

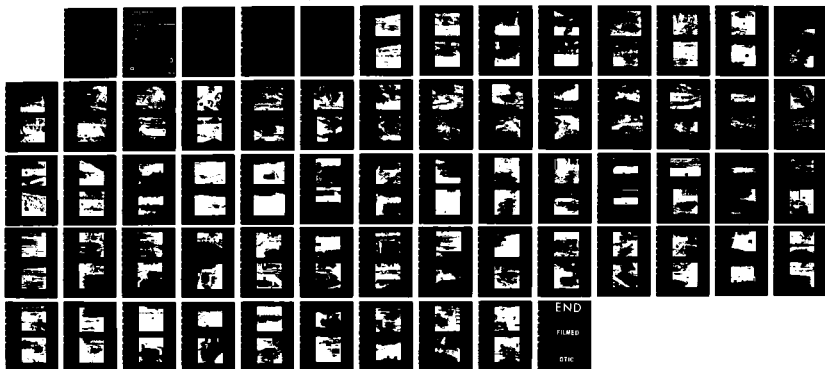
AD-A160 526

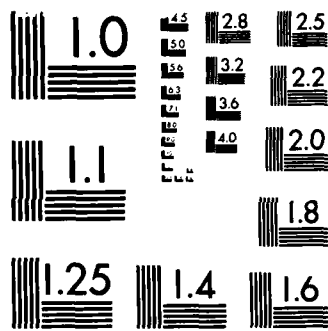
CLARENCE CANNON DAM AND MARK TWAIN LAKE FOUNDATION AND
EMBANKMENT COMPLET (U) ARMY ENGINEER DISTRICT ST LOUIS
NO DEC 84

1/1

UNCLASSIFIED

F/G 13/13 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

**CLARENCE CANNON DAM
& MARK TWAIN LAKE**

6

AD-A160 526

FOUNDATION AND EMBANKMENT COMPLETION REPORT

PART II MAIN DAM

PHASE II CONSTRUCTION AND RELATED CONTRACTS

**VOLUME III — PHOTOGRAPHS
PAGES 1 THRU 59**

DTIC FILE COPY

DTIC
ELECTE
OCT 23 1985
S E D



**US Army Corps
of Engineers**
St. Louis District

This document has been approved
for public release and sale; its
distribution is unlimited.

DECEMBER 1984

85 10 16 139

CLARENCE CANNON DAM AND RESERVOIR

SALT RIVER, MISSOURI

CENTER, MISSOURI

FOUNDATION AND EMBANKMENT COMPLETION REPORT

PART II MAIN DAM

PHASE II CONSTRUCTION AND RELATED CONTRACTS

VOLUME III PHOTOGRAPHS

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input checked="" type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/ _____	
Availability Codes	
Dist	Avail and/or Special
A-1	



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, ST. LOUIS DISTRICT
210 TUCKER BOULEVARD, NORTH
ST. LOUIS, MISSOURI 63101

DTIC
SELECTED
OCT 23 1985
E

This document has been approved
for public release and sale; its
distribution is unlimited.

PART II MAIN DAM
PHASE II CONSTRUCTION AND RELATED CONTRACTS
VOLUME III PHOTOGRAPHS

TABLE OF CONTENTS

	<u>Page</u>
Section 1. Right Abutment -----	1
Section 2. Concrete Structure	
A. Monolith D-1 - D-17 and Powerhouse -----	26
B. Stilling Basin Wall -----	97
C. Splitter Wall -----	106
D. Tailrace Wall -----	114
E. Stilling Basin -----	125
F. Tailrace -----	132
Section 3. Diversion Channel -----	137
Section 4. Left Abutment	
A. Basal Concrete Fillets -----	180
B. Cutoff Wall -----	197
C. Downstream Ravine -----	285
D. Embankment Contact Area -----	292
E. Cutoff Trench -----	377
Section 5. Foundation Instrumentation	
A. Embankment -----	384
B. Structure -----	395
Section 6. Drilling & Grouting -----	401

SECTION 1

PAGES NOS.

RIGHT ABUTMENT

1 - 25



Station 2+10, Offset 201 feet downstream, Elevation 602 feet.
Right abutment. 28 November 1973.



Station 2+10, Offset 150 feet downstream, Elevation 602 feet.
Right abutment. 28 November 1973



Station 2+10, Offset 125 feet downstream, Elevation 602 feet.
Right abutment. 28 November 1973.



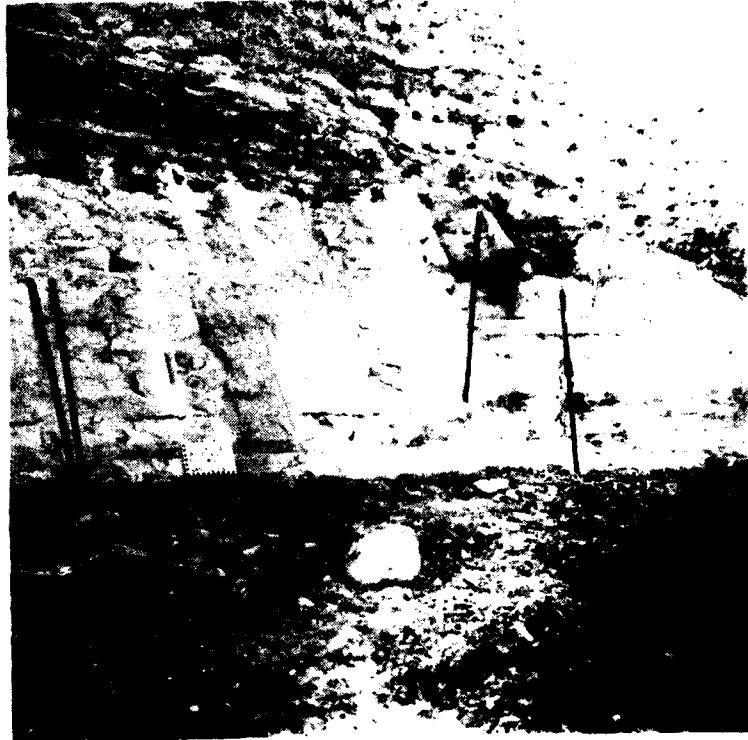
Station 2+10, Offset 101 feet downstream, Elevation 602 feet.
Right abutment. 28 November 1973.



Station 2+10, Offset 75 feet downstream, Elevation 602 feet.
Right abutment. 28 November 1973.



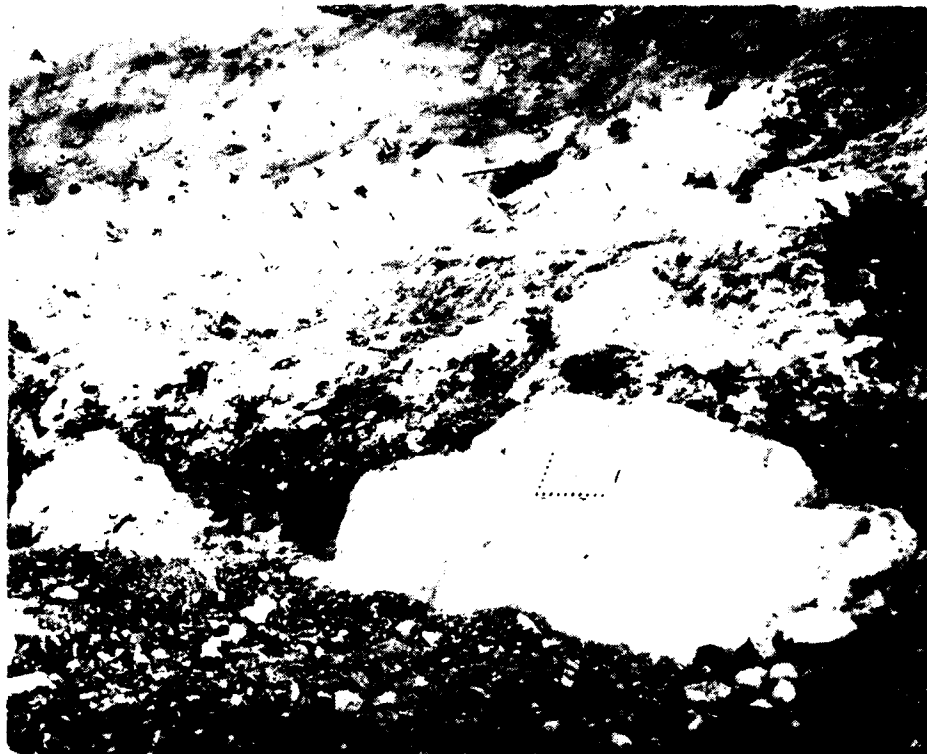
Station 2+10, Offset 50 feet downstream, Elevation 602 feet.
Right abutment. 28 November 1973.



Station 2+10, Offset 50 feet upstream, Elevation 602 feet.
Right abutment 1 on 1 slope. 28 November 1973.



Station 2+10, Offset 75 feet upstream, Elevation 602 feet.
Right abutment 1 on 1 slope. 28 November 1973.



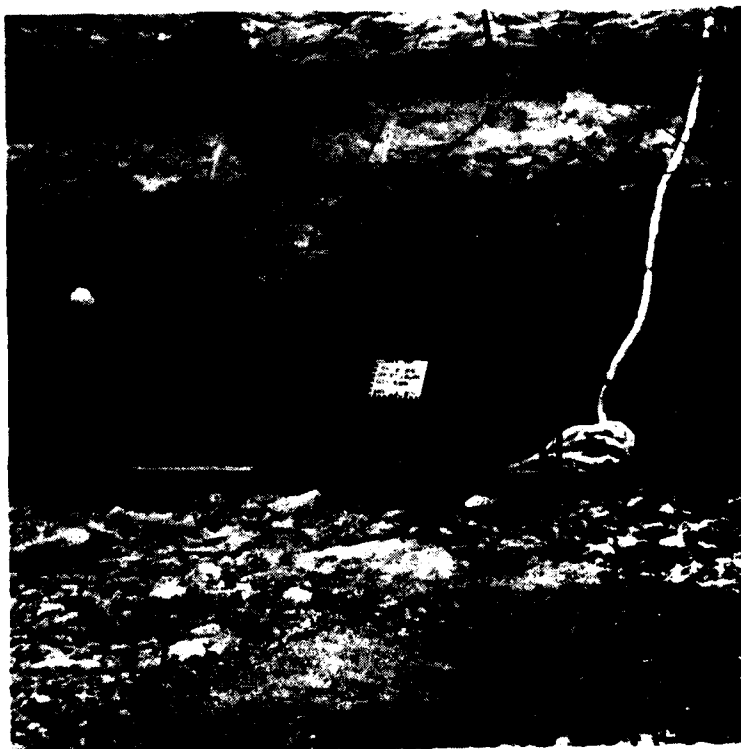
Station 2+05, Offset 100 feet upstream, Elevation 615 feet.
Right abutment, sink hole. 5 November 1973.



