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An Intensive Survey of the Proposed Channel Bank Protection Little River
Diversion Channel near Allensville, Cape Girardeau County, Missouri

U. S. Army Corps of Engineers
Memphis District

Jimmy D. McNeil
Archeologist

DTIC QUALITY INSPECTED 4

June 1983

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Abstract

On 4 and 5 November 1982, Memphis District archeologists, Mr. Jimmy McNeil and Mr. Doug Prescott, conducted an intensive survey for prehistoric, historic, and architectural properties along the proposed channel bank protection right-of-way on the Little River Diversion Channel near Allensville, Cape Girardeau County, Missouri. The area surveyed is located in the SW 1/4, NE 1/4, Section 1, Township 29N, Range 11E, Whitewater, Missouri Quadrangle, and totals approximately 1.3 hectares (3.21 acres). The study methods included a review of published literature, a review of state and Federal archival sources, a cartographic review, and intensive field examination. One unrecorded site, 23CG113, was discovered. The site is extensive. Large storage pits and seemingly undisturbed midden were noted in the bluff profile. In view of the current information on this site, it is believed that the site is potentially eligible for nomination to the National Register of Historic Places.

The proposed project is designed to avoid and protect the site and stop the bank erosion. Thus, it is recommended that the proposed project proceed as currently planned.

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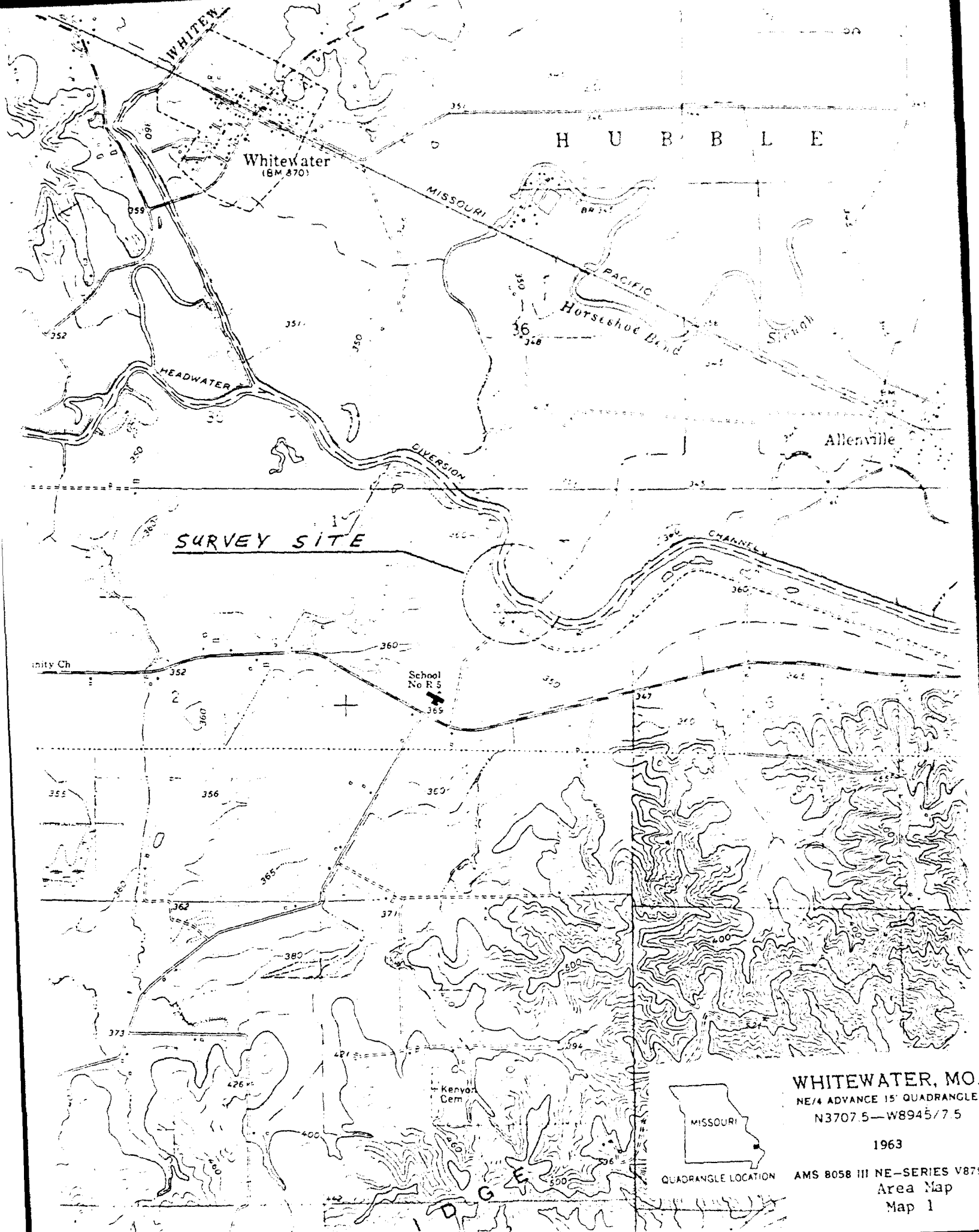
INTRODUCTION

