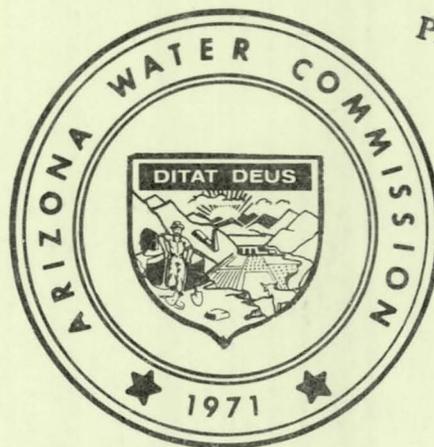


LIBRARY

Name of Dam: Buckeye Flood Retarding No. 3 - Az. Dam No. (7-45)
County and State: Maricopa, Arizona
Inventory Number:

PHASE I INSPECTION REPORT NATIONAL DAM SAFETY PROGRAM

STATE OF ARIZONA



FLOOD CONTROL DISTRICT
OF
MARICOPA COUNTY
3335 W. DURANGO
PHOENIX, ARIZONA 85009

OFFICE OF THE STATE WATER ENGINEER

Prepared by: Arizona Water Commission
Supervision of Dam Safety
Phoenix, Arizona

For: Los Angeles District Corps of Engineers
Date: Sept. 1979

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PHASE I INVESTIGATION REPORT

National Dam Safety Program

Name of Dam: Buckeye Flood Retarding Structure No. 3, AZ DAM
No. (7-45)

State Located: Arizona

County Located: Maricopa

Stream Intercept: Unnamed Washes

Date of Inspection: June 6, 1978

Buckeye Flood Retarding Structure No. 3 and related appurtenances have been evaluated and are found to be in good condition.

Hydrologic evaluation of the emergency spillway determined that the spillway has a capacity to discharge 90 percent of the outflow of the probable maximum flood as determined in accordance with the U.S. Army Corps of Engineers criteria. This poses no emergency; however, the apparent lack of capacity should be addressed further in terms of the real effect on downstream properties.

Further investigation of this dam is not recommended at this time.

Submitted by,

J. D. Walters

J. D. Walters
Arizona Water Commission
Supervision of Dam Safety
Arizona Registration No. 8335

Approved by,

Benson G. Scott

Benson G. Scott, P.E.
Arizona Water Commission
Chief, Supervision of Dam Safety
Arizona Registration No. 8169

Buckeye Flood Retarding Structure No. 3, AZ Dam No. (7-45)

Phase I Investigation Report

Introduction: The purpose of this report is to evaluate the safety of a nonfederal dam in accordance with the National Dam Inspection Act, Public Law 92-367.

Since 1971, all nonfederal dams in Arizona 25 feet or more in height or storing more than 50 acre-feet of water have been under jurisdiction of the State Water Engineer for the protection of life and property from the consequences of a failure or malfunction of a dam. Experienced professional engineers of the Arizona Water Commission carry out the program for safety of dams by review and approval of designs for new dams or major repair to existing dams, supervision of construction for all new dams and for repair to existing dams, and surveillance of existing dams by periodic inspection and evaluation.

The Buckeye Flood Retarding Structure No. 3 was designed and constructed and has been operated under the regulatory control of the Commission as documented in this report. Attached as part of the report are photographs, drawings and applicable data.

1. Description. Buckeye Flood Retarding Structure No. 3 is a homogeneous earth dam constructed across several small washes on the alluvial fan extending southerly from the White Tank Mountains. The dam is located 7 miles northeast of the Town of Buckeye, Arizona and is within Sections 2, 3 and 10, T1N, R3W and Section 36, T2N, R3W, G.S.R. B.&M..

The dam is classified as a jurisdictional dam as defined in Title I, Waters, Article I, Subclause 45-701 of the Arizona Revised Statutes. Upon completion the dam was approved and licensed to operate on July 22, 1975. The dam was designed and its construction supervised by the United States Soil Conservation Service as part of a Public Law 566 Project. The sponsor and current owner is the Maricopa County Flood Control District.

Buckeye F.R.S. No. 3 is an integral part of the Buckeye Watershed Protection Plan which, with structures Nos. 1 and 2, embraces 16 miles of dams designed to intercept flood runoff emanating from the western slopes of the White Tank Mountains and divert the flow to the Hassayampa River. The floodwater collected by Buckeye F.R.S. No. 3 below emergency spillway level is conveyed westerly through a 30-inch outlet to Buckeye F.R.S. No. 2 reservoir. Similarly, the cumulative storage below spillway level in F.R.S. No. 2 is conveyed through its 48-inch outlet to Buckeye F.R.S. No. 1 for ultimate discharge into the Hassayampa River. When storage behind F.R.S. No. 3 exceeds the level of the spillway crest the excess flood storage is discharged through the emergency spillway around the eastern end of the dam and outflows into natural watercourses.

2. Hazard Potential. Downstream land use is now limited principally to agriculture. However, there is a potential for urban development. Interstate Route I-10 traverses the downstream area and could be an

important contributing factor in development of the area. The Town of Buckeye and its eastern fringe area are about 5 miles downstream, but are considered too remote to be affected by sudden release of flood storage in case of dam failure. The existing and potential development downstream supports the classification of this dam in a high hazard category.

Buckeye Flood Retarding Structure No. 3 could temporarily store nearly 2,800 acre-feet of water to dam crest. This parameter coupled with its maximum height of, approximately 34 feet, classifies the dam as a intermediate-sized structure.

3. Project Documentation. An application for approval to construct Buckeye F.R.S. No. 3 was filed with the Water Commission on June 17, 1974 by the Flood Control District of Maricopa County, owner of the dam. Submitted with the application document were the plans, specifications and design reports necessary to permit an independent review by the Commission staff. A site inspection by an engineer and an engineering geologist from the Commission staff was a part of the review.

4. Geology. The damsite is located within the desert region of the Basin and Range Physiographic Province. It lies mainly on unconsolidated and semi-consolidated Quarternary-Tertiary alluvial fan deposits composed of outwash from the White Tank Mountains. The upper materials primarily consist of very loose to very dense silty sand (SM) and medium-to-coarse gravelly sand (GM-SW). Highly calcareous siltstone conglomerate (caliche conglomerate) underlies most of the site and occurs at shallow depths beneath much of the site.

Numerous southerly flowing ephemeral washes bisect the centerline of the dam. In the past, several of these washes had cut deeply into the siltstone conglomerate, but have since then been filled with coarse alluvium. Most of the present washes are well defined at the site, but seem to lose their identity short distances downstream.

The groundwater table is at an estimated depth of 200 to 300 feet and wasn't encountered during construction. Although faults are inferred to border the mountains, there are no known faults at or near the damsite.

5. Seismicity. Since Arizona is located in Zone 2 of the Seismic Zone Map by Algermission, 1969, earthquake activity is classified as being moderate. A brief survey of the historical seismicity map indicates that the region has been relatively free from any noticeable seismic disturbances. The most recent Arizona earthquake recorded in historic time occurred on February 3, 1976, in the Chino Valley located at about 75 miles northwest of Phoenix with a Richter magnitude of 5.2. Two aftershocks were felt and numerous smaller tremors were recorded.

Seismic studies, notably by Algermission and Perkins, have been made of the general area to project probable seismic acceleration coefficients for consideration in stability analysis of structures.

However, these coefficients are of very small magnitude and are of questionable applicability to low embankments in the project area. Moreover, the probability of simultaneous occurrence of a seismic event of moderate intensity with full reservoir storage is quite remote. It is for these reasons that the lack of use of seismic loading in the original design is fully supported.

6. Foundation Conditions. To investigate the subsoil conditions, twenty-two 1½-inch diameter holes were drilled and thirteen backhoe pits were excavated along the centerline of the embankment. These exploratory holes were spaced at about 500 feet apart on the average with a maximum distance between holes of 1100 feet. The drilling extended considerably below the underlying siltstone.

The drilling program was carried out by the Soil Conservation Service during April 1972. The supervision, field testing, and documentation were performed by their two staff geologists. During the course of drilling, continuous standard penetration tests were taken in several holes in the overburden material. Several soil samples obtained from the test pits were tested to determine their gradation and compaction characteristics. Four open-end field permeability tests were performed in the drill holes at stations along the centerline of the dam where thick deposits of coarse sand were encountered. Soils testing was done at the project site by the Soil Conservation Service.

