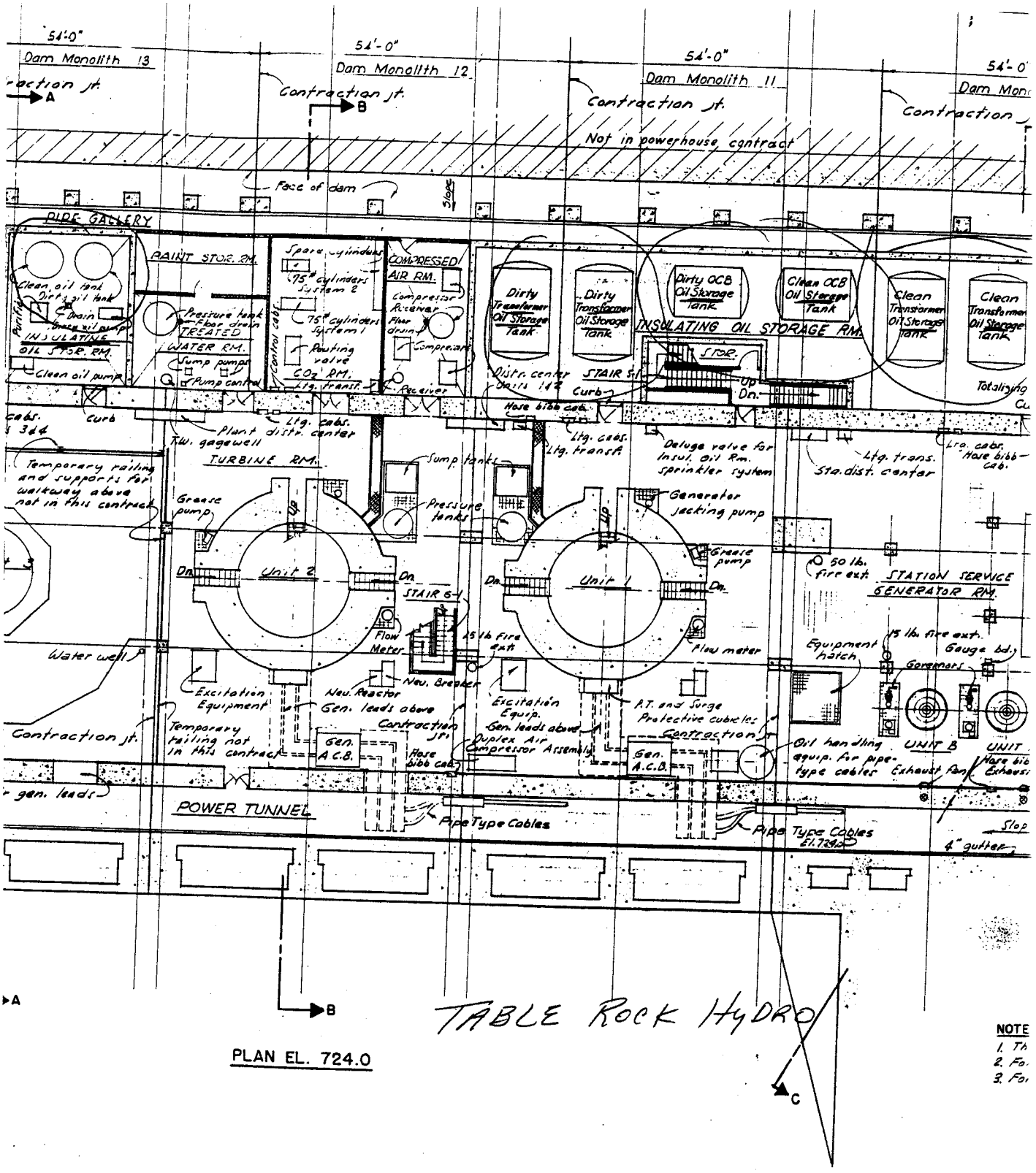
8) Have on hand:
80 feet of 8-inch sorbent boom
700 sorbent pads
15 sorbent pillows
60 sorbent socks
1 sorbent roll (3′ X 100′)

TABLE ROCK DAM SLUICE GATES

We have eight (8) tanks averaging 200 gal. of oil in each and a storage tank with 275 gal.

