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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 30

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
507.0	SURFACE	0.0						
	Brown moist medium stiff clayey SILT with hairlike roots, trace organics and surface coarse gravel and asphalt.			I	3/4/5	1	DS	6
502.5		4.5		I	2/3/4	2	DS	18
	Brown moist stiff very SILTY CLAY with limestone fragments, trace fossils and organics.		5	I	9/5/5	3	DS	7
498.0		9.0		I	10/9/50/5"	4A 4B	DS	12
	Brown to brown stiff very SILTY CLAY with limestone floaters, trace fossils.	9.9	10					
497.1	Bottom of test boring at 9.9 feet.		15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 507.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/27/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/27/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING # : 31

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB # : 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
510.0	SURFACE	0.0						
509.5	TOPSOIL	0.5		I	3/4/5	1A 1B	DS	18
508.0	Brown moist medium stiff to stiff very SILTY CLAY with trace hairlike roots.	2.0		I	4/4/8	2	DS	18
502.0	Brown moist stiff very SILTY CLAY.	8.0	5	I	4/4/5	3	DS	18
500.0	Brown to brown moist stiff SILTY CLAY with limestone floaters.	10.0	10	I	8/23/13	4	DS	18
	Bottom of test boring at 10.0 feet.		15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 510.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/27/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/27/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 32

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
526.0	SURFACE	0.0					
525.5	ASPHALT	0.5	I	4/2/2	1	DS	18
521.5	Brown moist stiff clayey SILT, trace organics.	4.5	I	3/4/5	2	DS	18
	Brown moist stiff SILTY CLAY with little fine sand, trace limestone floaters and iron oxide stains.		I	4/6/8	3	DS	18
516.8		9.2	I	12/ 50/3"	4	DS	6
	Bottom of test boring at 9.2 feet.						

DEPTH SCALE (feet): 5, 10, 15, 20, 25

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 526.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/27/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/27/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING # : 33

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB # : 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
546.0	SURFACE	0.0					
		0.7					
545.3	ASPHALT		I	22/50/4"	1A 1B	DS	8
	Brown moist medium stiff to stiff SILTY CLAY with limestone fragments, little fine gravel.	2.5					
543.5					2	RC	28.5"/30"
	Interbedded white to gray hard thin to medium bedded LIMESTONE, with trace thin shale layers. The limestone comprises 92 percent of this interval, assuming the unrecovered core to be shale. The limestone is in beds ranging in thickness from 0.5 to 7.5 inches. [RQD=42%] (Grier Limestone Member of the Lexington Limestone Formation Bedrock).	5.0					
					3	RC	60"/60"
541.0		10.0					
	Interbedded white to gray hard thin to medium bedded LIMESTONE, with trace thin shale layers. The limestone comprises 96 percent of this interval, in beds ranging in thickness from 0.5 to 12.5 inches. [RQD=69%] (Grier Member of the Lexington Limestone Formation Bedrock).						
536.0							
	Bottom of test boring at 10.0 feet.						

DEPTH SCALE (feet): 5, 10, 15, 20, 25

Datum Est. MSL | Hammer Wt. 140 lbs. | Hole Diameter 5 in. | Foreman BR

Surf. Elev. 546.0 ft. | Hammer Drop 30 in. | Rock Core Dia. 1-7/8 in. | Engineer ACC/WLC

Date Started 3/27/07 | Pipe Size O.D. 2 in. | Boring Method CFA | Date Completed 3/27/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER – hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 34

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
524.0	SURFACE	0.0					
523.7	ASPHALT	0.3	D		1	CA	6
522.5	Interbedded brown moist very soft highly weathered SHALE and gray hard LIMESTONE (bedrock).	1.5			2	RC	40/42
519.0	Interbedded white to gray hard thin to medium bedded LIMESTONE with trace thin shale layers. The limestone comprises 90 percent of this interval, assuming the unrecovered core to be shale. The limestone beds range in thickness from 0.5 to 5.0 inches. [RQD=37 %] (Grier Limestone Member of the Lexington Limestone Formation Bedrock).	5.0			3	RC	59/60
514.0	Interbedded white to gray hard thin to medium bedded LIMESTONE with trace thin shale layers. The limestone comprises 95 percent of this interval, assuming the unrecovered core to be shale. The limestone beds range in thickness from 0.5 to 9.0 inches. [RQD=84 %] (Grier Limestone Member of the Lexington Limestone Formation Bedrock).	10.0					
	Bottom of test boring at 10.0 feet.						

DEPTH SCALE (feet): 5, 10, 15, 20, 25

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 524.0 ft. Hammer Drop 30 in. Rock Core Dia. 1-7/8 in. Engineer ACC/WLC

Date Started 3/27/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/27/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 35

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
526.0	SURFACE	0.0						
525.5	ASPHALT	0.5		I	6/7/8	1	DS	6
523.8	Brown moist stiff clayey SILT with limestone floaters.	2.2		I	4/7/8	2	DS	18
521.5	Brown moist stiff to very stiff SILTY CLAY, trace shale fragments and iron oxide concretions.	4.5	5	I	6/7/4	3	DS	18
518.0	Brown moist medium stiff sandy CLAY with limestone floaters.	8.0						
516.6	Brown moist stiff sandy CLAY with silty layers and limestone floaters.	9.4	10	I	15/ 50/5"	4	DS	11
	Bottom of test boring at 9.4 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 526.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/27/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/27/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 36

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
526.0	SURFACE	0.0						
525.8	TOPSOIL	0.2		I	3/4/6	1A 1B	DS	18
524.0	Brown moist stiff to very stiff SILTY CLAY with limestone floaters, trace hairlike roots.	2.0		I	3/4/5	2	DS	18
521.5	Brown moist medium stiff to stiff clayey SILT, trace limestone and shale fragments and iron oxide stains.	4.5	5	I	5/7/8	3	DS	18
518.0	Brown moist stiff to very stiff SILTY CLAY, trace fine gravel and iron oxide stains.	8.0						
516.6	Light brown moist medium stiff to stiff very SILTY CLAY with limestone floaters.	9.4	10	I	10/ 50/5"	4	DS	9
	Bottom of test boring at 9.4 feet.		15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 526.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/27/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/27/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 37

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (Inches)
529.0	SURFACE	0.0						
528.5	ASPHALT	0.5		I	5/5/6	1	DS	9
526.8	Dark gray to olive brown moist stiff to very stiff SILTY CLAY with limestone floaters, trace shale fragments and organics.	2.2		I	3/4/4	2	DS	18
524.5	Dark gray to brown moist stiff very SILTY CLAY, trace limestone fragments.	4.5	5	I	7/6/6	3	DS	18
521.0	Dark gray to dark brown moist stiff SILTY CLAY with shale and limestone fragments, trace fine gravel.	8.0						
519.0	Brown moist stiff to very stiff SILTY CLAY with limestone floaters.	10.0	10	I	5/7/14	4	DS	18
	Bottom of test boring at 10.0 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 529.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/27/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/27/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING # : 38

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB # : 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
528.0	SURFACE	0.0						
526.0	Mixed brown moist medium stiff FILL, very silty clay with hairlike roots, trace gravel and asphalt.	2.0		I	3/4/3	1	DS	6
523.5	Brown, trace gray moist medium stiff very SILTY CLAY, trace shale and limestone fragments.	4.5		I	3/3/3	2	DS	18
520.0	Gray to brown moist stiff sandy CLAY with limestone floaters.	8.0	5	I	17/21/17	3	DS	18
518.0	Brown, trace gray moist stiff to very stiff SILTY CLAY with limestone floaters.	10.0		I	8/9/9	4	DS	18
	Bottom of test boring at 10.0 feet.		10 15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 528.0 ft. Hammer Drop 30 in. Rock Core Dia. – in. Engineer ACC/WLC

Date Started 3/26/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/26/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER – hrs. – ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 39

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
532.0	SURFACE	0.0					
531.2	TOPSOIL	0.8	I	4/50/3"	1	DS	6
527.5	Dark brown moist stiff very silty clay, trace shale and limestone fragments and hairlike roots.	4.5	I	4/5/7	2	DS	18
			I	6/7/9	3	DS	18
522.0	Dark brown, trace gray moist stiff to very stiff SILTY CLAY, trace shale fragments and hairlike roots.	10.0	I	9/15/18	4	DS	18
	Bottom of test boring at 10.0 feet.						

DEPTH SCALE (feet): 5, 10, 15, 20, 25

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 532.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/26/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/26/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 40

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
538.0	SURFACE	0.0						
537.5	ASPHALT	0.5		I	9/7/7	1	DS	18
533.5	Mixed brown moist stiff FILL, silty clay with brick and limestone fragments, trace organics.	4.5		I	9/10/10	2	DS	18
530.0	Brown moist stiff SILTY CLAY with limestone floaters.	8.0	5	I	50/6"	3	DS	6
528.0	Brown moist stiff SILTY CLAY with limestone floaters, trace shale fragments and fine gravel.	10.0	10	I	9/14/17	4	DS	18
	Bottom of test boring at 10.0 feet.		15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 538.0 ft. Hammer Drop 30 in. Rock Core Dia. - in. Engineer ACC/WLC

Date Started 3/26/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/26/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. - ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

BORING #: 41

CLIENT: Quest Engineers, Inc. JOB #: 070057E

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
		0.0						
538.0	SURFACE	0.1		I	3/5/7	1A 1B	DS	7
537.9	TOPSOIL	2.0		I	5/10/12	2	DS	18
536.0	Brown moist stiff very SILTY CLAY with hairlike roots, trace shale and limestone fragments and fine gravel.		5	I	9/8/11	3	DS	4
	Brown moist stiff SILTY CLAY, trace fine gravel.	8.0						
530.0	Brown, trace gray moist stiff SILTY CLAY, trace shale fragments and fine gravel.	10.0	10	I	5/9/11	4	DS	18
528.0	Bottom of test boring at 10.0 feet.		15					
			20					
			25					

Datum Est. MSL
Surf. Elev. 538.0 ft.
Date Started 5/26/07

Hammer Wt. 140 lbs.
Hammer Drop 30 in.
Pipe Size O.D. 2 in.

Hole Diameter 5 in.
Rock Core Dia. - in.
Boring Method CFA

Foreman BR
Engineer ACC/WLC
Date Completed 3/26/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 42

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
546.0	SURFACE	0.0						
545.6	TOPSOIL	0.4		I	3/5/6	1A 1B	DS	18
	Brown moist to stiff SILTY CLAY with limestone floaters, trace shale fragments and hairlike roots.		5	I	10/28/23	2	DS	6
				I	7/32/28	3	DS	18
538.0		8.0						
536.1	Brown, trace gray moist stiff SILTY CLAY with shale and limestone fragments, trace iron oxide stains.	9.9	10	I	16/17/ 50/5"	4	DS	19
	Bottom of test boring at 9.9 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 546.0 ft. Hammer Drop 30 in. Rock Core Dia. - in. Engineer ACC/WLC

Date Started 3/26/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/26/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER - hrs. - ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 43

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
599.0	SURFACE	0.0						
598.0	Mixed black moist medium dense FILL, asphalt.	1.0						
594.0	Interbedded white to gray hard thinly bedded LIMESTONE, with trace thin shale layers. The limestone comprises 92 percent of this interval, assuming the uncovered core to be shale. The limestone beds range in thickness from 0.25 to 3.0 inches. [RQD=0%] (Grier Limestone Member of the Lexington Limestone Formation Bedrock).	5.0	5			1	RC	47/48
589.0	Interbedded white to gray hard thin to medium bedded LIMESTONE, with trace thin shale layers. The limestone comprises 94 percent of this interval, in beds ranging in thickness from 1.0 to 7.0 inches. [RQD=69%] (Grier Limestone Member of the Lexington Formation Bedrock).	10.0	10			2	RC	60/60
	Bottom of test boring at 10.0 feet.		15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 599.0 ft. Hammer Drop 30 in. Rock Core Dia. 1-7/8 in. Engineer ACC/WLC

Date Started 3/26/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/26/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 44

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
604.0	SURFACE	0.0						
603.5	TOPSOIL	0.5		I	2/3/4	1A 1B	DS	8
602.0	Brown moist medium stiff very SILTY CLAY, trace shale and limestone fragments.	2.0		I	10/10/11	2	DS	6
	Brown, trace gray moist stiff SILTY CLAY with limestone floaters, trace shale fragments and fine gravel.		5	I	4/6/7	3	DS	18
596.0		8.0						
594.5	Interbedded brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	9.5	10	I	10/50/6"	4	DS	4
	Bottom of test boring at 9.5 feet.		15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 604.0 ft. Hammer Drop 30 in. Rock Core Dia. - in. Engineer ACC/WLC

Date Started 3/26/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/26/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 45

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
622.0	SURFACE	0.0						
621.9	TOPSOIL	0.1		I	2/4/16	1A 1B	DS	18
620.0	Brown, trace gray moist stiff SILTY CLAY, trace shale and limestone fragments.	2.0		I	5/13/17	2	DS	6
617.5	Brown moist stiff sandy SILTY CLAY with limestone floaters.	4.5	5	I	17/12/ 50/2"	3	DS	12
614.0	Brown, trace gray moist stiff SILTY CLAY with limestone floaters.	8.0						
612.0	Brown moist stiff to very stiff SILTY CLAY with shale fragments and limestone floaters, trace hairlike roots.	10.0	10	I	6/10/14	4	DS	18
	Bottom of test boring at 10.0 feet.		15 20 25					

Datum Est. MSL | Hammer Wt. 140 lbs. | Hole Diameter 5 in. | Foreman BR

Surf. Elev. 622.0 ft. | Hammer Drop 30 in. | Rock Core Dia. - in. | Engineer ACC/WLC

Date Started 3/26/07 | Pipe Size O.D. 2 in. | Boring Method CFA | Date Completed 3/26/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER - hrs. - ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

BORING # : 46

CLIENT: Quest Engineers, Inc. JOB # : 070057E

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
638.0	SURFACE	0.0		I	1/4/6	1	DS	16
635.5	Mixed brown moist medium stiff to stiff FILL, silty clay with wood and limestone.	2.5				2	RC	30/30
633.0	Interbedded white to gray hard thin to medium bedded LIMESTONE with trace thin shale layers. Limestone comprises 92 percent of this interval, in beds ranging in thickness from 0.25 to 5.0 inches. [RQD=32%] (Tanglewood Limestone Member of the Lexington Limestone Formation).	5.0	5			3	RC	60/60
628.0	Interbedded white to gray hard thin to medium bedded LIMESTONE with little shale layers. Limestone comprises 90 percent of this interval, in beds ranging in thickness from 1.5 to 20.5 inches. [RQD=83%] (Tanglewood Limestone Member of the Lexington Limestone Formation).	10.0	10					
	Bottom of test boring at 10.0 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 638.0 ft. Hammer Drop 30 in. Rock Core Dia. 1-7/8 in. Engineer ACC/WLC

Date Started 3/23/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/23/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER — hrs. — ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 47

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
664.0	SURFACE	0.0						
	Mixed brown moist soft FILL, silty clay with asphalt and hairlike roots.	0.4		I	1/6/50/2"	1A 1B	DS	7
663.6		2.0						
662.0	Brown moist stiff SILTY CLAY with limestone.			I	12//17/21	2	DS	18
	Interbedded brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).		5	I	12/17/32	3	DS	18
656.0		8.0						
654.3	Interbedded brown to olive brown moist soft weathered SHALE and hard limestone (bedrock).	9.7	10	I	14/17/50/3"	4	DS	14
	Bottom of test boring at 9.7 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 664.0 ft. Hammer Drop 30 in. Rock Core Dia. - in. Engineer ACC/WLC

Date Started 3/23/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/23/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 48

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
692.0	SURFACE	0.0						
691.8	TOPSOIL	0.2		I	2/3/7	1A 1B	DS	14
690.0	Mixed brown moist stiff FILL, silty clay with limestone.	2.0		I	13/50/3"	2	DS	9
	Interbedded brown to olive brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).		5	I	10/50/4"	3	DS	6
682.5		9.5		I	36/50/6"	4	DS	5
	Bottom of test boring at 9.5 feet.		10					
			15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 692.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/23/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/23/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 49

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
705.0	SURFACE	0.0						
		0.2		I	1/4/4	1A	DS	13
704.8	TOPSOIL	2.0				1B		
703.0	Brown, trace gray moist medium stiff to stiff SILTY CLAY with shale and limestone fragments, trace fossils and roots.			I	10/12/21	2	DS	18
	Interbedded olive brown moist very soft highly weathered SHALE and gray hard LIMESTONE (bedrock).		5	I	10/13/25	3	DS	18
697.0		8.0						
695.5	Interbedded olive brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	9.5	10	I	9/50/6"	4	DS	12
	Bottom of test boring at 9.5 feet.							
			15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 705.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/23/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/23/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 50

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
716.0	SURFACE	0.0						
715.5	Mixed brown moist medium stiff FILL, silty clay with asphalt and hairlike roots.	0.5		I	6/4/2	1A 1B	DS	12
711.5	Orangish brown moist stiff SILTY CLAY with shale and limestone fragments, trace iron oxide stains.	4.5	5	I	25/50/6"	2	DS	6
708.0	Bluish gray and olive brown moist stiff SILTY CLAY with limestone floaters.	8.0		I	7/17/26	3	DS	10
706.4	Interbedded brown, trace gray moist very soft highly weathered SHALE and gray hard LIMESTONE (bedrock).	9.6	10	I	13/14/50/2"	4	DS	6
	Bottom of test boring at 9.6 feet.		15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 716.0 ft. Hammer Drop 30 in. Rock Core Dia. - in. Engineer ACC/WLC

Date Started 3/23/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/23/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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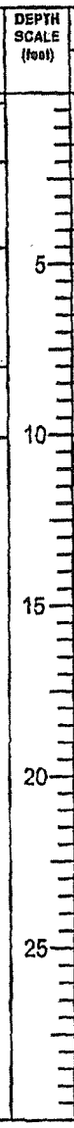
LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 51

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
734.0	SURFACE	0.0					
733.7	TOPSOIL	0.3	I	2/2/2	1A 1B	DS	7
732.0	Mixed brown moist medium stiff FILL, silty clay with asphalt and gravel.	2.0	I	4/13/9	2	DS	18
729.5	Mixed brown moist stiff FILL, silty clay with limestone floaters, trace asphalt and roots.	4.5	I	9/7/4	3	DS	3
726.0	Brown moist stiff SILTY CLAY with limestone fragments.	8.0					
724.0	Brown moist stiff SILTY CLAY with limestone floaters and iron oxide stains, trace shale fragments, fossils and fine gravel.	10.0	I	7/9/17	4	DS	18
	Bottom of test boring at 10.0 feet.						



Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 734.0 ft. Hammer Drop 30 in. Rock Core Dia. - in. Engineer ACC/WLC

Date Started 3/23/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/23/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER – hrs. – ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 52

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
776.0	SURFACE	0.2						
775.8	TOPSOIL	2.0		I	1/2/8	1A 1B	DS	12
774.0	Mixed brown, trace gray moist medium stiff FILL, silty clay, trace topsoil with shale fragments, trace hairlike roots and limestone fragments.	4.5		I	4/4/12	2	DS	18
771.5	Mixed brown moist stiff FILL, clay with limestone fragments.		5	I	6/5/5	3	DS	18
766.0	Brown moist stiff SILTY CLAY, trace iron oxide stains, trace roots.	10.0	10	I	5/7/9	4	DS	18
	Bottom of test boring at 10.0 feet.		15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 776.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer MES

Date Started 4/5/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 4/5/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 53

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
802.0	SURFACE	0.2						
801.8	TOPSOIL	2.0		I	4/6/7	1A 1B	DS	9
800.0	Brown moist stiff very SILTY CLAY with trace hairlike roots and limestone floaters.	4.5		I	6/12/16	2	DS	18
797.5	Brown moist stiff SILTY CLAY with shale and limestone fragments, trace roots and iron oxide stains.	8.0	5	I	6/10/31	3	DS	18
794.0	Interbedded brown moist very soft very highly weathered SHALE and gray hard LIMESTONE (bedrock).	10.0	10	I	22/31/50	4	DS	18
792.0	Interbedded olive brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).		15					
	Bottom of test boring at 10.0 feet.		20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 802.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/22/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/22/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 54

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
772.0	SURFACE	0.2						
771.8	TOPSOIL	1.5		I	2/4/ 50/6"	1	DS	3
770.5	Interbedded brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).					2	RC	57/58
765.7	Interbedded white to gray hard thin to medium bedded LIMESTONE with trace thin shale layers. Limestone comprises 92 percent of this interval, in beds ranging in thickness from 0.75 to 12.5 inches [RQD = 67 %] (Tangelwood Limestone Member of the Lexington Limestone Formation)	6.3	5			3	RC	60/60
760.7	Interbedded white to gray hard thin to medium bedded LIMESTONE with drak gray moist soft to medium tough thin to medium bedded SHALE. Limestone comprises 56 percent of this interval, in beds ranging in thickness from 0.75 to 5.0 inches. [RQD = 60 %] (Tanglewood Limestone Member of the Lexington Limestone Formation)	11.3	10					
	Bottom of test boring at 11.3 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 772.0 ft. Hammer Drop 30 in. Rock Core Dia. 1-7/8 in. Engineer ACC/WLC

Date Started 3/21/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/21/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 55

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (Inches)
752.0	SURFACE	0.5					
751.5	TOPSOIL		I	3/4/7	1A 1B	DS	18
749.0	Orangish brown, trace gray moist medium stiff to stiff SILTY CLAY with shale and limestone fragments and hairlike roots, trace iron oxide stains.	3.0 4.5	I	7/18/13	2A 2B	DS	18
747.5	Bluish gray, trace olive brown moist stiff SILTY CLAY with limestone.	5.2		50/3"	3	DS	3
746.8	Bluish gray, trace olive brown moist stiff SILTY CLAY with shale and limestone fragments, trace roots.				4	RC	31/54
742.0	Interbedded olive brown moist soft thin to medium bedded SHALE and white to gray hard thin to medium bedded LIMESTONE. Limestone comprises 33 percent of this interval assuming the unrecovered core to be shale. The limestone beds range in thickness from 1.0 to 5.25 inches. [RQD = 28%] (Clays Ferry Formation Bedrock)	10.0					
	Bottom of test boring at 10.0 feet.						

DEPTH SCALE (feet): 5, 10, 15, 20, 25

Datum Est. MSL | Hammer Wt. 140 lbs. | Hole Diameter 5 in. | Foreman BR

Surf. Elev. 752.0 ft. | Hammer Drop 30 in. | Rock Core Dia. 1-7/8 in. | Engineer ACC/WLC

Date Started 3/21/07 | Pipe Size O.D. 2 in. | Boring Method CFA | Date Completed 3/21/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER — hrs. — ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 56

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
744.0	SURFACE	0.5					
743.3	TOPSOIL and ASPHALT	2.0	I	5/4/7	1A 1B	DS	8
742.0	Brown moist stiff SILTY CLAY with shale and limestone fragments, trace iron oxide stains.		I	8/38/32	2	DS	18
737.5	Interbedded olive brown, trace gray moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	6.5	I	50/6"	3	DS	4
734.0	Interbedded olive brown to gray moist soft to medium tough thin to medium bedded SHALE and white to gray hard thinly bedded LIMESTONE. Limestone comprises 33 percent of this interval, in beds ranging in thickness from 0.5 to 4.0 inches. [RQD = 55%] (Clays Ferry Formation Bedrock)	10.0			4	RC	42/42
	Bottom of test boring at 10.0 feet.						

DEPTH SCALE (feet): 5, 10, 15, 20, 25

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 744.0 ft. Hammer Drop 30 in. Rock Core Dia. 1-7/8 in. Engineer ACC/WLC

Date Started 3/21/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/21/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER — hrs. — ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING # : 57

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB # : 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
744.0	SURFACE	0.0						
742.8	Mixed brown moist medium stiff to stiff FILL, silty clay with asphalt and trace hairlike roots.	1.2 / 2.0		I	7/1/2	1A 1B	DS	9
742.0	Light brown moist stiff SILTY CLAY with limestone fragments and trace asphalt.	4.5	5	I	7/10/12	2	DS	18
739.5	Interbedded brown moist very soft highly weathered SHALE and gray hard LIMESTONE (bedrock).			I	13/21/31	3	DS	18
734.0	Interbedded olive brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	10.0	10	I	11/32/32	4	DS	18
	Bottom of test boring at 10.0 feet.		15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 744.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/21/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/21/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 58

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
739.0	SURFACE	0.1						
738.9	TOPSOIL	2.0		I	4/3/6	1A 1B	DS	18
737.0	Brown moist stiff SILTY CLAY with iron oxide stains and trace hairlike roots.	4.5		I	9/8/13	2	DS	18
734.5	Interbedded brown moist very soft highly weathered SHALE and gray hard LIMESTONE (bedrock).	7.5	5	I	9/15/34	3	DS	18
731.5	Interbedded olive brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	10.0				4	RC	26/30
729.0	Interbedded olive brown to gray moist soft thinly bedded SHALE and white to gray hard thinly bedded LIMESTONE. Limestone comprises 52 percent of this interval, in beds ranging in thickness from 0.5 to 3.75 inches. [RQD = 13 %] (Clays Ferry Formation Bedrock)		10					
	Bottom of test boring at 10.0 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 739.0 ft. Hammer Drop 30 in. Rock Core Dia. 1-7/8 in. Engineer ACC/WLC

Date Started 3/21/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/21/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 59

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
723.0	SURFACE	0.4						
722.6	TOPSOIL	2.0		I	4/4/3	1A 1B	DS	18
721.0	Brown moist medium stiff to stiff SILTY CLAY with iron oxide stains and trace fine gravel and hairlike roots.	4.5		I	23/3/5	2	DS	4
718.5	Brown moist stiff SILTY CLAY with limestone floaters.		5	I	3/1/3	3	DS	18
715.0	Brown and gray moist soft to medium stiff clayey SILT with trace shale fragments and iron oxide concretions.	8.0						
713.0	Interbedded brown and gray moist very soft highly weathered SHALE and gray hard LIMESTONE (bedrock).	10.0	10	I	7/10/18	4	DS	18
	Bottom of test boring at 10.0 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 723.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/21/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/21/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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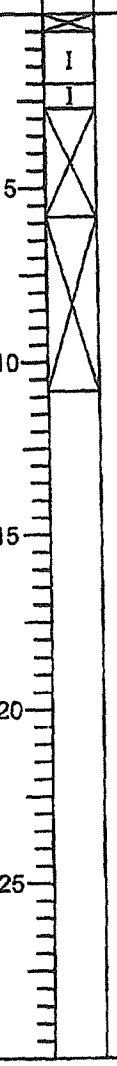
LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 60

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
716.0	SURFACE	0.5					
715.5	ASPHALT	2.0	I	4/4/4	1	DS	18
714.0	Brown, trace gray moist stiff SILTY CLAY with iron oxide stains.	2.7	I	50/2"	2	DS	1
					3	RC	38/38
713.3	Interbedded gray moist soft SHALE and gray hard LIMESTONE (Clays Ferry Formation Bedrock).	5.9					
					4	RC	60/60
713.1	Interbedded gray moist soft to medium tough thinly bedded SHALE and white to light gray hard thin to medium bedded LIMESTONE. Limestone comprises 66 percent of this interval, in beds ranging in thickness form 0.25 to 4.5 inches. [RQD = 22%] (Clays Ferry Formation Bedrock)	10.9					
705.1	Interbedded gray moist soft to medium tough thinly bedded SHALE and white to light gray hard thin to medium bedded LIMESTONE. Limestone comprises 63 percent of this interval, in beds ranging in thickness from 0.25 to 5.75 inches [RQD = 26%] (Clays Ferry Formation Bedrock)						
	Bottom of test boring at 10.9 feet.						



Datum Est. MSL | Hammer Wt. 140 lbs. | Hole Diameter 5 in. | Foreman BR

Surf. Elev. 716.0 ft. | Hammer Drop 30 in. | Rock Core Dia. 1-7/8 in. | Engineer ACC/WLC

Date Started 3/20/07 | Pipe Size O.D. 2 in. | Boring Method CFA | Date Completed 3/20/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 61

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
728.0	SURFACE	0.5						
727.5	ASPHALT			I	4/5/8	1	DS	18
	Brown and gray moist stiff SILTY CLAY with shale fragments and limestone floaters.			I	7/32/20	2	DS	18
			5	I	5/7/12	3	DS	18
720.0		8.0						
718.0	Greenish brown to gray moist stiff to very stiff SILTY CLAY with trace shale and limestone fragments.	10.0		I	5/5/7	4	DS	18
	Bottom of test boring at 10.0 feet.		10					
			15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 728.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/20/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/20/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

BORING #: 62

CLIENT: Quest Engineers, Inc.

JOB #: 070057E

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
780.0	SURFACE	0.3						
779.7	Dark and light brown wet medium dense fine to coarse GRAVEL with trace silty clay.			I	4/4/11	1A 1B	DS	10
775.5	Interbedded brown moist very soft highly weathered SHALE and gray hard LIMESTONE (bedrock).	4.5		I	4/6/8	2	DS	18
772.0	Interbedded olive brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	8.0	5	I	8/9/10	3	DS	12
770.3	Interbedded gray moist soft SHALE and gray hard LIMESTONE (bedrock).	9.7	10	I	10/30/ 50/3"	4	DS	14
	Bottom of test boring at 9.7 feet.		15 20 25					

Datum: Est. MSL
Surf. Elev.: 780.0 ft.
Date Started: 3/20/07

Hammer Wt.: 140 lbs.
Hammer Drop: 30 in.
Pipe Size: O.D. 2 in.

Hole Diameter: 5 in.
Rock Core Dia.: -- in.
Boring Method: CFA

Foreman: BR
Engineer: ACC/WLC
Date Completed: 3/20/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED 1.0 ft.
AT COMPLETION 4.0 ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 63

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
733.0	SURFACE						
732.5	ASPHALT	0.5					
	Dark brown moist medium stiff SILTY CLAY with shale and	2.5	I	5/4/4	1	DS	5
730.5	limestone fragments.		I	4/7/11	2	DS	18
	Interbedded brown moist very soft highly weathered SHALE and gray hard LIMESTONE (bedrock).		I	30/36/ 50/5"	3	DS	14
725.0		8.0					
723.0	Interbedded olive brown moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	10.0	I	4/40/46	4	DS	18
	Bottom of test boring at 10.0 feet.						

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 733.0 ft. Hammer Drop 30 in. Rock Core Dia. – in. Engineer ACC/WLC

Date Started 3/20/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/20/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 64

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
711.0	SURFACE	0.5						
710.5	Mixed brown moist medium stiff FILL, silty clay with hairlike roots and asphalt, trace gravel.	2.0		I	3/2/3	1A 1B	DS	18
709.5	Brown moist stiff SILTY CLAY with iron oxide stains, trace shale fragments.			I	4/8/3	2	DS	6
703.0	Light brown, trace gray moist to wet medium stiff to stiff SILTY CLAY with shale and limestone fragments.	8.0	5	I	9/9/3	3	DS	8
701.0	Olive brown and gray very moist medium stiff to stiff SILTY CLAY with shale and limestone fragments.	10.0		I	10/4/7	4	DS	10
	Bottom of test boring at 10.0 feet.		10 15 20 25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 711.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/20/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/20/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED 7.5 ft.
AT COMPLETION 7.0 ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 65

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
708.0	SURFACE							
707.3	ASPHALT	0.7						
	Light brown moist stiff SILTY CLAY with shale and limestone fragments, trace fossils.			I	4/4/5	1	DS	8
				I	3/3/14	2	DS	18
703.5		4.5	5					
	Olive brown and gray moist medium stiff SILTY CLAY with shale and limestone fragments.			I	8/2/4	3	DS	18
700.0		8.0						
	Brown moist medium stiff to stiff clayey SILT with shale fragments and limestone floaters and a brown silty clay layer.	10.0	10	I	8/12/12	4	DS	18
698.0								
	Bottom of test boring at 10.0 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 708.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/20/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/20/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 66

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
712.0	SURFACE							
711.3	ASPHALT	0.7						
709.7	Bluish gray moist stiff SILTY CLAY with a brown clayey silt layer and organics.	2.3		I	3/4/6	1	DS	18
				I	3/4/5	2	DS	18
	Brownish gray moist stiff very SILTY CLAY with limestone floaters and trace shale fragments.		5	I	5/50/6"	3	DS	18
702.5		9.5		I	12/19/50/2"	4A 4B	DS	13
702.3	Interbedded gray moist soft SHALE and gray hard LIMESTONE (bedrock).	9.7	10					
	Bottom of test boring at 9.7 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 712.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer ACC/WLC

Date Started 3/21/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/21/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 67

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
770.0	SURFACE	0.5					
769.5	ASPHALT	2.0		6/50/2"	1	DS	7
768.0	Interbedded brown, trace gray moist very soft highly weathered SHALE and gray hard LIMESTONE (bedrock).	5.0			2	RC	19/36
765.0	Interbedded olive brown moist soft thin to medium bedded SHALE and white to gray hard thin to medium bedded LIMESTONE. Limestone comprises 53 percent of this interval, assuming the unrecovered core to be shale. The limestone beds range in thickness from 0.5 to 5.5 inches. [RQD = 32%] (Clays Ferry Formation)	10.0			3	RC	39/80
760.0	Interbedded olive brown to gray moist soft thin to medium bedded SHALE and white to gray hard thin to medium bedded LIMESTONE. The limestone beds range in thickness from 0.25 to 3.5 inches. Poor core recovery. [RQD = 32%] (Clays Ferry Formation)						
	Bottom of test boring at 10.0 feet.						

DEPTH SCALE (feet): 5, 10, 15, 20, 25

Datum Est. MSL | Hammer Wt. 140 lbs. | Hole Diameter 5 in. | Foreman BR

Surf. Elev. 770.0 ft. | Hammer Drop 30 in. | Rock Core Dia. 1-7/8 in. | Engineer ACC/WLC

Date Started 3/19/07 | Pipe Size O.D. 2 in. | Boring Method CFA | Date Completed 3/19/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 68

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	Cond	Blows/6"	No.	Type	Rec. (inches)
748.0	SURFACE	0.3					
747.7	ASPHALT		I	3/17/18	1	DS	10
745.5	Brown moist stiff SILTY CLAY with shale fragments and limestone floaters, trace iron oxide stains.	2.5					
742.0	Interbedded white to gray hard thinly bedded LIMESTONE with trace thin shale layers. Limestone comprises 98 percent of this interval, in beds ranging in thickness from 0.25 to 5.5 inches. [RQD = 23%] (Tanglewood Limestone Member of the Lexington Limestone Formation Bedrock)	6.0			2	RC	42/42
737.0	Interbedded white to gray hard thin to medium bedded LIMESTONE with trace thin shale layers. Limestone comprises 95 percent of this interval, in beds ranging in thickness from 0.25 to 3.5 inches [RQD = 43%] (Tanglewood Limestone Member of the Lexington Limestone Formation Bedrock)	11.0			3	RC	60/60
	Bottom of test boring at 11.0 feet.						

DEPTH SCALE (feet): 5, 10, 15, 20, 25

Datum Est. MSL | Hammer Wt. 140 lbs. | Hole Diameter 5 in. | Foreman BR

Surf. Elev. 748.0 ft. | Hammer Drop 30 in. | Rock Core Dia. 1-7/8 in. | Engineer ACC/WLC

Date Started 3/19/07 | Pipe Size O.D. 2 in. | Boring Method CFA | Date Completed 3/19/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED 4.0 ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 69

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
770.0	SURFACE	0.2					
769.8	ASPHALT		I	4/18/50/4"	1	DS	12
767.1	Brown moist stiff SILTY CLAY with limestone floaters, trace iron oxide stains.	2.9		50/5"	2	DS	2
					3	RC	31/31
764.5	Interbedded white to gray hard thin to medium bedded LIMESTONE with trace thin shale layers. Limestone comprises 95 percent of this interval, in beds ranging in thickness from 0.5 to 3.75 inches. [RQD = 0%] (Tanglewood Limestone Member of the Lexington Limestone Formation Bedrock)	5.5			4	RC	60/60
759.5	Interbedded white to gray hard thin to medium bedded LIMESTONE with some gray moist soft to medium tough thinly bedded SHALE. Limestone comprises 69 percent of this interval, in beds ranging in thickness from 0.25 to 8.0 inches. [RQD = 34%] (Tanglewood Limestone Member of the Lexington Limestone Formation Bedrock)	10.5					
	Bottom of test boring at 10.5 feet.						

DEPTH SCALE (feet): 5, 10, 15, 20, 25

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 770.0 ft. Hammer Drop 30 in. Rock Core Dia. 1-7/8 in. Engineer ACC/WLC

Date Started 3/19/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/19/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 70

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
764.0	SURFACE	0.5						
763.5	Mixed brown moist medium stiff FILL, silty clay, some topsoil, trace hairlike roots with limestone floaters.	2.0		I	4/9/9	1A 1B	DS	12
762.0	Mottled brown moist medium stiff SILTY CLAY with limestone floaters.	4.5		I	13/8/13	2	DS	18
759.5	Dark brown moist stiff SILTY CLAY with limestone floaters.		5	I	7/12/13	3	DS	18
756.0	Dark brown moist stiff SILTY CLAY, trace iron oxide stains.	8.0						
754.0	Interbedded brown moist very soft very highly weathered SHALE and gray hard LIMESTONE (bedrock).	10.0	10	I	15/18/50/6"	4	DS	12
	Bottom of test boring at 10.0 feet.		15					
			20					
			25					

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 764.0 ft. Hammer Drop 30 in. Rock Core Dia. -- in. Engineer MES

Date Started 4/5/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 4/5/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

THELEN ASSOCIATES, INC.
Geotechnical • Testing Engineers
1398 Cox Avenue / Erlanger, Kentucky 41018-1002 / 859-746-9400 / Fax 859-746-9408
2140 Waycross Road / Cincinnati, Ohio 45240-2719 / 513-825-4350 / Fax 513-825-4756
www.thelenassoc.com

LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 71

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
764.0	SURFACE						
763.3	ASPHALT	0.7	X				
	Brown moist stiff SILTY CLAY with shale and limestone fragments, trace iron oxide stains.	2.3	I	10/12/24	1	DS	18
761.7			I	5/9/7	2	DS	18
	Dark brown moist stiff to very stiff SILTY CLAY, trace iron oxide stains and organics.	4.5					
759.5			I	7/8/10	3	DS	18
	Light brown, trace gray moist stiff SILTY CLAY with silt seams and limestone fragments.	8.5					
755.5			X		4	RC	17/18
	Interbedded gray moist soft to medium tough thinly bedded *SHALE and white to gray hard thinly bedded* LIMESTONE. Limestone comprises 56 percent of this interval, assuming the unrecovered core to be shale. The limestone beds range in thickness from 0.5 to 2.0 inches. [RQD = 0 %] (Millersburg Member of the Lexington Limestone Formation Bedrock).	10.0					
754.0							
	Bottom of test boring at 10.0 feet.						