On 4 and 5 November 1982, an intensive survey of a portion of the right descending bank of the Little River Diversion Channel was conducted by Mr. Jimmy McNeil and Mr. Doug Prescott of the Environmental Resources Branch, U.S. Army Corps of Engineers, Memphis District.

During the November survey, site 23CG113 was discovered eroding out of the channel bank. No other sites were found within the project right-of-way. On 4 and 5 May 1983, Corps archeologists, Mr. Jimmy McNeil and Ms. Joan Koch, returned to the site to check the amount of erosion that had occurred during the winter.

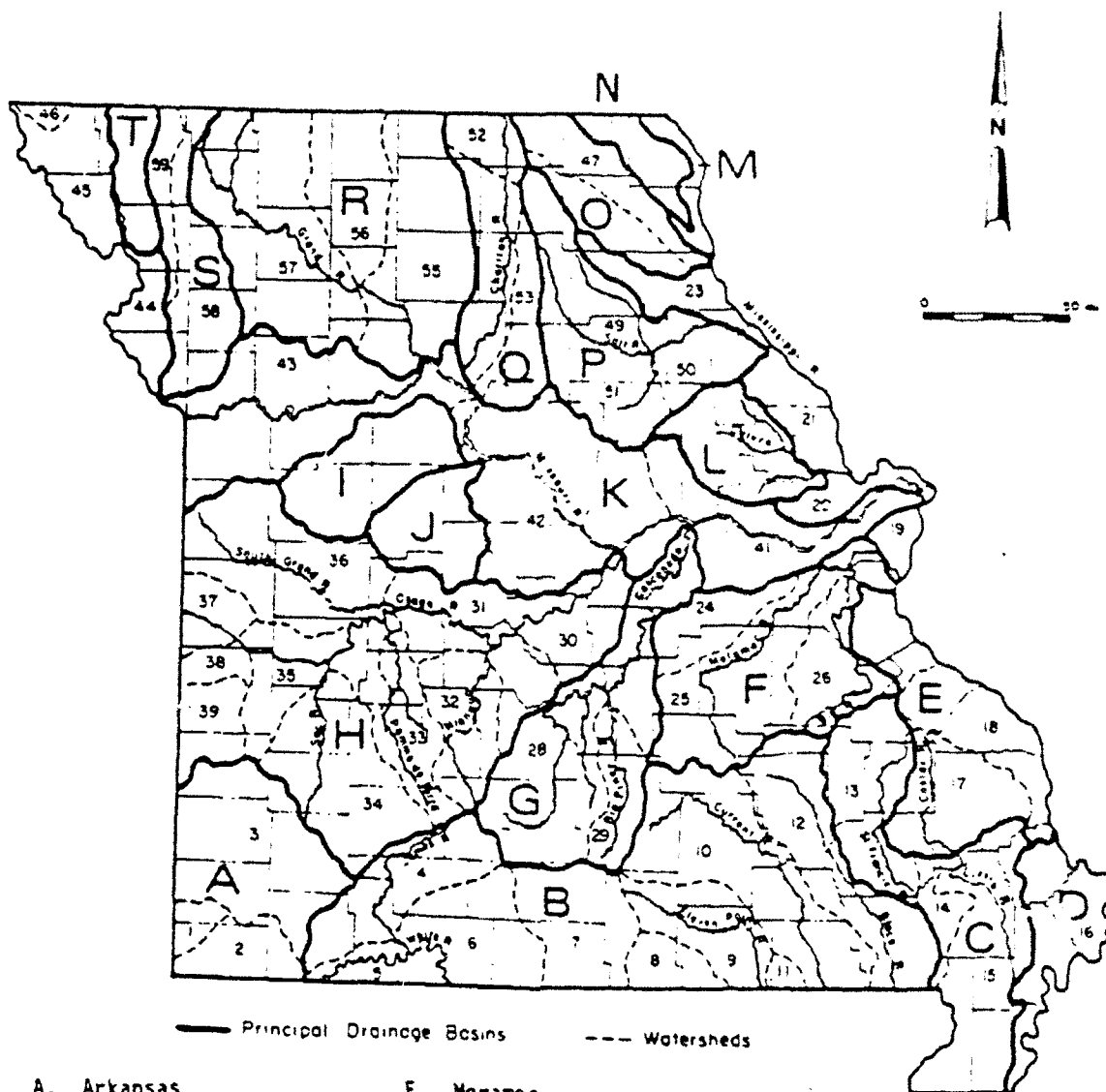
PROJECT DESCRIPTION

The proposed project is located on the right descending bank of the Little River Headwater Diversion Channel near Allensville, Missouri (Map 1). A 1200-foot section is actively eroding and threatens the adjacent levee head. The erosion has been monitored since September 1978. At that time a 200-foot section was caving. Three years later the bank collapse had extended to an approximate 1000-foot reach with the bank receding about 20 feet. During the last three months of 1982, the erosion had extended another 200 feet downstream and an additional 60 feet inland. The upstream two-thirds of the project area is highly sensitive to erosion. The downstream project third consists of an erosion-resistant clay plug. The clay plug protrudes from the collapsing bank, interrupting the water flow and causing turbulence that erodes the non-clay areas (C.O.E. 1983a).



WHITEWATER, MO.
NE/4 ADVANCE 15' QUADRANGLE
N3707.5—W8945/7.5
1963
AMS 8058 III NE—SERIES V879
Area Map
Map 1





- | | | |
|-----------------------|------------------------|-----------------------|
| A. Arkansas | F. Meramec | |
| 1. Lost Creek | 24. Bourbeuse | |
| 2. Elk | 25. Meramec | |
| 3. Spring | 26. Big | L. Cuivre |
| B. White | G. Gasconade | M. Des Moines |
| 4. James | 27. Lower Gasconade | N. Wyaconda/Fox |
| 5. Table Rock | 28. Upper Gasconade | O. Fabius |
| 6. White | 29. Big Piney | 47. North Fabius |
| 7. North Fork | H. Osage | 48. South Fabius |