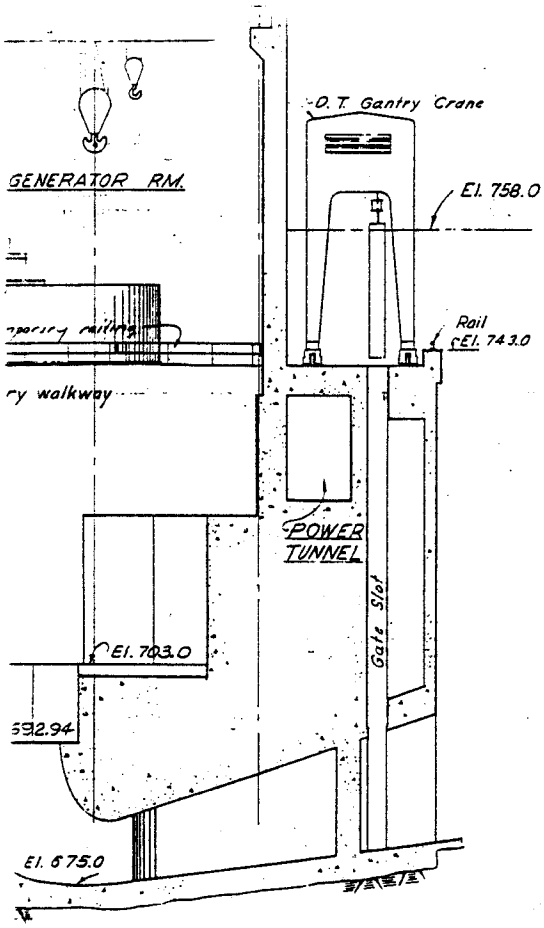
Harlan Petter


BEGIN ACCESS ROAD
Sta. 212+00 (Previous contract)
Sta. 48+45.9 and Sta. 22+96.0
(Dam coordinates)
NOTE:
Rock-filled timber crib composed of 8"x8" timbers with 2 layers of 1" timber sheathing each side with 4"x12" diagonal bracing. Timber connections are 2-3/4" bolts each joint.
ACCESS ROAD (THIS CONTRACT)
ROCK FILL EMBANKMENT (PREVIOUS CONTRACT)
Shoulder
Sta 16+37
Sta 50+64
7 OIL CIRCUIT BREAKERS
Slope 1on2
El. 754.0
2 TRANSFORMERS
Cable tunnel
Transformer rotating pad
Transformer jacking pad
SWITCHYARD
Power tunnel
Sta 52+73
Sta 52+77.5
Sta 52+78.0
El. 741.0
Remove riprap in this area as necessary to construct tailrace wall and replace when wall is completed (6)
Tailrace wall
Dumped riprap (Previous contract)
POWERHOUSE (THIS CONTRACT)
Tailrace paving (This contract)
El. 698.0
1'-0" Concrete cap
Detail "B"
Existing timber crib to be removed this contract (1)
LEFT TRAINING WALL (PREVIOUS CONTRACT)
1'-0" riprap
El. 738.0±
2'-0" riprap
Sta 56+78
Existing cofferdam to be removed this contract (1)
FLOW
PLAN
SCALE: 1"=50'
Temporary concrete key to be removed this contract
1'-0" Concrete cap (Transformer base)
El. 708.0
Mastic and building paper
El. 698.0
Concrete wingwall to be removed this contract
DETAIL "B"
SCALE 3/8" = 1'-0"
NOTES:
1. For general notes see dwg. 2582.
2. For details of paving and grading for parking area and access road see dwg 2770.
3. For concrete and reinforcing for sidewalks and low walls see dwgs. 2772 thru 2774.
4. For detail of tailrace wall see dwg. 2619.
5. For details of Transformer Rotating and Jacking pads, see dwg. 2753.
6. For limits of riprap placed on switchyard fill under previous contract see dwg 2770.
ALL STORAGE OF OIL ON THIS ELEVATION DRAINS INTO SUMP.
TRANSFORMERS HAVE NO CONTAINMENT FOR SPILL.
Parapet El. 801.5
Fence
Slope
Power tunnel
Compacted fill varying from 0.25' to 1.25'
Original ground surface
Cable tunnel
6" Crushed rock surfacing
Assumed rock line
Tailrace retaining wall
El. 698.0
SECTION A-A
SCALE: 1"=30'
LEGEND:
EXISTING CONTOURS TO BE ALTERED
EXISTING CONTOURS
FINISH GRADE CONTOURS
CORPS OF ENGINEERS U.S. ARMY
OFFICE OF THE DIVISION ENGINEER DALLAS, TEXAS
OFFICE OF THE DISTRICT ENGINEER LITTLE ROCK, ARKANSAS
TABLE ROCK DAM
POWERHOUSE AND SWITCHYARD
GENERAL PLAN
SCALE AS SHOWN
OCT. 1938