Datum Est. MSL Hammer Wt. 140 lbs. Hole Diameter 5 in. Foreman BR

Surf. Elev. 764.0 ft. Hammer Drop 30 in. Rock Core Dia. 1-7/8 in. Engineer ACC/WLC

Date Started 3/17/07 Pipe Size O.D. 2 in. Boring Method CFA Date Completed 3/17/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
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STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 72

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
798.0	SURFACE	0.5						
797.5	TOPSOIL	2.0		I	2/6/15	1A 1B	DS	12
796.0	Brown moist stiff SILTY CLAY with limestone floaters, trace iron oxide stains.			I	15/26/36	2	DS	18
	Light brown moist stiff very SILTY CLAY with limestone floaters.		5	I	50/2"	3	DS	6
790.0		8.0						
788.0	Interbedded olive brown to gray moist soft weathered SHALE and gray hard LIMESTONE (bedrock).	10.0	10	D		4	CA	0
	Bottom of test boring at 10.0 feet.		15 20 25					

Datum Est. MSL | Hammer Wt. 140 lbs. | Hole Diameter 5 in. | Foreman BR

Surf. Elev. 798.0 ft. | Hammer Drop 30 in. | Rock Core Dia. -- in. | Engineer ACC/WLC

Date Started 3/17/07 | Pipe Size O.D. 2 in. | Boring Method CFA | Date Completed 3/17/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 73

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
852.0	SURFACE	0.0					
850.0	Mixed brown moist soft FILL, silty clay, trace topsoil with asphalt fragments, trace hairlike roots.	2.0	I	3/2/ 50/3"	1	DS	12
846.1	Interbedded gray moist very soft weathered SHALE and white to gray hard LIMESTONE. Shale and limestone are thin to medium bedded. Limestone comprised of 60 percent of this interval in 1-inch to 3-inch thick beds. [RQD = 0 %] (Clays Ferry Formation Bedrock)	5.9			2	RC	24/36
842.0	Interbedded white to gray, trace brown hard thin to medium bedded weathered LIMESTONE, trace thin shale beds. Limestone beds 0.5 to 5.5-inch in thickness. [RQD = 24 %] (Tanglewood Limestone Member of the Lexington Limestone Formation).	10.0			3	RC	57/60
	Bottom of test boring at 10.0 feet.						

DEPTH SCALE (feet): 5, 10, 15, 20, 25

Datum Est. MSL | Hammer Wt. 140 lbs. | Hole Diameter 5 in. | Foreman BR

Surf. Elev. 852.0 ft. | Hammer Drop 30 in. | Rock Core Dia. 1-7/8 in. | Engineer MES/ACC

Date Started 4/5/07 | Pipe Size O.D. 2 in. | Boring Method CFA | Date Completed 4/5/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION 0.0 ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
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STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

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www.thelenassoc.com

LOG OF TEST BORING

CLIENT: Quest Engineers, Inc. BORING #: 74

PROJECT: Consulting Services, KAW Main for WTP on Pool 3, Contract A, Franklin Co., KY JOB #: 070057E

LOCATION OF BORING:

ELEV.	SOIL DESCRIPTION COLOR, MOISTURE, DENSITY, PLASTICITY, SIZE, PROPORTIONS	STRATA DEPTH (feet)	DEPTH SCALE (feet)	SAMPLE Cond	Blows/6"	No.	Type	Rec. (inches)
824.0	SURFACE	0.5						
823.5	ASPHALT			I	3/7/7	1	DS	6
819.5	Brown moist medium stiff to stiff SILTY CLAY with shale fragments and iron oxide stains.	4.5		I	5/5/5	2	DS	18
816.0	Brownish gray moist stiff SILTY CLAY with limestone fragments.	8.0	5	I	9/12/ 50/3"	3	DS	12
814.6	Brown, trace gray moist very stiff very SILTY CLAY with shale fragments and limestone floaters.	9.4	10	I	26/ 50/5"	4	DS	9
	Bottom of test boring at 9.4 feet.		15 20 25					

Datum Est. MSL | Hammer Wt. 140 lbs. | Hole Diameter 5 in. | Foreman BR

Surf. Elev. 824.0 ft. | Hammer Drop 30 in. | Rock Core Dia. -- in. | Engineer ACC/WLC

Date Started 3/16/07 | Pipe Size O.D. 2 in. | Boring Method CFA | Date Completed 3/16/07

SAMPLE CONDITIONS
D - DISINTEGRATED
I - INTACT
U - UNDISTURBED
L - LOST

SAMPLE TYPE
DS - DRIVEN SPLIT SPOON
PT - PRESSED SHELBY TUBE
CA - CONTINUOUS FLIGHT AUGER
RC - ROCK CORE

GROUNDWATER DEPTH
FIRST NOTED None ft.
AT COMPLETION Dry ft.
AFTER -- hrs. -- ft.
BACKFILLED Immed. hrs.

BORING METHOD
HSA - HOLLOW STEM AUGERS
CFA - CONTINUOUS FLIGHT AUGERS
DC - DRIVING CASING
MD - MUD DRILLING

STANDARD PENETRATION TEST - DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30"; COUNT MADE AT 6" INTERVALS

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2007-00134

HEARING DATA REQUESTS TO KENTUCKY AMERICAN WATER
Item 7 of 15

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7. Provide a copy of any cost estimates or cost analyses performed by or for Kentucky American Water relating to the discussions concerning the sale of 3-5 MGD of water by the City of Versailles to Kentucky American Water.

Response:

Please see the attached information from the BWSC.

O'BRIEN & GERE

Program Manager's Agenda

Bluegrass Water Supply Commission

January 22, 2007

1. Review of Program Manager Budget
2. Status Report

   Task Order #2

   - Kentucky River Pool #3 – Water Withdrawal Application – On Hold
   - Phase I Pipeline Routing Study Amendment – On Hold

   Task Order #4 & Task Order #5

   - Review of Alternatives and Update on Least Cost Alternatives – Executive Summary of Analysis

O'BRIEN & GERE

Program Manager Status Report
Bluegrass Water Supply Commission
January 22, 2007 Board Meeting

SUMMARY OF PROGRAM MANAGER BUDGET

	Budget	Effort Spent to Date	Remaining Budget
Task Order #2	$ 94,000.00	$ 88,012.88	$ 5,987.12
Task Order #3	$ 79,000.00	$ 77,041.16	$ 1,958.84
Task Order #4	$ 59,500.00	$ 18,987.57	$ 40,512.43
Task Order #5	$ 63,730.00	$ 56,476.70	$ 7,253.30
Total	$ 311,230.00	$ 255,515.75	$ 55,714.25

TASK ORDER #2

- **KENTUCKY RIVER POOL 3 – WATER WITHDRAWAL APPLICATION**

  This item has been placed on hold pending the final outcome of the alternative evaluation in Task Order #5.

- **AMENDING PHASE I ROUTING STUDY**

  This item has been placed on hold by the Master Planning and Capital Construction Committee with the recommended that the selection of the final route be tabled until the completion of Task Order No. 5's alternative evaluation.

TASK ORDER #4

- **LOUISVILLE WATER COMPANY PROPOSAL**

  BWSC has received several proposals from Louisville Water Company (LWC) for wholesale supply of finished water. The latest proposal was focused on a water supply alternative to meet the needs of BWSC members only (9 MGD or less). If BWSC agreed to a long term contract with minimum purchase provisions, LWC would contribute the required capital to fully fund construction of a 24-inch main with a 10 MGD capacity terminating at KY Highway 53 for all of the supply options specified.

The various options specified either design or reserved capacity with minimum daily purchases and a variety of rate options. The latest option presented by LWC was to have a maximum day to minimum purchase ratio of 2:1 with the standard wholesale water rate of $1.63 per one thousand gallons.

Based on an estimated purchase amount of 2 MGD to 3 MGD, the calculated unit cost to the Commission would be greater than $4.00 per 1,000 gallons.

- **CITY OF VERSAILLES PROPOSAL**

The City of Versailles recently completed construction of a WTP with capacity in excess of their near term demands. Since KAW service area abuts Versailles, it is plausible that KAW could receive water from Versailles to address current deficits, and in turn, convey water to Winchester to address their near term deficit. In reviewing this information, all of the flow rates from the City of Versailles would require additional pumping on BWSC's behalf in order to deliver the water into KAW's system on a short-term basis. (This analysis is based on a five-year term.)

Preliminary estimates of these booster pump options and the City of Versailles' improvements are in the range of $185,000 to $400,000.

Based on an estimated purchase amount of 2 MGD to 3 MGD, the calculated unit cost to the Commission would be in the range of $2.40 to $2.50 per 1,000 gallons.

- **FPB WATER TREATMENT PLANT EVALUATION**

Frankfort Plant Board (FPB), in cooperation with BWSC, retained GRW Engineers to evaluate the existing FPB WTP for the possibility to meet the short-term needs of Kentucky American Water (KAW). The study also looked at expanding FPB's capacity to meet the needs of BWSC, or to meet the partial needs of both KAW and BWSC.

In summary, the report by GRW Engineers indicates that the historical raw water pumping demands during peak days and the 3-day running annual average has approached 16 MGD on a few occasions and was recommended that the 16 MGD demand be used as the critical present day peak demand. As a result, there is no reliable treatment plant capacity available for BWSC without substantial improvements to expand the water treatment plant and distribution system in the range of $17 to $32 million.

Based on an estimated purchase amount of 2 MGD to 3 MGD, the calculated unit cost to the Commission would be greater than $3.00 per 1,000 gallons.

Program Manager Status Report
Bluegrass Water Supply Commission
January 22, 2007 Board Meeting

TASK ORDER #5

- **SUMMARY OF WATER SUPPLY ALTERNATIVES**

A Master Planning and Capital Construction Committee meeting was held on January 3rd and January 12th, 2007 to present the conclusion of Task Orders No. 4 & No. 5. A presentation and draft copy of the report has been given to the Master Planning and Capital Construction Committee for review and comments. The following is a summary of these conclusions.

In response to Kentucky American Water's (KAW) offer to construct capacity at Pool 3 for BWSC, BWSC authorized O'Brien & Gere to undertake Task Order No.5. The intent of Task Order No. 5 is to support BWSC through review of KAW's Preliminary Design Memorandum for a new Water Treatment Plant on Pool 3 of the Kentucky River and to review, update and reassess other alternatives for water supply and grid alternatives to the members of BWSC.

O'Brien & Gere developed initial concept level costs for the several alternatives. Some of the alternatives evaluated included looking at a smaller WTP on Pool #3, purchasing water from Louisville Water Company, increasing the capacity at FPB's WTP, purchasing water from Greater Fleming Regional Water Commission, as well as others, and various combinations.

Interim Findings

- If BWSC develops a 15 MGD Pool 3 water supply independent of KAW, unit costs will be nearly 2-1/2 to 3 times the unit costs if KAW and BWSC worked in partnership, due to loss in economy of scale
- If the BWSC facilities were reduced down to the current 9 MGD committed capacity, the capital costs would be less, but the unit costs would be even higher
- Phasing can defer costs for some members, but is relatively ineffective at reducing unit cost
- Of the other (not Pool 3) BWSC-Only Alternatives, the most preferred, based on cost appear to be :
  - Frankfort Plant Board
  - Greater Fleming, including combinations with FPB & LWC
- The above unit costs are nearly double the BWSC/KAW Pool 3 option, and may not satisfy FPB's desire for a substantial back-up supply

- **BWSC/KAW PARTNERSHIP**

KAW presented to the BWSC on September 25, 2006, a proposal to construct a 20 MGD facility in Pool 3 of the Kentucky River. O'Brien & Gere has been reviewing the KAW partnership proposal and comparing the costs of the proposed Partnership with other supply options available to BWSC.

KAW proposes to provide multiple connections to BWSC, in order to reduce the size and cost of the BWSC grid. This approach is consistent with the 2004 Feasibility Study, but different than the "independent grid" approach favored by the Commission.

The project cost as presented in the meetings with KAW and pending any update information from the 30% design submittal is as follows:

Proposed Cost – 20 MGD WTP Facilities (30% Design)

Raw Water Intake Facilities	$ 18,492,892
WTP Facilities	$ 42,600,616
WTP Residual Facilities	$ 12,258,535

Proposed Cost - Transmission Main (30% Design)

Booster Pumping Facility	$ 3,055,467
Intermediate Storage Facility	$ 5,101,998
Pipeline – 42-inch	$ 76,718,778
Total Project Cost – WTP & Transmission Main	**$158,228,286**

CONCLUSIONS

O'Brien & Gere has re-evaluated the alternatives to KAW's proposal. There are a couple of problems that impact nearly all alternatives:

- **The independent grid is too expensive for BWSC to finance alone, with commitments of 9 MGD.**
- **If BWSC commits to 15 MGD, the unit wholesale costs are more reasonable, but the impact on customer's bills is excessive.**

The estimated cost of the KAW proposal is roughly $0.20 to $0.30 per 1,000 gallons more than the "all-in" approach with an independent grid. Assuming that BWSC agrees to using multiple connections to KAW (to avoid cost of the independent grid), the cost could be reduced. It is recommended that BWSC propose to take a smaller share of the Pool 3 facilities (5 MGD out of 25 MGD vs. 9 MGD out of 30 MGD). This allows for a lesser unit cost for the facility and less grid cost to the members.

RECOMMENDATIONS

It is recommended that BWSC negotiate with KAW for cost sharing of a 25 MGD facility.

If KAW accepts the 5 MGD initial share in Pool 3, then this will allow for lesser unit cost to BWSC for the initial phase and explore further the possibility to combine that with a supplemental supply from the Ohio River for the remainder of the 4 MGD.

Based on an estimated minimum purchase amount of 5 MGD, the calculated unit cost to the Commission would be in the range of $2.45 to $2.55 per 1,000 gallons.

It should be noted that the costs per 1,000 gallons are dependent on several factors (terms of borrowing, interest rates, rate coverage, daily withdrawal rates, etc) which should be common to all options.

Both O'Brien & Gere and PFM will work together to conduct additional analysis to provide more detail cost analysis of the rates and will look for guidance on using the appropriate factors for the purpose of projecting wholesale rates.

801 Corporate Drive
Lexington, KY 40503
Tel 859 / 223-3999
Fax 859 / 223-8917

GRW Engineers, Inc.

Engineering
Architecture
Planning
GIS
Aviation Consultants

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Cincinnati, OH
Indianapolis, IN
Knoxville, TN
Louisville, KY
Nashville, TN

April 14, 2006

Mr. Bruce Southworth
Utilities Director
City of Versailles
City Hall
196 South Main Street
Versailles, KY 40383

Re: BWSC Emergency Water Supply Study
Versailles Water System
City of Versailles, Kentucky
GRW Project No. 2676-18

Dear Mr. Southworth:

Per your request, we have evaluated the ability of City of Versailles's water systems to provide emergency water to the Bluegrass Water Supply Commission (BWSC) at the existing Kentucky American Water Company connection on Huntertown Road.

We utilized Bentley's WaterCAD V 7.0 modeling software to model the existing system and the proposed BWSC water demand. Three (3) different flow rate scenarios were considered in this study, 2mgd, 3mgd and 5mgd. These rates were assumed to be constant rates over a 24-hour period. i.e. 2mgd / (24 hrs/day * 60 hrs/min) = 1,388 gpm or ~ 1,400 gpm. It was also assumed in this analysis that the water system improvements currently under construction had been completed and the system is operating as designed.

As you know, the current improvements will create a new pressure zone in the southeast portion of the Versailles service area. This will include constructing a new 2,000 gpm booster pump station and a new 1 million gallon tank. The booster station was designed per the Recommended Standard for Water Works, with one 2,000 gpm primary pump, a second standby pump and provisions for a third future pump. The hydraulic grade line for this zone (tank overflow elevation) will be 1,110 feet. It is my understanding that KAWC's hydraulic grade line at the connection point is slightly higher at 1,132 feet. This difference in hydraulic grade will have to be overcome to allow Versailles to supply the requested water. This report is based on providing the requested demands at the metering point and does not address exactly how KAWC (or the BWSC) would achieve this additional pressure boost. We would assume that KAWC would reduce the HGL down to match Versailles, if possible, or a booster pump/station would be installed near the KAWC connection point.

2 MGD SCENARIO

To begin this evaluation, we modeled the 2 mgd (1,400 gpm) water demand with the booster pump station as it is currently being constructed, that is with one worker pump operating. This resulted in excessive run times, approximately 20 hrs/day, for the new booster station. This result is easily seen by comparing the total system demand verses the booster station pump discharge rate: the Versailles current peak demand (675 gpm) plus the proposed BWSC (1,400 gpm) equals 2,075 gpm compared to the 2,000 gpm pumping rate.

The next step in the analysis was to add the third pump to the booster station, which is currently under construction. This would allow the City to run two (2) pumps with one standby pump. This, at the current Versailles water demand for the new pressure zone, would allow the pump station to operate at an acceptable 14 hrs/day. The system maintained adequate pressures (min. pressure - 52 psi at Node J-411) while meeting the additional 2mgd water demand. Turnover in the new tank was rapid, but acceptable.

This scenario indicated that two short sections of 16-inch diameter water main would have high line velocities, in the 5 to 6 ft/sec range. If the BWSC and Versailles are planning to utilize the KAWC's connection point as a continuous purchase point, then the City may require that new parallel mains to be installed to reduce these velocities and associated friction losses.

The estimated construction cost for this scenario is as follows.

Pump Station 3rd Pump & Controls	$ 71,350.00
1,750 LF of 16" Water @ $50/ft (optional)	*$ 87,500.00*
Total Construction Cost (2mgd)	$158,850.00

Fire flows were also modeled for a 2 hour, 775 gpm fire in Sycamore Estates with and without the additional BWSC water demand. The 2 mgd demand resulted only in an additional pressure drop of approximately 8 psi in the Sycamore area; however, the system pressure stayed within an acceptable range.

3 MGD SCENARIO

The 3 mgd demand was modeled with the assumptions described above and with the third booster pump described in the 2 mgd scenario being installed in the booster station that is currently under construction. The estimated run time for the booster station, at the current Versailles demand plus the additional 3 mgd to the BWSC, is 17 hr/day. The system also was able to maintain the required pressures of 30 psi (44.5 psi at Node J-411).

Also, the velocities in the above mentioned mains increased to the 5 to 7 ft/sec. range. As stated above, these velocities will need to be addressed if the 3 mgd purchased by BWSC is intended to be a "normal" operating situation.

A 775 gpm fire flows scenario resulted in pressures very near the minimum required pressures for Sycamore Estates. During this time, the pressure within Sycamore fell to approximately 17 psi. To avoid this pressure drop, several thousand feet of water main would need to be added to Sycamore. A more cost-effective solution would be to simply limit the amount of water available to the KAWC meter in the event of a fire.

Along these same lines, if the City elects to pursue this alternative, consideration should be given to the expected growth in the new pressure zone and the potential need to reduce the amount of water available to KAWC/BWSC as this growth occurs.

5 MGD SCENARIO

The same modeling assumptions as stated above for the 3 mgd scenario were modeled with the 5 mgd demand. The booster pumping station, as it is currently being constructed (including the third pump), was unable to supply sufficient water to meet the City's needs and the desired 5 mgd BWSC demand.