| 8. Spring | 30. Lower Osage | P. Salt |
| 9. Eleven Point | 31. Lake of the Ozarks | 49. North Fork |
| 10. Current | 32. Niangua | 50. Salt 1 |
| 11. Fourche Creek | 33. Pomme de Terre | 51. Salt 2 |
| 12. Black | 34. Sac | Q. Chariton |
| C. St. Francis | 35. Upper Osage | 52. Upper Chariton |
| 13. Upper St. Francis | 36. South Grand | 53. Lower Chariton |
| 14. Lower St. Francis | 37. Marais des Cygnes | 54. Middle/East Fork |
| 15. Little River | 38. Little Osage | R. Grand |
| D. Lower Mississippi | 39. Marmaton | 55. Grand 1 |
| 16. Lower Mississippi | I. Blackwater | 56. Thompson |
| E. Upper Mississippi | J. Lamine | 57. Grand 2 |
| 17. Whitewater/Castor | K. Missouri | S. Platte |
| 18. Mississippi 1 | 41. Missouri 1 | 58. Platte |
| 19. Mississippi 2 | 42. Missouri 2 | 59. One Hundred & Two |
| 20. Mississippi 3 | 43. Missouri 3 | T. Nodaway |
| 21. Mississippi 4 | 44. Missouri 4 | |
| 22. Mississippi 5 | 45. Missouri 5 | |
| 23. North River | 46. Nishnabotna | |

ENVIRONMENTAL SETTING

The surface geology of the study area is Tertiary-Quaternary recent deposits. These deposits consist of alluvial and colluvial materials from the uplands that are approximately 200 feet thick (Keonig 1961).

The eroding bank is composed of braided stream terrace deposits laid down by meandering, small streams which characteristically flow in parallel directions. These deposits contain alternating layers of clay, silt, and sand. These are underlain by coarse sand grading to sandy gravel. An abandoned, clay filled, stream channel crosses perpendicular to the diversion channel. The clay is highly resistant to erosion, thus causing a plug that projects into the channel (COE 1983a). The project is located on the Dubbs soil formation (USDA 1977).

Most of the area in which the proposed project is located is in agriculturalized land. Wooded areas near the project are dominated by black willow (salix nigra) and cottonwood (Populus deltoides) (COE 1983b). Agricultural grasses and various scrub bushes and vines exist in portions of the project right-of-way.