As indicated in the boring logs, the overburden materials consisted of silty sand and medium-to-coarse sand. With few exceptions, the thickness of this layer was found to vary between one to 11 feet and averaged about 6 feet. The density of this material generally increased from very loose at the surface to very dense beneath. The loose sand deposits may be considered to be of recent origin. The surface layer was underlain by consolidated and semi-consolidated deposits of highly calcareous siltstone conglomerate containing thin beds and lenses of silty sand and coarse grained sand. Thick deposits of coarse sand were encountered between stations 70+00 and 100+00, between stations 106+00 and 117+00, between stations 120+00 and 145+00, and between stations 176+00 and 185+00. These layers consisted of well-graded, gravelly silty sand (SM-SW), coarse grained silty sand (SM), and silty gravel with admixtures of sand (GM). The coarse sand layers extended to considerable depths at some locations. Their consistency ranged from loose to very dense, but was mostly medium. The looser sands are surface deposits considered to be of recent alluvium. These coarse sands extend to depths of 17 feet at station 73+00, 6 feet at station 108+00, 12 feet at station 129+00, and about 10 feet at station 183+00.

The results of open-end field percolation tests are shown in the following tabulation:

<u>Station</u>	<u>Location</u>	<u>Depth</u>	<u>USCS</u>	<u>K(cu.ft./sq.ft./day)</u>
73+00	Q _L Dam	9.5'	SW-SM	7.1
75+22	Q _L Dam	7.0'	SM	0.5
129+00	Q _L Dam	9.5'	SW-SM	9.9
10+25	Prin. spw.	9.5'	SW-SM	40.3

Groundwater was not encountered during exploration. It is estimated to be at depths ranging from 100 feet to 200 feet.

7. Foundation Preparation. All loose, unconsolidated surface soil was stripped before foundation excavation. The keyway was excavated into the siltstone or into firm sandy silt. The foundation outside of the keyway prism was excavated to somewhat shallower depths. In any case, positive cutoff was assured by excavating the keyway through coarse sands to siltstone.

8. Embankment. The dam is a rolled earthfill embankment constructed of well-graded gravelly silty sand (SM-SW), coarse grained silty sand (SM), and silty gravel with admixtures of sand (GM) obtained from the "low flow" channel area parallel to the centerline of the dam in the reservoir. The materials were compacted to 95 percent of the laboratory maximum dry density as determined by the laboratory procedures outlined in ASTM Designation D-698, Method A. The range of moisture content variation permitted during placement was 2 percent above and 3 percent below the optimum. The maximum uncompacted lift thickness of 8 inches as specified, was achieved throughout construction of the embankment. Construction control tests confirmed that embankment materials were placed within the specified moisture-density requirements.

9. Outlet Works. The outlet is a 30-inch reinforced concrete pipe. It is concrete-encased to the springline for the 144-foot reach under the dam and unencased for the 400-extension which empties into the floodway leading to Buckeye Flood Retarding Structure No. 2. The foundation for the outlet under the dam consists of lime-cemented silt, sand and gravel interbedded with uncemented dense silty sand. The pipe inlet is rounded and constructed integrally with a standard SCS baffle-type dissipator before entry into the floodway leading to Buckeye Flood Retarding Structure No. 2. Cutoff collars are provided along the outlet conduit under the dam.

10. Emergency Spillway. An unlined spillway channel is excavated along a semicircular alignment around the left abutment of the dam. As the material in this area consists of siltstone conglomerate with cobbles and boulders, no special treatment of the spillway was provided. There is a probability that some erosion must be anticipated during infrequent spillway flows. The channel will discharge floodwater into the original streambed at a point below the downstream toe of the dam. The spillway has not operated since construction.

Buckeye Flood Retarding Structure No. 3 is classified as an intermediate-sized structure with a high hazard potential. Therefore, the emergency spillway should have a capacity large enough to discharge the outflow of the Probable Maximum Flood (PMF).

To confirm the capacity of the spillway, hydrologic analyses were based on the U.S. Soil Conservation Service methods and criteria. A local, six-hour Probable Maximum Storm was developed for the watershed using procedures outlined in HMR-49, "Probable Maximum

Precipitation Estimates, Colorado River and Great Basin Drainages", dated September 1977, prepared by the National Oceanic and Atmospheric Administration. This storm was routed through the structure using the SCS watershed modeling program "TR-20". The routing was performed with an initial water surface at spillway crest elevation. The spillway was found to have a capacity to discharge 90 percent of the probable maximum flood without overtopping the dam.

Pertinent information on the dam, outlet works, emergency spillway and the hydrologic analyses are summarized in the following tabulation.

Embankment

Purpose	Flood detention
Type	Homogeneous earth
Length of crest	3 miles
Width of crest	14 feet
Crest elevation	1170 feet
Maximum height*	34 feet
Embankment slopes	3:1, upstream; 2:1 downstream
Keyway bottom width	15 feet
Keyway side slopes	2:1

*Measured from bottom of keyway to dam crest.

Reservoir

Area of watershed	9.3 square miles
Storage capacity to dam crest	2786 acre-feet
Storage capacity to spillway crest	920 acre-feet
Surface area at dam crest	335 acres
Surface area at spillway crest	180 acres

Outlet Works

Type of conduit	Reinforced concrete pipe
Diameter of conduit	30 inches, I.D.
Length of conduit	144 feet plus 400-foot outfall
Maximum capacity**	106 c.f.s.

**Assuming w.s. at crest of dam.

Emergency Spillway

Type	Uncontrolled, open channel
Length of crest	100 feet
Width of crest	400 feet
Crest elevation	1163.2 feet
Total freeboard	6.8 feet
Channel section	Trapezoidal, 2:1 side slopes

Flood Hydrology

Flood type	<u>PMF*</u>	<u>PMF**</u>	<u>0.7PMF**</u>	<u>0.85PMF**</u>
Storm Precip.-In.	13.2	13.2	-	-
Storm Duration-hrs	6	6	6	6
Time of concentra- tion-hrs.	2.2	2.2	2.2	2.2
Peak inflow-cfs	21,065	25,921	18,145	22,033
Peak inflow/sq.mi.	2265	2787	1951	2369
Runoff-acre-feet	5795	5795	4056	4926
Runoff-in.	11.7	11.7	8.2	9.9
Runoff coef.	88	88	88	88
Routing technique	SCS- TR-20	SCS- TR-20	SCS-TR20	SCS-TR20
Peak outflow-cfs	15440	18533	12241	15282
Peak outflow/sq.mi.	1660	1993	1316	1643
Max. water surface elevation	1169.8	overtop	1169.0	overtop
Residual freeboard	0.2	-	1.0	0.25

Notes: Initial water surface at spillway crest, outlet plugged.

*Precipitation time distribution per SCS 6-hr. storm.
 **Precipitation time distribution per HMR-49 thunder-storm criteria.

11. Specifications. The specifications governing construction of the dam were prepared by the U.S. Soil Conservation Service working with the Flood Control District of Maricopa County. Commission review concerned itself with foundation preparation, embankment placement, moisture condition, and density in the structural back-fill section as well as control of the concrete construction. With some minor revisions, the specifications were found to be satisfactory.

12. Construction History. Application to construct the dam was approved by the State of Arizona on June 17, 1974, and the construction was completed during March 1975. M. M. Sundt Construction Company of Tucson, Arizona was the contractor. The construction was carried out under the joint supervision of the engineering personnel from the Arizona Water Commission, U.S. Soil Conservation Service and the Flood Control District of Maricopa County. With few minor exceptions, the dam and its appurtenant structures were built according to the drawings and specifications.

13. Data on File. The following data are on file with the Arizona Water Commission, 222 North Central Avenue, Suite 800, Phoenix, Arizona 85004. Also, items 1 through 5 are on file with the U.S. Soil Conservation Service, Phoenix, Arizona and with the owners, the Flood Control District of Maricopa County, Phoenix, Arizona. There is no data stored at the project site.

1. As-built drawings
2. Construction specifications
3. Preliminary design report
4. Geologic investigation report
5. Construction quality control testing results
6. Memorandum of design review by Water Commission engineers and engineering geologist
7. Commission construction inspection reports, including photographs taken during construction
8. Reports of Commission operation and maintenance inspections made since the completion of construction

14. Instrumentation. Survey and settlement monuments are installed at approximately 1000 feet intervals. They are monitored by the Flood Control District's staff on a periodic basis. There is no other instrumentation at this project, and none is recommended at this time.