In an attempt to satisfy the 5 mgd demand, we ran another scenario utilizing larger pumps in the booster pump station. This proposed adjustment satisfied the desired demands for the new pressure zone, however, it also highlighted a larger issue with trying to meet the requested water demand. The Versailles Water Treatment Plant is only rated for 10 mgd. The City's Water Plant currently operates in the 4 to 5 million gallons per day range. If an additional 5 mgd in demand were given to the BWSC, the plant would be operating at capacity, leaving no room for expansion within Versailles or even daily maintenance at the Water Plant. Additional concerns with this would be meeting the required one day storage volume for the distribution system.

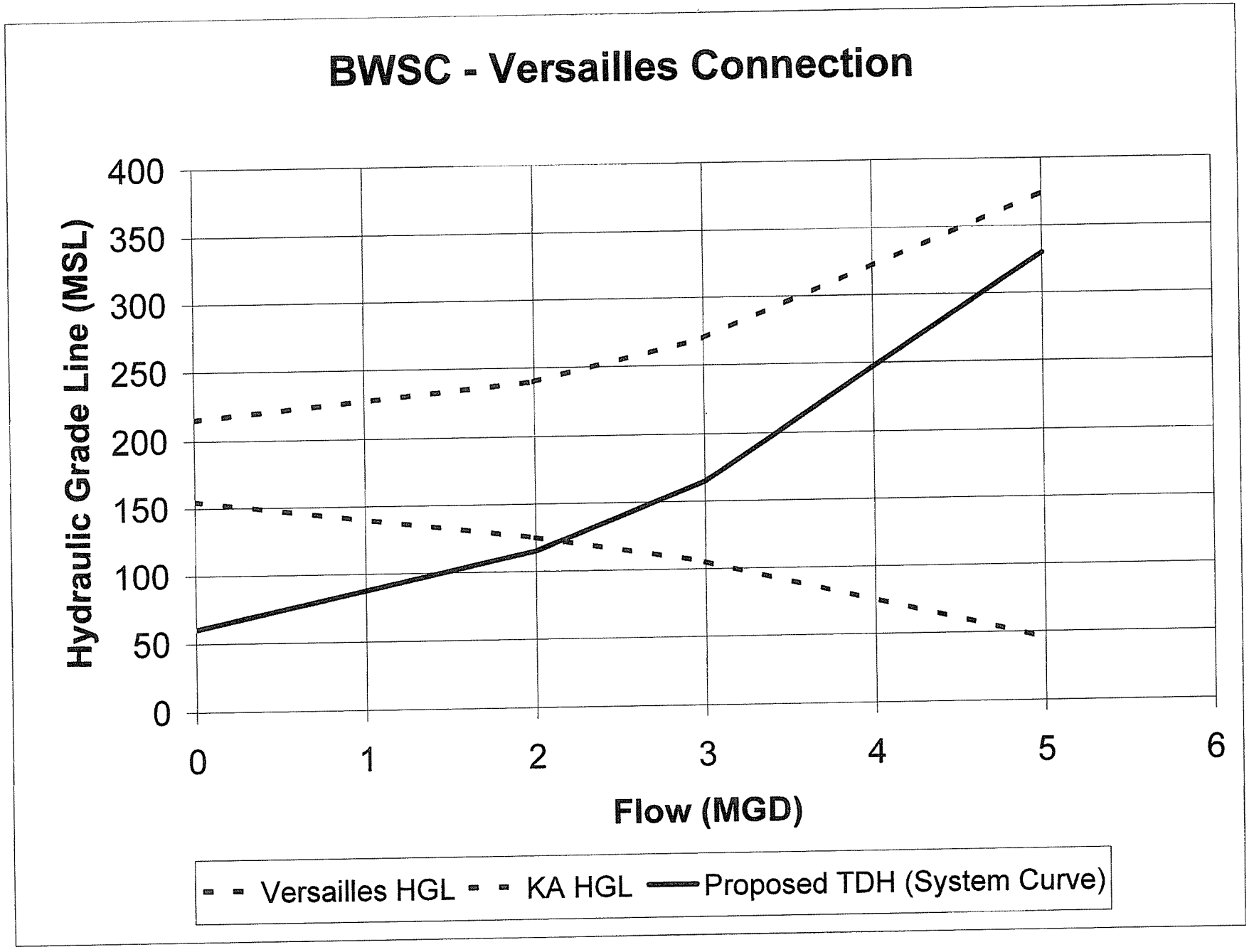
Given the above, the City of Versailles should strongly consider the many improvements that would be needed to the system and the extensive associated costs before agreeing to a 5 mgd rate.

Without fully knowing the details of the potential agreement between the City of Versailles and the Bluegrass Water Supply Commission and the intended demand patterns, it is difficult to make a firm recommendation. However, it would appear that the City of Versailles could provide temporary emergency water at the KAWC connection at a rate of 2 to 3 million gallons per day without negatively impacting their operation if the above discussed improvements are implemented. It would further appear that a 5 mgd purchase by BWSC would be impractical with the limiting factor being the capacity of the Versailles Water Treatment Plant.

Should you have any questions or comments, feel free to contact Brad Montgomery or me at the above phone number.

Very truly yours.

Michael Jacobs, P.E.
Project Engineer


BWSC - Versailles Connection
Hydraulic Grade Line (MSL)
400
350
300
250
200
150
100
50
0
0
1
2
3
4
5
6
Flow (MGD)
Versailles HGL
KA HGL
Proposed TDH (System Curve)

Option I -

Diesel Pump	$	75,000
Misc. Hwy. Trailer	$	60,000
Temp. Piping & Valves	$	50,000
Total	**$**	**185,000**

Option II -

Diesel Pump	$	135,000
Temp. Piping & Valves	$	50,000
Temp. Housing	$	56,150
Versailles Pump Improvements	$	71,350
Versailles Piping Improvements	$	87,500
Total	$	400,000

Linda
Bridwell/KAWC/AWWSC
03/17/2006 06:14 PM

To "Bryan Lovan" <LovanBK@obg.com>@AWX
cc briddle@gmwss.com, "Don Hassall" <dhassall@bgadd.org>, DRTalley@alltel.net, "George Rest" <RestGB@obg.com>, tom_calkins@nicholasville.org, VAzevedo@wmutilities.com,
bcc
Subject Re: Agenda for City of Versailles Meeting

Bryan,
As we discussed previously, I learned after the meeting that the 1132 was a gradient Rich determined was what would be at the connection getting 3 mgd to Versailles, not vice versa. Normal system gradient is about 1170. If I understood correctly, we can provide them up to about 2 mgd at normal system gradient, pumping from the Parkers Mill tank. The water goes out through 2-12" pipes that feed into the 16", so there's a bit of a bottleneck either way.

So we went back and modelled what it would take to get water in at that point. We used peak day conditions and turned off one of the pumps at RRS. Under those conditions, we could take in 2 mgd at a gradient of 1,195 feet, 3.0 mgd at 1,225 feet, and 5.0 mgd at 1,330 feet. That may require a more complex connection than we had originally anticipated.

Unfortunately, there's not a lot of demand out in that area except for the airport, which means the water's got to come all the way back to Parkers Mill tank.

Please let me know if you have any questions.
Linda

Linda Bridwell, PE
Project Delivery & Developer Services Manager - WV, KY TN
Southeast Region
2300 Richmond Road
Lexington, KY 40502
Tel: 859-268-6373
Fax: 859-268-6374

"Bryan Lovan" <LovanBK@obg.com>

"Bryan Lovan"
<LovanBK@obg.com>
02/09/2006 10:33 AM

To: "Don Hassall" <dhassall@bgadd.org>, <briddle@gmwss.com>, <bridwell@kawc.com>, <tom_calkins@nicholasville.org>, <VAzevedo@wmutilities.com>
cc: <DRTalley@alltel.net>, "George Rest" <RestGB@obg.com>
Subject: Agenda for City of Versailles Meeting

Everyone,

Here is what I have found out so far. The existing OF of the Huntertown Tank is 1033.5 and the OF of the new tank (on same property as the one with the horse mural adjacent to Bluegrass Parkway) will be 1110. The HGL for KA's system in the area of Huntertown Road is 1132 +/- according to Rich Svindland.

Now Versailles is also constructing a new booster station to fill the new tank from the existing

tank and has a capacity of 2,000 gpm. The current demand on Versailles system in this area is 500 gpm. The city is supposed to have a 16-inch water main under Bluegrass Parkway to near KA's system @ Sycamore Estates.
The City could supply 2-3 mgd thru the 16-inch main with a temporary pump and piping between the City's system and KA's system. If more flow in needed, then City has a 24-inch main near the intersection of KY 33/Bluegrass Parkway and the new By-pass that is to feed the existing/new tank.

Here is some of the items I would like to get from our meeting on the 13th.

1) City of Versailles' system mapping in the area with existing system hydraulic grade line
2) Kentucky American' system mapping in the area with existing system hydraulic grade line
3) Proposed improvements - both Versailles & KAW that may be needed to meet flows of 2 MGD to 5 MGD
4) KA's interim needs (capacity)
5) City of Versailles current wholesale contract rate and terms
6) "Operational Issues" for this interim connection

Is there anything else you would like for me to cover or ask. Otherwise, I will see everyone in Versailles on Monday.

Thanks,

Bryan K. Lovan , PE, PLS
Project Manager
O'Brien & Gere Engineers, Inc.
1019 Majestic Drive, Suite 110
Lexington, Kentucky 40513-1895
Office - 859-223-0137 Ext. 22
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e-mail: lovanbk@obg.com

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2007-00134

HEARING DATA REQUESTS TO KENTUCKY AMERICAN WATER
Item 8 of 15

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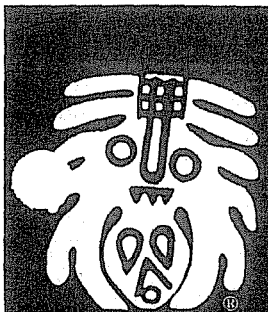
8. Provide a copy of the cultural resources assessment for the pipeline route from Pool 3 to Central Kentucky.

Response:

Refer to the attached letter report from Cultural Resource Analysts, Inc., dated July 9, 2007, titled *A Cultural Historic Letter Report Regarding a Reconnaissance Level Overview of the Proposed Kentucky American Water Peaks Mill Water Transmission Line in Fayette, Scott, Franklin and Owen Counties, Kentucky* and the attached survey report from Cultural Resource Analysts, Inc., dated July 18, 2007, titled *Cultural Historic Survey for the Proposed Kentucky American Water storage tank, Treatment Facility, and Pump Station in Franklin, Henry and Owen Counties, Kentucky.*



Stone tablet, Gailskill Mound
Mount Sterling, Kentucky

CULTURAL RESOURCE ANALYSTS, INC.

www.crai-ky.com

July 9, 2007

Gannett Fleming, Inc.
P.O. Box 67100
Harrisburg, PA 17106-7100

Re: A Cultural Historic Letter Report Regarding a Reconnaissance Level Overview of the Proposed Kentucky American Water Peaks Mill Water Transmission Line in Fayette, Scott, Franklin, and Owen Counties, Kentucky
CRAI Project No.: K06G004
Contract Publication Series No.: 07-094

During May 2007, Cultural Resource Analysts, Inc. (CRAI), completed a cultural historic reconnaissance level overview survey of the proposed Peaks Mill Water Transmission Line project in Fayette, Scott, Franklin, and Owen Counties, Kentucky. The survey was conducted at your request and in conformance with the scope of work developed for the project. The purpose of the reconnaissance level overview survey was to identify above ground cultural historic resources located within the project corridor, particularly those that are eligible for or listed in the National Register of Historic Places (NRHP). This letter report dealing with the overall project corridor should be utilized in conjunction with the baseline cultural historic report that was developed to consider potential impacts from vertical elements associated with the project. That report, which is being provided to you along with this letter report, is entitled *A Cultural Historic Survey for the Proposed Kentucky American Water Storage Tank, Treatment Facility, and Pump Stations in Franklin, Henry, and Owen Counties, Kentucky.*

The proposed route for the water transmission line project begins in Fayette County on the north side of Ironworks Pike (KY 1973) just west of its intersection with KY 972 and proceeds west-northwest along Ironworks Pike. The water line route skirts the community of Donerail, deviating north-northwest along the contour of a northbound entrance ramp onto I-75, then bears southwest into realignment with Ironworks Pike. The route continues west-northwest into Scott County and through the community of White Sulphur, bearing west at the intersection of Ironworks Pike and U.S. 460. The route continues west into Franklin County along U.S. 460 to the community of Woodlake, where it deviates northeast and then northwest along KY 1262 and through the community of Peaks Mill. The proposed route is located southwest of the intersection of KY 1262 and KY 2919, then follows KY 2919 northwest to its intersection with U.S. 127. Here the line bears north, running above Long Branch. The proposed route joins U.S. 127 to the north of the community of Swallowfield and continues north into Owen County to the proposed site of a new

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water treatment facility. The proposed water transmission line is approximately 30.4 mi in length. Figures 1b–1l are topographic maps showing the location of the proposed water transmission line in Fayette, Scott, Franklin, and Owen counties and the identified cultural historic sites. Corresponding photographs of all identified resources are also included.

Scope of Services

Gannett Fleming, Inc., contacted CRAI to complete the following scope of services.

1. Complete a review of the state survey and National Register of Historic Places (NRHP) files (standing historic structures) at the Kentucky Heritage Council (KHC) (State Historic Preservation Office [SHPO]) for the proposed project's Area of Potential Effect (APE) to determine if previously identified sites, structures, or districts are located within the APE;
2. Review the project files for reports of previous projects located in or near the current proposed project's APE at the KHC (SHPO);
3. Review readily available historic maps, including topographic maps, of the proposed project's APE and surrounding vicinity;
4. Field check the current condition of previously recorded cultural historic sites within the APE;
5. Identify the locations of cultural historic sites (standing structures) not previously recorded in the APE;
6. Make a preliminary assessment of the potential eligibility of the cultural historic resources located within the APE;
7. Map the location of historic buildings and structures within the APE;
8. Cultural historic resources that appear to be potentially eligible for inclusion in the NRHP will be photographed (to the extent possible) and briefly described;
9. A final determination of eligibility and NRHP boundary recommendations will not be made during this reconnaissance level overview study.

Items 1-3; Records Search and Historic Map Review

Before entering the field, all available surveys, reports, and maps pertinent to the project area were identified and reviewed. This task began with an investigation of the records of the KHC. The KHC files revealed that one site listed in the NRHP, the Switzer Covered Bridge (Site 19), is located in the proposed project's APE. A total of 1,007 sites in rural Fayette County, 353 sites in rural Scott County, 294 sites in rural Franklin County, and 80 sites in rural Owen County have been previously surveyed according to the records of the KHC. Ten previously surveyed sites, including the Switzer Covered Bridge (FR-61), were located within the current project area (Site 8 (SC-79): Site 9 (SC-86), Site 10 (SC-85), Site 11 (SC-142), Site 12 (SC-117), Site 13 (SC-98), Site 14 (SC-116), Site 16 (FR-75), and Site 20 (FR-60)). Fifteen additional sites were identified during the reconnaissance level field survey. Twelve sites identified in the project corridor appear to be eligible for listing in the NRHP, and one site is listed in the NRHP (Kentucky Heritage Council [KHC], Survey and National Register Files).

The Switzer Covered Bridge National Register of Historic Places nomination form was completed in 1974 by Gloria Mills of the Kentucky Heritage Commission. The site is located over North Elkhorn Creek on the northeast side of the current KY 1262 bridge in Franklin County, Kentucky. The 120 ft span was constructed circa 1855 by George Hockensmith. It is the only extant covered bridge in Franklin County and the only remaining covered span with sawtooth-edged entrances in Kentucky. The bridge was originally built from yellow poplar with a roof clad in wooden shingles.