RESULTS OF THE RECORDS SEARCH

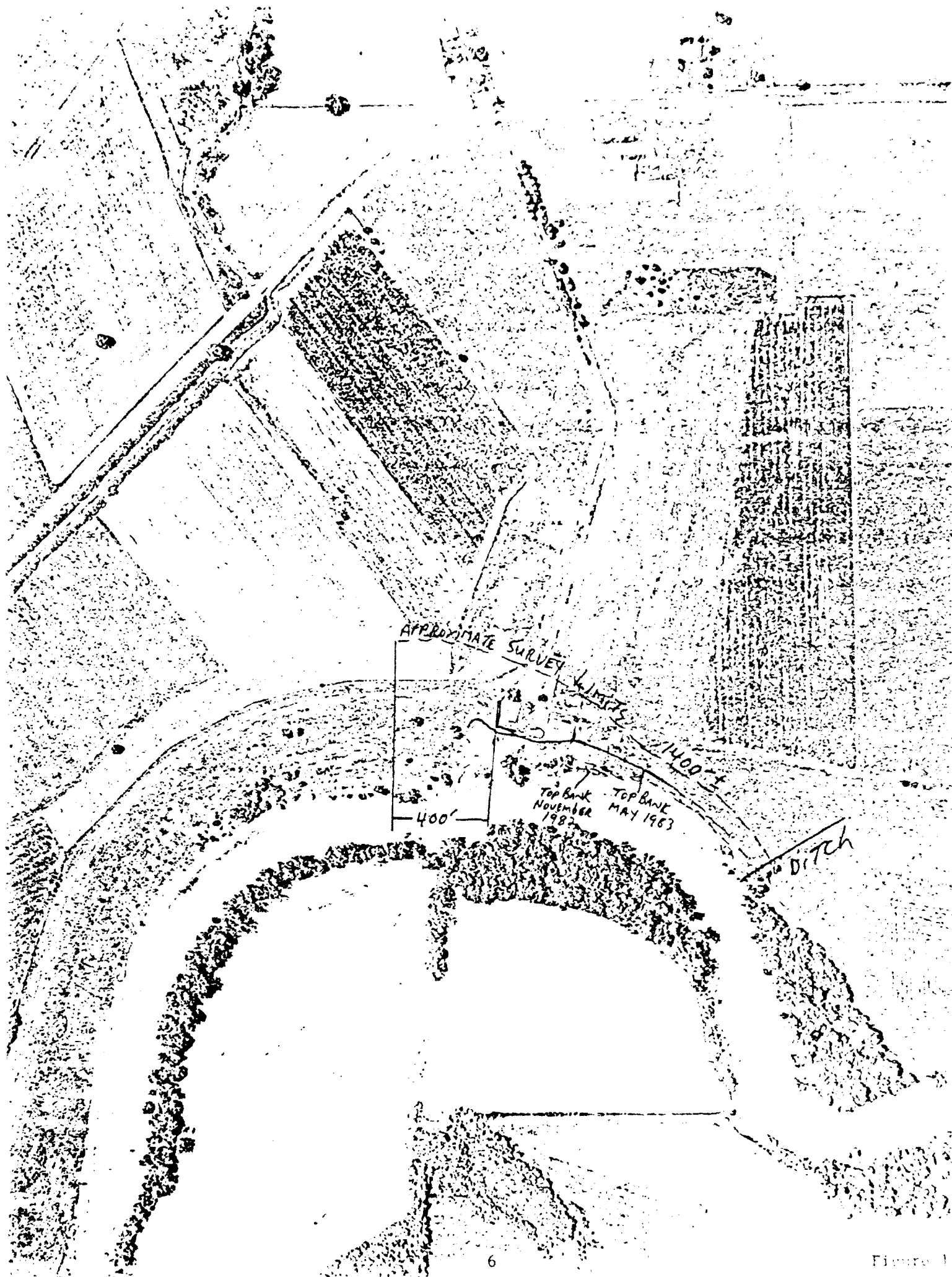
State files were checked for recorded sites within, or near, the project right-of-way. No sites are recorded for the project area (Weichman 1982). The National Register of Historic Places was consulted and there are no listed or eligible sites within the project boundaries.

PREVIOUS RESEARCH

Until recently, very little archeological work has been conducted in the general area of this survey, and no work has been conducted in the immediate project area. Recent work within Cape Girardeau County has been conducted by Grantham (1979), Hartfield, Price and Green (1983), Iroquois Research Institute (1978), Nixon (1982), C. R. Price (1977), and J. E. Price (1977). Before these recent researchers began work in the area, most archeological and historical work had been conducted by Goodspeed (1888) and Phillips, Ford, and Griffin (1951).