15. Performance Evaluation.

A. Inspections: This dam has been inspected by the Water Commission periodically since the completion of construction in March 1975. Inspections have occurred on March 29, 1977 and on June 6, 1978. Messrs. Peter Pivonka and Robert Pendergast, representatives of the owner, accompanied our engineer, Mr. K. M. Hussain, on the most recent inspection of the dam on June 6, 1978. During that inspection the embankment was found to be in satisfactory condition with no evidence of cracking or erosion gullies found in the embankment. The 30-inch diameter outlet pipe was found to be clean and free of silt. The emergency spillway was found to be satisfactory and the channel was free of debris and other obstructions. Concrete in the end walls and the apron slabs of the principal outlet appeared in sound condition. The standard metal trashguard was recently painted. The gates for the irrigation outlets were in operating condition.

B. Future Activity: The Arizona Water Commission will continue to inspect and evaluate the structure at periodic intervals and after heavy rainfall. Also, the owner will accompany Water Commission personnel on joint annual inspections so that needed maintenance items can be recorded for immediate attention.

16. Emergency Communication. There is no warning system installed at the dam. Flood conditions would be known sufficiently in advance of any alarming conditions at the dam and proper emergency measures would have been implemented. County Flood Control maintenance personnel patrol the dam frequently and are in the area during flood alert conditions to warn of hazardous conditions through their intercommunication system.

17. Appraisal of the Project.

A. Conclusions: The embankment, emergency spillway and outlet works are in good condition with no apparent problems. The dam was designed, constructed, and is being operated under the regulatory control of the Arizona Water Commission. A License of Approval limiting storage to flood control was issued on July 22, 1975.

The emergency spillway has sufficient capacity to discharge 90 percent of the P.M.F. without overtopping the dam. This is below the capacity recommended for this intermediate-sized, high hazard dam.

B. Recommendations: The present operational surveillance plan should be continued. Members of the owners engineering staff should be included in an inspection of the dam every other year or following a major impoundment.

Further investigation beyond this Phase I report is not warranted. However, the slight deficiency in the capacity of the emergency spillway should be further discussed in terms of the real hazard to downstream properties.

Buckeye Flood Retarding #3 Dam

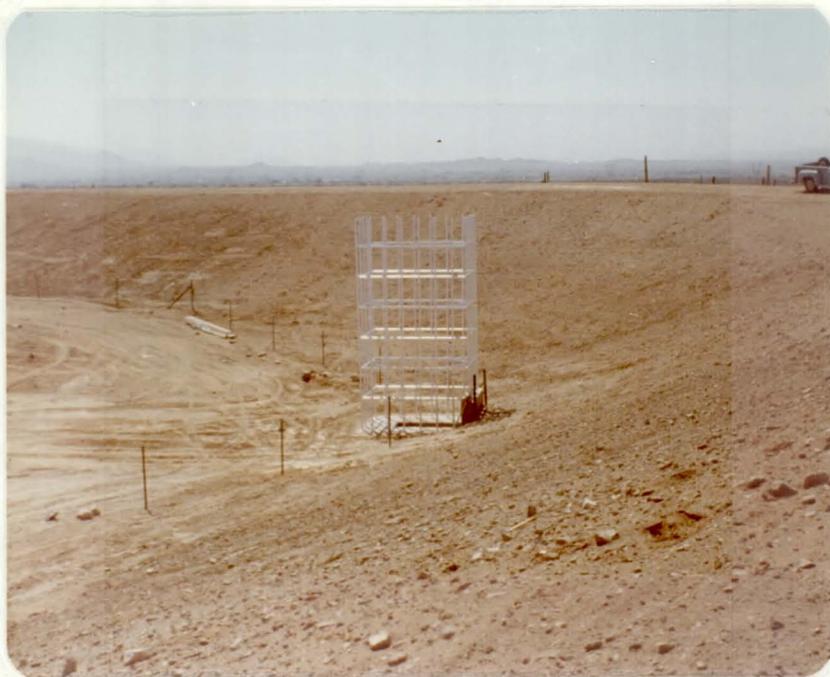


Photo 1 (April 25, 1975) - Trash rack over principal spillway intake structure.

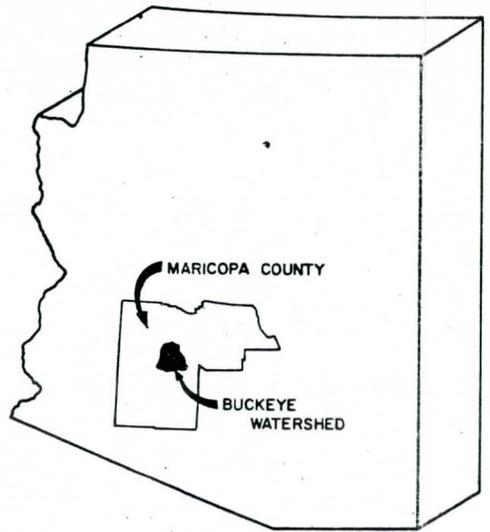
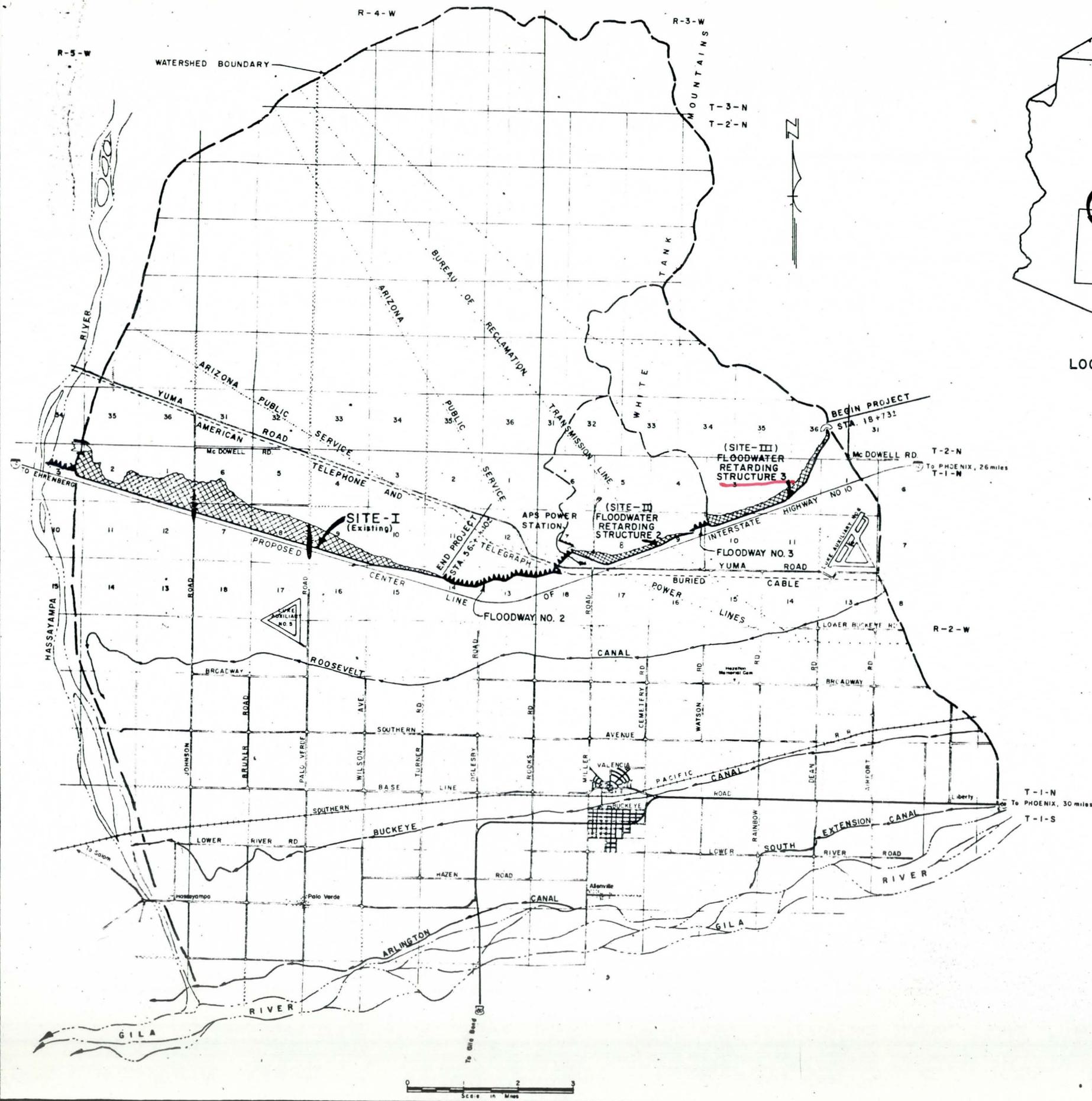


Photo 2 (April 25, 1975) - Looking east along upstream face of dam. Stem for 12" gate in foreground.