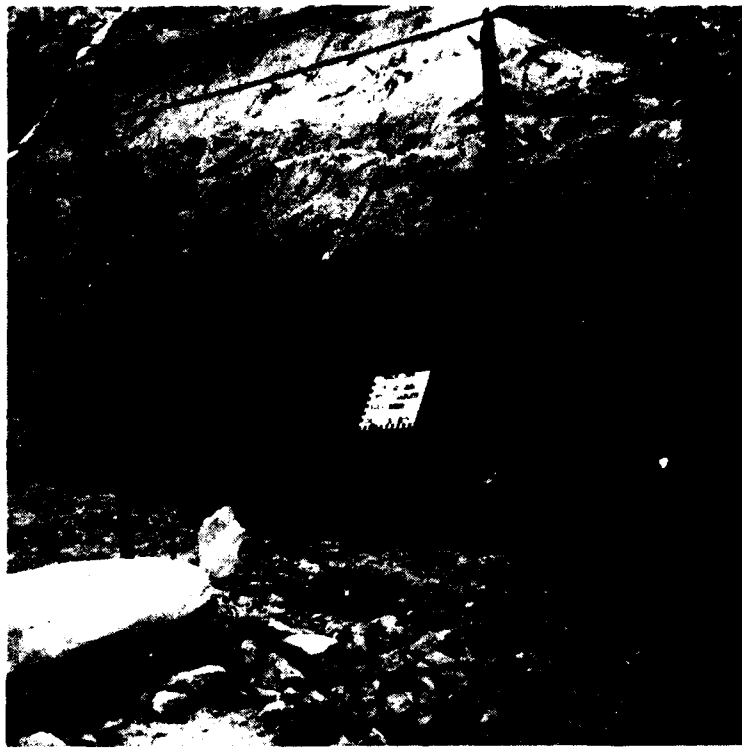
Station 2+10, Offset 101 feet upstream, Elevation 615 feet.
Right abutment, sink hole. 28 November 1973.



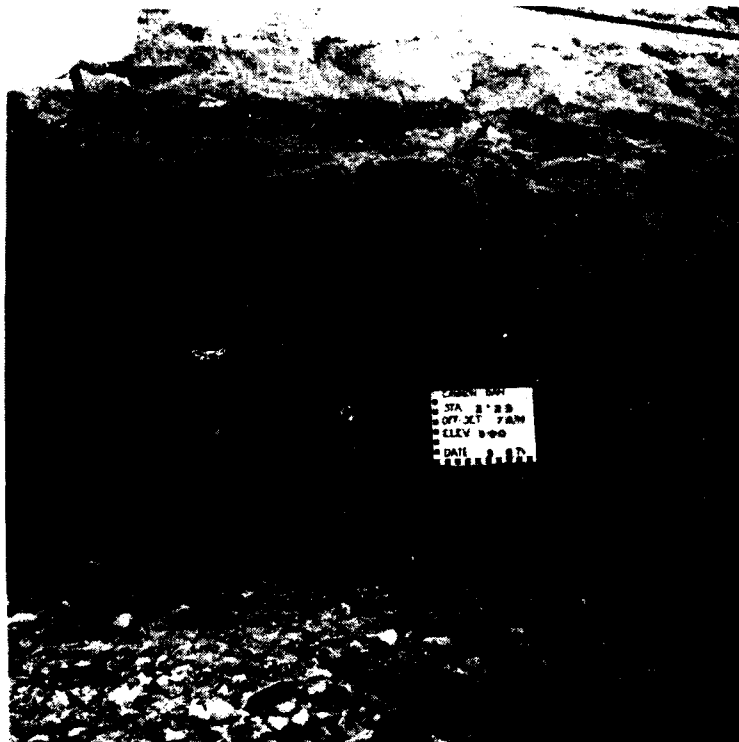
Station 2+10, Offset 140 feet upstream, Elevation 602 feet.
Right abutment 1 on 1 slope. 28 November 1973.



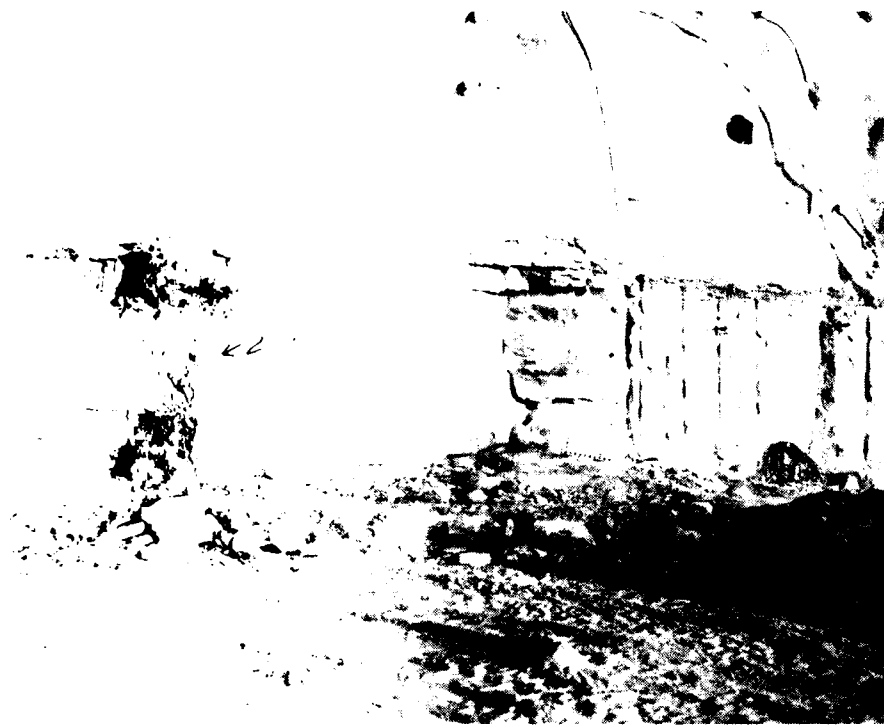
Station 2+25, Offset 150 feet downstream, Elevation 590 feet.
Right abutment 1 on 1 slope. 8 March 1974.



Station 2+25, Offset 100 feet downstream, Elevation 590 feet.
Right abutment 1 on 1 slope. 8 March 1974.



Station 2+25, Offset 75 feet downstream, Elevation 590 feet.
Right abutment 1 on 1 slope. See following photograph for con-
tinuation of chimney at Elevation 590 feet.



Station 2+30, Offset 75 feet downstream, Elevation 580 feet.
Right abutment 1 on 1 slope. Arrow marks continuation of solution
chimney seen in preceding photograph. 16 April 1974.



Station 2+30, Offset 50 feet upstream, Elevation 590 feet.
Right abutment 1 on 1 slope. 16 April 1974.



Station 2+30, Offset 50 feet upstream, Elevation 580 feet.
Right abutment 1 on 1 slope. 16 April 1974.



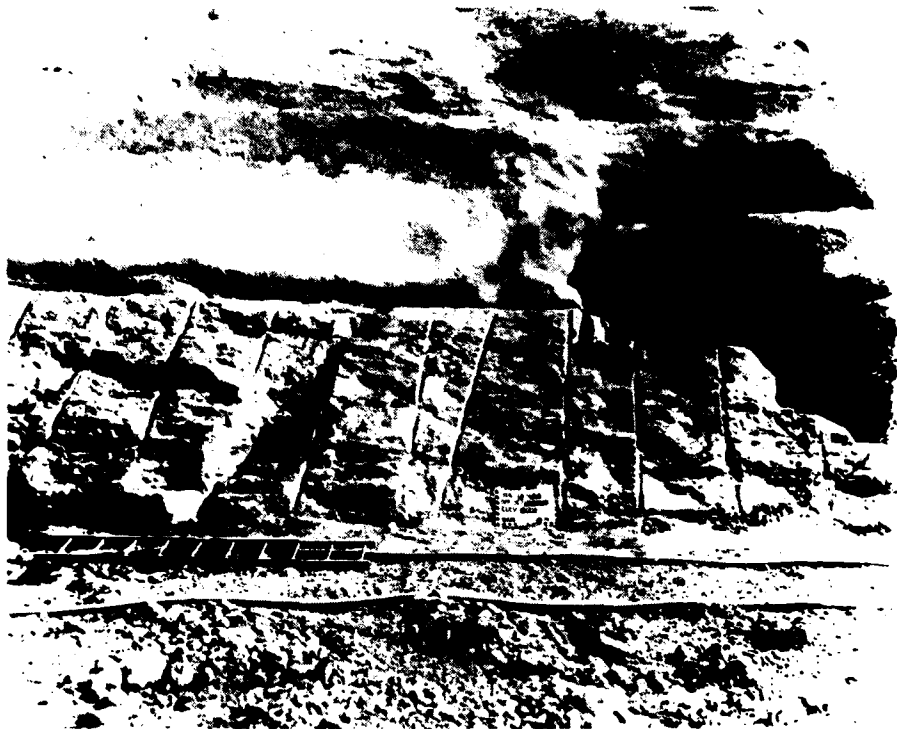
Station 2+30, Offset 85 feet upstream, Elevation 580 feet.
Right abutment 1 on 1 slope. 16 April 1974.



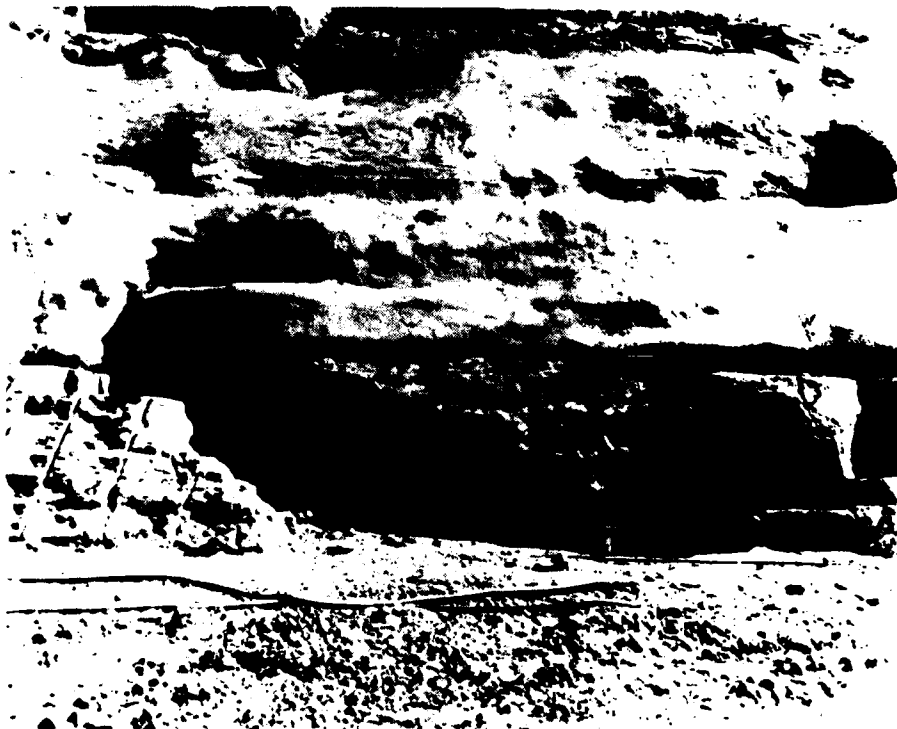
Station 2+30, Offset 110 feet upstream, Elevation 580 feet.
Right abutment 1 on 1 slope. 16 April 1974.