SURVEY METHODOLOGY AND RESULTS

The designated right-of-way encompasses approximately 1.3 hectares (3.2 acres) (Figure 1). The survey area consisted of a corridor 30.48 meters (100 feet) wide and 426.72 meters (1400 feet) long on the right descending bank of the Little River Diversion Channel. The project area consists of a high knoll-like area and a lower area. The lower area has been used as a borrow pit. In both areas the ground visibility was approximately 45 percent. Because of the ground cover, 30X30X50 cm shovel cuts were



placed every 30 meters along the length and width of the borrowed area. However, because of the excellent channel bank profile it was felt that extensive shovel cuts were not needed on the high area. The bank profile averaged 12.2 to 15.25 meters (40-50 feet) in height. In most places, it was possible to walk on a layer of slumped ground surface, about 2 meters beneath the upper bluff edge. This provided an excellent stratigraphic view of the project right-of-way. Site 23CG113 was found in the exposed profile. Stone and ceramic artifacts were found both on the surface and in the profile; large pits were also noted in the profile. In order to try to determine the site boundary, surface survey was continued outside the right-of-way into a plowed field. However, there had been no rain after the plowing, thus, it was difficult to see small artifacts. Artifacts were found 90 meters landward of the channel top bank. Approximate site dimensions are 320 meters northwest to southeast along the channel and approximately 90 meters southwest landward. A field examination of surface and profile artifacts included shell tempered plain ceramics, one expanded item early woodland-like projectile point (found approximately 95 cm below the surface), a small, triangular Lake Mississippian-like projectile point (found approximately 50 cm below the surface), and non-diagnostic cores and flakes. Pits encountered in the bank profile contained highly leached bone, ceramics, lithics, and carbon flakes. One pit was approximately 2 meters deep and wide. Midden depth varied from 5 cm to 75 cm with the maximum depth near the crest of the knoll.

On 4 and 5 May 1983, Mr. Jimmy McNeil and Ms. Joan Koch, staff archeologists, returned to the proposed project area to check erosion damage to site 23CG113. The damage was significant. Approximately 18.3 meters (60 feet) of inland site had eroded away. Again, while walking below top bank, midden, ceramics, storage pits, bone and lithics were noted eroding out of the site.

The bank profile did not indicate a plow zone. Thus, it is possible that portions of the site have never been plowed, although the right-of-way has been utilized as grazing pasture. There was also no indication of vandalism by relic collectors. Figure 2 shows the general soil profiles for the high and low areas of the project.

Because of the presence of apparently undisturbed buried midden and features, and lack of archeological work in the immediate surrounding area, the Memphis District considers this site to be of National Register quality.

PROJECT IMPACT

The proposed project will provide protection against the erosion of the base soils beneath the site, thus stopping site damage caused by massive erosion and slumpage. Typical slab failures of the upper strata induced by the undercutting have been responsible for the bank collapse. The erosion can be stopped by placing riprap in the channel and on the exposed bank.

UNIFIED SOIL CLASSIFICATION

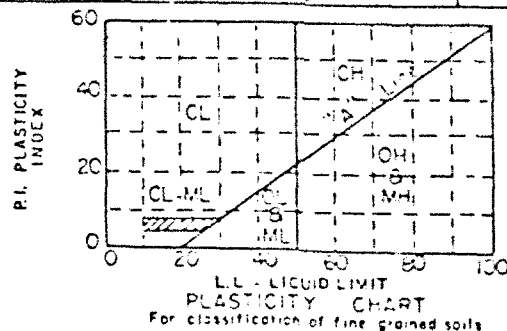
MAJOR DIVISION		TYPE	LETTER SYMBOL	NUM. SCL	TYPICAL NAMES
COARSE GRAINED SOILS More than half of material is larger than No. 2 sieve size	GRAVEL More than half of coarse fraction larger than No. 4 sieve size	GRAVEL (little or no fines)	GW	100	GRAVEL, Well graded, gravel-sand mixtures, little or no fines
		GRAVEL (more than 5% fines)	GP	50	GRAVEL, Poorly graded, gravel-sand mixtures, little or no fines
		CLAYEY GRAVEL (more than 12% fines)	GM	40	SILTY GRAVEL, gravel-sand-silt mixtures
		CLAYEY GRAVEL (more than 20% fines)	GC	30	CLAYEY GRAVEL, gravel-sand-clay mixtures
	SAND More than half of coarse fraction smaller than No. 4 sieve size	CLEAN SAND (little or no fines)	SW	60	SAND, Well graded, gravelly sands
		SAND (more than 5% fines)	SP	30	SAND, Poorly graded, gravelly sands
		SILTY SAND (more than 12% fines)	SM	20	SILTY SAND, sand-silt mixtures
		CLAYEY SAND (more than 20% fines)	SC	10	CLAYEY SAND, sand-clay mixtures
FINE GRAINED SOILS More than half the material is smaller than No. 200 sieve size	SILTS & CLAYS (liquid limit < 50)	ML	10	SILT & very fine sand, silty or clayey fine sand or clayey silt with slight plasticity	
		CL	40	LEAN CLAY, Sandy Clay, Silty Clay, of low to medium plasticity	
		OL	10	ORGANIC SILTS, and organic silty clays of low plasticity	
	SILTS & CLAYS (liquid limit > 50)	MH	40	SILT, fine sandy or silty soil with high plasticity	
		CH	10	FAT CLAY, inorganic clay of high plasticity	
		OH	10	ORGANIC CLAYS of medium to high plasticity, organic silts	
		HIGHLY ORGANIC SOIL		PT	10
WOOD		Wd	10	WOOD	
SHELLS		SI	10	SHELLS	
NO SAMPLE					

