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10-59

# ENGINEERING FILE COPY

## DETAILED GEOLOGIC INVESTIGATION OF DAM SITES

### GENERAL

State Texas County Boys ; 1/2, 1/2, Sec.       , T        R        ; Watershed Guadalupe  
 Subwatershed Blue Creek Fund class 3000 Site number 17 Site group II Structure class A  
 (FP-2, WP-1, etc.)  
 Investigated by Dale L. Bidwell (signature and title) Geol. Equipment used Rolling Hills (Type, size, make, model, etc.) Date 11-9-61

Dale L. Bidwell

### SITE DATA

Drainage area size 3.02 sq. mi., 2317 acres. Type of structure compacted earth Purpose floodwater retarding  
 Direction of valley trend (downstream) E-SE Maximum height of fill 25 feet. Length of fill 1500 feet.  
 Estimated volume of compacted fill required 105,600 yards

### STORAGE ALLOCATION

	Volume (ac. ft.)	Surface Area (acres)	Depth at Dam (feet)
Sediment	<u>100</u>	<u>80</u>	<u>15</u>
Floodwater	<u>1130</u>	<u>228</u>	<u>23</u>

### SURFACE GEOLOGY AND PHYSIOGRAPHY

Physiographic description Blacklands Prairie Topography Rolling Hills Attitude of beds: Dip 01 SE Strike SE-SW  
 Steepness of abutments: Left 2 percent; Right 4 percent. Width of floodplain at centerline of dam 500 feet  
 General geology of site: Site 17 is located on an outcrop of the Taylor formation of Upper Cretaceous age.

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FEATURE Centerline of Dam  
 (Centerline of Dam, Principal Spillway, Emergency Spillway, the Stream Channel, Investigations for Drainage of Structure, Borrow Area, Reservoir Basin, etc.)

DRILLING PROGRAM

Equipment Used	Number of Holes		Number of Samples Taken		
	Exploration	Sampling	Undisturbed (state type)	Disturbed Large	Small
<u>Rolling 1500</u>	<u>12</u>	<u>3</u>			<u>20</u>
Total					

SUMMARY OF FINDINGS  
 (include only factual data)

The foundation in the abutment segments is composed of three horizons of residual soil. The upper horizon is composed of CH clay containing a slight amount of organic matter. The middle horizon is composed of gravelly CH and clayey gravel. The lower horizon is composed of CH soil containing slight amounts of sand. The clay is actually weathered shale.

The foundation in the valley floor segment is composed of the following soil horizons:

The surface horizon is CH soil containing a slight amount of organic matter and an occasional trace of gravel.

The next horizon is composed of gravelly CH soil.

The third horizon is slightly sandy, CH soil which is actually weathered shale. Bedrock is composed of shale.



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FEATURE Emergency Spillway  
 (Centerline of Dam, Principal Spillway, Emergency Spillway, the Stream Channel, Investigations for Drainage of Structure, Borrow Area, Reservoir Basin, etc.)

DRILLING PROGRAM

Equipment Used	Number of Holes		Number of Samples Taken		
	Exploration	Sampling	Undisturbed (state type)	Disturbed Large	Small
Acker Auger	10	3		3	
Falling 1500	6	3			
Total	16	6			

SUMMARY OF FINDINGS  
 (include only factual data)

Three horizons were found in the spillway.  
 The top horizon is a slightly gravelly, slightly organic GI material.  
 The second horizon was a sandy GI material as determined from the samples obtained after great difficulty in augering the materials.  
 The lower horizon is a shaly GI material containing slight amounts of CaCO<sub>3</sub>.  
 Due to difficulty in obtaining the services of a downer the exact nature of the GI horizon is not known; however, as soon as a downer can be obtained and pits dug in the spillway area a supplemental report will be submitted describing the nature of the GI horizon and the underlying shaly clay in detail.  
 Representative composite samples were submitted of each horizon in the spillway from the spillway test borings.



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FEATURE Borrow  
 (Centerline of Dam, Principal Spillway, Emergency Spillway, the Stream Channel, Investigations for Drainage of Structure, Borrow Area, Reservoir Basin, etc.)

DRILLING PROGRAM

Equipment Used	Number of Holes		Number of Samples Taken		
	Exploration	Sampling	Undisturbed (state type)	Disturbed	
				Large	Small
<u>Acker Auger</u>	<u>15</u>	<u>6</u>		<u>4</u>	
Total					

SUMMARY OF FINDINGS  
 (include only factual data)

Three major material horizons were found in the borrow area.  
The top horizon is a slightly organic, slightly sandy CH material; the second horizon, where present, is a gravelly CH or CH-GC material containing variable amounts of coarse sand, and the lower horizon is a slightly sandy, shaly CH material.  
In a few places, as shown on the grid sheets, an alluvial type CH material with sand laminae was found above the gravelly CH horizon.  
A high water table was found at 6 feet at A 29+00 in the borrow.  
Representative composite samples were taken of each major horizon and a single sample was taken of the laminated CH alluvial material.

DETAILED GEOLOGIC INVESTIGATION OF DAM SITES

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State Texas County Hays Watershed Guadalupe Subwatershed Plus Creek  
Site number 12 Site group II Structure class A Investigated by Henry H. Swope Date: 11-8-61  
(signature and title)

INTERPRETATIONS AND CONCLUSIONS

Centerline Dam: Founding of the cutoff wall trench as outlined on sepias submitted should provide adequate and necessary treatment of the foundation entirely. Founding the cutoff trench as indicated should reduce the possibility of seepage occurring in the abutments after water is impounded. Notice that water will cover much of the abutment slopes when its surface is at principal spillway crest elevation. Materials removed from the abutment segments of the cutoff trench should be used as recommended for similar soils to be removed from the emergency spillway cut. Soils removed from the valley floor segment of the cutoff trench should be used as recommended for similar soils to be removed from the borrow area.