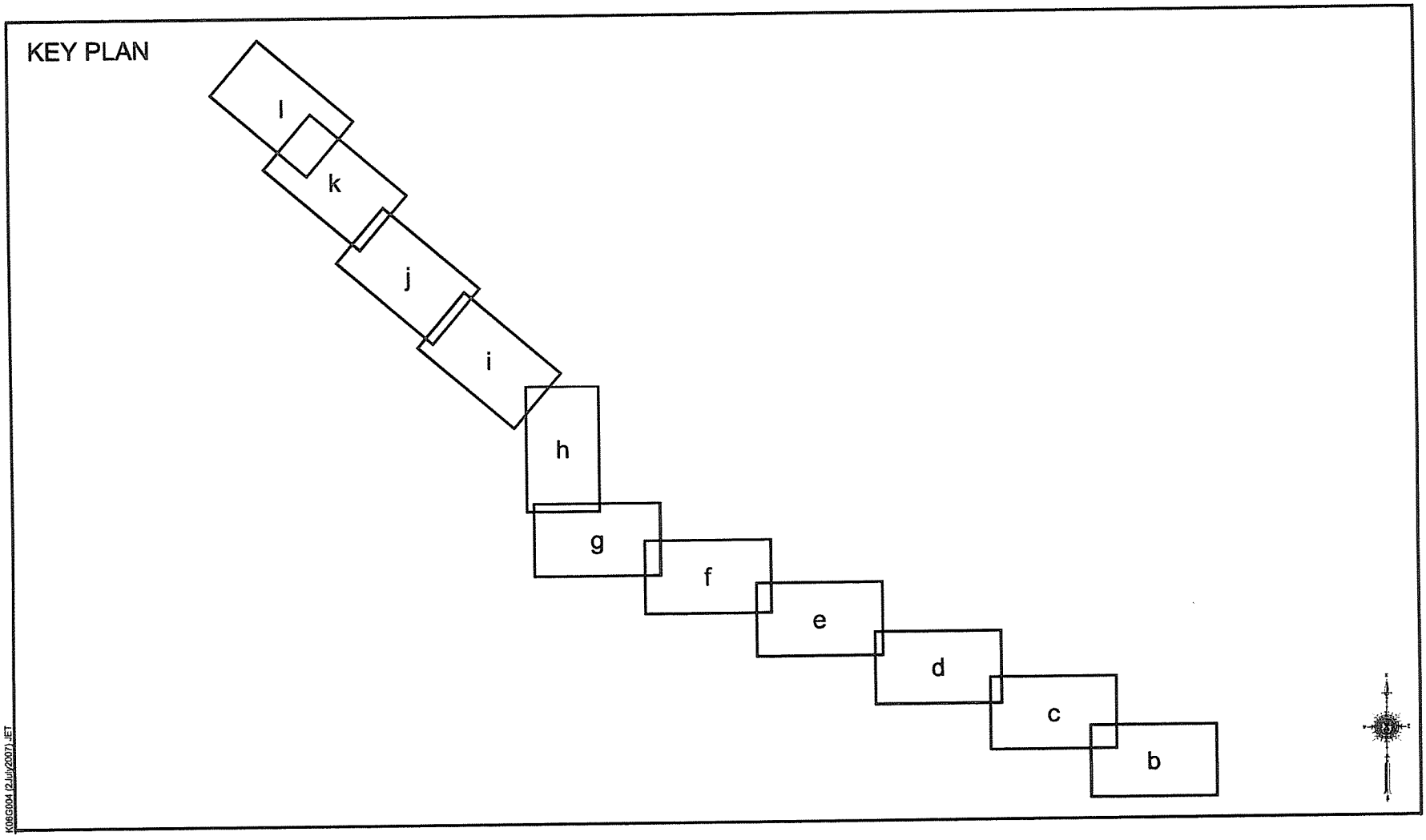


Figure 1a. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

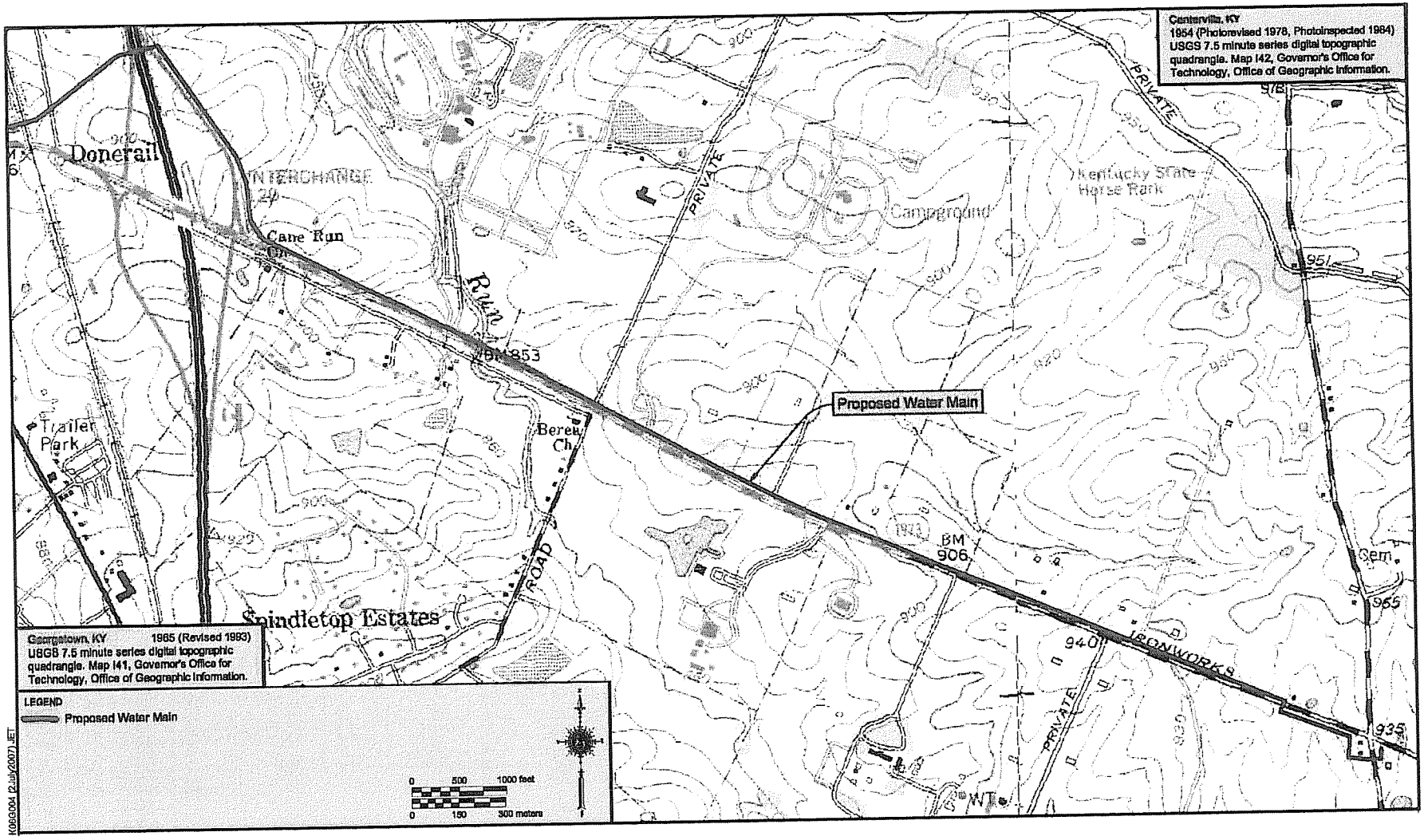


Figure 1b. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

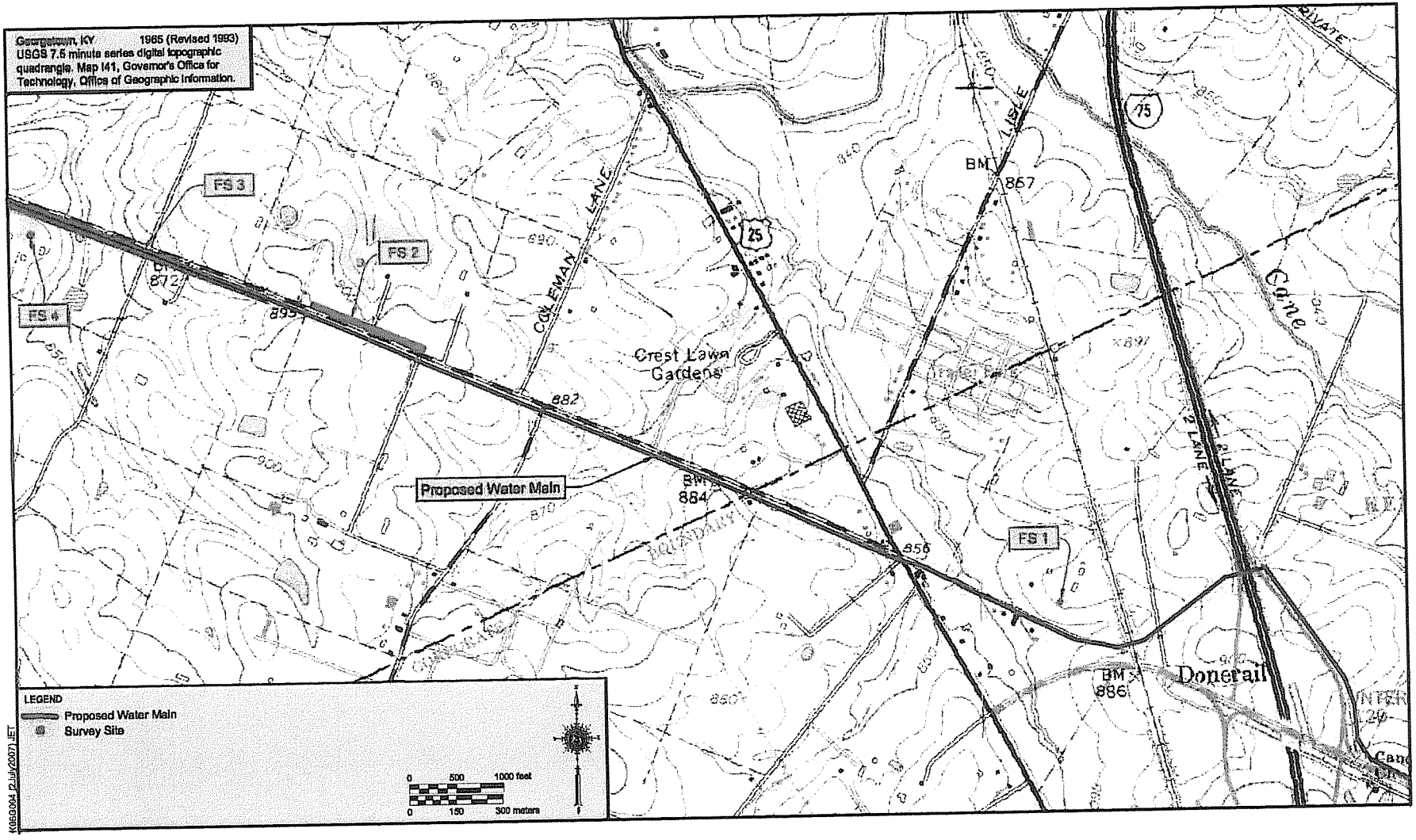


Figure 1c. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

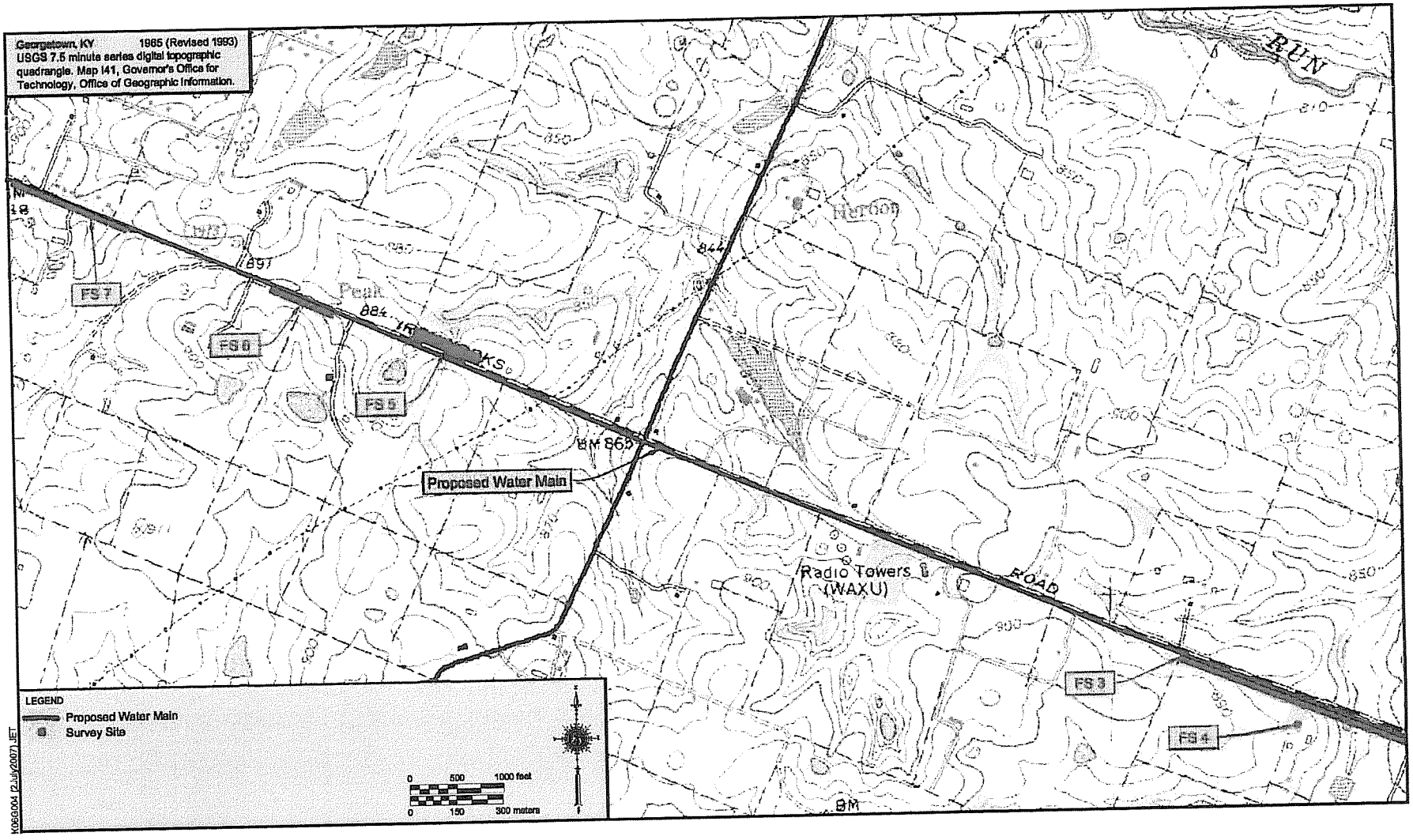


Figure 1d. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

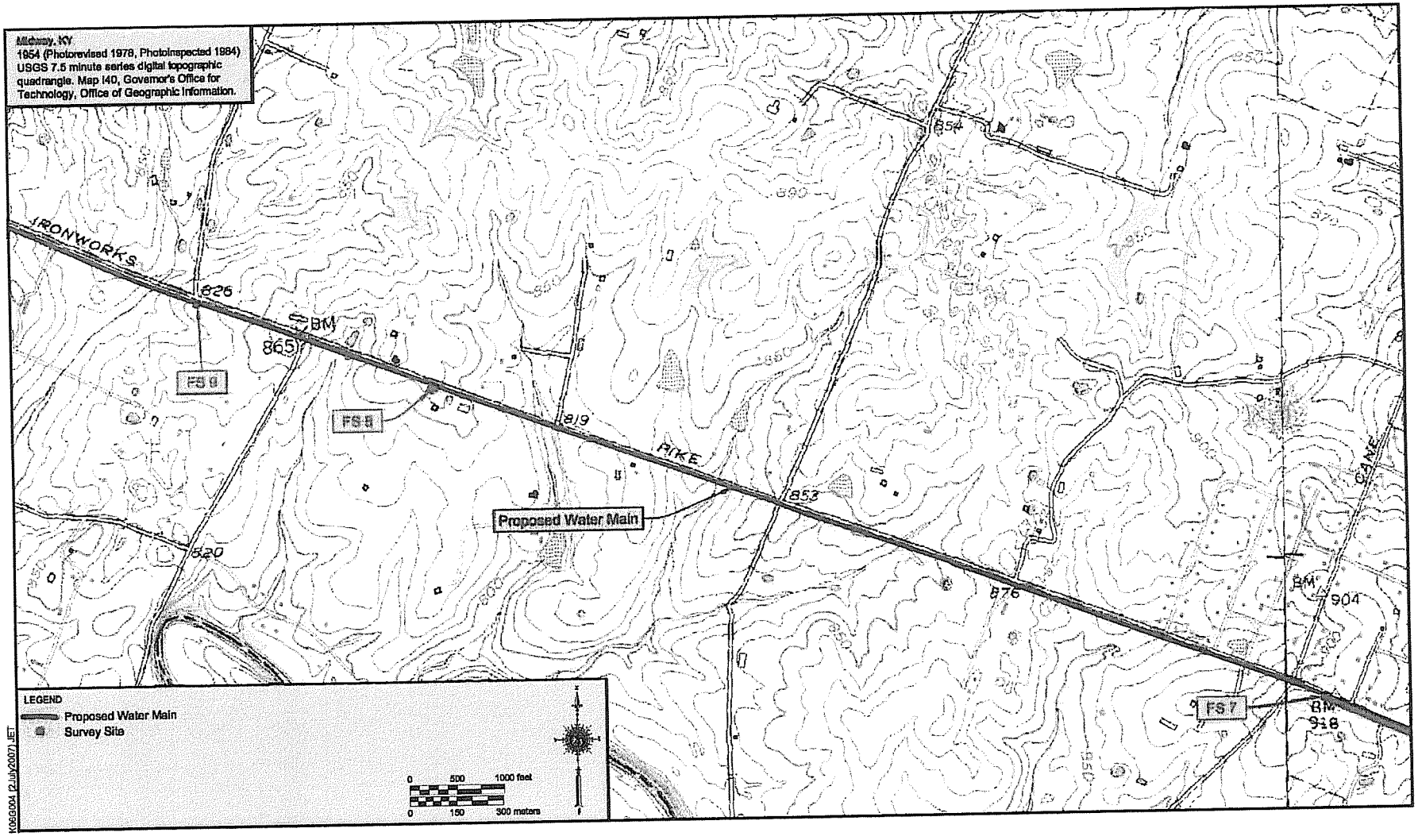


Figure 1e. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

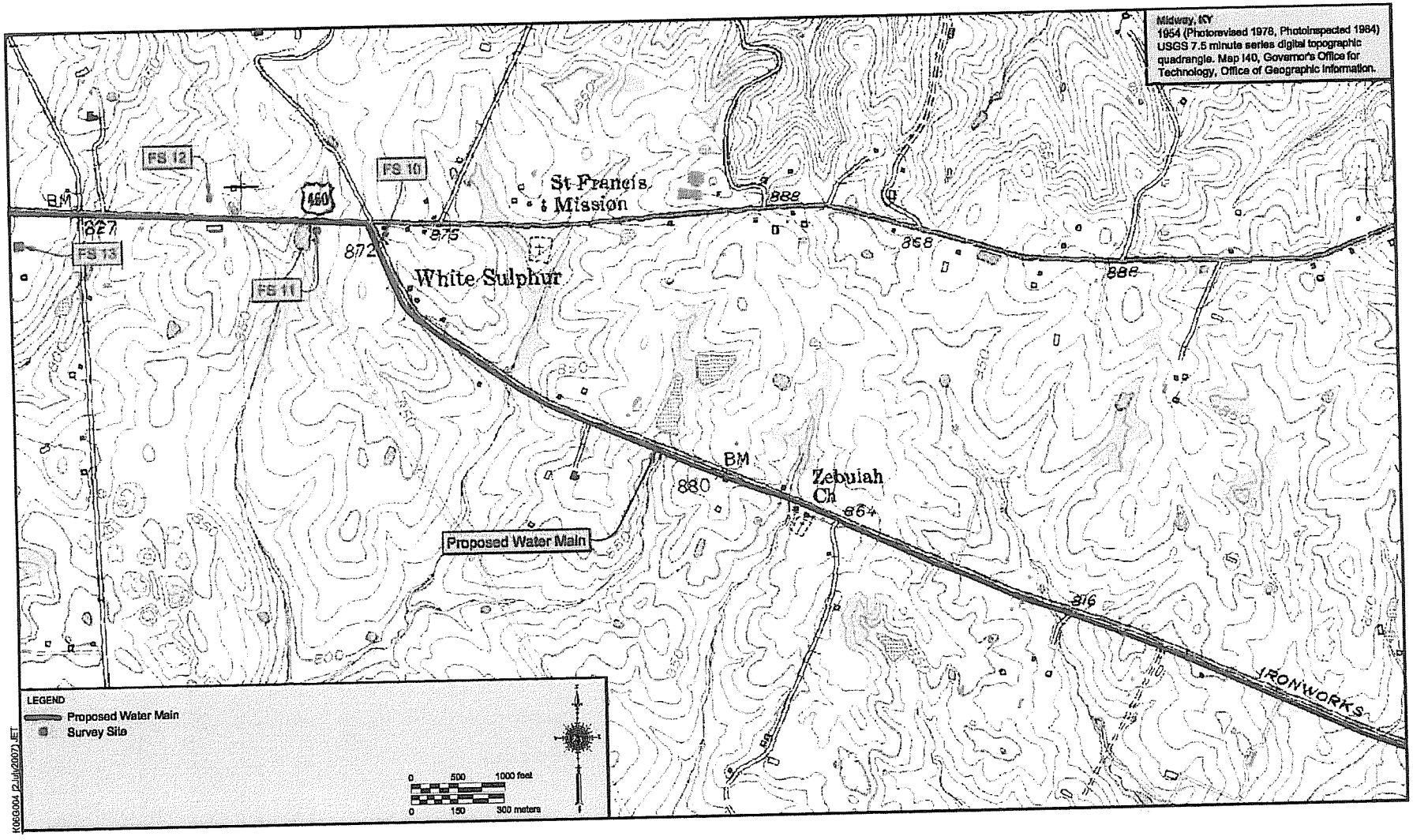


Figure 1f. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