Station 2+45, Offset 220 feet downstream, Elevation 570 feet.
Right abutment 1 on 1 slope. 6 April 1974.



Station 2+45, Offset 200 feet downstream, Elevation 570 feet.
Right abutment 1 on 1 slope. 6 April 1974.



Station 2+45, Offset 180 feet downstream, Elevation 570 feet.
Right abutment 1 on 1 slope. 6 April 1974.



Station 2+45, Offset 110 feet downstream, Elevation 570 feet.
Right abutment 1 on 1 slope. 30 April 1974.



Station 2+48, Offset 90 feet downstream, Elevation 570 feet.
Right abutment 1 on 1 slope. 1 May 1974



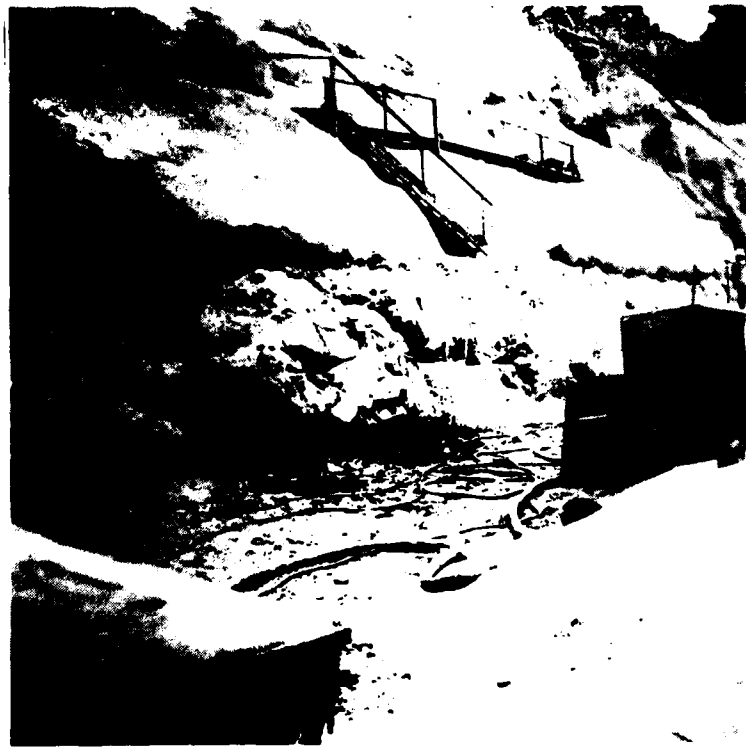
Station 2+45, Offset 85 feet downstream, Elevation 570 feet.
Right abutment 1 on 1 slope. 30 April 1974.



Station 2+45, Offset 50 feet upstream. Elevation 570 feet.
Right abutment 1 on 1 slope. 1 May 1974.



Station 2+45, Offset 50 feet upstream, Elevation 570 feet.
Right abutment 1 on 1 slope. 1 May 1974.



Station 2+65, Offset 170 feet downstream, Elevation 553 feet.
Right abutment 1 on 1 slope. 3 June 1974.



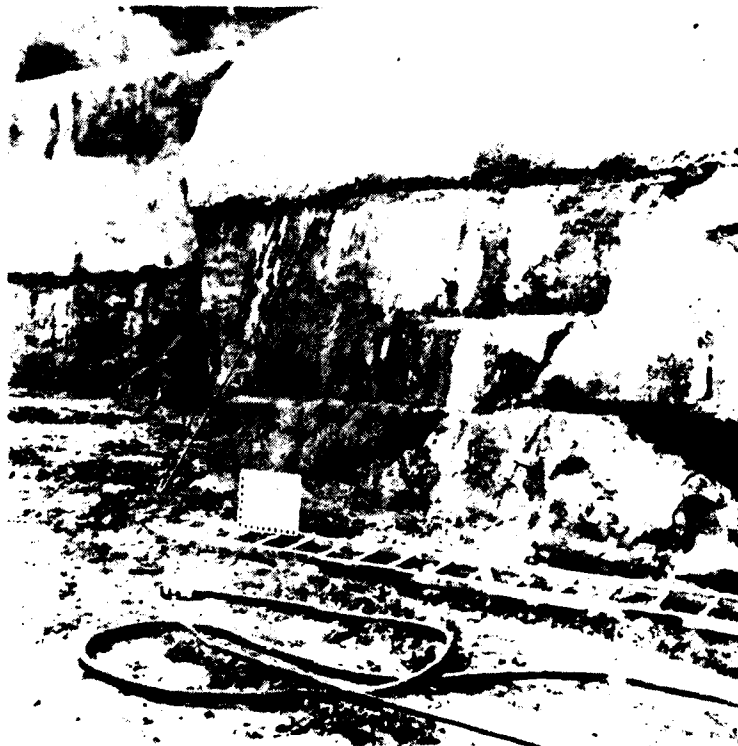
Station 2+55, Offset 106 feet downstream, Elevation 560 feet.
Right abutment 1 on 1 slope. 22 May 1974.



Station 2+60, Offset 80 feet downstream, Elevation 560 feet.
Right abutment 1 on 1 slope. 22 May 1974.



Station 2+55, Offset 60 feet upstream, Elevation 560 feet.
Right abutment 1 on 1 slope. 22 May 1974.



Station 2+60, Offset 35 feet upstream, Elevation 553 feet.
Right abutment 1 on 1 slope. 7 June 1974.



Station 2+55, Offset 30 feet upstream, Elevation 560 feet.
Right abutment 1 on 1 slope. 22 May 1974.



Station 2+60, Offset 60 feet upstream, Elevation 553 feet.
Right abutment 1 on 1 slope. 4 June 1974.



Station 2+60, Offset 95 feet upstream, Elevation 553 feet.
Right abutment 1 on 1 slope. 7 June 1974.



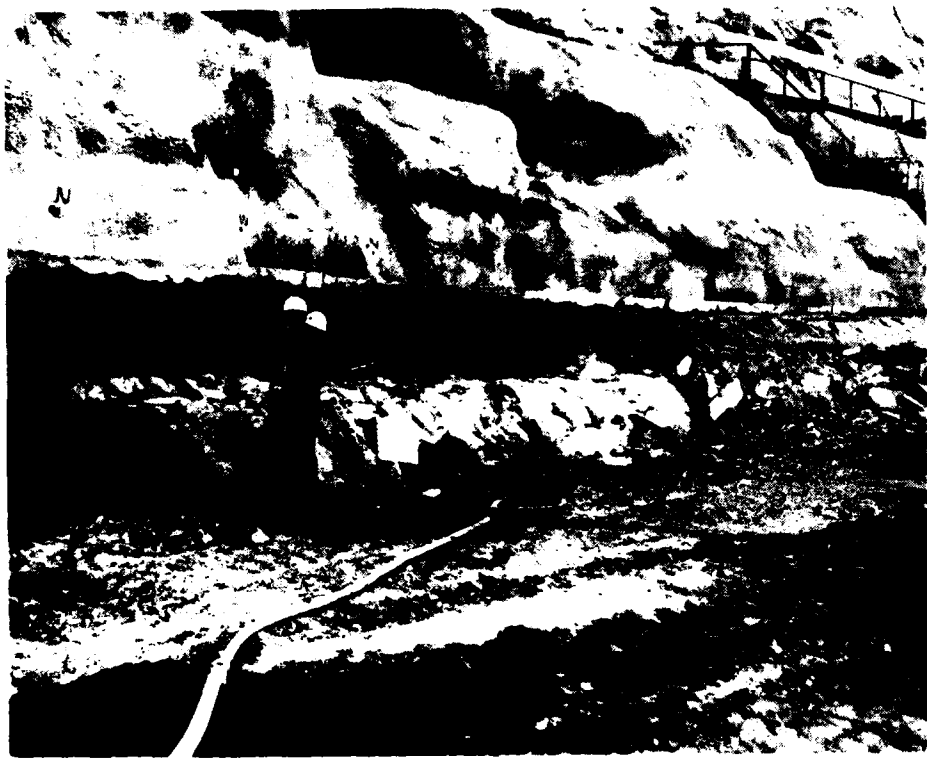
Station 2+60, Offset 120 feet upstream, Elevation 553 feet.
Right abutment 1 on 1 slope. 7 June 1974.



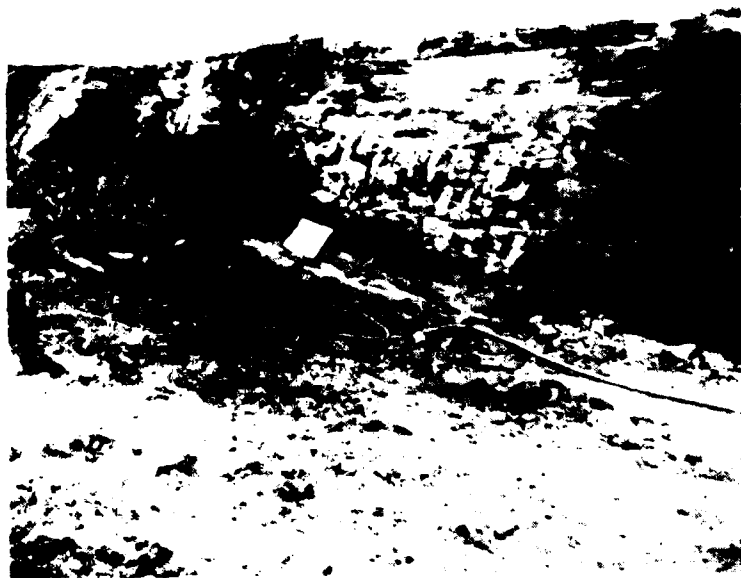
Station 2+89, Offset 301 feet downstream, Elevation 531 feet.
Right abutment 1 on 1 slope. 6 September 1974.



Station 2+70, Offset 250 feet downstream, Elevation 543 feet.
Right abutment 1 on 1 slope. 24 June 1974.