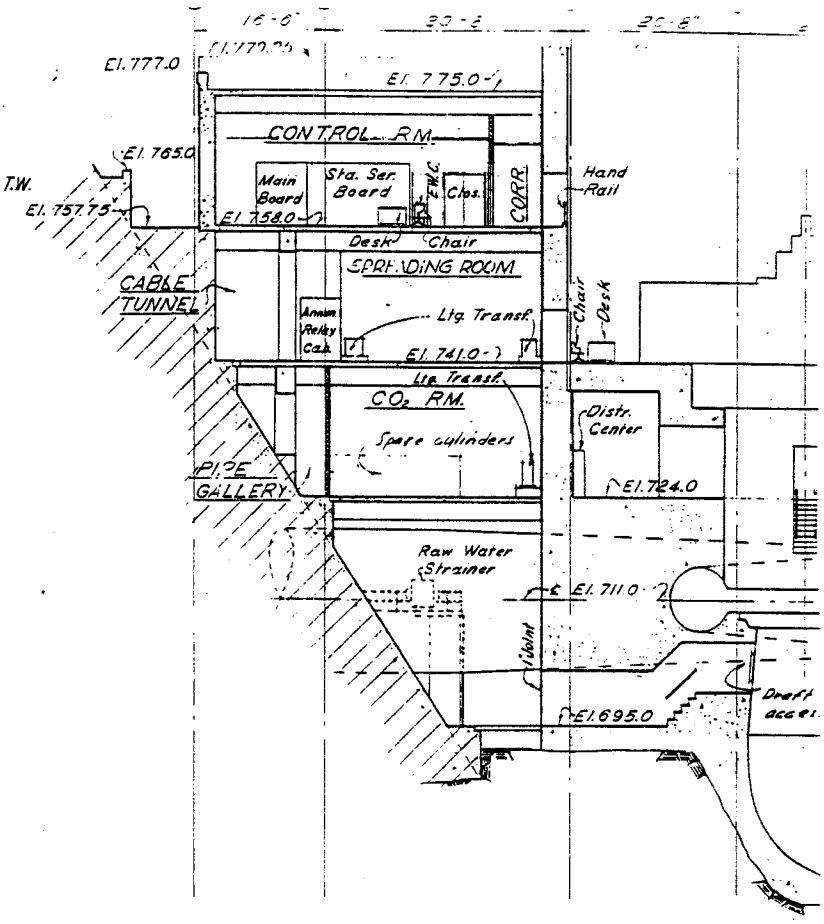


PLAN EL. 724.0

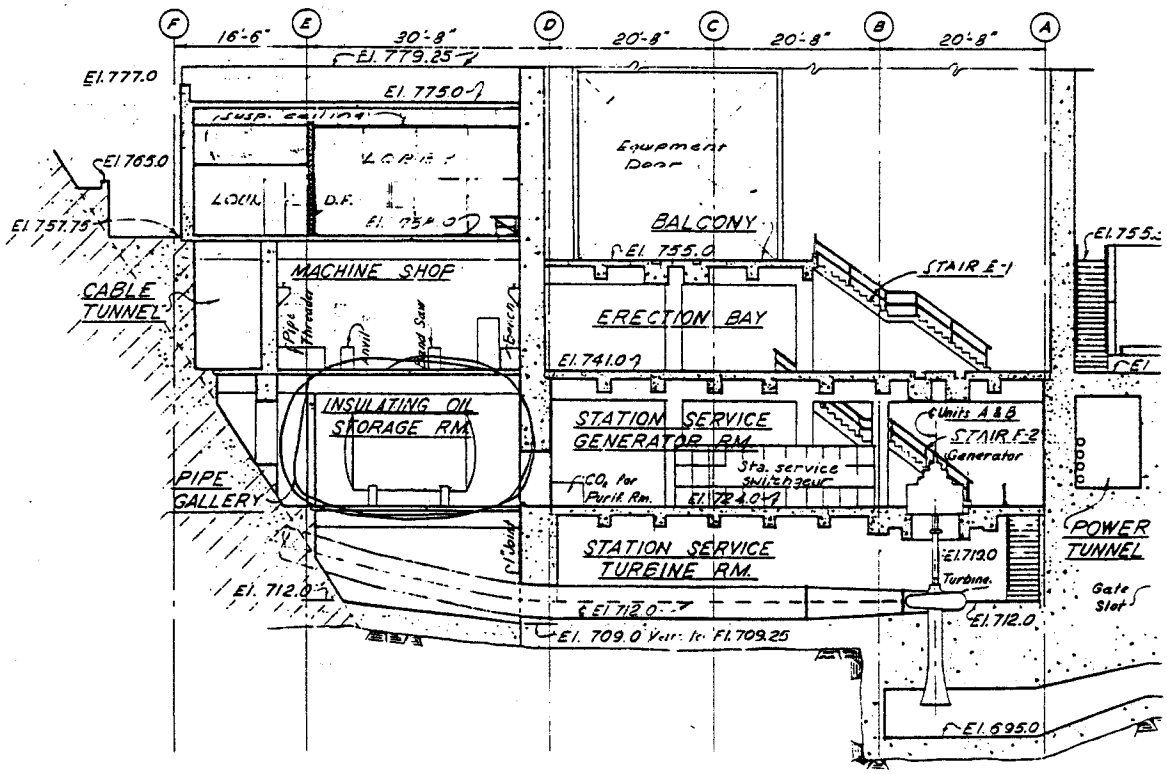
NOTE
1. Th
2. Fo
3. Fo



A–A



SECTION B



SECTION C–C

PROJECT INFORMATION, CLIMATE AND SOIL DATA
TABLE ROCK POWERHOUSE AND DAM

Project Information: Table Rock Powerhouse and Dam is located on the main stem of the White River at river mile 528.8, about six miles southwest of Branson, Missouri. There are 4,020 square miles of drainage area above the dam. Its primary purposes are flood control and hydroelectric power generation.

Climate: Table Rock Powerhouse and Dam is located in Stone County, Missouri. Stone County is hot in summer and moderately cool in winter. Rainfall is fairly heavy and well distributed throughout the year. The average winter temperature is 35 degrees F, and the average daily minimum temperature is 21 degrees. Snow falls nearly every winter, but snow cover lasts but a few days. Average annual snowfall is 10 inches per year. On the average, 3 days of the year have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year.

Rainfall: Rainfall averages for the general area are as follows:

Jan - 1.90 inches	Jul - 3.49 inches
Feb - 2.29 inches	Aug - 3.16 inches
Mar - 3.68 inches	Sep - 4.10 inches
Apr - 4.28 inches	Oct - 3.33 inches
May - 4.60 inches	Nov - 3.44 inches
Jun - 4.59 inches	Dec - 2.90 inches

The total annual precipitation is approximately 42 inches. Of the total annual precipitation, 25 inches, or 60 percent, usually falls in April through September. In 2 years out of 10, the rainfall is April through September is less than 20 inches. The prevailing wind is from the south-southeast. Average wind speed is highest, 13 miles per hour, in spring.