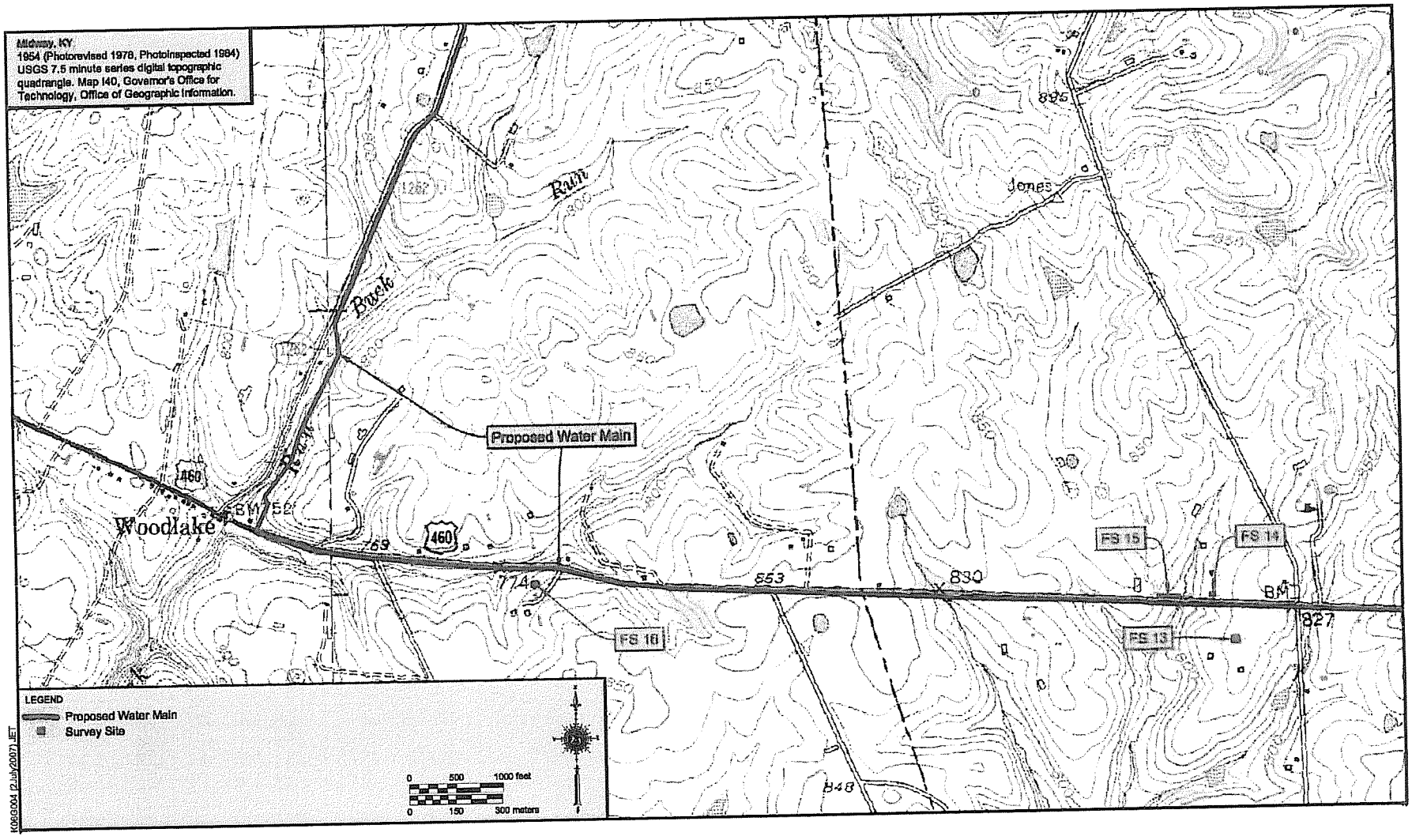


Figure 1g. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

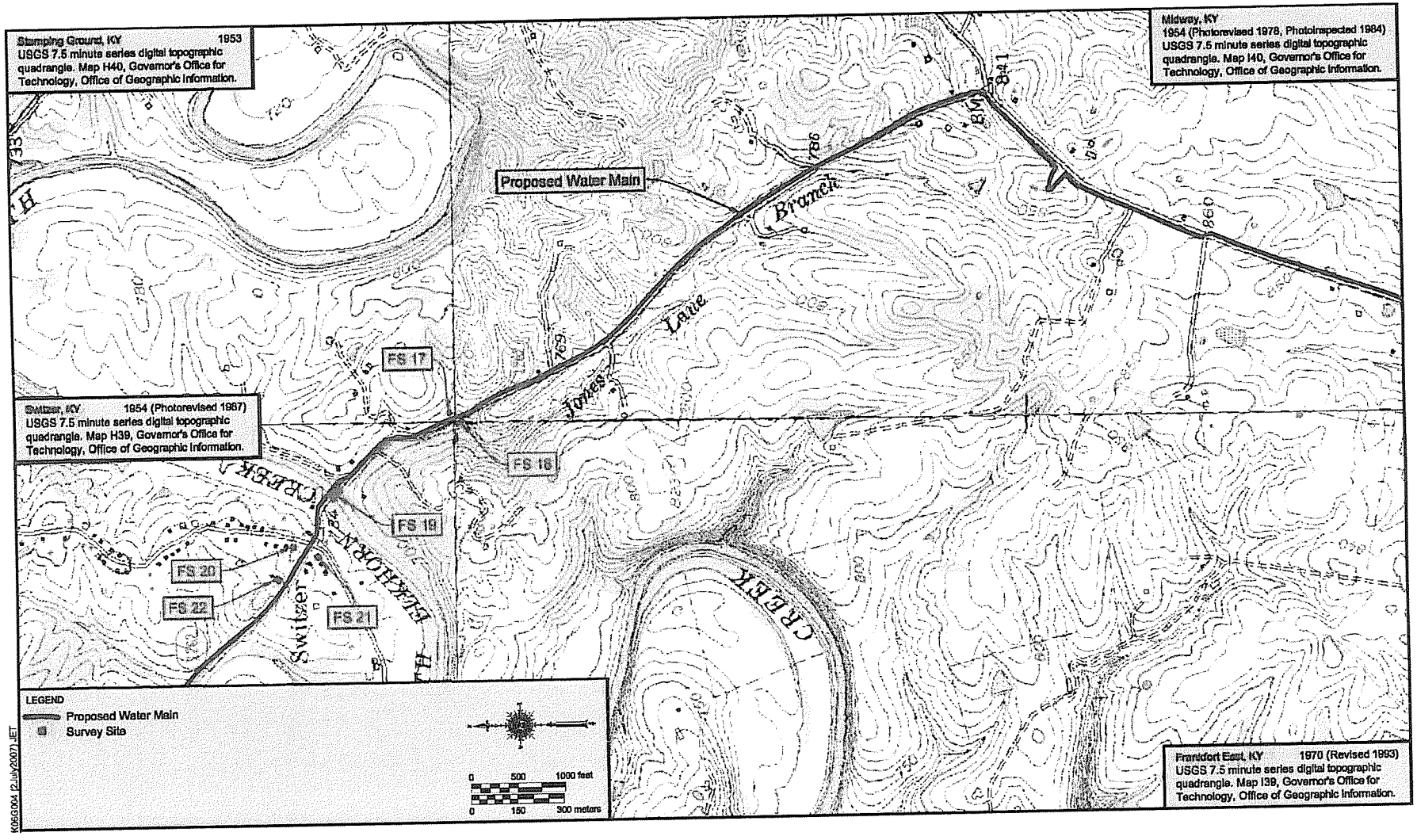


Figure 1h. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

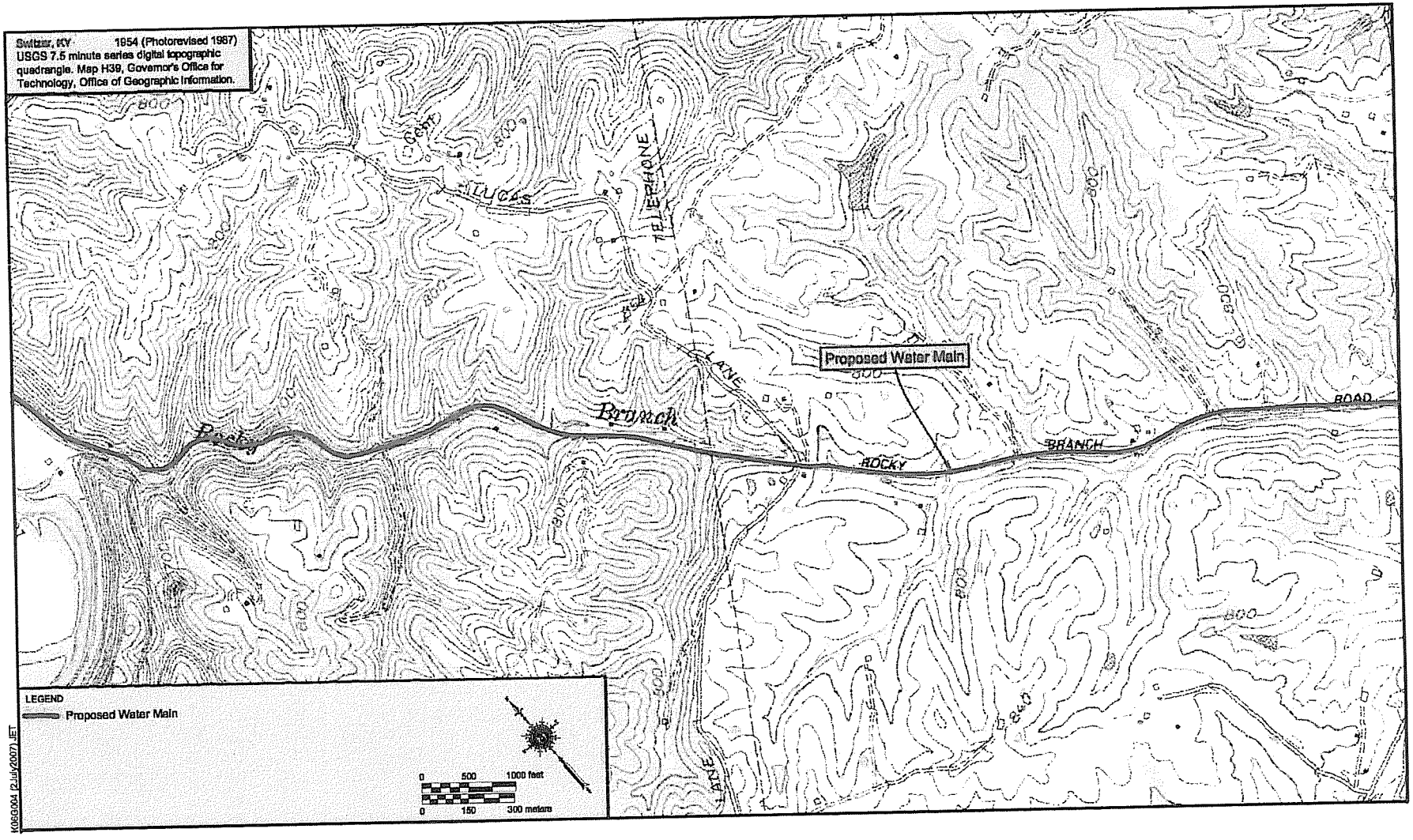


Figure 1i. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

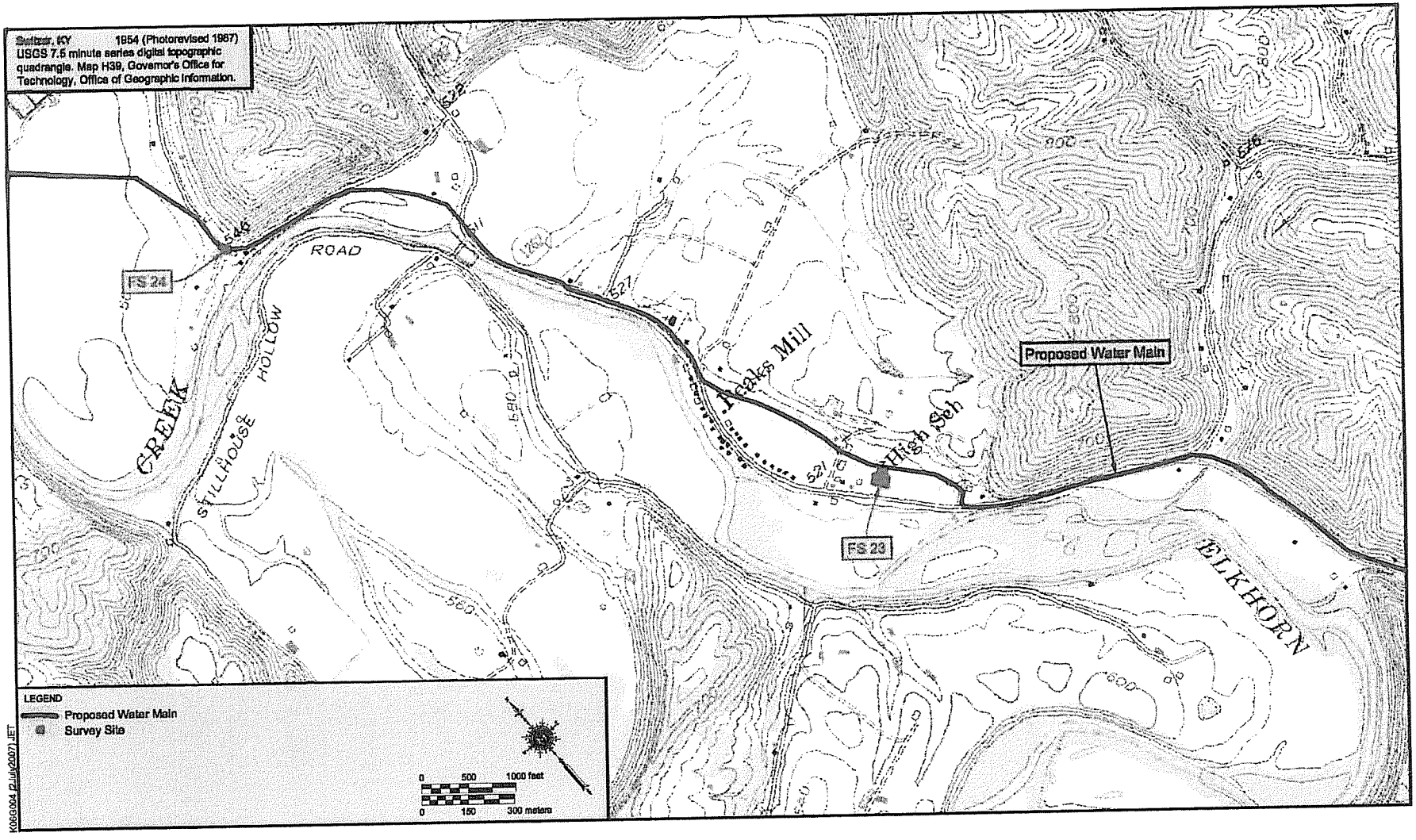


Figure 1j. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

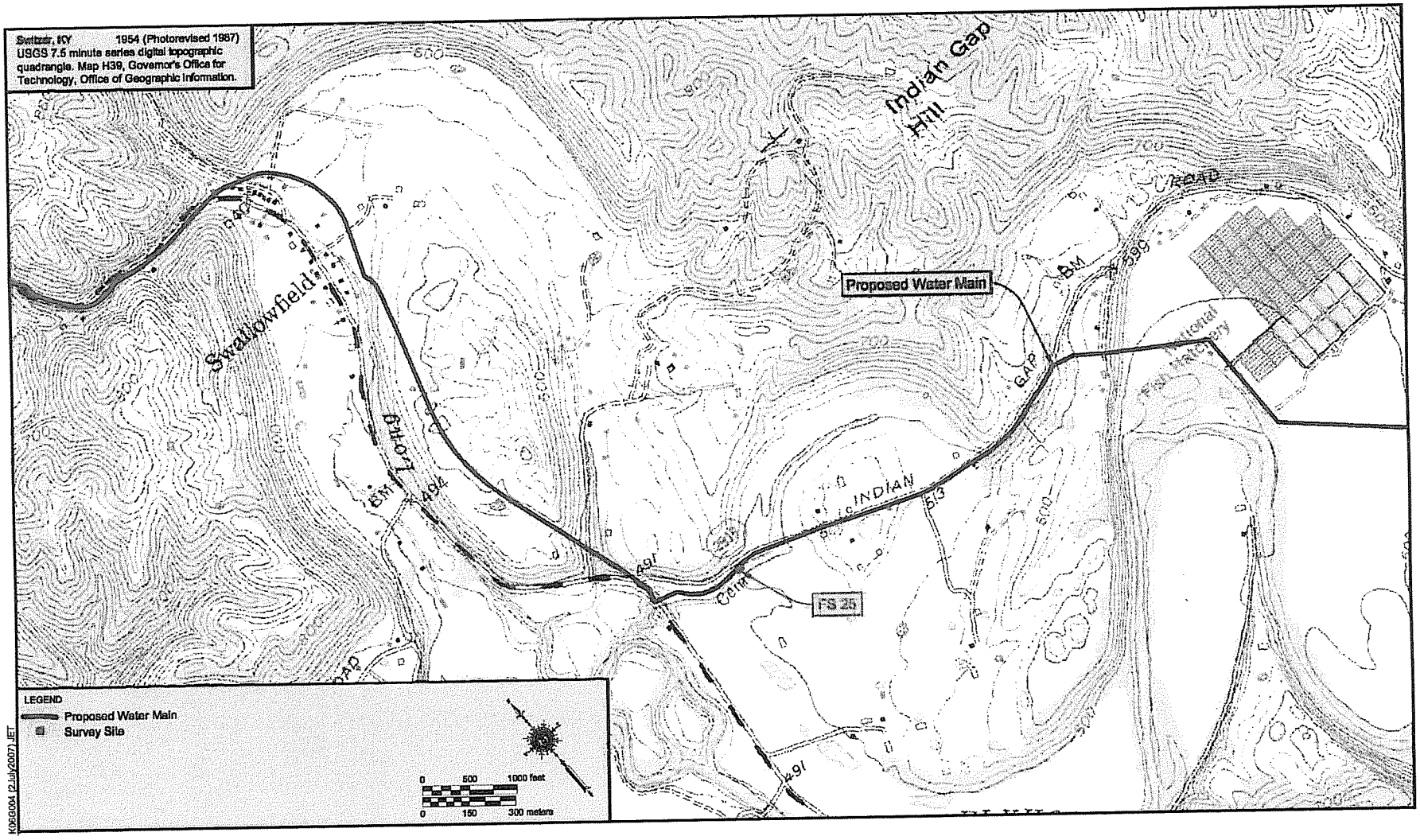
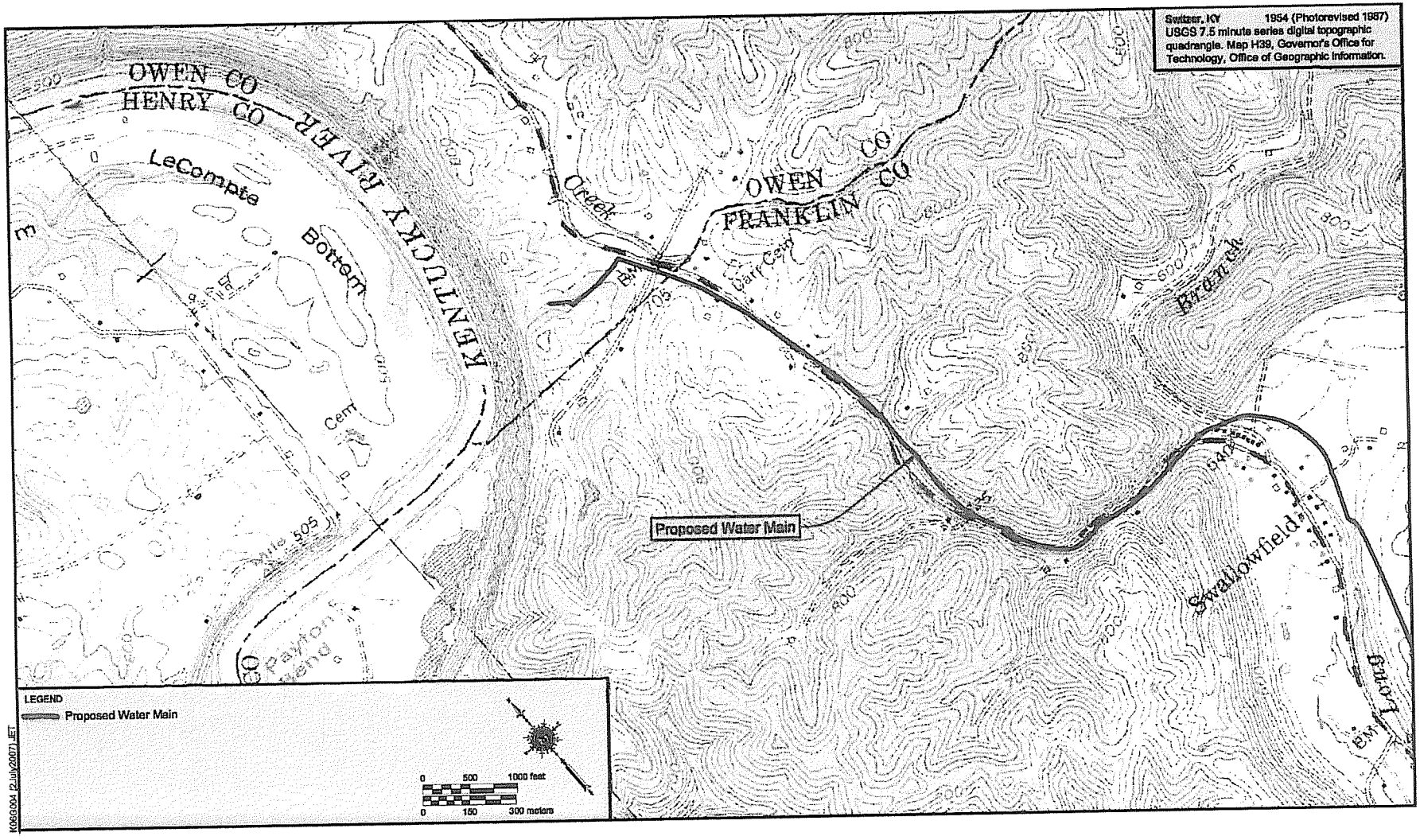


Figure 1k. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.