Station 2+65, Offset 230 feet downstream, Elevation 543 feet.
Right abutment 1 on 1 slope. 24 June 1974



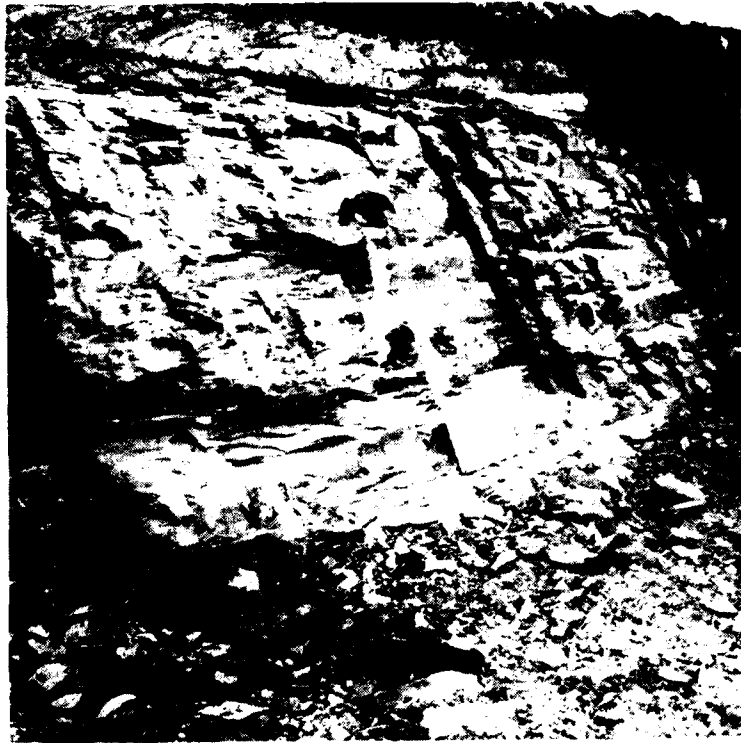
Station 2+74, Offset 175 feet downstream, Elevation 533 feet.
Right abutment 1 on 1 slope. 12 August 1974.



Station 2+74, Offset 105 feet downstream. Elevation 535 feet.
Right abutment 1 on 1 slope. 15 August 1974.



Station 2+60, Offset 90 feet downstream, Elevation 543 feet.
Right abutment 1 on 1 slope. 25 June 1974



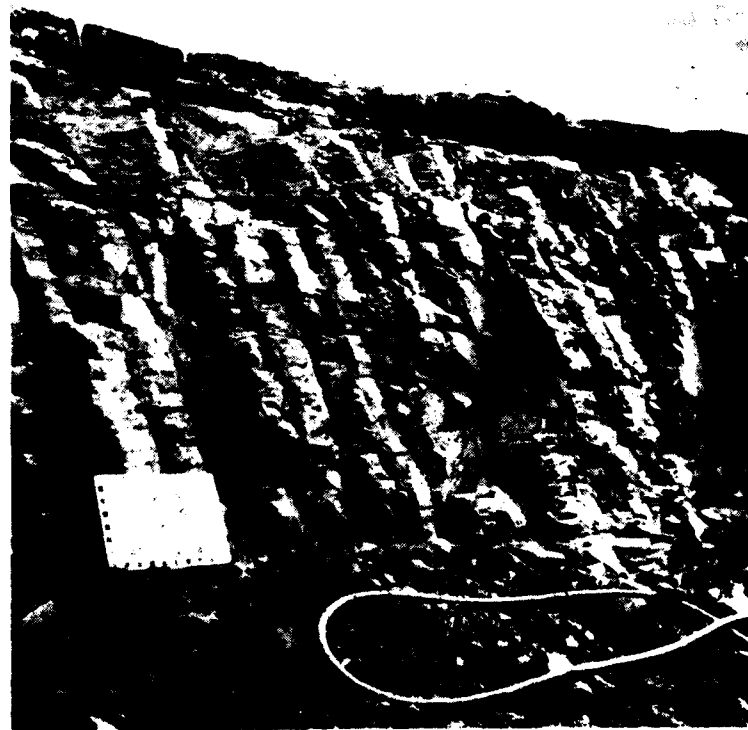
Station 2+80, Offset 30 feet upstream, Elevation 535 feet.
Right abutment 1 on 1 slope. 4 September 1974.



Station 2+60, Offset 30 feet upstream, Elevation 542 feet.
Right abutment 1 on 1 slope. 1 July 1974.



Station 2+70, Offset 50 feet upstream, Elevation 543 feet.
Right abutment 1 on 1 slope. 1 July 1974.



Station 2+80, Offset 60 feet upstream, Elevation 535 feet.
Right abutment 1 on 1 slope. 4 September 1974.



Station 3+40, Offset 65 feet upstream, Elevation 493 feet.
Right abutment 1 on 1 slope. 8 April 1975.



Station 2+70, Offset 70 feet upstream, Elevation 543 feet.
Right abutment 1 on 1 slope. 1 July 1974.



Station 2+95, Offset 125 feet downstream, Elevation 530 feet.
Right abutment 1 on 1 slope. 12 August 1974.



Station 2+95, Offset 190 feet downstream, Elevation 513 feet.
Right abutment 1 on 1 slope. 15 October 1974.



Main dam excavation, left abutment in background. October 1974.



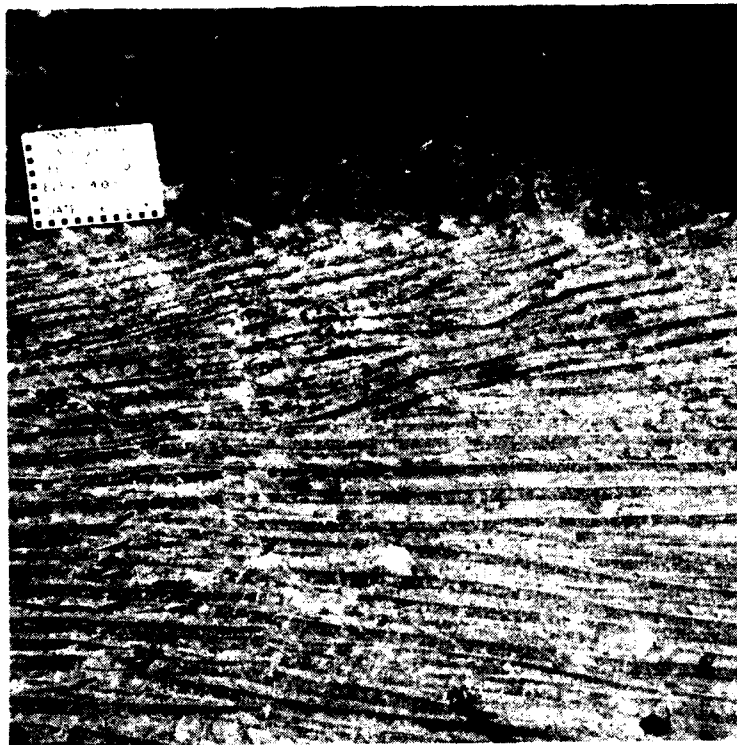
Excavation for Powerhouse and Spillway, forms for Tailrace and Splitter Walls in backfround. October 1974.



Excavation of foundation for Main Dam and Right Abutment. Oct. 1974.



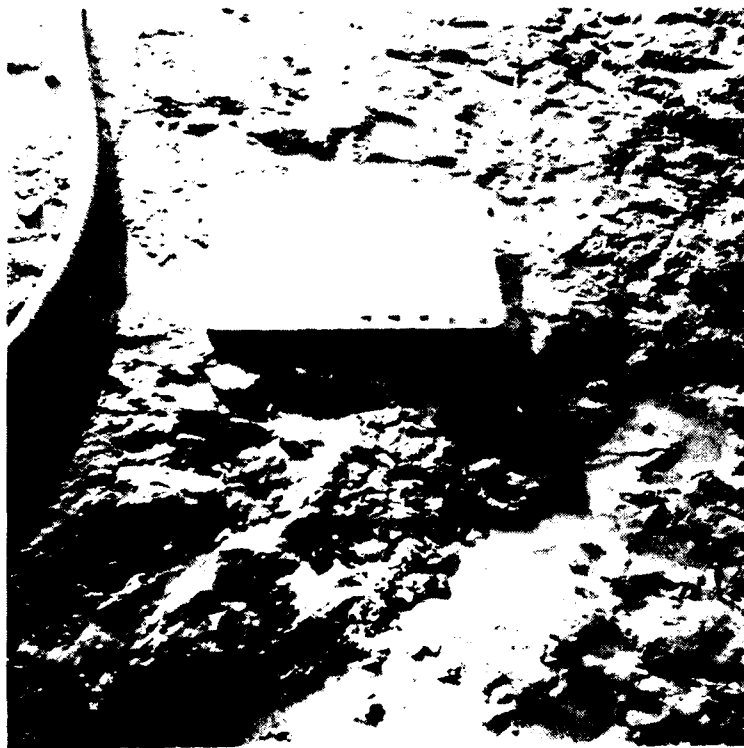
Excavation of Monoliths D17, D16, D15 and Splitter Wall (foreground) with shotcrete applied. October 1974.



Station 10+01, Offset centerline, Elevation 485 feet.
Final foundation 485 berm. 10 June 74.



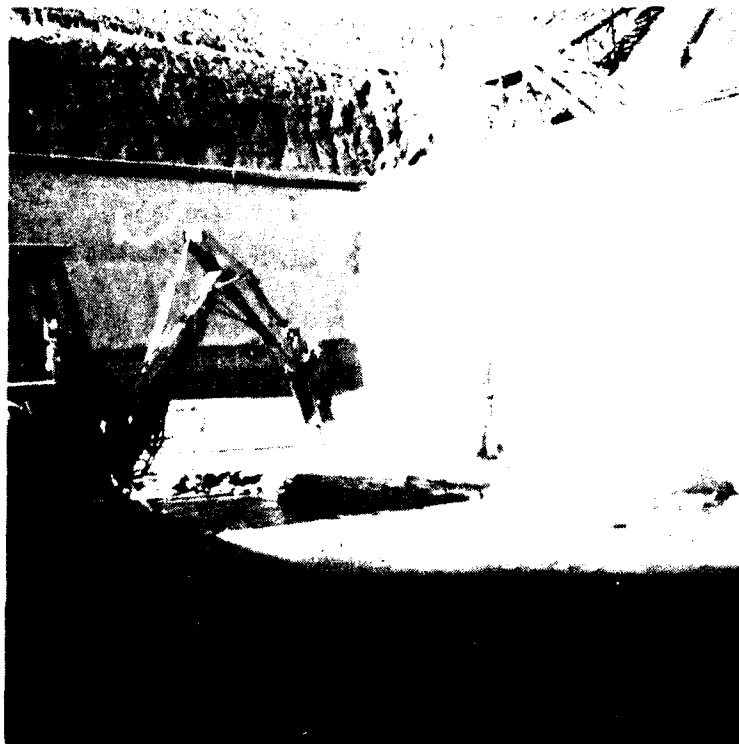
Station 9+30, Offset 20 feet upstream, Elevation 470 feet.
Monolith D-1 and D-2. 26 Aug 74. Irregular horizontal
line on shale is the 1 to 2 inch offset required for
saw-cut operations.