Soils: Soils in the area are a combination of Tonti silt, 1 to 3 percent slope; Gobbler-Sonsac complex, 3 to 8 percent slopes; Gobbler-Sonsac complex, 8 to 15 percent slopes, stony; Sonsac-Rueter complex, 35 to 70 percent slopes, very rocky; Gasconade gravelly clay loam, 3 to 8 percent slopes, rocky; Moko-rock outcrop complex, 3 to 8 percent slopes, very stony; Alred-ocie complex, 3 to 8 percent slopes; and Alred-ocie-sonsac complex, 8 to 15 percent slopes, stony. Descriptions of each are as follows:

The Tonti series consists of deep, moderately well drained, slowly permeable soils that formed in residuum from cherty limestone. These nearly level to moderately sloping soils are on uplands of the Ozark Highlands.

The Gobbler series consists of deep, well drained, moderately permeable soils on uplands. They formed in colluvium and red clays with a high content of chert fragments on ridge tops, side slopes and structural benches.

The Sonsac series consists of moderately deep, well drained soils formed in residuum from limestone with or without a thin layer of loess, on upland slopes.

The Rueter series consists of very deep, somewhat excessively drained soils formed in residuum and locally transported colluvial-alluvial materials from cherty limestone on steep side slopes and narrow ridgetops. Permeability is moderately rapid.

The Gasconade series consists of shallow and very shallow, well and somewhat excessively drained, moderately slowly permeable soils formed in thin clayey layers with a considerable amount of coarse fragments from residuum of the underlying limestone bedrock. These soils are on steep dissected upland landscapes and generally are isolated glade areas.

The Moko series consists of shallow and very shallow, well drained and somewhat excessively drained, moderately permeable soils that formed in loamy residuum from limestone, or dolomite. They occur on dissected uplands in the Ozarks of northern Arkansas and southern Missouri.

The Alred series consists of very deep, well drained soils formed in loess and hillslope sediments and the underlying clayey residuum. These soils are on moderately sloping to very steep uplands. Permeability is moderate in the upper part and slow in the lower part.

The Ocie series consists of deep, well and moderately well drained, slowly permeable soils formed in hillslope sediments and the underlying sandstone. These soils are on upland saddles, benches, and side slopes.

<u>Groundwater:</u> Tonti silt - depth to seasonal high water table is between 1.5 and 2.5 feet. Gobbler, Sonsac, Rueter, Gasconade, Moko, Alred and Ocie series - depth to seasonal high water table is greater than 6 feet.

Source: Soil Survey of Stone County, Missouri, U.S. Department of Agriculture Soil Conservation Service. Data not yet published.