K066004 (2-July-2007).JET

Figure 1l. Topographic maps illustrating the water pipeline route in Fayette, Scott, Franklin, and Owen counties, Kentucky.

Alterations resulting from restoration efforts in 1906, 1911, 1991, and 1998 include a tin roof and centrally located side doors to prevent the removal of vertical boards by individuals fishing from the bridge. The bridge was closed to automobile traffic in 1954 following completion of the adjacent KY 1262 bridge and now serves the community of Switzer as the focal point of a small park. The Switzer Covered Bridge was listed in the NRHP in 1974 (KHC, Survey and National Register Files; Kentucky Department for Libraries and Archives 2005).

Additional reports identified during the records review are found in the Research and Survey Methodology section included in *A Cultural Historic Survey for the Proposed Kentucky American Water Storage Tank, Treatment Facility, and Pump Stations in Franklin, Henry, and Owen Counties, Kentucky.*

Identified Field Sites

- FS 1: (Zone 16; Quad: Georgetown, Kentucky; E:715677, N:4225288) This site is an early twentieth century house with a brick exterior built in the Colonial Revival style located at 4705 Ironworks Pike in Fayette County, Kentucky (Figures 1c, 2, and 3). Site 1 is potentially eligible for listing in the NRHP under Criterion C.
- FS 2: (Zone 16; Quad: Georgetown, Kentucky; E: 713605, N: 4226080) This site is an intact dry-laid rock wall with vertical coping located on the north side of Ironworks Pike approximately .25 mi west of Colman Lane in Scott County, Kentucky (Figures 1c and 4). Site 2 is potentially eligible for listing in the NRHP under Criterion C.
- FS 3: (Zone 16; Quad: Georgetown, Kentucky; E: 713107, N: 4226243) This site is a dry-laid rock fence located on the south side of Ironworks Pike approximately .5 mi west of Colman Lane in Scott County, Kentucky (Figures 1c, 1d, and 5). At this time, Site 3 does not appear to be eligible for listing in the NRHP.
- FS 4: (Zone 16; Quad: Georgetown, Kentucky; E: 712325, N: 4226441) This site is a two-story, three-bay (w/d/w) house with a prominent cross gable, which may continue as a rear ell located on the south side of Ironworks Pike approximately .25 mi west of Etter Lane in Scott County, Kentucky (Figures 1c, 1d, and 6). The house features decorative brackets and is clad in weatherboard siding. A dry-laid rock fence along Ironworks Pike is associated with the residence. Site 4 is potentially eligible for listing in the NRHP under Criterion C and possibly Criterion A.
- FS 5: (Zone 16; Quad: Georgetown, Kentucky; E: 709658, N: 4227609) This site is a dry-laid rock retaining wall located on the north side of Ironworks Pike approximately .4 mi west of U.S. 62 in Scott County, Kentucky (Figures 1d and 7). At this time, Site 5 does not appear to be eligible for listing in the NRHP.
- FS 6: (Zone 16; Quad: Georgetown, Kentucky; E: 709175, N: 4227746) This site is a dry-laid rock retaining wall located on the south side of Ironworks Pike approximately .7 mi west of U.S. 62 in Scott County, Kentucky (Figures 1d and 8). Sections of the wall are in poor condition. At this time, Site 6 does not appear to be eligible for listing in the NRHP.
- FS 7: (Zone 16; Quad: Georgetown, Kentucky; E: 708499, N: 4228005) This site is a good example of a dry-laid rock wall with horizontal coping located on the south side of Ironworks Pike approximately 1.1 mi west of U.S. 62 in Scott County, Kentucky (Figures 1d, 1e, and 9). Site 7 is potentially eligible for listing in the NRHP under Criterion C.

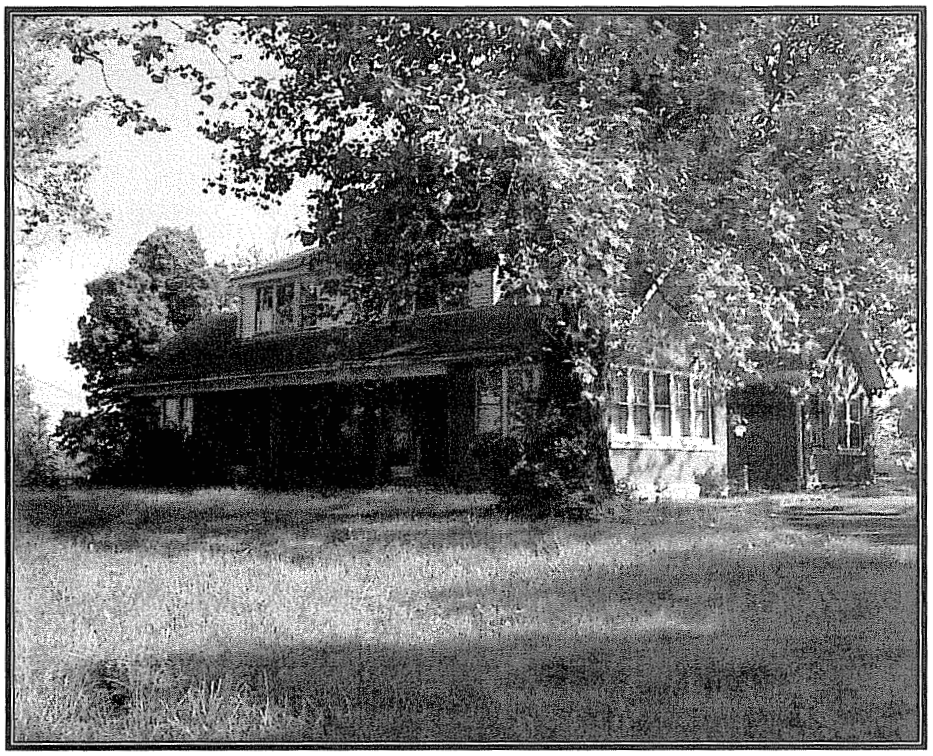


Figure 2. FS 1, early twentieth-century house with brick exterior built in the Colonial Revival style.

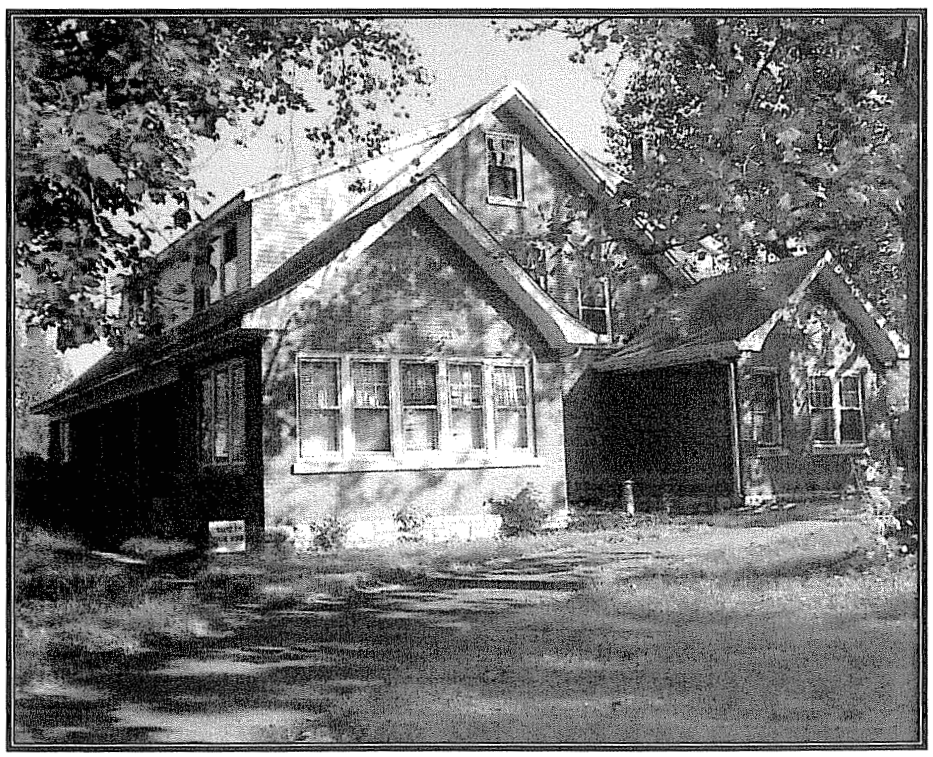


Figure 3. FS 1, façade and side elevation.

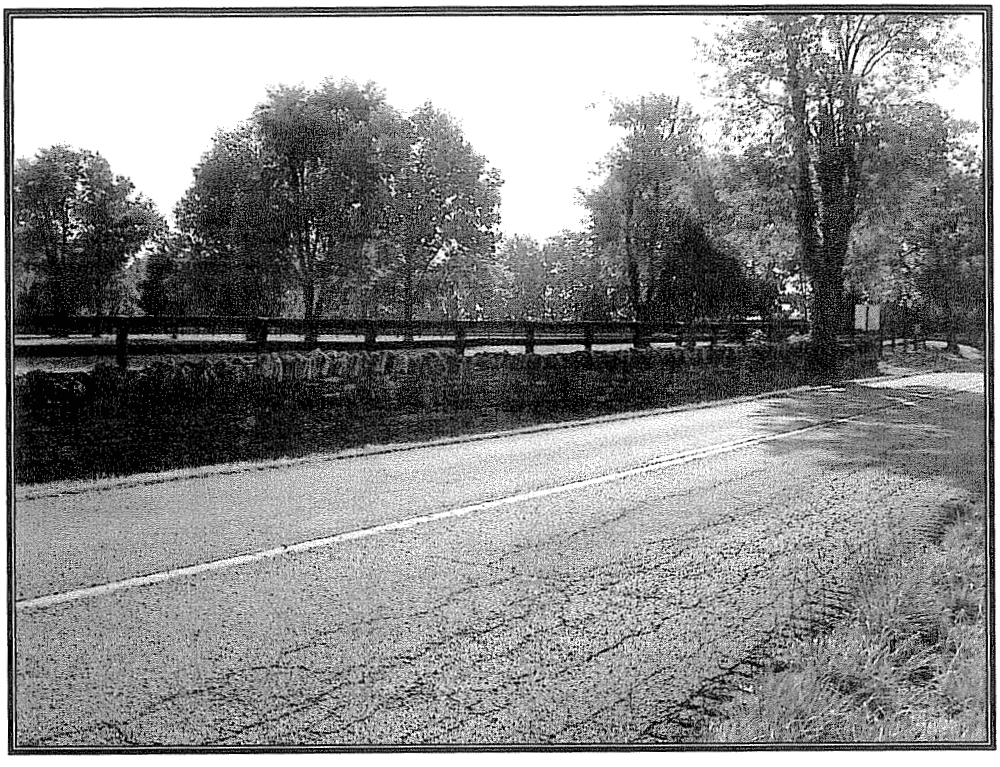


Figure 4. FS 2, dry-laid rock wall with vertical coping.

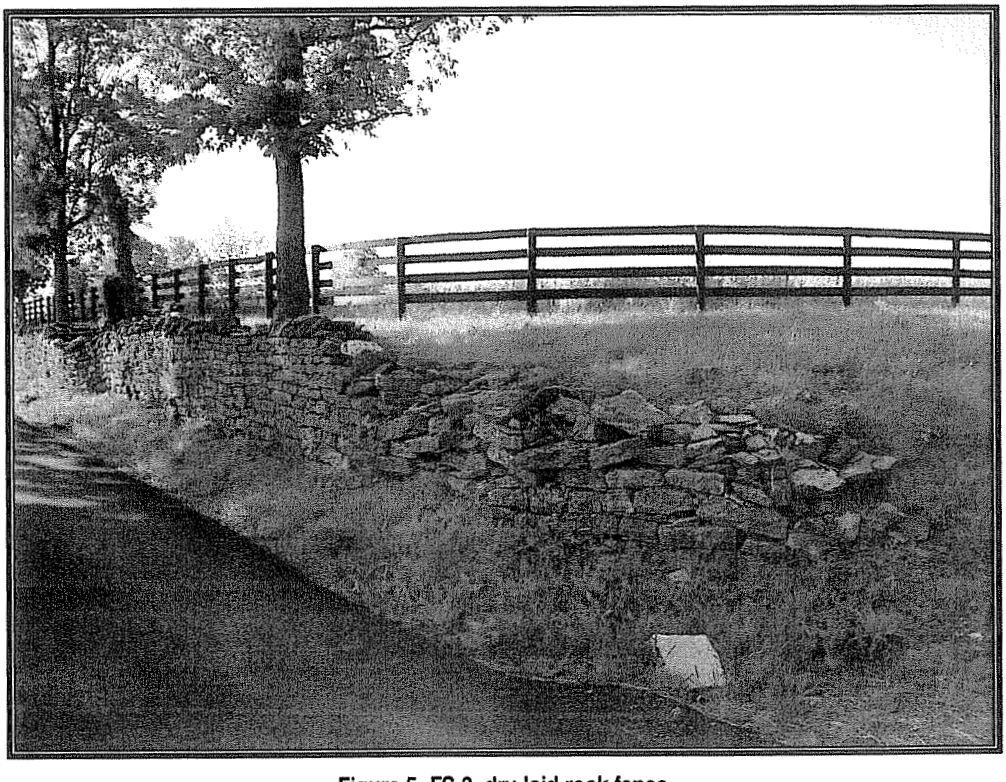


Figure 5. FS 3, dry-laid rock fence.

Figure 6. FS 4, two-story, three- bay (w/d/w) house with prominent cross-gable.

Figure 7. FS 5, dry-laid rock retaining wall.

Figure 8. FS 6, dry-laid rock retaining wall.

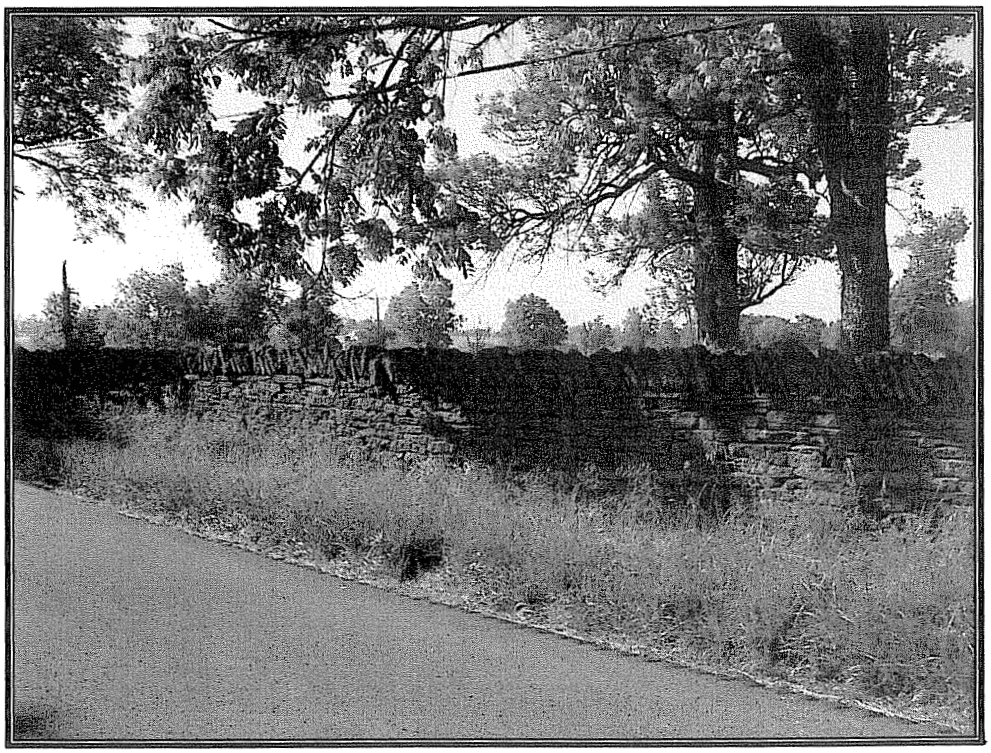


Figure 9. FS 7, dry-laid rock wall with horizontal coping.

- FS 8: (KHC Survey # SC-79; Zone 16; Quad: Midway, Kentucky; E: 705263, N: 4229128) This site is a one-and-one-half-story, four-bay (w/d/w/w), gable-roof brick house located on the south side of Ironworks Pike approximately 1.8 mi west of Cane Run Road in Scott County, Kentucky (Figures 1e, 10, and 11). The façade brickwork was laid in a Flemish bond configuration, and the dwelling rests on a stone foundation. The residence was a stagecoach stop from 1800 to 1832, according to the state historic marker located in front of the house. Site 8 is potentially eligible for listing in the NRHP under Criteria A, B, and/or C.

- FS 9: (KHC Survey # SC-86; Zone 16; Quad: Midway, Kentucky; E: 704496, N: 4229376) This site is a one-story, two-bay (d/w), hip-roof brick house located on the south side of Ironworks Pike approximately .2 mi west of KY 341 in Scott County, Kentucky (Figures 1e and 12). A small mansard roof shelters the entry. The residence was originally the Greenwood Schoolhouse, documented by Ann Bevins in 1979 and described in *A History of Scott County As Told By Selected Buildings* (KHC, survey and National Register files; Bevins 1989:282). Site 9 is potentially eligible for listing in the NRHP under Criterion A.