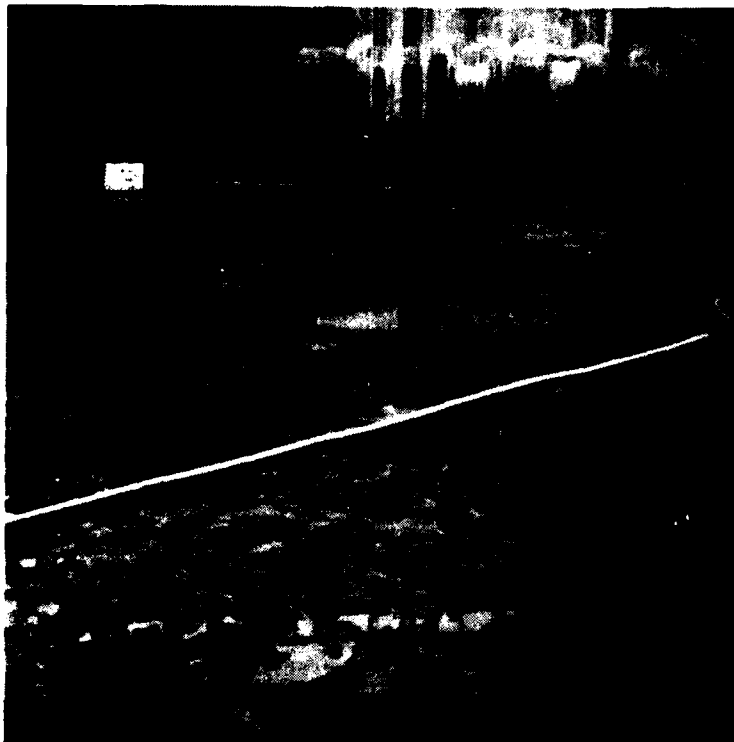
Station 9+83, Offset 45 feet downstream, Elevation 463 feet.
Preliminary foundation Monolith D1 and D2. 15 November 1974.



Station 9+70, Offset 84 feet downstream, Elevation 465 feet.
Final foundation Monolith D1 and D2. 23 January 1974.



Overall view of Monolith D1, looking north.



Station 9+20, Offset centerline, Elevation 465 feet. Final foundation Monolith D3/4 and D5/6. 22 July 1975



Station 9+00, Offset 20 feet upstream. Elevation 465 feet.
Final foundation Monolith D3/4 and D5/6. 22 July 1975.



Station 9+20, Offset centerline, Elevation 465 feet. Final
foundation Monolith D3/4 and D5/6. 22 July 1975



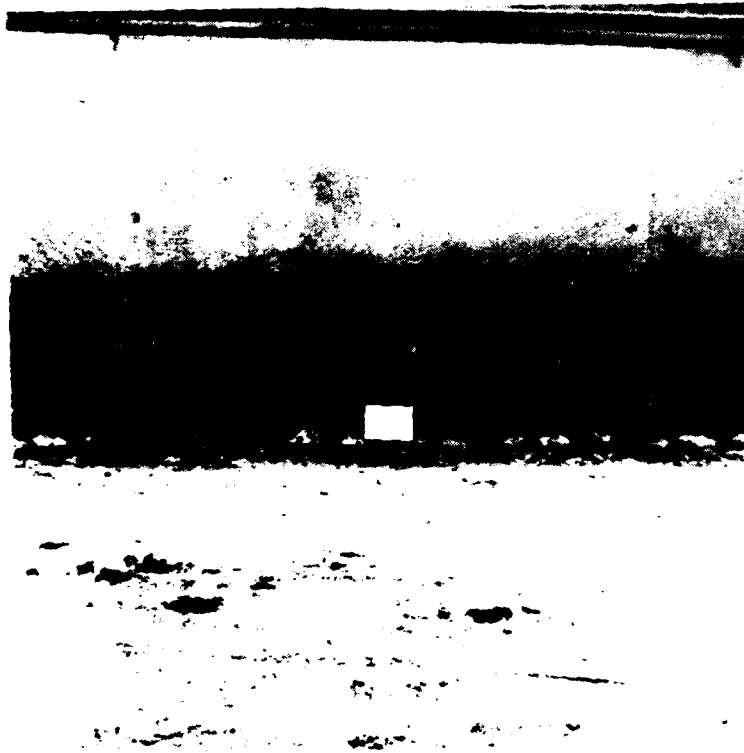
Station 8+80, Offset 20 feet upstream, Elevation 465 feet.
Final foundation Monolith D3/4 and D5/6. 22 July 1975.



Station 8+75, Offset 107 feet downstream. Elevation 475 feet.
Monolith D3/4 and D5/6, saw cut face. 13 July 1974.



Station 8+30, Offset 113 feet downstream, Elevation 475 feet.
Monolith D3/4 and D5/6, saw cut face. 19 July 1974.



Station 8+50, Offset 20 feet upstream, Elevation 470 feet.
Monolith D3/4 and D5/6, saw cut face. 26 August 1974.



Station 8+55, Offset 20 feet upstream, Elevation 480 feet.
Monolith D3/4 and D5/6. 26 July 1974.



Station 8+80, Offset 20 feet upstream, Elevation 465 feet.
Final foundation Monolith D3/4 and D5/6. 22 July 1975.



Station 8+10, Offset 20 feet upstream, Elevation 470 feet.
Powerhouse. 24 August 1974.



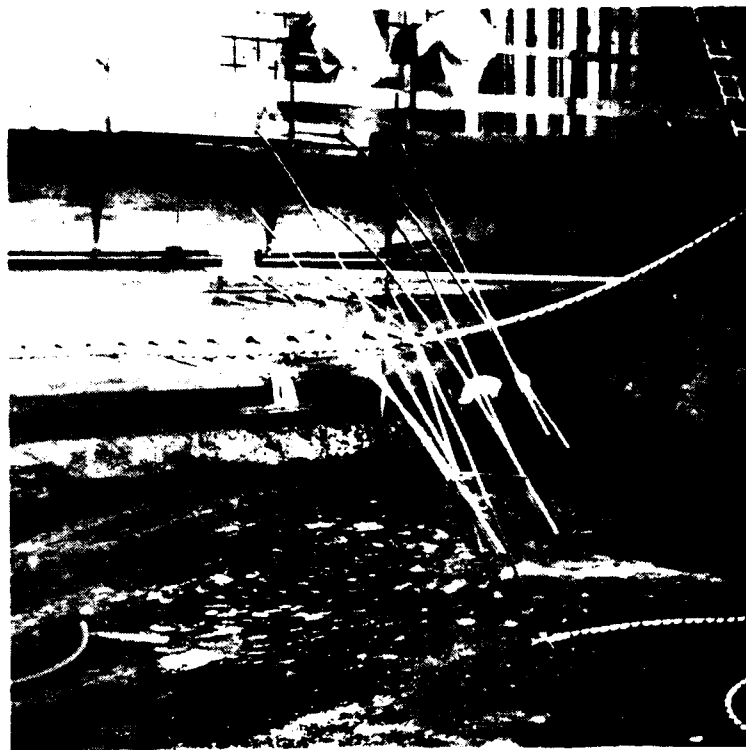
Station 8+12, Offset 92 feet downstream, Elevation 465 feet.
Final foundation, Powerhouse. 23 May 1975.



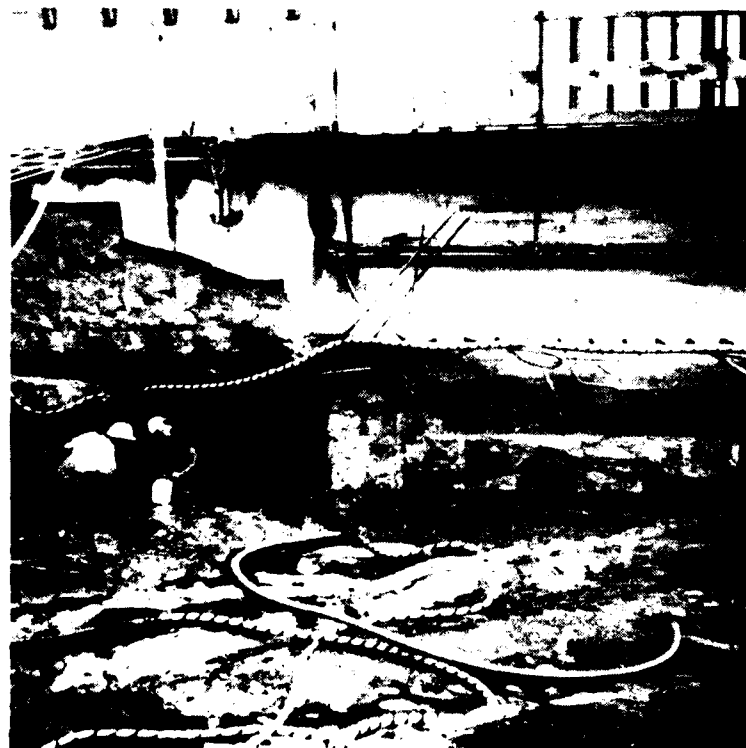
Station 7+60, Offset 10 feet upstream, Elevation 464 feet.
Final foundation, Powerhouse. 9 May 1975.



Station 8+00, Offset 37 feet upstream, Elevation 465 feet.
Final foundation, Powerhouse. 17 February 1975.



Station 7+60, K-2f, final foundation section, Powerhouse.
Showing sump #1. 10 June 1975.



Station 7+60, K-2f, final foundation section, Powerhouse.
Showing sump #1. 10 June 1975.



Station 7+60, Offset 90 feet downstream, Elevation 465 feet.
Final foundation, Powerhouse. 23 May 1975.



Station 7+60, Offset 110 feet downstream, Elevation 465 feet.
Final foundation, Powerhouse. 23 May 1975.



Station 7+00, downstream 1 on 1, looking east. Powerhouse 16 June 1975.



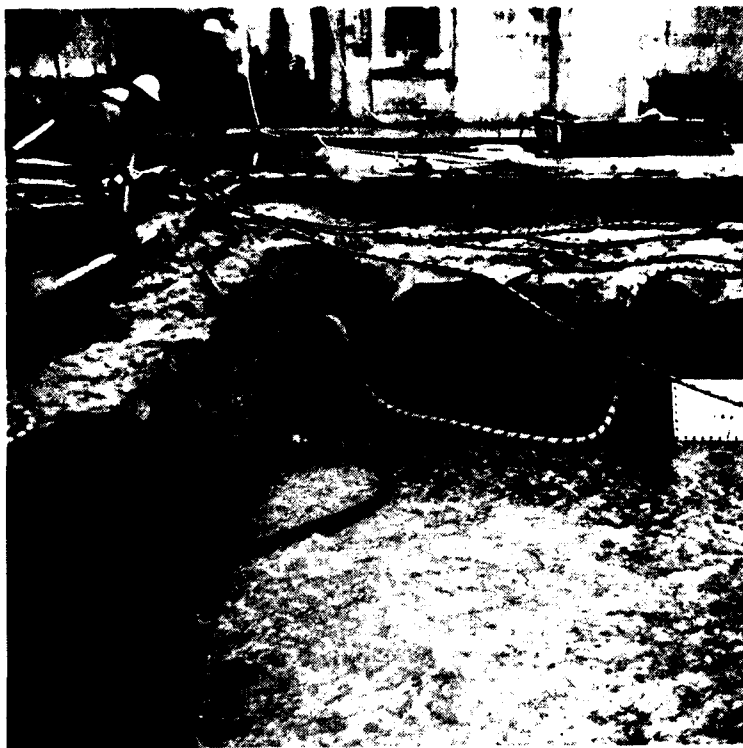
Station 7+60, downstream 1 on 1, looking east. Powerhouse.
16 June 1975.