Buckeye Flood Retarding #3 Dam



Photo 3 (April 25, 1975) - East end of emergency spillway near control section. Embankment in background.



LOCATION MAP

LEGEND

- Floodwater Retarding Structure
- Floodway
- Existing Road Ramp Crossings

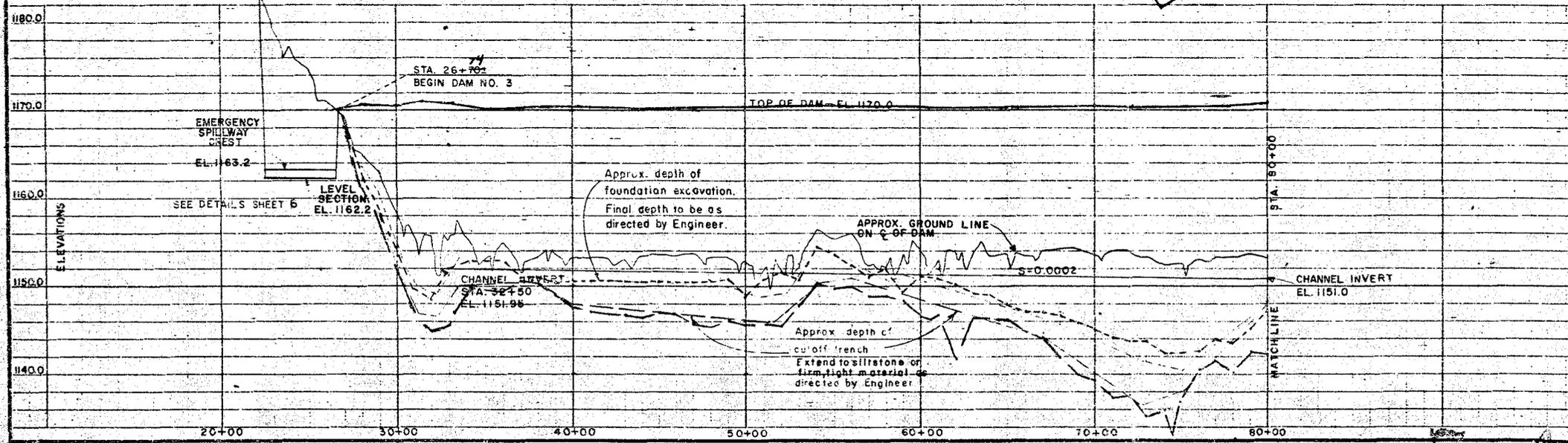
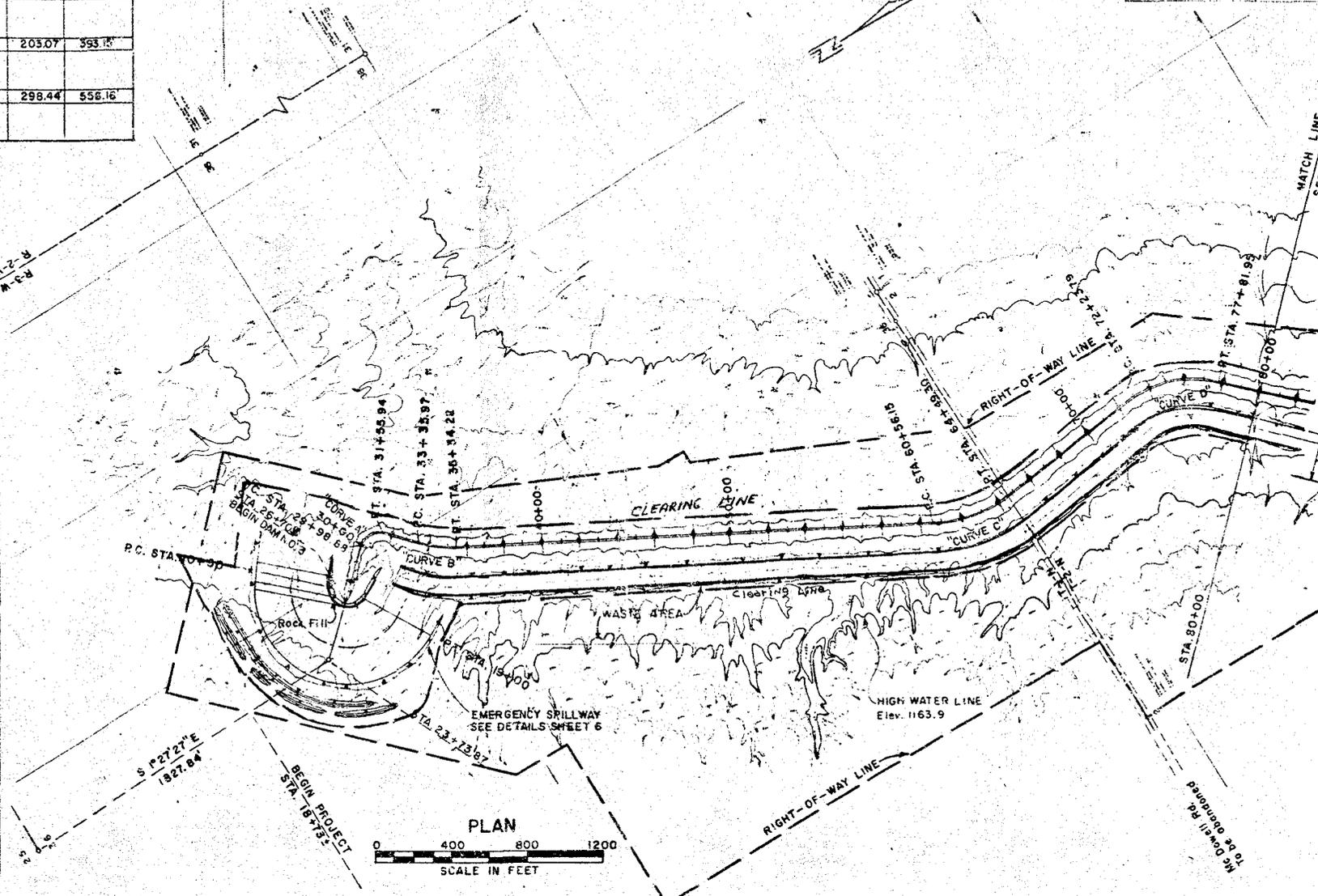
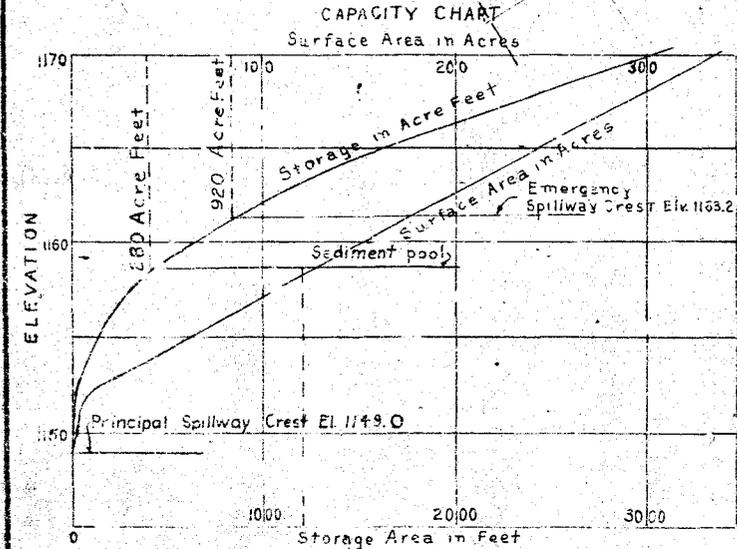
AS BUILT

LOCATION MAP			
BUCKEYE FLOODWATER RETARDING STRUCTURES 2 & 3			
BUCKEYE W. P. P.			
MARICOPA COUNTY, ARIZONA			
U. S. DEPARTMENT OF AGRICULTURE			
SOIL CONSERVATION SERVICE			
Designed G. WATT	Date 5-71	Approved by _____	Title _____
Drawn G. HANLEY	Date 5-71	Checked _____	Title _____
Traced _____	Sheet No 2	Drawing No _____	_____
Checked J.L.S., P.J.M., L.C.S.	Date 2-74	of 57	7E-23079

7-45

DESCRIPTION				DAM CURVE DATA					
CURVE	STATION	POINT	BEARING	DISTANCE	A	D	R	T	L
	23+73.87	BEGIN	S 42° 57' 57" E	725.01'					
A	29+98.98	P.C.			90° 01' 10"	57° 18' 47"	99.97'	100.00'	157.07'
	30+98.88	P.T.							
	31+58.84	P.T.	S 47° 03' 13" W	380.03'					
B	33+35.97	P.C.			18° 31' 40"	3° 20' 44"	613.09'	100.00'	198.25'
	34+35.97	P.T.							
	35+34.22	P.T.	S 28° 31' 33" W	2825.00'					
C	60+58.15	P.C.			35° 22' 40"	8° 59' 54"	636.73'	203.07'	393.15'
	62+58.22	P.T.							
	64+49.30	P.T.	S 6° 51' 07" E	1276.00'					
D	72+23.79	P.C.			50° 13' 40"	8° 59' 56"	636.70'	298.44'	558.16'
	75+22.23	P.T.							
	77+81.95	P.T.	S 43° 22' 33" W	516.49'					
	80+00.00	M.L.							