NOTE: Soils possessing characteristics of two groups are designated by combinations of group symbols.

DESCRIPTIVE SYMBOLS

COLOR	
Color	Symbol
Tan	T
Yellow	Y
Red	R
Black	BK
Gray	Gr
Light Gray	lGr
Dark Gray	dGr
Brown	Br
Light Brown	lBr
Dark Brown	dBr
Brownish-Gray	brGr
Grayish-Brown	grBr
Greenish-Gray	gnGr
Grayish-Green	grGn
Green	Gn
Blue	Bl
Blue-Green	BlGn
White	Wh
Mixed	Mix

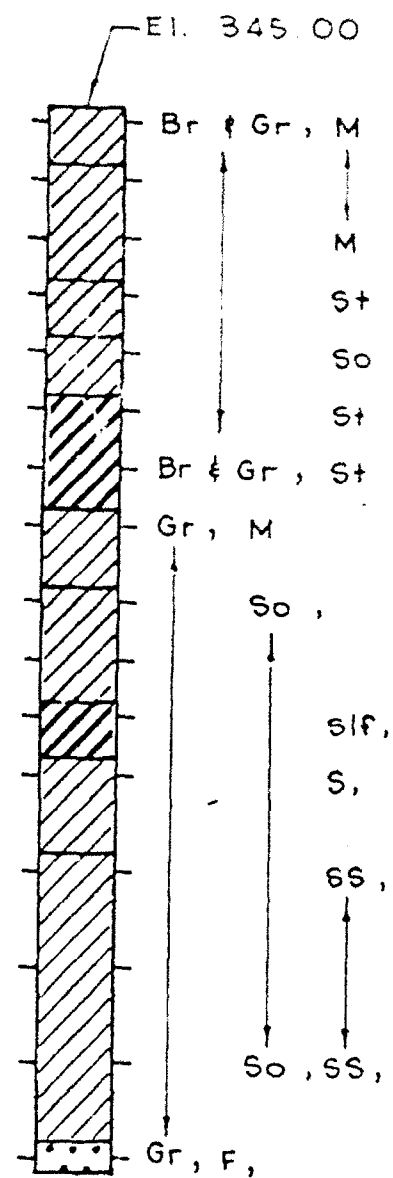
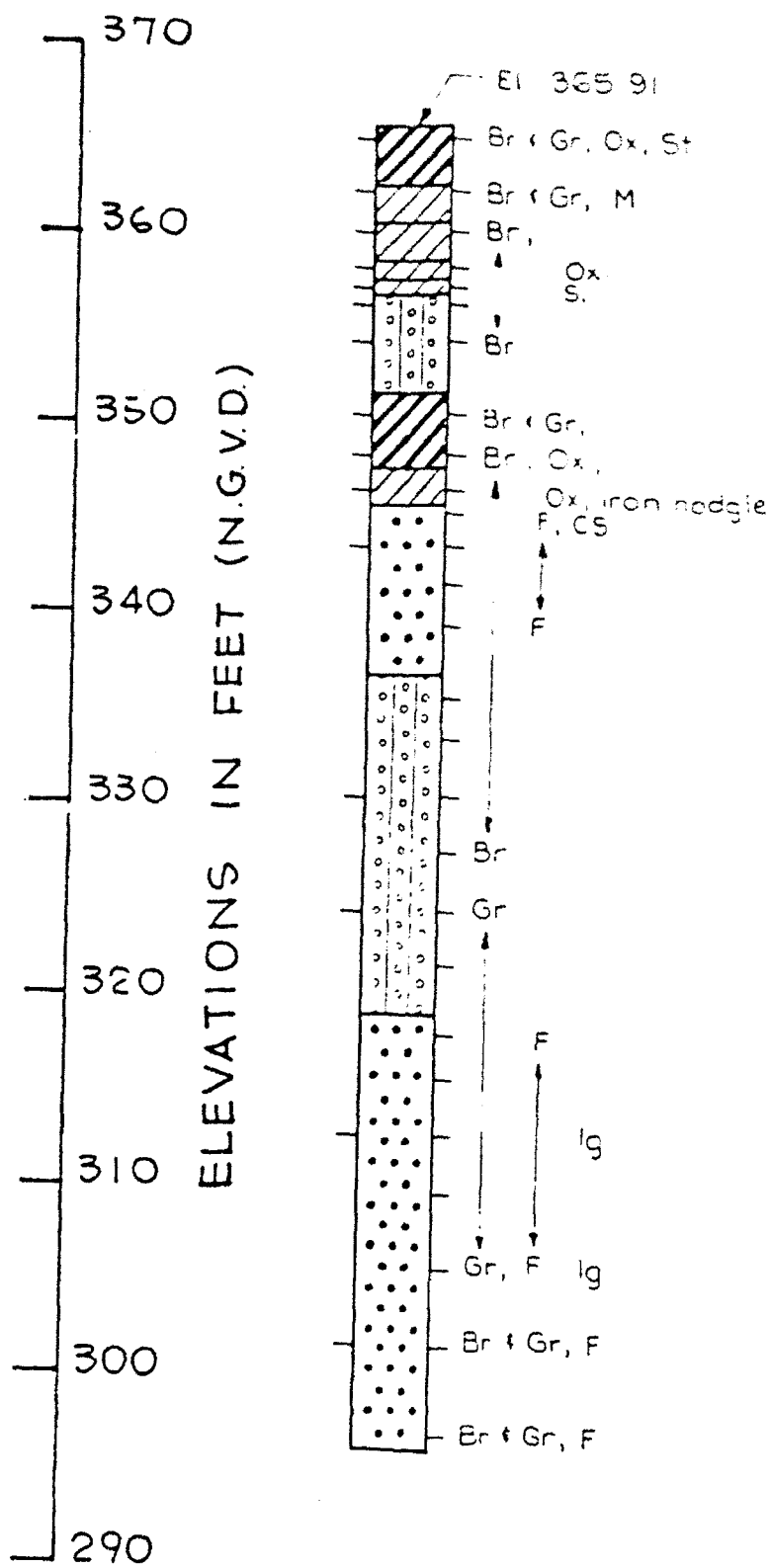
CONSISTENCY FOR COHESIVE SOILS		
CONSISTENCY	COHESION IN LBS/FT FROM UNCONFINED COMPRESSION TEST	SYMBOL
Very Soft	0 - 250	VS
Soft	250 - 1000	S
Medium	1000 - 2000	M
Stiff	2000 - 4000	St
Very Stiff	4000 - 8000	VSt
Hard	8000 -	H

[illegible]