SPILL HISTORY - TABLE ROCK POWERHOUSE AND DAM

CESWL-CO-UW 17 November 1995

MEMORANDUM FOR: Chief, CESWL-CO-E

SUBJECT: Spill History

1. Reference CESWL-CO-E memorandum dated 16 October 1995, subject as above.

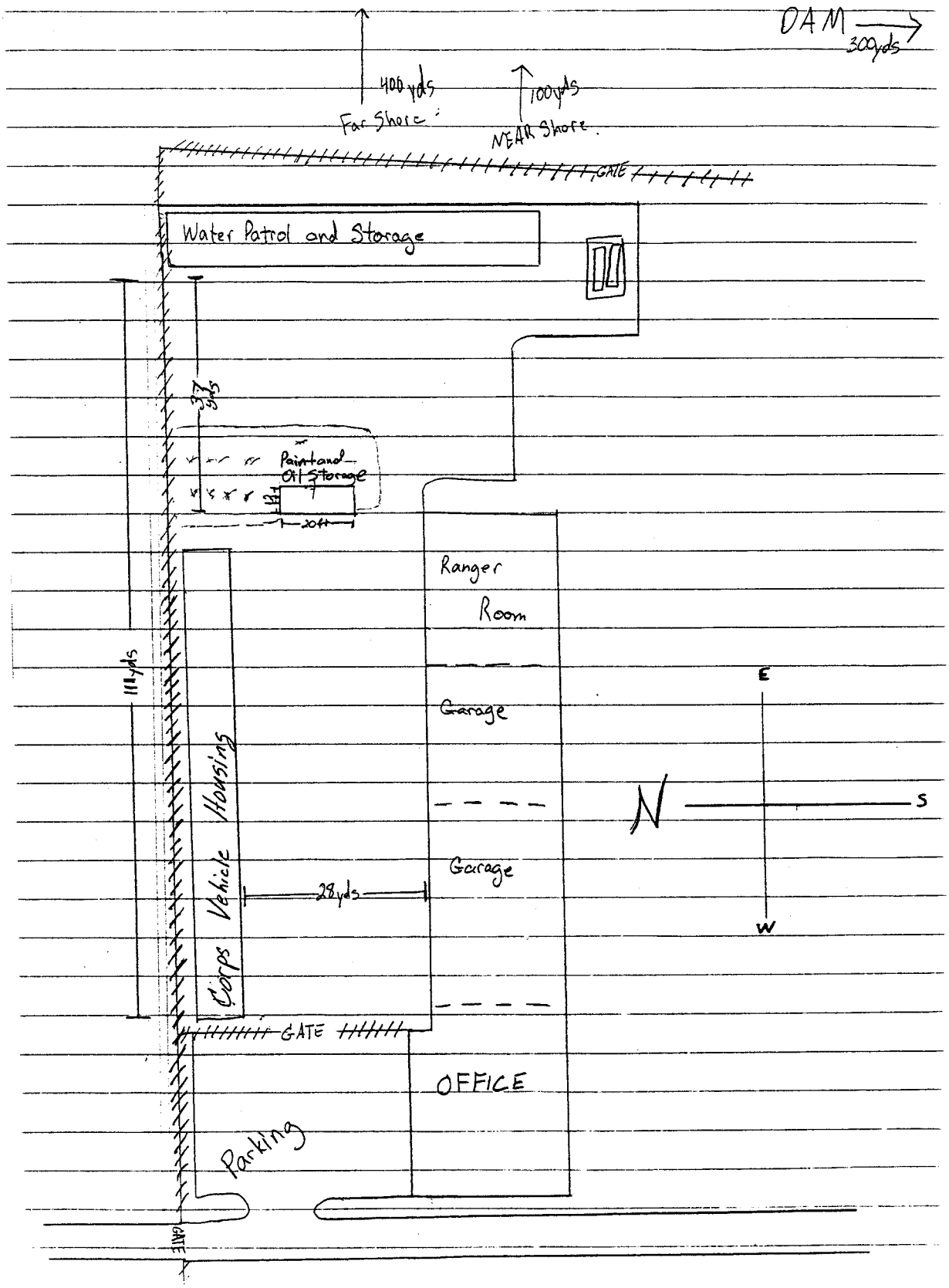
2. We have completed a survey of facilities at Beaver Project, Beaver Powerhouse, Table Rock Project, and Table Rock Powerhouse and have no spill history to report.

Kenneth Foersterling
Lake Manager
Acting Project Manager

PETROLEUM AND HAZARDOUS SUBSTANCES SOURCE MATRIX
UPPER WHITE RIVER

Facility	Petroleum and Hazardous Substances	Approx. Quantity	Location	On/Off Shore	Spill Prevention Measures
Upper White River Project Office, Branson, MO	Paint	15 Gal	Compound Paint Shop	On	Sorbents

TABLE ROCK LOWER COMPOUND



PROJECT INFORMATION, CLIMATE AND SOIL DATA
UPPER WHITE RIVER PROJECT OFFICE

Project Information: Upper White River Project Office is located off State Highway 265 near Table Rock Powerhouse and Dam, 6 miles from Branson, Missouri. Its primary purposes are to provide administrative and operational/maintenance support to Table Rock and Beaver Powerhouses and Dams, as well as parks and recreational facilities.