CHANNEL CURVE DATA					
CURVE	A	D	R	T	L
B	18° 31' 40"	7° 02' 48"	813.03'	132.62'	262.93'
C	35° 22' 40"	6° 50' 35"	836.73'	266.86'	516.65'
D	50° 13' 40"	13° 07' 13"	436.70'	204.65'	382.83'



AS BUILT

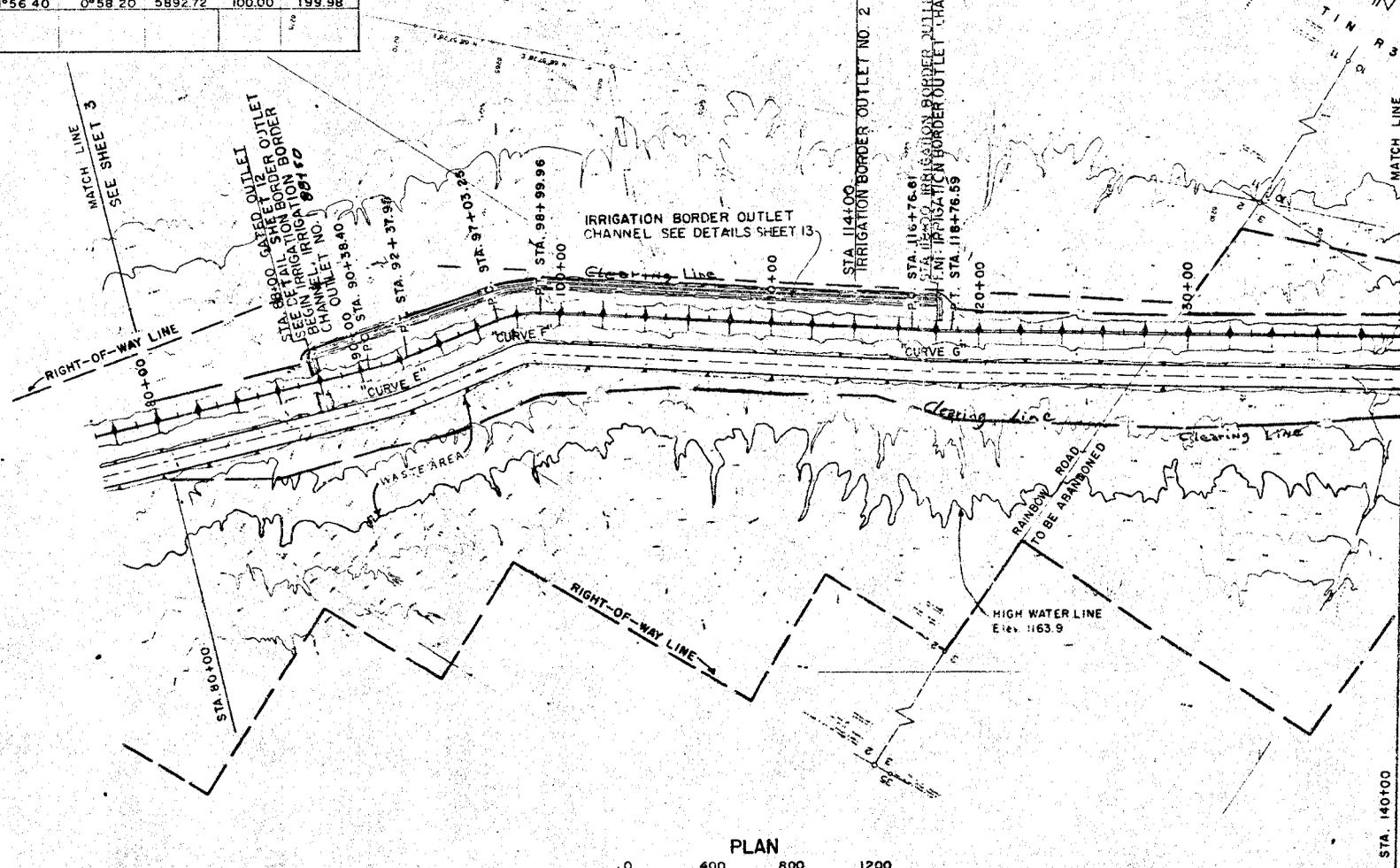
PLAN & PROFILE OF DAM NO. 3
BUCKEYE FLOODWATER RETARDING STRUCTURES 2 & 3
BUCKEYE W.P.P.
MARICOPA COUNTY, ARIZONA

**U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE**

Designed	G. WATT	Date	6-72	Approved by	
Drawn	R. SLOCUM	Date	6-72	Checked	
Traced		Date		Sheet	3 of 57
Checked	J.L.S. P.J.M.	Date	1-74	Drawing No.	7E-23079

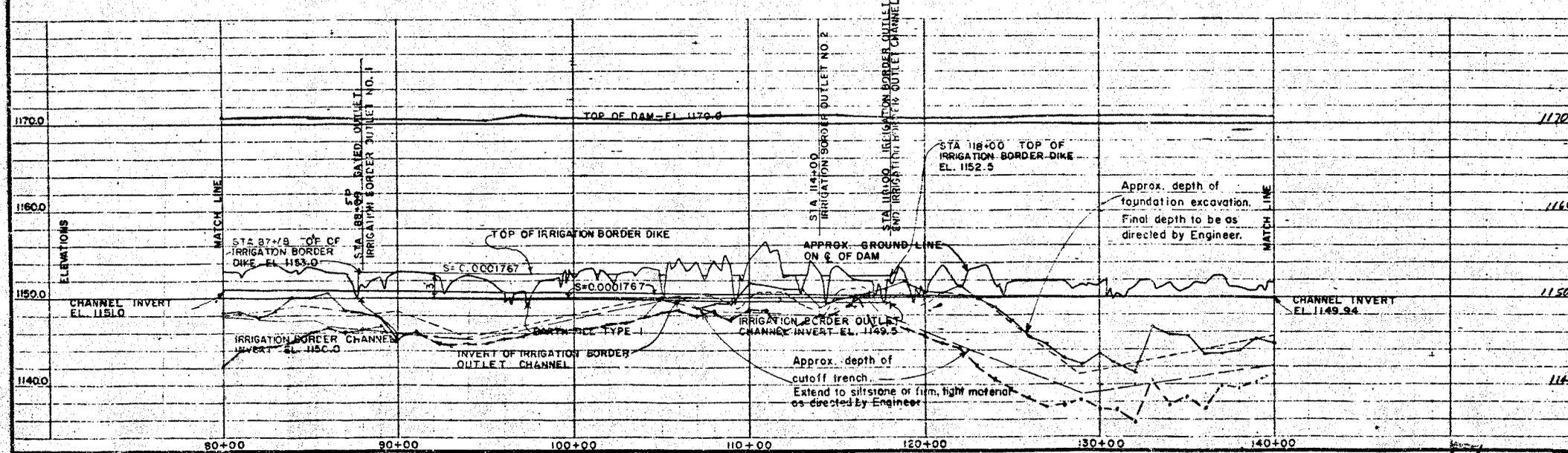
DESCRIPTION				DAM CURVE DATA					
CURVE	STATION	POINT	BEARING	DISTANCE	Δ	D	R	T	L
	80+00.00	M.L.	S43°22'33"W	1138.40'					
E	90+38.40	P.C.			9°21'40"	4°41'28"	1221.40'	100.00'	199.55'
	92+37.95	P.T.							
F	97+03.25	P.C.	S34°00'53"W	665.30'					
	98+03.25	P.I.			25°25'30"	12°55'31"	443.28'	100.00'	196.71'
	98+99.96	P.T.							
G	116+76.61	P.C.	S59°26'23"W	1978.65'					
	117+76.61	P.I.			1°56'40"	0°58'20"	5892.72'	100.00'	199.98'
	118+76.59	P.T.							
	130+00.00	M.L.	S57°29'43"W	2223.41'					