Station 7+40, Offset 10 feet downstream, Elevation 464 feet.
Final foundation, Powerhouse. 9 May 1975.



Station 7+45, Offset 32 feet downstream, Elevation 453 feet.
Final foundation, Powerhouse. 10 June 1975.



Station 7+10, Offset centerline, Elevation 464 feet. Final foundation, Powerhouse. 21 May 1975.



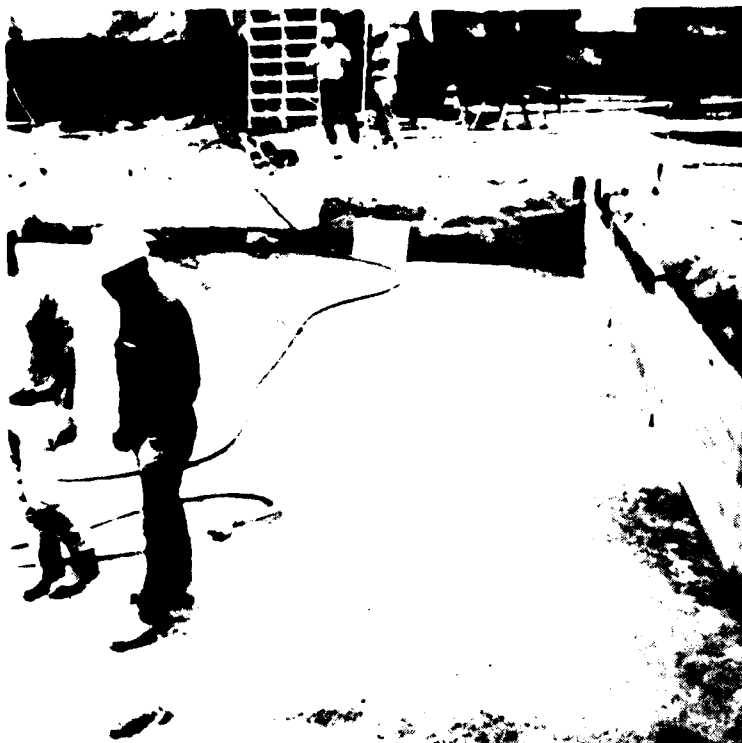
Station 7+10, Offset centerline, Elevation 464 feet. Final foundation, Powerhouse. 21 May 1975.



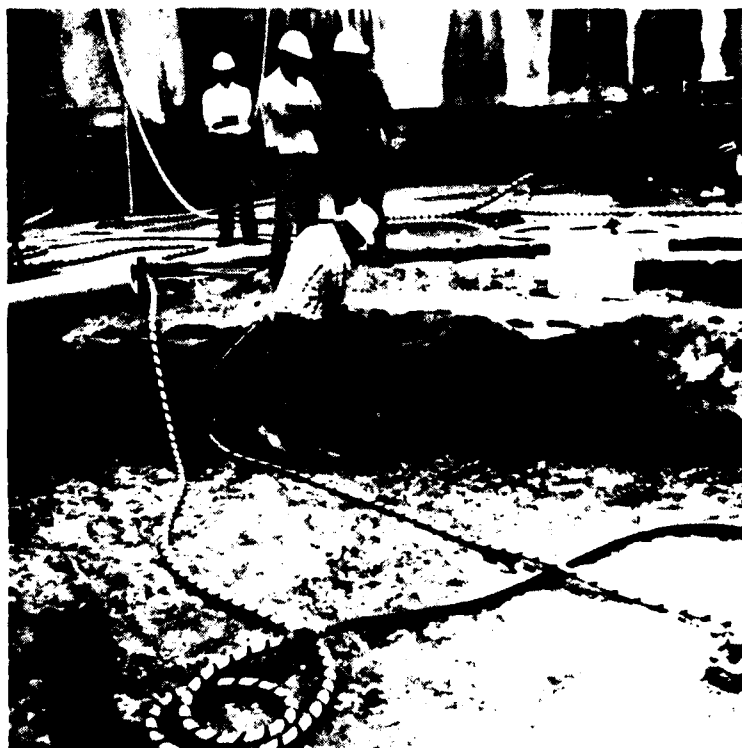
Station 7+10, Offset 57 feet upstream, Elevation 470 feet.
Powerhouse. 21 September 1974.



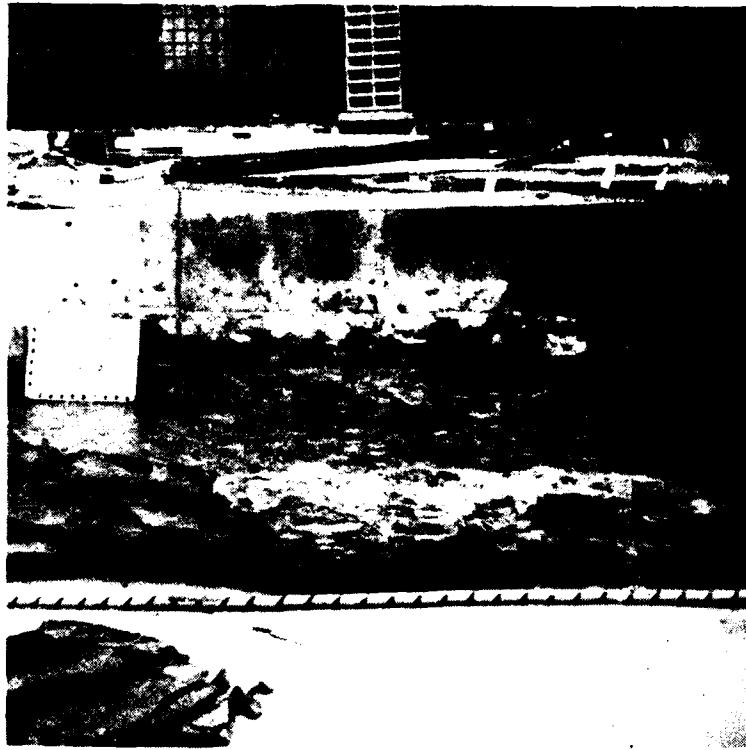
Station 7+27, Offset 20 feet downstream, Elevation 464 feet.
Final foundation, Powerhouse. 21 May 1975.



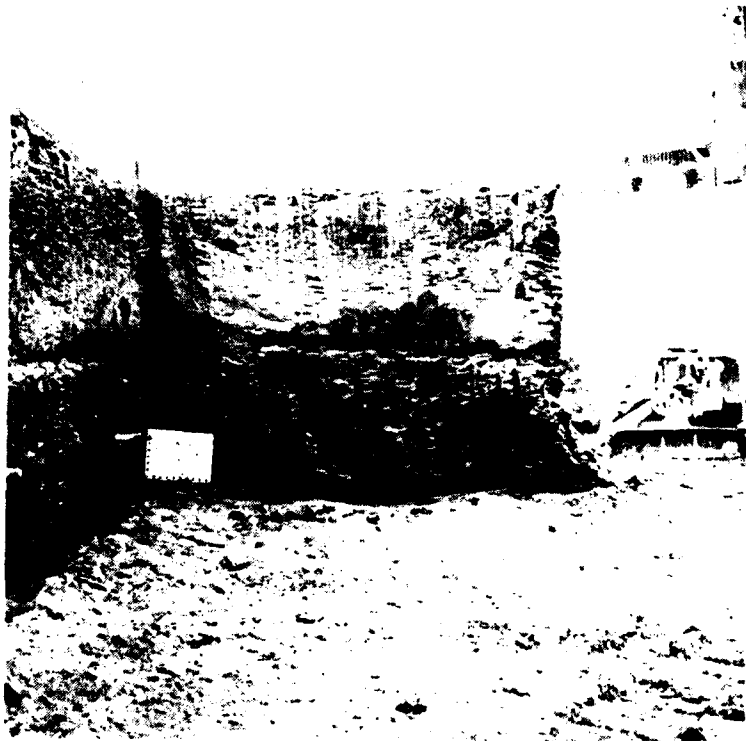
Station 6+80, Offset 15 feet upstream, Elevation 464 feet.
Final foundation, Powerhouse. 14 May 1975.



Station 7+00, Offset 15 feet upstream, Elevation 464 feet.
Final foundation, Powerhouse. 21 May 1975.



Station 6+65, Offset 25 feet downstream. Elevation 462 feet.
Final foundation, Powerhouse 1 on 1 slope. 11 June 1978.



Station 6+51, Offset 58 feet upstream. Elevation 457 feet.
Final foundation, Powerhouse. 2 June 1975.



Station 6+54, Offset 40 feet downstream, Elevation 457 feet.
Final foundation, Powerhouse. 2 June 1975



Station 6+20, Offset 15 feet upstream, Elevation 464 feet.
Final foundation, Powerhouse. 16 May 1975.



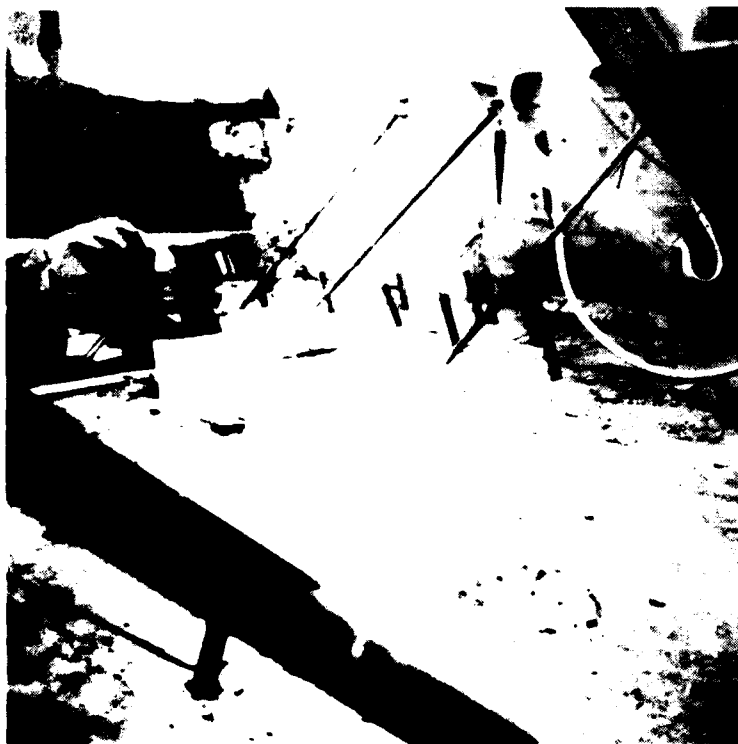
Station 6+00, Offset 67 feet upstream, Elevation 485 feet.
Powerhouse (485 berm). 23 July 1974.