Climate: Upper White River Project Office is located in Stone County, Missouri. Stone County is hot in summer and moderately cool in winter. Rainfall is fairly heavy and well distributed throughout the year. The average winter temperature is 35 degrees F, and the average daily minimum temperature is 21 degrees. Snow falls nearly every winter, but snow cover lasts but a few days. Average annual snowfall is 10 inches per year. On the average, 3 days of the year have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year.

Rainfall: Rainfall averages for the general area are as follows:

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Source: Soil Survey of Stone County, Missouri, U.S. Department of Agriculture Soil Conservation Service. Data not yet published.

SPILL HISTORY - UPPER WHITE RIVER PROJECT OFFICE

CESWL-CO-UW 17 November 1995

MEMORANDUM FOR: Chief, CESWL-CO-E

SUBJECT: Spill History

1. Reference CESWL-CO-E memorandum dated 16 October 1995, subject as above.

2. We have completed a survey of facilities at Beaver Project, Beaver Powerhouse, Table Rock Project, and Table Rock Powerhouse and have no spill history to report.

Kenneth Foersterling
Lake Manager
Acting Project Manager

APPENDIX K

TRAINING REQUIREMENTS

REQUIRED ATTENDEES

All personnel who work in or around areas where hazardous materials and substances are received, stored or disbursed.

COURSE

First Responder Awareness Level

Provided by: This course is available through the District, contact the Emergency Management Branch for more information.

Description: The course equips individuals with the knowledge to initiate an emergency response sequence by notifying the proper authorities. It also provides: an understanding of what hazardous substances are, and the risks associated with them in an incident; an understanding of the potential outcomes associated with an emergency created when hazardous substances are present; the ability to recognize the presence of hazardous substances in an emergency; the ability to identify the hazardous substances, if possible; an understanding of the role of the first responder awareness individual in our emergency response plan including site security and control and the U.S. Department of Transportation's Emergency Response Guidebook; the ability to realize the need for additional resources, and to make appropriate notifications to the communication center.

Prerequisites: None.

Duration: Approximately 2-4 hours.

APPENDIX K

TRAINING REQUIREMENTS
(Continued)

REQUIRED ATTENDEES

Personnel expected to respond, in a defensive fashion, to releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. **They do not stop the release.**

COURSE

First Responder Operations Level

Provided by: Training is available locally, contact Emergency Management Branch for recommendations.

Description: Individuals are trained to respond in a defensive fashion; however, this does not include training on how to stop a release. The course provides guidance on containing releases from a safe distance, keeping it from spreading, and preventing exposures. It also provides: knowledge of the basic hazard and risk assessment techniques; know how to select and use proper personal protective equipment provided to the first responder operations level; an understanding of basic hazardous materials terms; know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available at their location; know how to implement basic decontamination procedures; and an understanding of the relevant standard operating procedures and termination procedures.

Prerequisites: None.

Duration: Minimum of 8 hours.

APPENDIX K

TRAINING REQUIREMENTS
(Continued)

REQUIRED ATTENDEES

Personnel expected to respond to releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance.

COURSE

Hazardous Material Technician Training

Provided by: Training is available locally, contact Emergency Management Branch for recommendations.

Description: Personnel expected to respond to releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. This course is an intensive, hands-on course and covers aspects in responding to hazardous substance incident.

Prerequisites: Must have completed a First Responder Operations Level Course.

Duration: Three days.

APPENDIX K

TRAINING REQUIREMENTS
(Continued)

REQUIRED ATTENDEES

Personnel expected to respond with and provide support to hazardous materials technicians. The hazardous materials specialists requires a more directed or specific knowledge of the various substances they may be called upon to contain. This person would also act as as the site liaison with federal, state, local and other government authorities in regards to site activities.

COURSE

Hazardous Materials Specialist Training

Provided by: Training is available locally, contact Emergency Management Branch for recommendations.