CHANNEL CURVE DATA					
CURVE	Δ	D	R	T	L
E	9°21'40"	3°58'30"	1441.40'	118.01'	235.50'
F	25°25'30"	23°33'05"	243.28'	54.88'	107.96'
G	1°56'40"	0°56'25"	6092.72'	103.39'	206.77'



ESTIMATED BORROW WIDTH = 230'

NOTE: SEE SHEET 7 FOR TYPICAL X-SECTION



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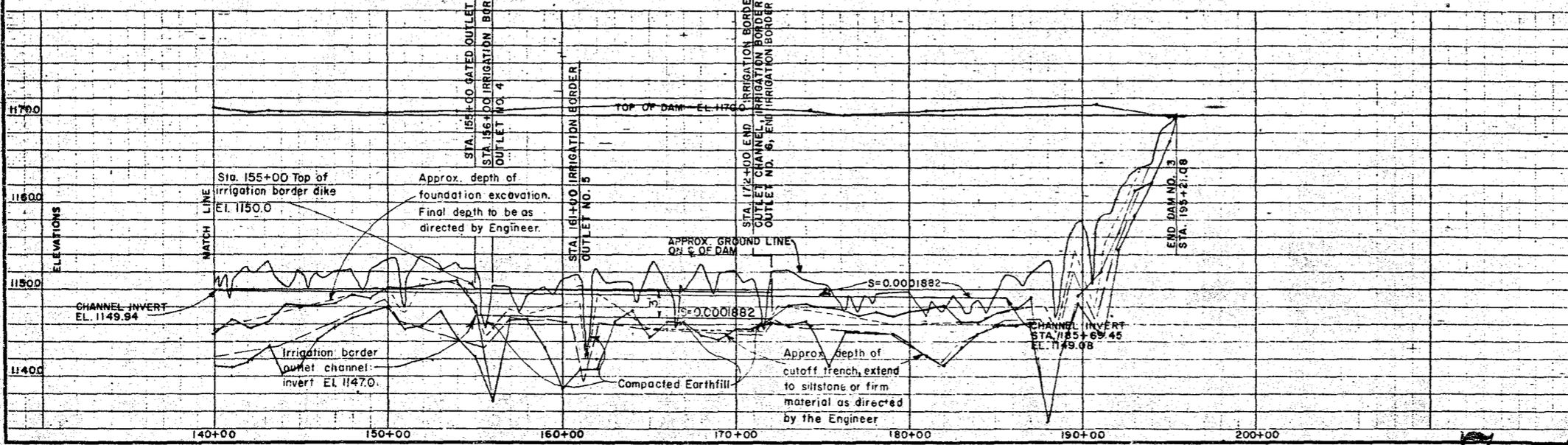
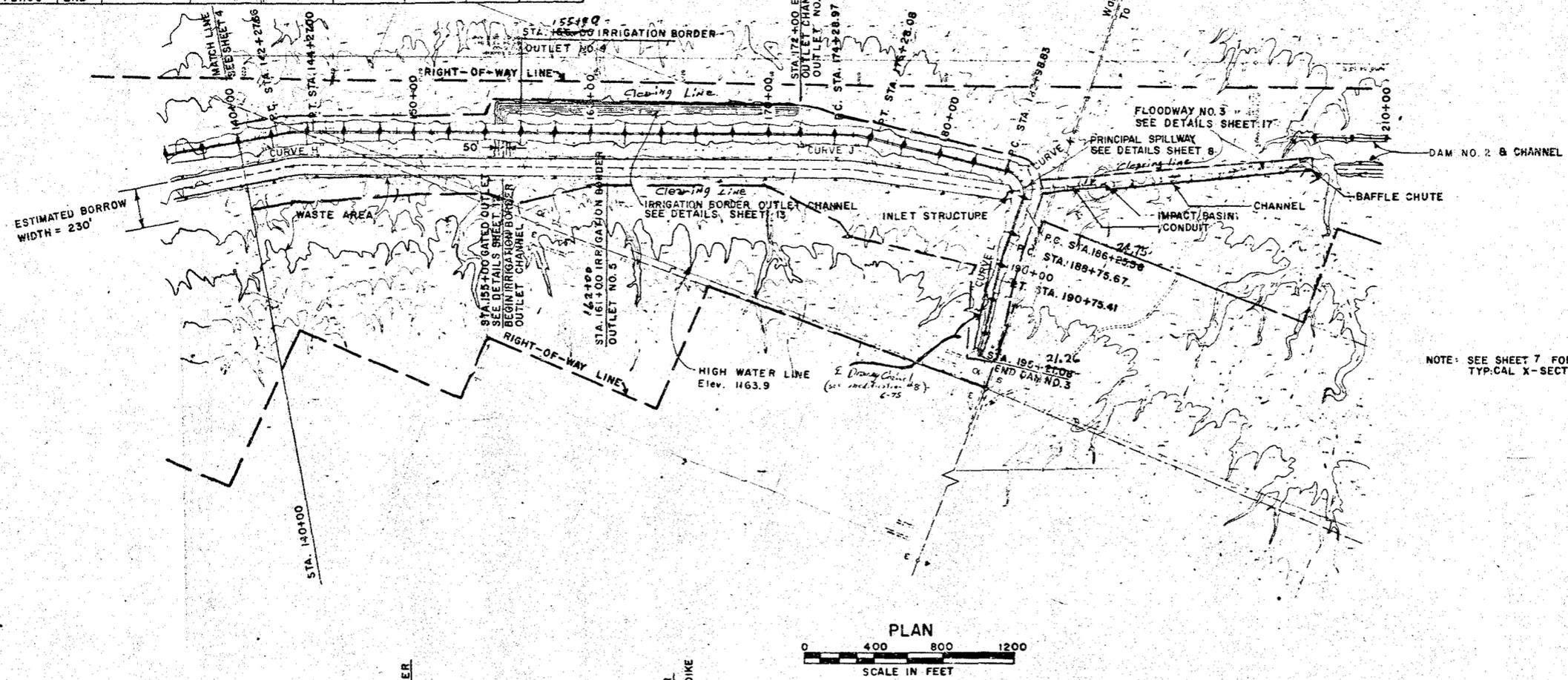
PLAN & PROFILE OF DAM NO. 3
 BUCKEYE FLOODWATER
 RETARDING STRUCTURES 2 & 3
 BUCKEYE W.P.P.
 MARICOPA COUNTY, ARIZONA

U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

Designed	G. WATT	Date	6-72	Approved by	
Drawn	R. SLOCUM	Date	7-72	Title	
Checked	J.L.S., P.J.M.	Date	1-74	Sheet No	4 of 57
				Drawing No	7E-23079

DESCRIPTION				DAM CURVE DATA					
CURVE	STATION	POINT	BEARING	DISTANCE	Δ	D	R	T	L
	140+00.00	M.L.	S57°29'43"W	327.66'					
	142+27.66	P.C.			11°25'15"	5°43'46"	1000.03	100.00	199.34'
H	143+27.66	P.T.							
	144+27.00	P.T.							
	174+28.97	P.C.	S68°54'56"W	3201.97'					
J	175+28.97	P.T.			13°13'50"	6°36'31"	862.63	100.00	199.11'
	176+28.08	P.T.							
	185+98.83	P.C.	S82°08'28"W	1020.75'					
K	185+98.83	P.T.			9°54'55"	42°13'21"	135.70	150.00	226.73'
	186+28.73	P.T.							
	188+75.67	P.C.	N 2°07'37"W	500.11'	12°53'00"				
L	189+75.67	P.T.			3°35'17"	1596.87	100.00	199.74'	
	190+75.41	P.T.							
	195+21.00	END	N 9°17'37"W	545.67'					

CHANNEL CURVE DATA					
CURVE	Δ	D	R	T	L
H	11°25'15"	7°09'42"	800.03	80.00'	159.47'
J	7°34'29"	8°38'48"	562.63	43.87'	87.60'