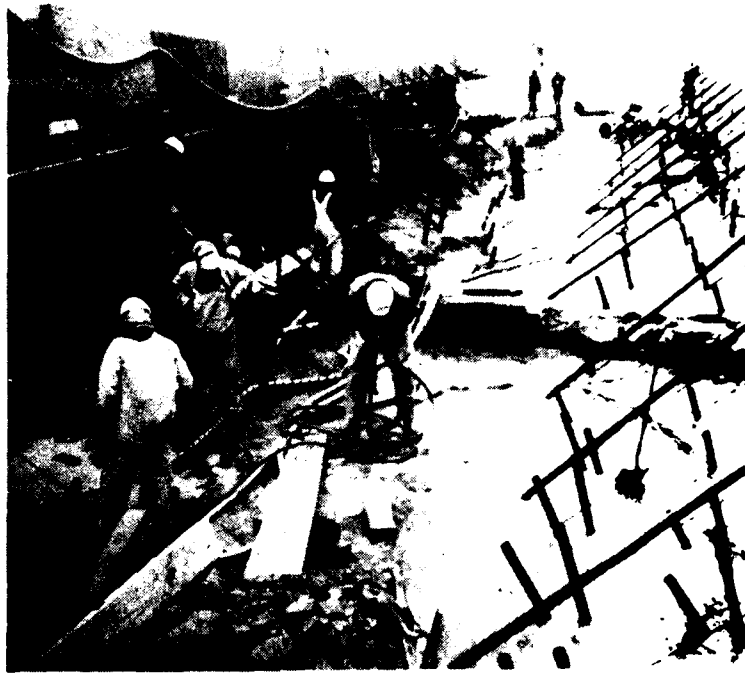
Station 5+60, Offset 122 feet downstream, Elevation 465 feet.
Final foundation, Monolith D7. 16 June 1975.



Station 5+80, Offset 100 feet downstream, Elevation 463 feet.
Final foundaion, Monolith D7. 17 January 1975.



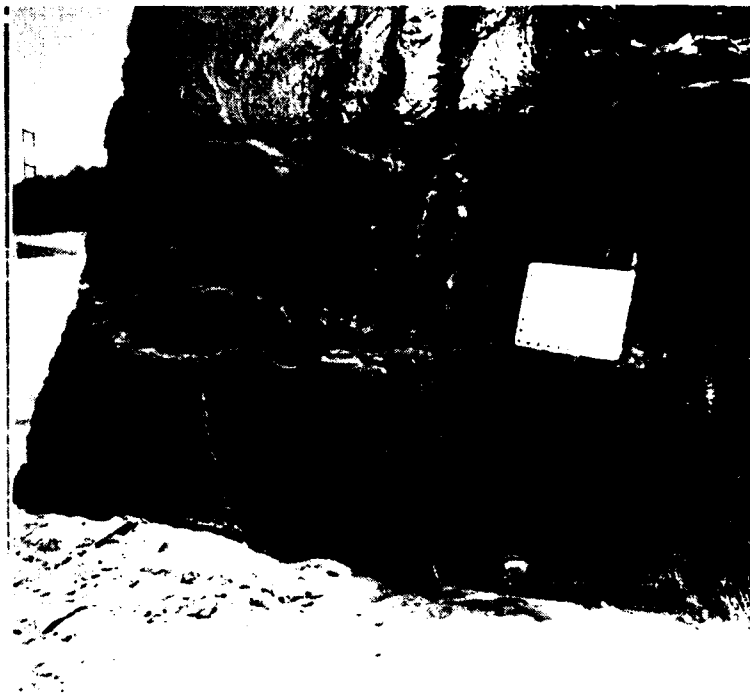
Station 5+80, Offset 20 feet upstream. Elevation 463 feet.
Final foundation, Monolith D7. 17 January 1975.



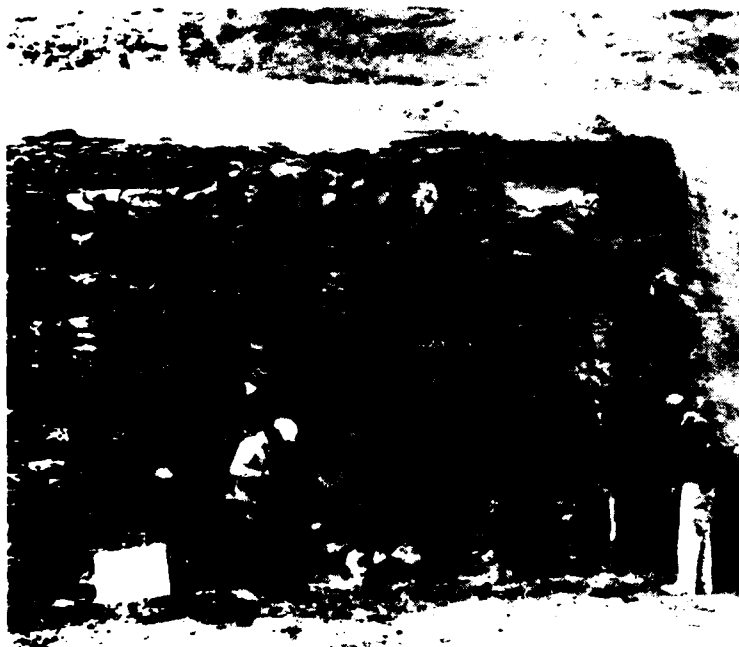
General overview of Monolith D7, final foundation. 17 January 1975.



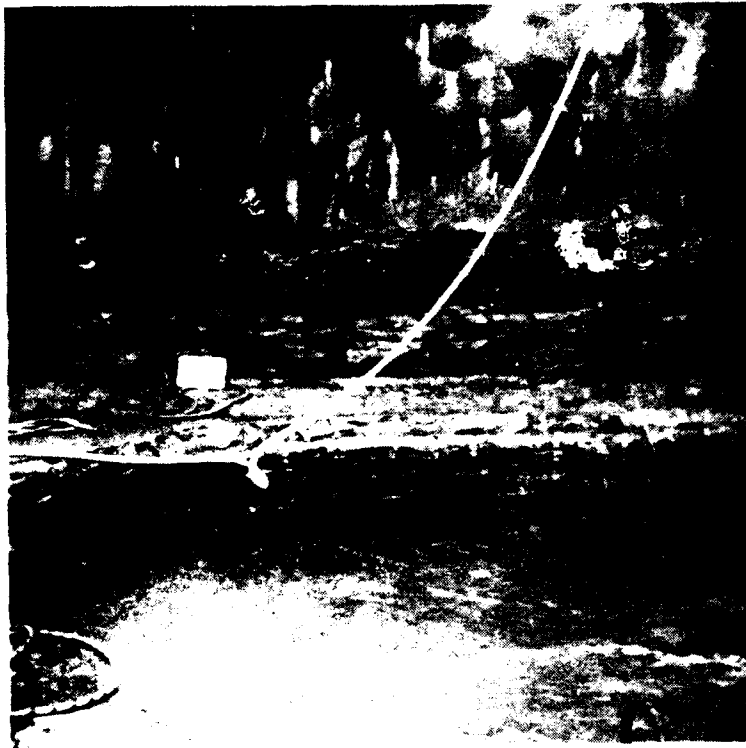
Station 5+10, Offset 114 feet downstream, Elevation 470 feet.
Monolith D8. 9 October 1974.



Station 5+30, Offset 120 feet downstream, Elevation 490 feet.
Monolith D8. 21 September 1974.



Station 5+25, Offset 40 feet upstream, Elevation 471 feet.
Monolith D8. 18 October 1974.



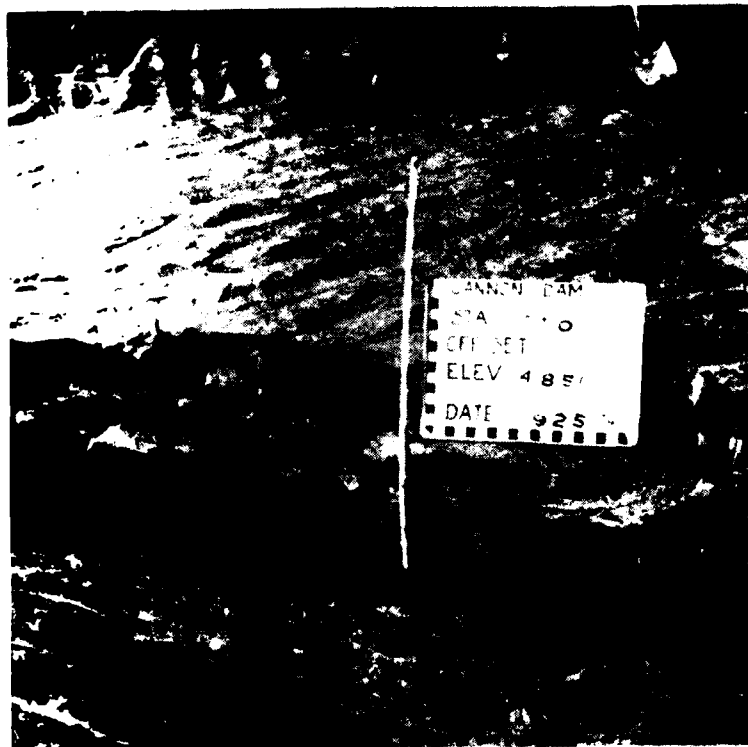
Station 5+20, Offset 40 feet upstream, Elevation 465 feet.
Final foundation, Monolith D8. 14 August 1975.



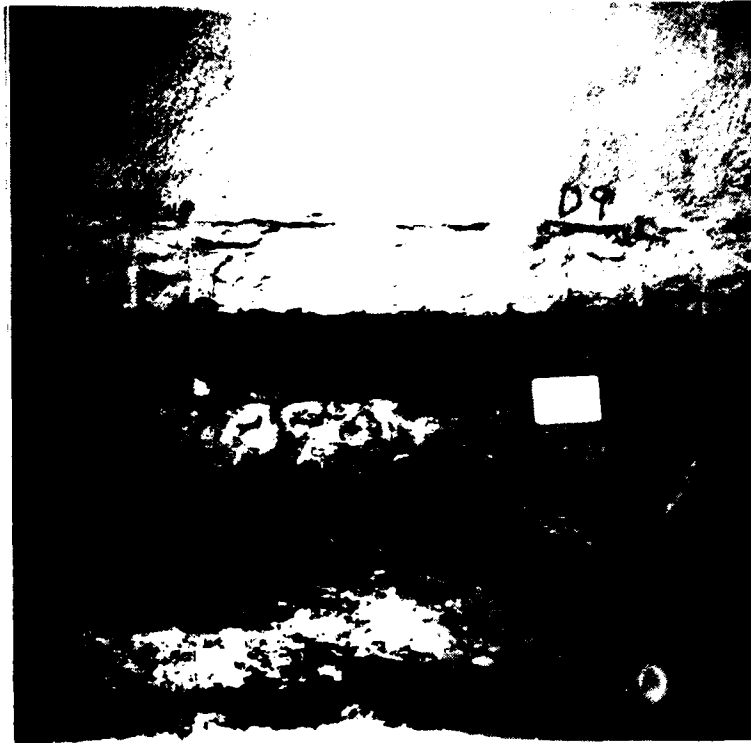
Station 5+05, Offset 10 feet upstream. Elevation 465 feet.
Final foundation, Monolith D8. 14 August 1975.