STANDARD BORING LEGEND

DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS

Figure 2



ALL EL. IN NATIONAL GEODETIC VERTICAL DATUM

MISSISSIPPI RIVER AND TRIBUTARIES

RIGHT BANK CAVING AT WEST

END OF LITTLE RIVER DIVERSION

General Project Soil Profiles

Figure 3

SUBJECT: CHANNEL BANK PROTECTION
LITTLE RIVER DIVERSION CHANNEL
NEAR ALLENVILLE, MISSOURI

COMPUTED BY

DATE

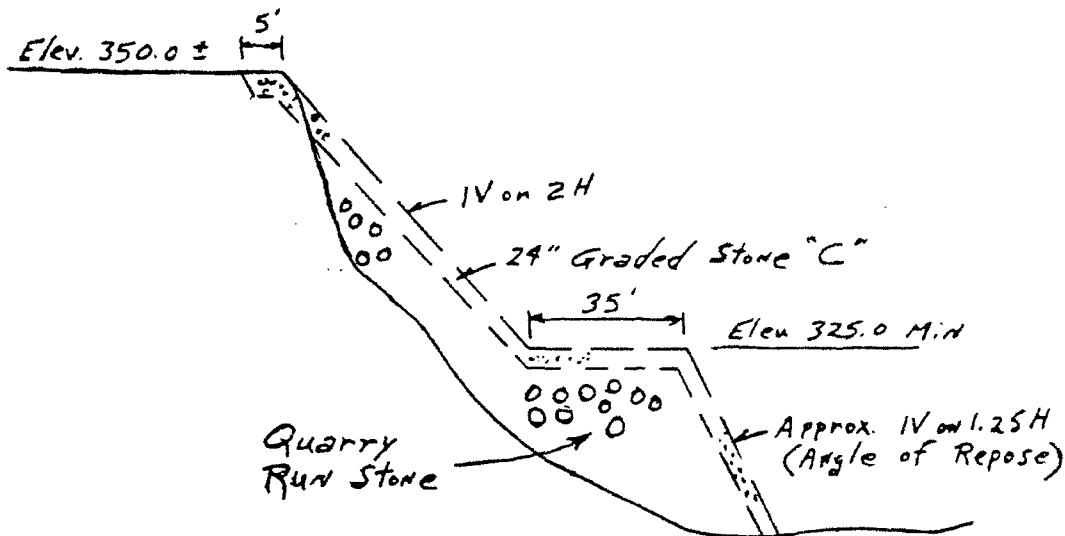
FILE NO.

CHECKED BY

DATE

SHEET NO.

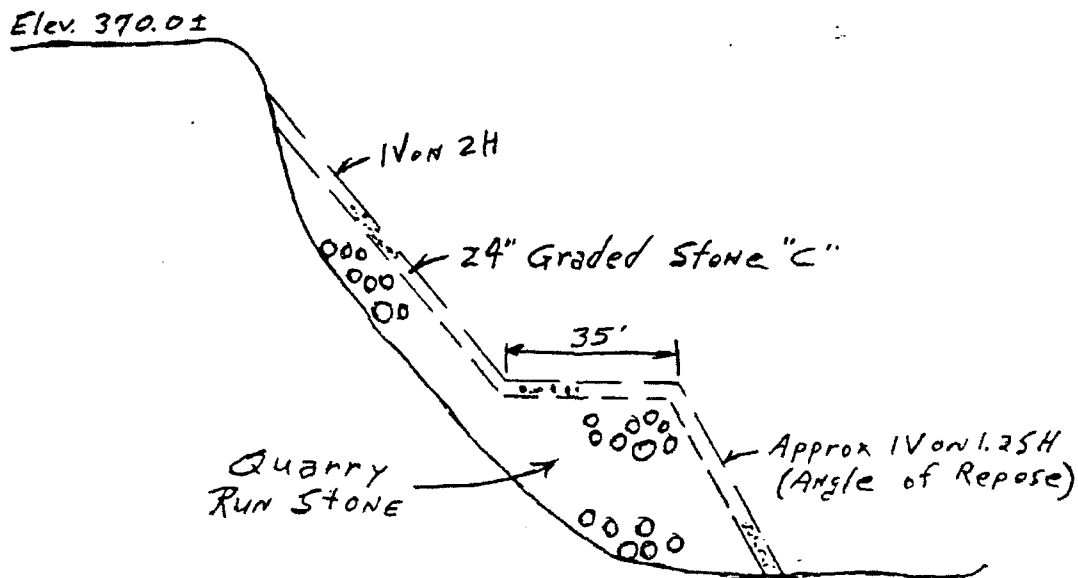
TO BE CONSTRUCTED BELOW SITE 23CG113.



TYPICAL SECTION "A"

TOP OF BANK BELOW ELEV. 360.0'

TO BE CONSTRUCTED AT SITE 23CG113.



TYPICAL SECTION "B"

TOP OF BANK ABOVE ELEV. 360.0'

Figure 3, Section A, demonstrates that the riprap will extend onto the top bank surface in the area where the clay plug is located. Section B indicates that the riprap will not extend to the bank top of site 23CG113. Ripraping will stop approximately 3 meters beneath the cultural stratum. During the stabilizing process some slumpage will occur at the site edge. This is due to the existing bank profile gradient. Once top bank slumpage has occurred and base erosion has been stopped by ripraping, site erosion will be stopped. All riprap and equipment will be transported, to the levee and staging area, over existing roads. Transportation from the staging area to channel edge will be through the previously borrowed area. This area has been intensively surveyed and no sites were found. From this point riprap will be placed along the channel bank. Equipment will operate only on areas that have been rip-aped. Thus, there will be no impact on the site.

CONCLUSIONS

An intensive survey of the proposed right-of-way revealed one large site, 23CG113. Stabilization of the channel bank can be affected while avoiding the site. Thus, we recommend that the proposed work should proceed as scheduled.

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