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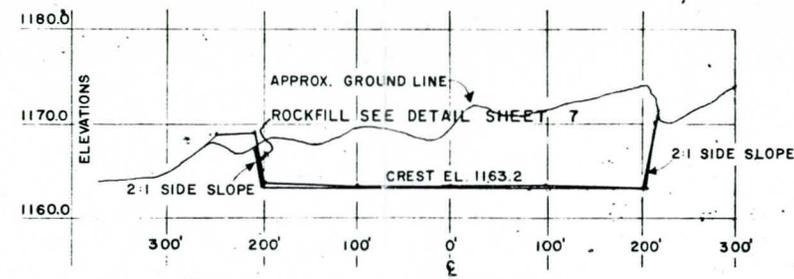
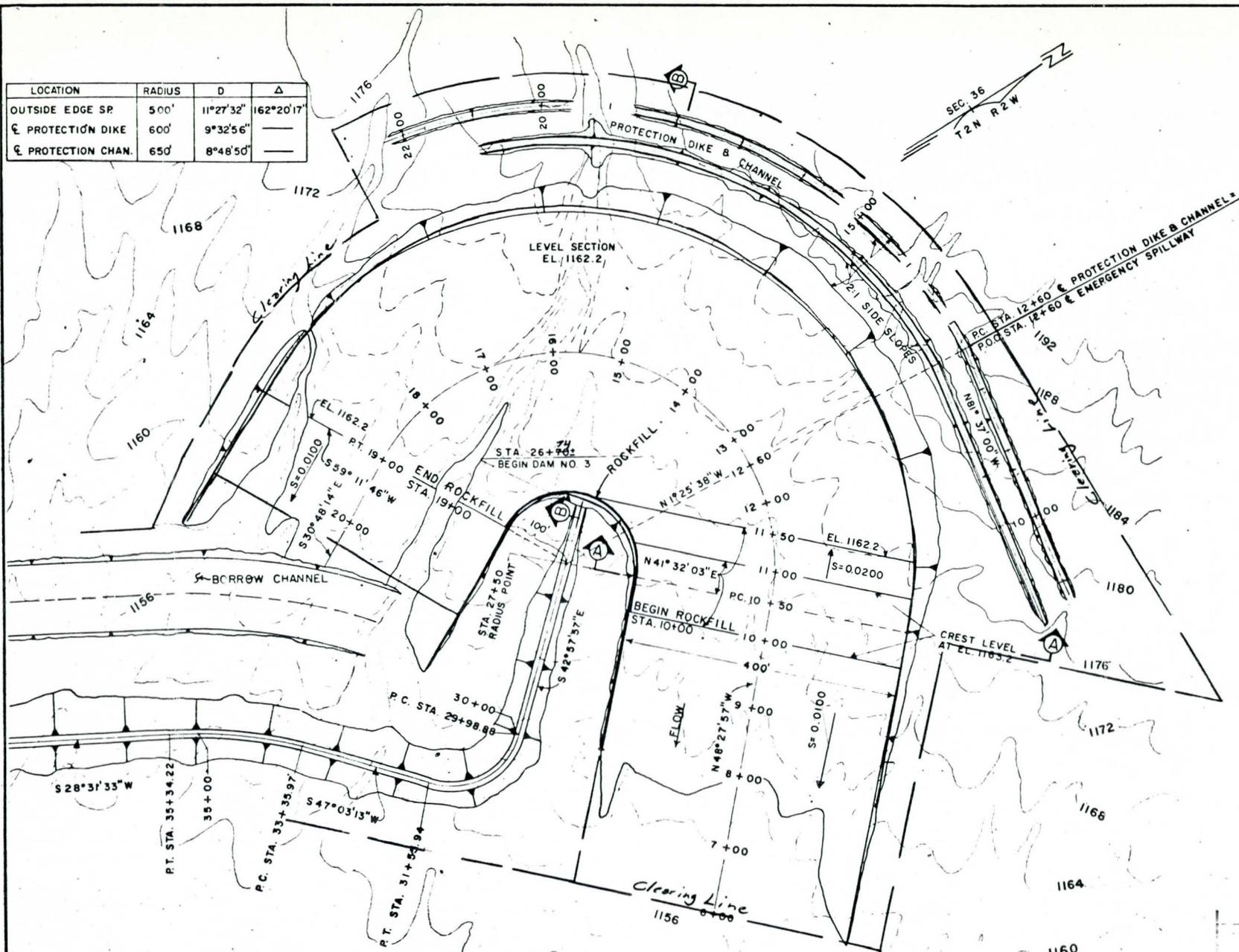
PLAN & PROFILE OF DAM NO. 3
 BUCKEYE FLOODWATER
 RETARDING STRUCTURES 2 & 3
 BUCKEYE, W.P.P.
 MARICOPA COUNTY, ARIZONA

U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

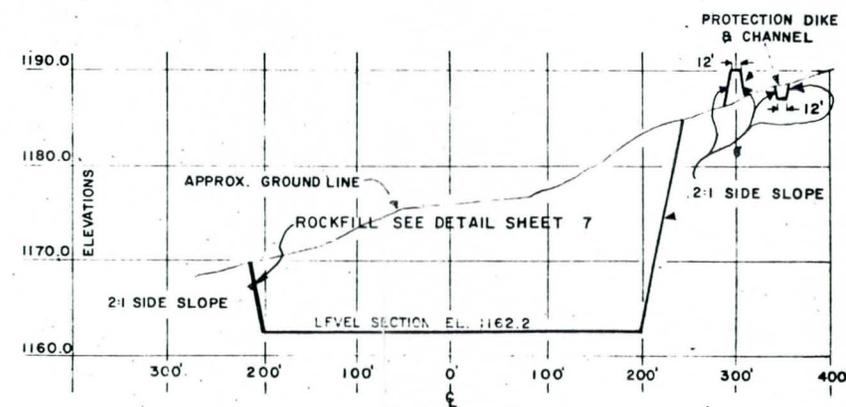
Designed	G. WATT	Date	7-72	Approved by	
Drawn	R. SLOCUM	Date	7-72	Title	
Checked	J.L.S., P.J.M.	Date	1-74	Sheet No.	5 of 57
				Drawing No.	7E-23079

7-45

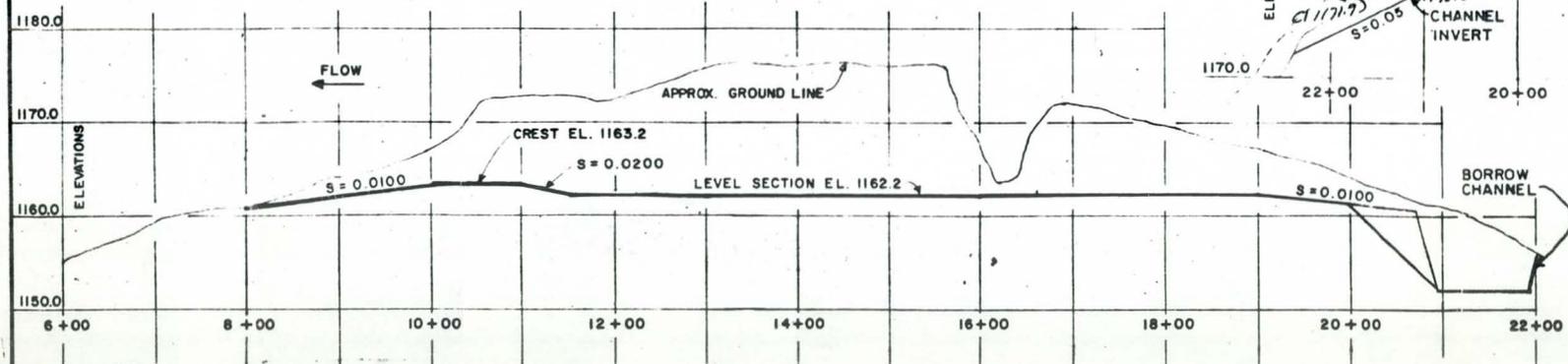
LOCATION	RADIUS	D	Δ
OUTSIDE EDGE SP	500'	11°27'32"	162°20'17"
PROTECTION DIKE	600'	9°32'56"	
PROTECTION CHAN.	650'	8°48'50"	