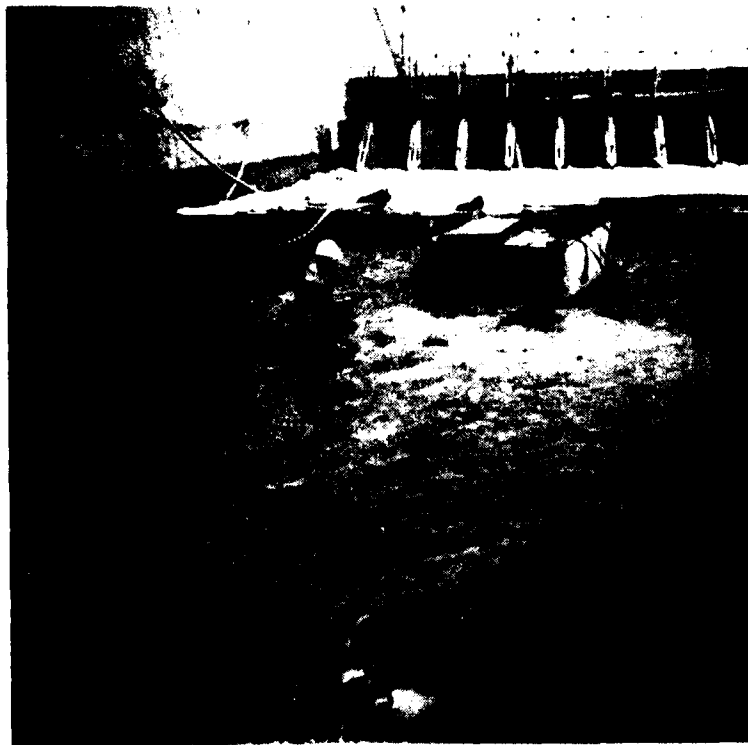
Station 5+00, Upstream 485 Berm, Elevation 485. Monolith D9.
25 September 1974.



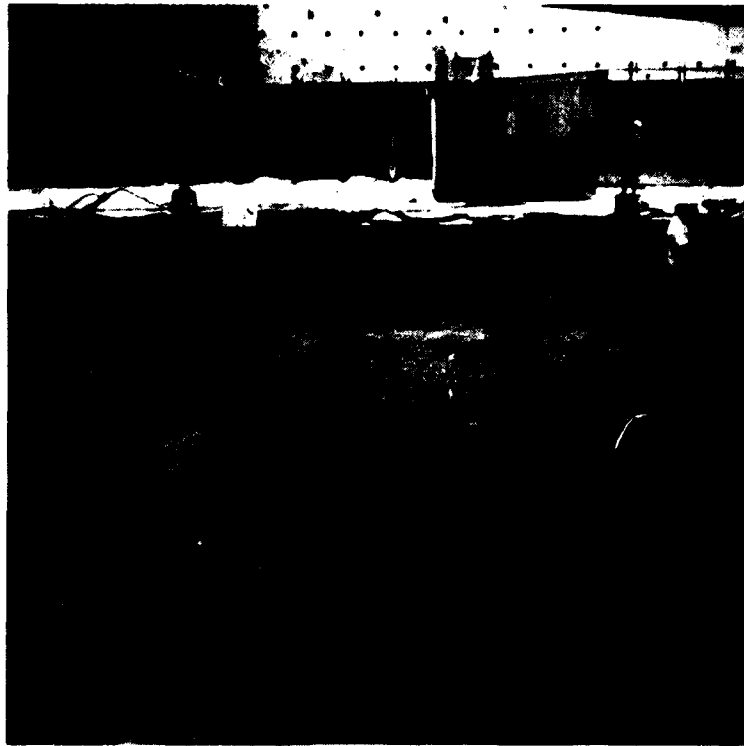
Station 4+50, Offset 120 feet downstream. Elevation 498 feet.
Monolith D9. 17 September 1974.



Station 4+60, Offset 110 feet downstream, Elevation 465 feet.
Final foundation, Monolith D9. 6 August 1975.



Station 4+45, Offset 90 feet downstream. Elevation 465 feet.
Final foundation, Monolith D9. 6 August 1975.



Station 4+45, Offset 60 feet downstream, Elevation 465 feet.
Final foundation, Monolith D9. 6 August 1975.



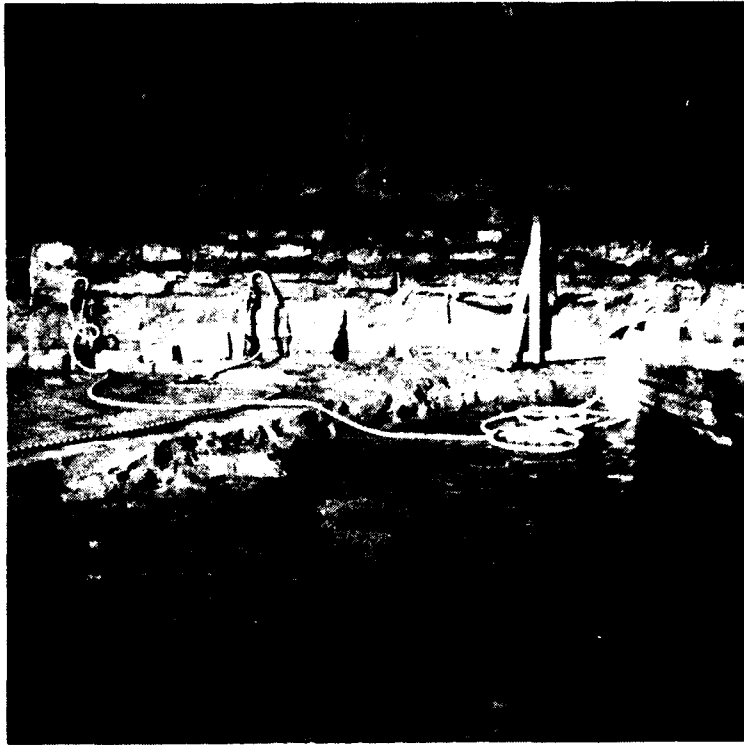
Station 5+05, Offset 20 feet downstream, Elevation 465 feet.
Final foundation, Monolith D9. 6 August 1975.



Station 4+65, Offset 40 feet upstream, Elevation 471 feet.
Monolith D9. 18 October 1974.



Station 4+60, Offset 40 feet upstream, Elevation 465 feet.
Final foundation, Monolith D9. 6 August 1975.



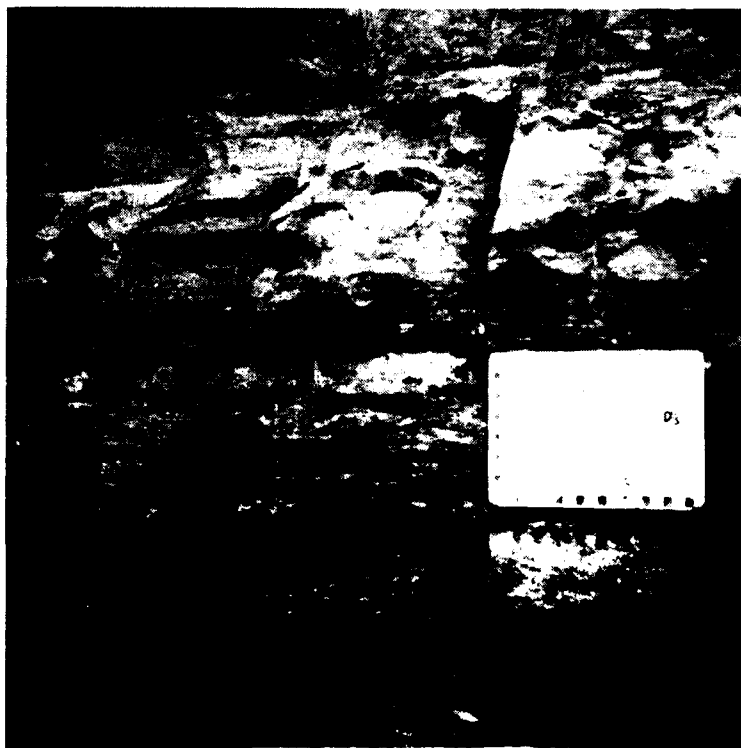
Station 4+90, Offset 40 feet upstream, Elevation 465 feet.
Final foundation, Monolith D9. 6 August 1975.



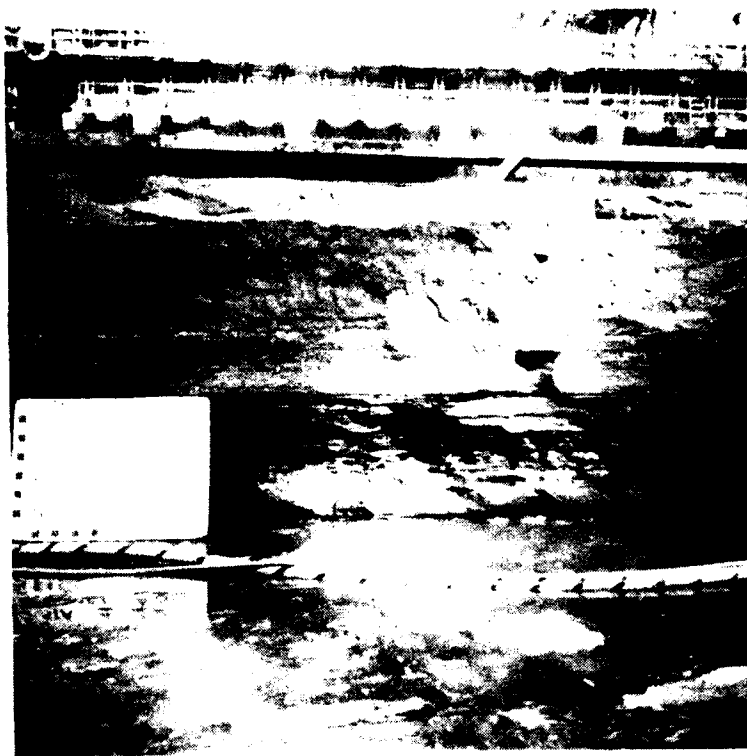
Station 4+45, Offset 20 feet upstream, Elevation 465 feet.
Final foundation, Monolith D9. 6 August 1975.



Station 4+20, Offset 120 feet downstream, Elevation 490 feet.
Monolith D10. 21 September 1974.



Station 4+05, Offset 110 feet downstream, final foundation,
Monolith D10. 6 August 1975.



Station 4+30, Offset 60 feet downstream, Elevation 465 feet.
Final foundation, Monolith D10. 6 August 1975.



Station 4+35, Offset 40 feet upstream, Elevation 472 feet.
Monolith D10. 5 May 1975.



Station 4+00, Offset 40 feet upstream, Elevation 465 feet.
Final foundation, Monolith D10. 6 August 1975.



Station 3+75, Offset 111 feet downstream, Elevation 473 feet.
Monolith D11/12. 30 April 1975



Station 3+70, Offset 111 feet downstream, Elevation 465 feet.
Final foundation Monolith D11/12. 11 July 1975.



Station 3+60, Offset 111 feet downstream, Elevation 465 feet.
Final foundation, Monolith D11/12. 11 July 1975.

END

FILMED

12-85

DTIC