Description: The course provides the attendee with the knowledge to: implement the local emergency response plan; understand classification, identification and verification of known and unknown materials by using advanced survey instruments and equipment; understand the the state emergency response plan; select and use proper specialized chemical personal protective equipment; understand in-depth hazard and risk techniques; perform specialized control containment, and/or confinement operations within the capabilityies of the resources and personal protective equipment available; determine and implement decontamination procedures; develop a site safety and control plan; and understand chemical, radiological and toxicological terminology and behavior.

Prerequisites: Must have completed a First Responder Hazardous Materials Technician Level Course.

Duration: Three days.

APPENDIX K

TRAINING REQUIREMENTS
(Continued)

REQUIRED ATTENDEES

Personnel expected to assume control of the incident scene beyond the first responder awareness level.

COURSE

On-Scene Incident Commander Training

Provided by: Training is available locally, contact Emergency Management Branch for recommendations.

Description: The course provides the attendee with the knowledge to: implement the the employer's incident command system and emergency response plan; understand the hazards and risks associated with employees working in chemical protective clothing; implement the local emergency response plan; understand the state emergency response plan and the Federal Regional Response Team; and understand the importance of decontamination procedures.

Prerequisites: Must have completed a First Responder Operations Level Course.

Duration: Three days.

APPENDIX K

TRAINING REQUIREMENTS
(Continued)

REQUIRED ATTENDEES

Each District employee who may be exposed to hazardous chemicals when working must be provided information and trained prior to initial assignment to work with a hazardous chemical, and when a new hazard is introduced into the workplace.

COURSE

Hazardous Communication Training

Provider: Supervisors are responsible for providing Hazardous Communication Training per SWLR 385-1-1, dated 23 Feb 1996. The District Safety and Occupational Health Office will assist and advise supervisors.

Description: The Hazard Communication Program exists to reduce the incidence of chemical source illnesses and injuries. OSHA Regulations, under 29 CFR 1910.1200, require employers to teach employees the: hazards and identities of the chemicals they are exposed to when working; protective measures available to prevent adverse effects; location of Material Safety Data Sheets (MSDSs); importance of maintaining legible container labels (including piping); and the location of the written Hazardous Communication Program. Additional training for working with hazardous substances such as asbestos and lead is required, contact the District Safety and Occupational Health Office for guidance.

Prerequisites: None.

Duration: No specific timeframe exists.

APPENDIX K
TRAINING REQUIREMENTS

RECOMMENDED ATTENDEES

Resident Engineers and Managers

COURSE AND CATALOG NUMBER

Executive Environmental and Hazardous Material Course (ALMC-EX)
Catalog No. 03-0082

Suggested Provider: U.S. Army Logistics Management College (ALMC)
Fort Lee, VA 23801-6040
804-734-4220/2177
804-734-3136

Description: The curriculum includes a brief discussion of the concepts of ecology and pollution; the Army environmental program; executive legal responsibilities and penalties; environmental laws, regulations, and policies; executive environmental documentation and facilities for pollution abatement. The on-site course can be tailored to cover specific installation environmental problems.

Prerequisites: Participants should be commanders, civilian executives, and their principal staff members, LTC/GS-13 and above, who are in positions to recommend courses of action or make decisions on military matters impacting the environment.

Duration: 3 Days

APPENDIX K

TRAINING REQUIREMENTS
(Continued)

RECOMMENDED ATTENDEES

Personnel, and their supervisors, who manage the Hazardous Waste (HW) Program for the District and provide HW training to field offices.

COURSE AND CATALOG NUMBER

Hazardous Materials/Waste Handling Course
Catalog No. 04-0078

Suggested Provider: U.S. Army Logistics Management College (ALMC)
Fort Lee, VA 23801-6040
804-734-4220/2177
804-734-3136

Description: The course includes identification and classification of hazardous materials and hazardous wastes; health effects and personal safety; packaging, labeling, handling, storage, and transportation procedures; contingency planning and release response; and hazardous materials and hazardous wastes laws, regulations, and policies.

Prerequisites: None

Duration: 5 Days