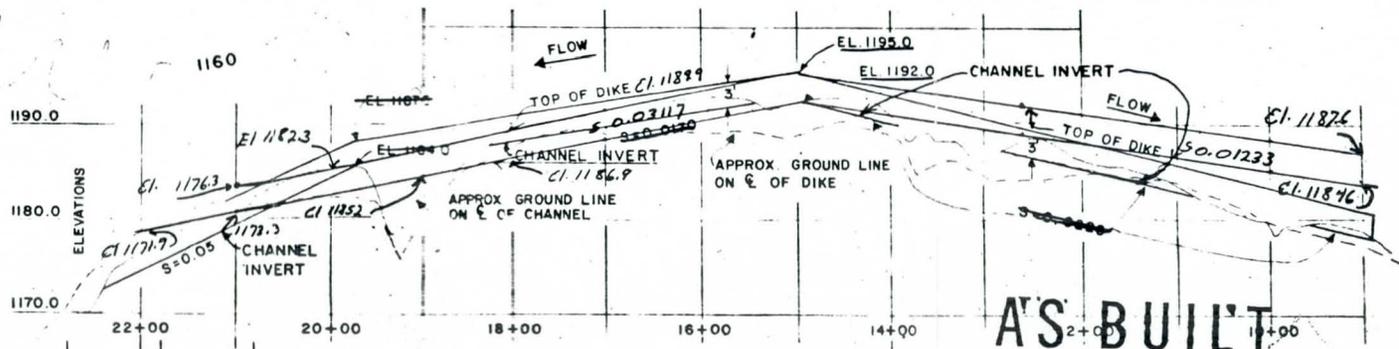
SECTION A-A



SECTION B-B



PROFILE OF EMERGENCY SPILLWAY

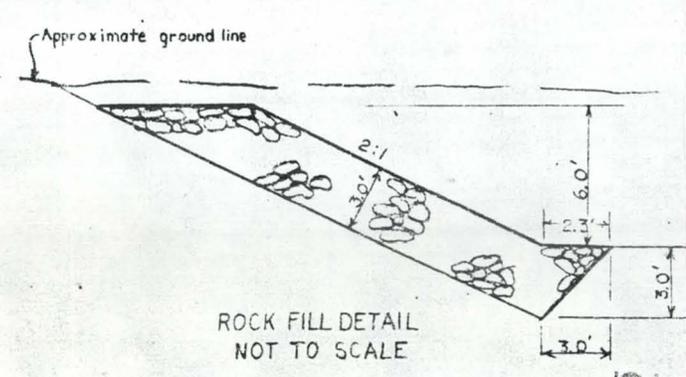
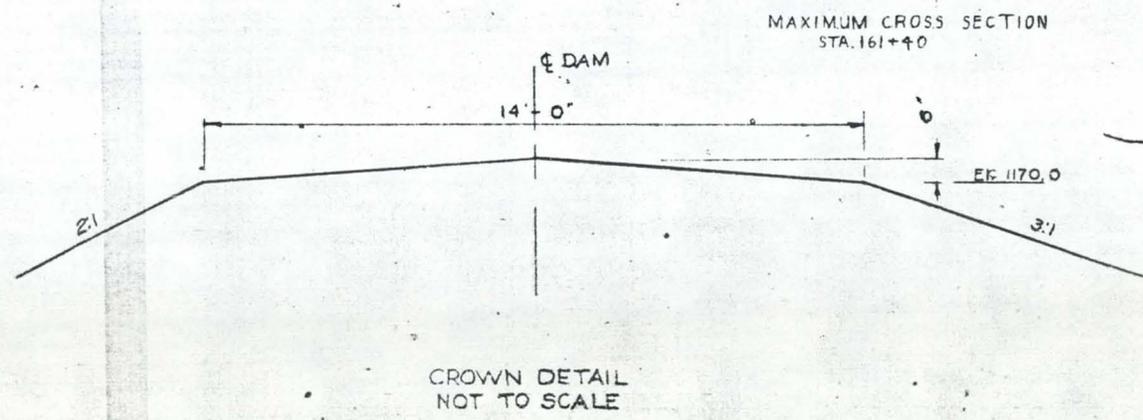
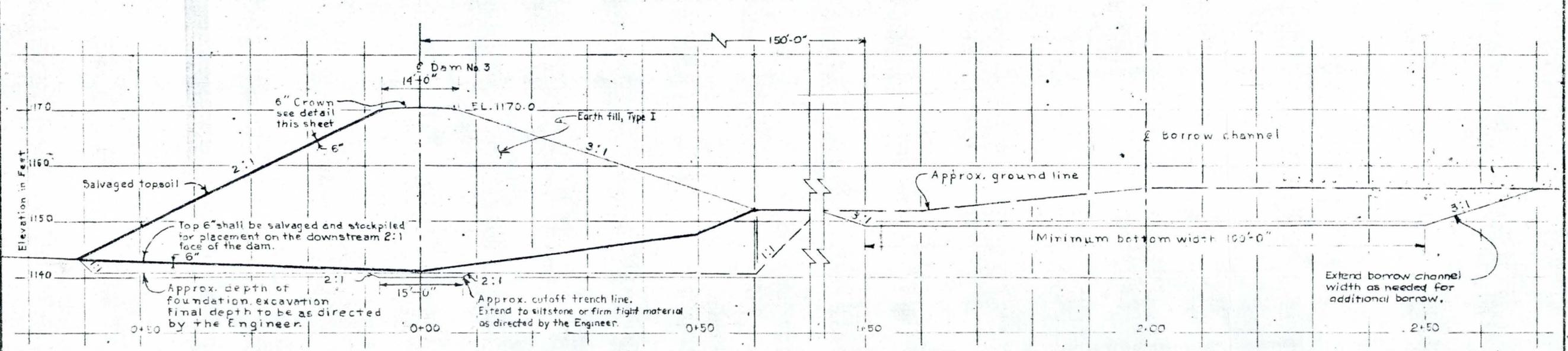
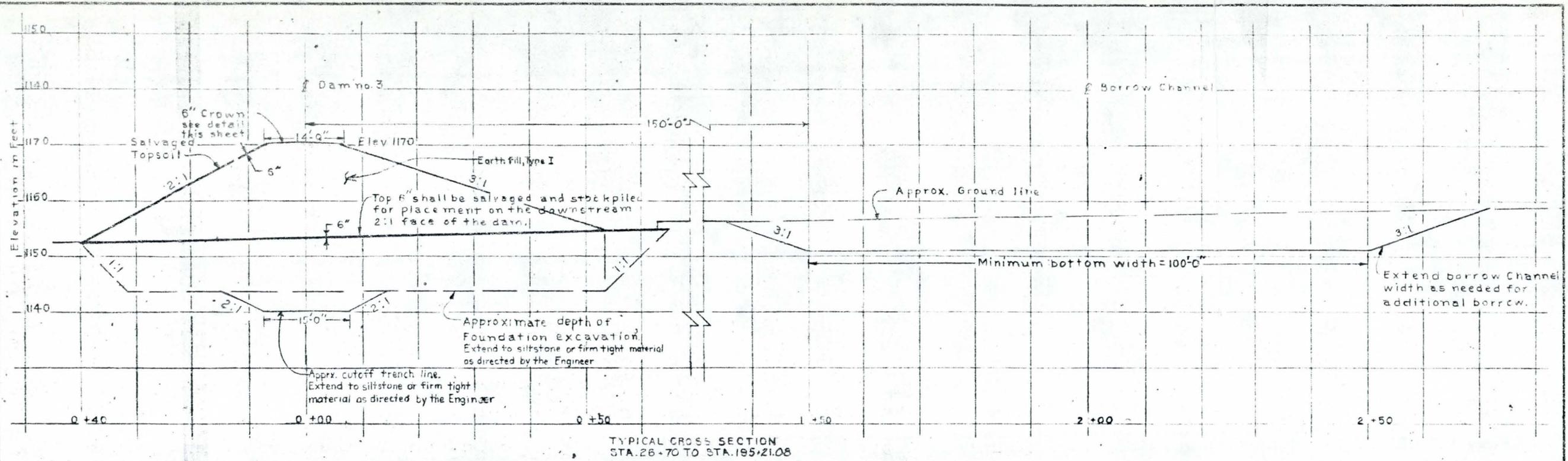


PROFILE OF EARTH PROTECTION DIKE & CHANNEL

A'S BUILT

EMERGENCY SPILLWAY DETAILS DAM NO. 3			
BUCKEYE FLOODWATER			
RETARDING STRUCTURES 2 & 3			
BUCKEYE W.P.P.			
MARICOPA COUNTY, ARIZONA			
U. S. DEPARTMENT OF AGRICULTURE			
SOIL CONSERVATION SERVICE			
Designed	G. WATT	Date	6-72
Drawn	R. SLOCUM	Date	7-31-72
Traced	J. L. S. P. J. M. L.	Date	1-74
Sheet	No. 6	of	57
Drawing No.	7E-23079		

7-43



AS BUILT

TYPICAL & MAXIMUM CROSS SECTIONS OF DAM NO. 3
 BUCKEYE FLOODWATER
 RETARDING STRUCTURES 2 & 3
 BUCKEYE, W. P. P.
 MARICOPA COUNTY, ARIZONA

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

Designed	L. BURTON	Date	1-74
Drawn	LMC	Approved by	
Traced		Title	
Checked	J. L. S. [Signature]	Sheet	7E-23079
		No. of	57

7-45