Principal Spillway: Treatment of the foundation underlying the principal spillway should be as recommended for the valley floor segment of the centerline of the dam.

The soils used as backfill in the structure foundation trench should be as similar as possible to those used in adjacent segments of the cutoff trench.

Stream Channel: Preparation of the stream channel should consist of the removal of the top horizon.

Borrow: Gravelly CH and CH-GC materials found in the borrow may best be used in the outer sections of the dam.

Other CH materials in the borrow may be used anywhere in the dam.

The high water table at A 28+00 was encountered in the laminated CH material and did not appear to be under a hydrostatic head.

Emergency Spillway: From the information now available from the spillway, before test pits have been put down, CH materials may be used anywhere in the dam and GC materials may best be used in the downstream section of the dam.

A conclusive report on the spillway conditions, giving a description of the GC horizon and a determination of whether or not classified rock excavation is present in the spillway, will be submitted when deeper exploration is completed. Processing of the samples and preliminary design of the structure should not be held up for this information.

A vegetative cover should be placed on the spillway soon after construction to help reduce the effects of erosion.



Trial Form

REPORT TO ACCOMPANY  
 DETAILED GEOLOGIC INVESTIGATION OF DAM SITES

COMPOSITE SAMPLES FOR MOISTURE DENSITY DETERMINATION

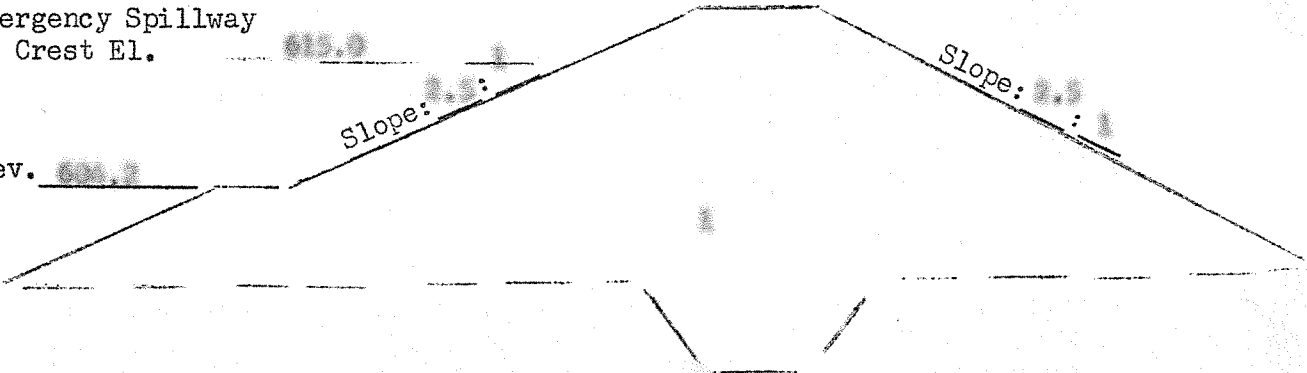
Watershed Flam Creek

Site No. 12

SUGGESTED EMBANKMENT SECTION(S)

Emergency Spillway  
 Crest El. 815.0

Elev. 820.0



SUGGESTED USE OF MATERIALS

Comp. No.	Material Source	Hole Nos.	Field Class.	Depth		Emb. Sec.	Quan. Avail. (Est.) Cu. Yds.
				From	To		
1	Gravel	100-104	CE	1.0	4.0	1	75,000
2	"	161-164	CE	4.0	7.0	1	25,000
3	"	160-164	CE	7.0	13.0	1	35,000
4	"	110	CE	2.0	10.0	1	15,000
4	Bank Spwy	211, 212, 214	CE	0.0	3.0	1	55,000
5	"	211, 212, 214	CE	3.0	6.0	1	30,000
6	"	211, 214	CE	6.0	Grade	1	10,000

Comments: All materials may be used in zone 1 on a selective basis.

REPORT TO ACCOMPANY  
 DETAILED GEOLOGIC INVESTIGATION OF DAM SITES

GROUNDWATER ELEVATIONS AND SUGGESTED TRENCH DEPTHS FOR  
CUTOFF AND PRINCIPAL SPILLWAY FOUNDATION

Watershed \_\_\_\_\_

Site No. \_\_\_\_\_

Centerline Embankment					:	Centerline Principal Spillway				
Test	Ground:	Trench	:	Material	:	Test	Ground:	Trench	:	Material
Hole	Water:	Bottom	:	at	:	Hole	Water:	Bottom	:	at
No.	Elev.:	Depth:	Elev.:	Grade	:	No.	Elev.:	Depth:	Elev.:	Grade
1		6.0	487.2	CS	:	100		7.0	481.7	CS
2		6.0	481.5	CS	:	101		7.0	480.4	CS
3		7.0	481.0	CS	:	102		8.0	480.1	CS
4		7.0	480.5	CS	:					
5		6.0	476.8	CS	:					
101		7.0	480.4	CS	:	Alternate Location				
6		7.0	487.5	CS	:					
7		10.0	488.3	CS	:					
8		6.0	480.7	CS	:					
9		10.0	480.3	CS	:					
10		6.0	480.8	CS	:					
11		7.0	486.7	CS	:					

Comments: \_\_\_\_\_  
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