- FS 10: (KHC Survey # SC-85; Zone 16; Quad: Midway, Kentucky; E: 701120, N: 4231056) The White Sulphur Baptist Church is a one-story, single-bay (d), gable-roof brick church located on the southeast corner of Ironworks Pike and US 460 approximately 1.5 mi east of the Franklin County line in Scott County, Kentucky (Figures 1f and 13). Additions have been constructed on the northern and eastern elevations of the church. Site 10 is potentially eligible for listing in the NRHP under Criterion A and possibly Criterion C.

- FS 11: (KHC Survey # SC-142; Zone 16; Quad: Midway, Kentucky; E: 700896, N: 4231051) The White Sulphur School is located on the south side of U.S. 460 approximately .25 mi west of its intersection with Ironworks Pike (Figures 1f and 14). The single-story, five-bay (w/w/d/w/w), cross-gable brick building was documented by Ann Bevins in 1979 and described in *A History of Scott County As Told By Selected Buildings* (KHC, survey and National Register files; Bevins 1989:282). Site 10 is potentially eligible for listing in the NRHP under Criterion A and possibly Criterion C.

- FS 12: (KHC Survey # SC-117; Zone 16; Quad: Midway, Kentucky; E: 700545, N: 4231168) This site is a one-and-one-half-story, three-bay (w/d/w), cross-gable frame house in the Gothic Revival style located at 4333 U.S. 460 approximately .3 mi west of its intersection with Ironworks Pike (Figures 1f and 15). The house has three cross-gables, a bay window on the eastern elevation, and original windows throughout. According to Kevin Conley, who documented the house in August 2001, the residence was constructed in 1892 and features major rear additions (KHC, survey and National Register files). Site 12 is potentially eligible for listing in the NRHP under Criteria A, B, and/or C.

- FS 13: (KHC Survey # SC-98; Zone 16; Quad: Midway, Kentucky; E: 699935, N: 4231000) This site is a single-story, five-bay (w/w/d/w/w), side-gable brick house designed in the Federal style and located at 4476 U.S. 460 approximately .7 mi west of its intersection with Ironworks Pike (Figures 1f, 1g, and 16). The house was built in the 1830s and received a major rear addition in 1993, according to Phil Thomason, who documented the residence in August 2001 (KHC, survey and National Register files). Site 13 is potentially eligible for listing in the NRHP under Criteria A, B, and/or C.

- FS 14: (KHC Survey # SC-116; Zone 16; Quad: Midway, Kentucky; E: 699854, N: 4231147) This site is a one-and-one-half-story, three-bay (w/d/w), side-gable frame house located at 4501 U.S. 460 approximately .75 mi west of its intersection with Ironworks Pike (Figures 1g and 17). The house was built around 1850 and has received major modifications, according to Phil Thomason, who documented the residence in August 2001 (KHC, survey and National Register files). At this time, Site 14 does not appear to be eligible for listing in the NRHP.

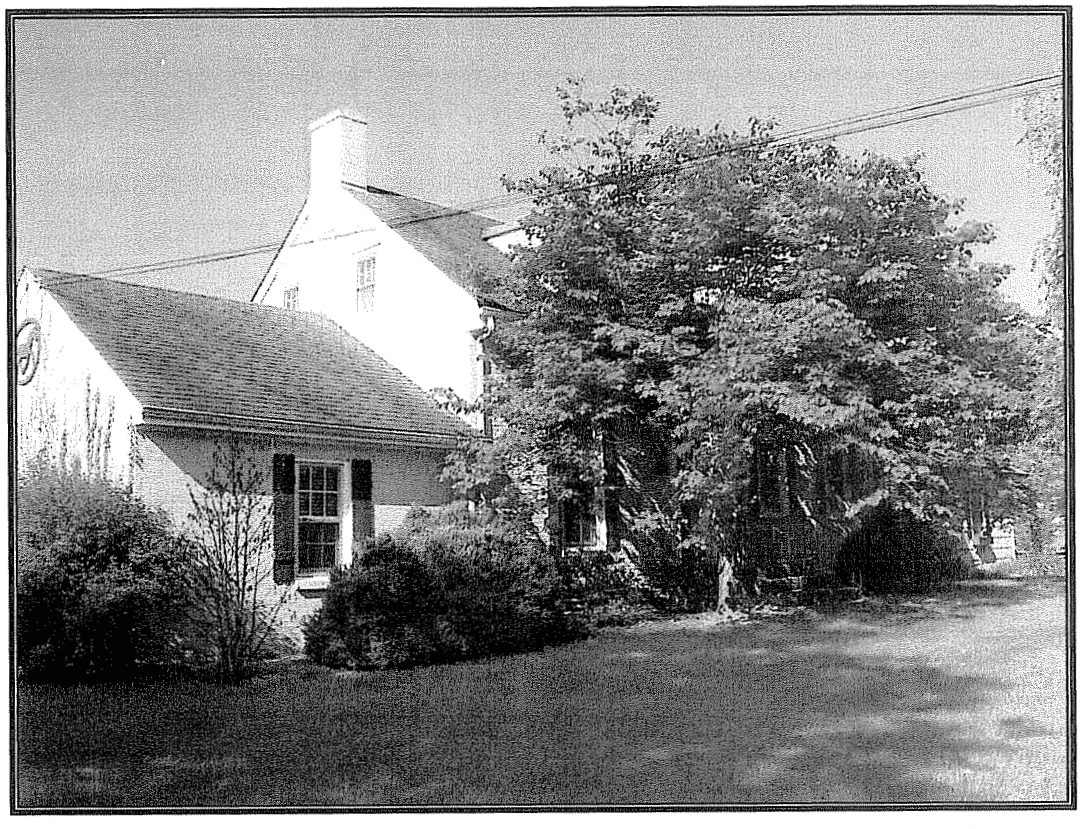


Figure 10. FS 8, one-and-one-half-story, four-bay (w/d/w/w) gable-roof brick house (SC-79).

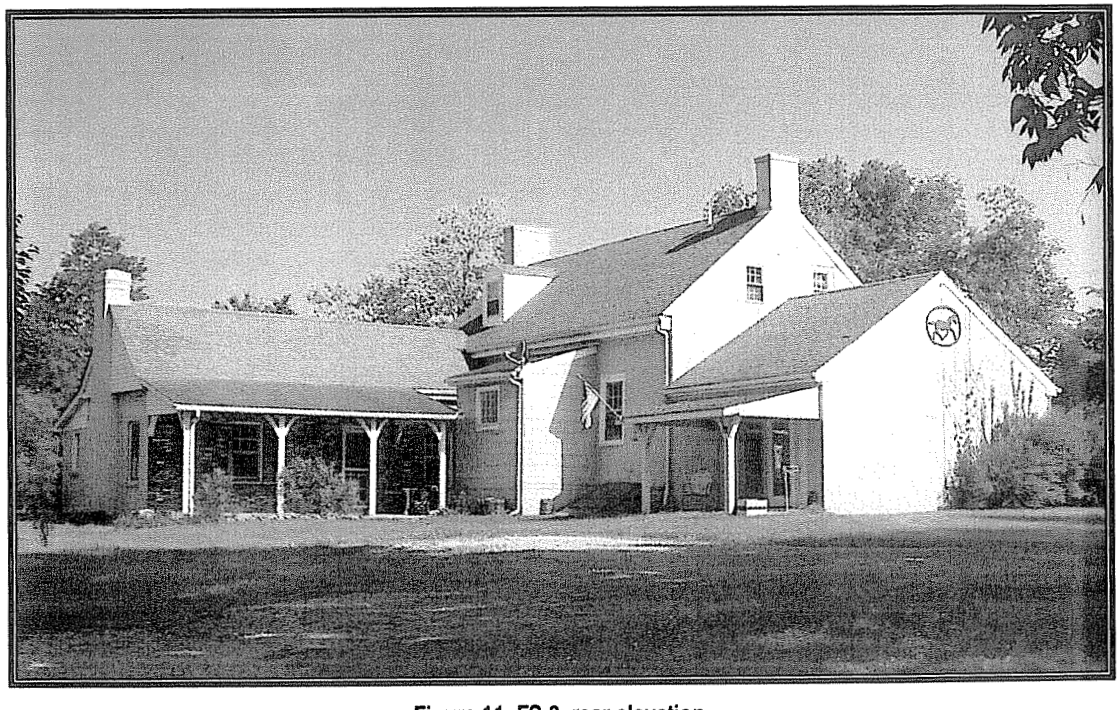


Figure 11. FS 8, rear elevation.

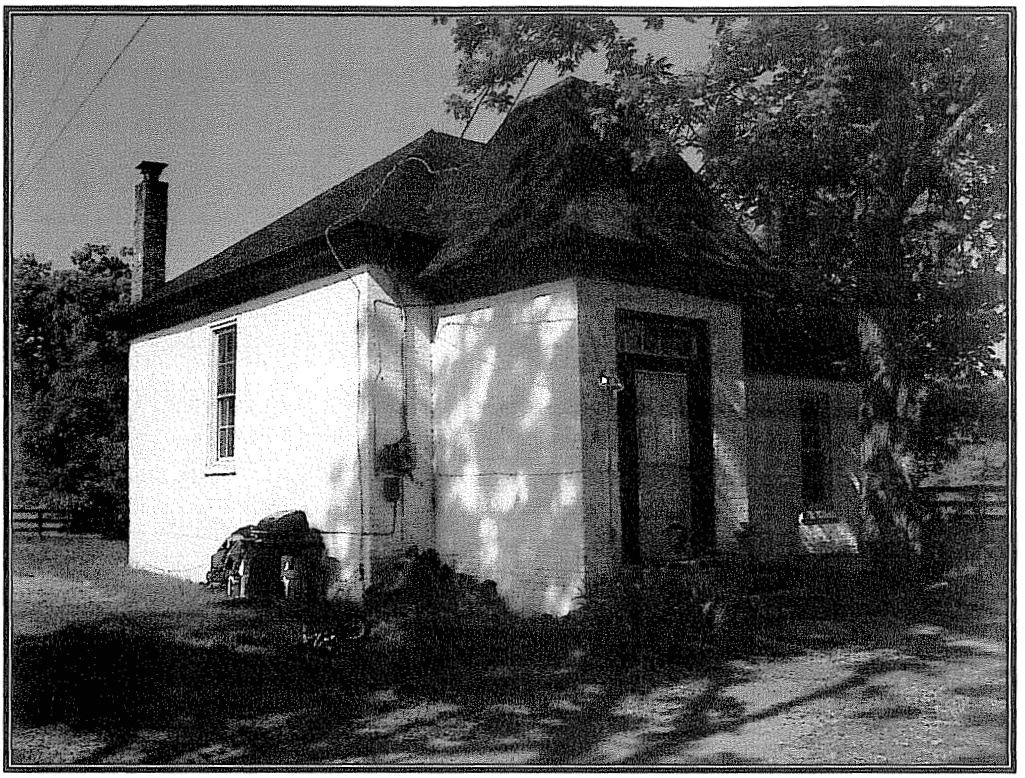


Figure 12. FS 9, one- story, two-bay (d/w) hip-roof brick house (SC-86).

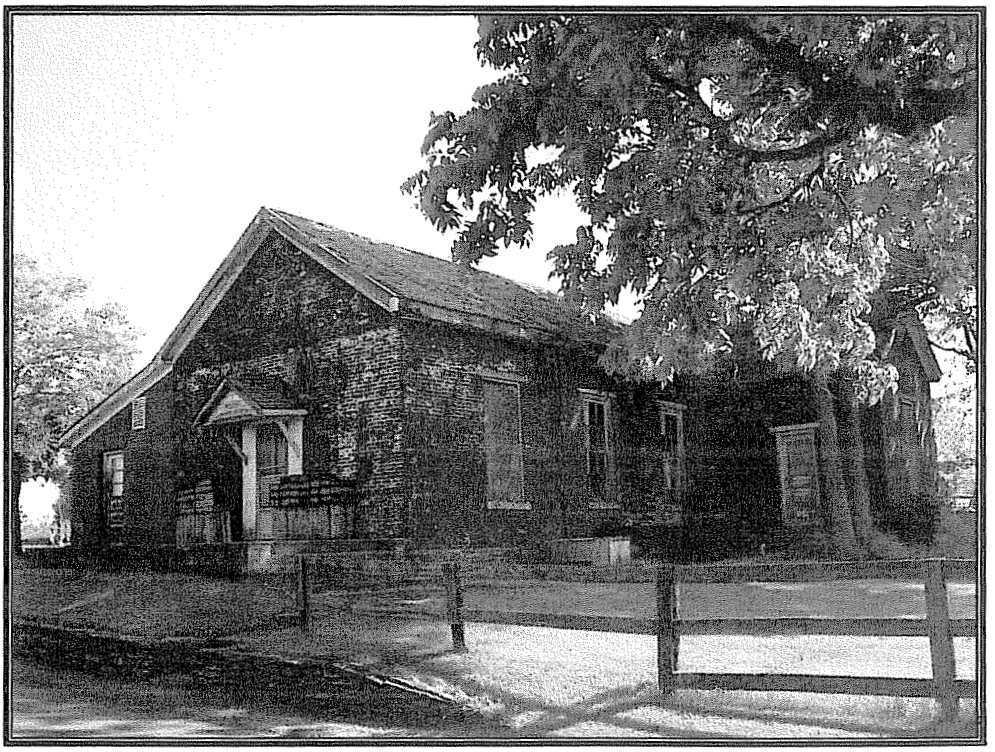


Figure 13. FS 10, White Sulphur Baptist Church (SC-85).

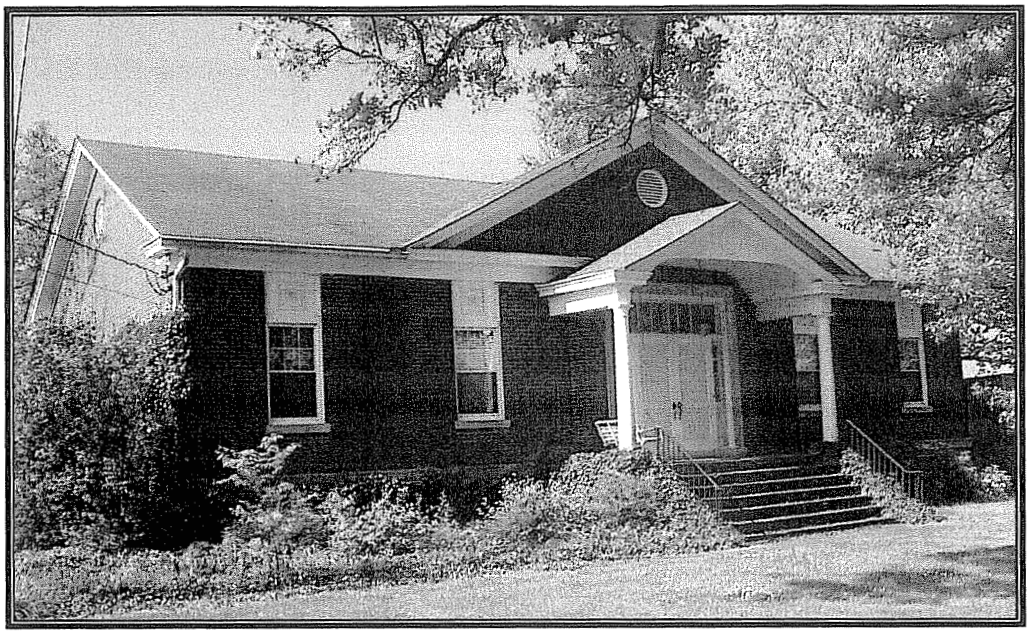


Figure 14. FS 11, White Sulphur School (SC-142).

Figure 15. FS 12, one-and-one-half-story, three-bay (w/d/w) cross-gable frame house built in the Gothic Revival style (SC-117).

Figure 16. FS 13, single-story, five-bay (w/w/d/w/w) side-gable brick house built in the Federal style (SC-98).

Figure 17. FS 14, one-and-one-half-story, three-bay (w/d/w) side-gable frame house (SC-116).

- FS 15: (Zone 16; Quad: Midway, Kentucky; E: 699768, N: 4231147) This site is a dry-laid rock fence located on the north side of U.S. 460 approximately .8 mi west of its intersection with Ironworks Pike in Scott County, Kentucky (Figures 1g and 18). The northern section of the fence is collapsing and in generally poor condition. At this time, Site 15 does not appear to be eligible for listing in the NRHP.
- FS 16: (KHC Survey # FR-75; Zone 16; Quad: Midway, Kentucky; E: 697660, N: 4231157) The John C. Frazier House is a two-story, T-plan frame house with an associated dry-laid rock fence and extant smokehouse (Figures 1g and 19). The house was documented by William Scott, Jr., of Historic Frankfort, Inc., in July 1986. The house originally belonged to John Wilson, son of local settler Captain Isaac Wilson, and was constructed between 1875 and 1882 with Italianate style detailing (KHC, survey and National Register files). Site 16 is potentially eligible for listing in the NRHP under Criteria B and/or C.
- FS 17: (Zone 16; Quad: Stamping Ground, Kentucky; E: 696914, N: 4235758) This site is a two-story, three-bay (w/d/w), T-plan house located on the east side of KY 1262 approximately .4 mi southeast of the community of Switzer in Franklin County, Kentucky (Figures 1h and 20). The house has a shed-roof rear addition, a metal roof, and replacement window sashes throughout. At this time, Site 17 does not appear to be eligible for listing in the NRHP.
- FS 18: (Zone 16; Quad: Midway, Kentucky; E: 696894, N: 4235718) This site is a one-story, four-bay (ww/d/ww/w), side-gable ranch house with a stone exterior located on the west side of KY 1262 approximately .36 mi southeast of the community of Switzer in Franklin County, Kentucky (Figures 1h and 21). A dry-laid rock fence is associated with the residence. The rock fence is in good condition and features a double-capped stone pier at its northern terminus. At this time, Site 18 does not appear to be eligible for listing in the NRHP.
- FS 19: (KHC Survey # FR-61; Zone 16; Quad: Switzer, Kentucky; E: 696681, N: 4236145) The Switzer Covered Bridge is located over North Elkhorn Creek on the northeast side of the current KY 1262 bridge in Franklin County, Kentucky (Figures 1h and 22). The bridge was included in the National Register of Historic Places in September 1974 as one of seventeen remaining covered bridges in Kentucky. The bridge was constructed around 1855 by contractor George Hockensmith and is the only remaining covered bridge in Franklin County (KHC, survey and National Register files).
- FS 20: (KHC Survey # FR-60; Zone 16; Quad: Switzer, Kentucky; E: 696478, N: 4236252) This site is a one-and-one-half-story, three-bay (w/d/w), side-gable frame house located on the northwest corner of KY 1262 and KY 1689 in the community of Switzer in Franklin County, Kentucky (Figures 1h and 23). The house is clad in weatherboard siding and has a metal-panel roof and a stone foundation. A dry-laid rock retaining wall is associated with the house. At this time, Site 20 does not appear to be eligible for listing in the NRHP.
- FS 21: (Zone 16; Quad: Switzer, Kentucky; E: 696448, N: 4236176) This site is a one-and-one-half-story, front-gable commercial building located on the southwest corner of KY 1262 and KY 1689 in the community of Switzer in Franklin County, Kentucky (Figures 1h and 24). The façade of the store is in poor condition and appears to be vacant. At this time, Site 21 does not appear to be eligible for listing in the NRHP.

Figure 18. FS 15, dry-laid rock fence.

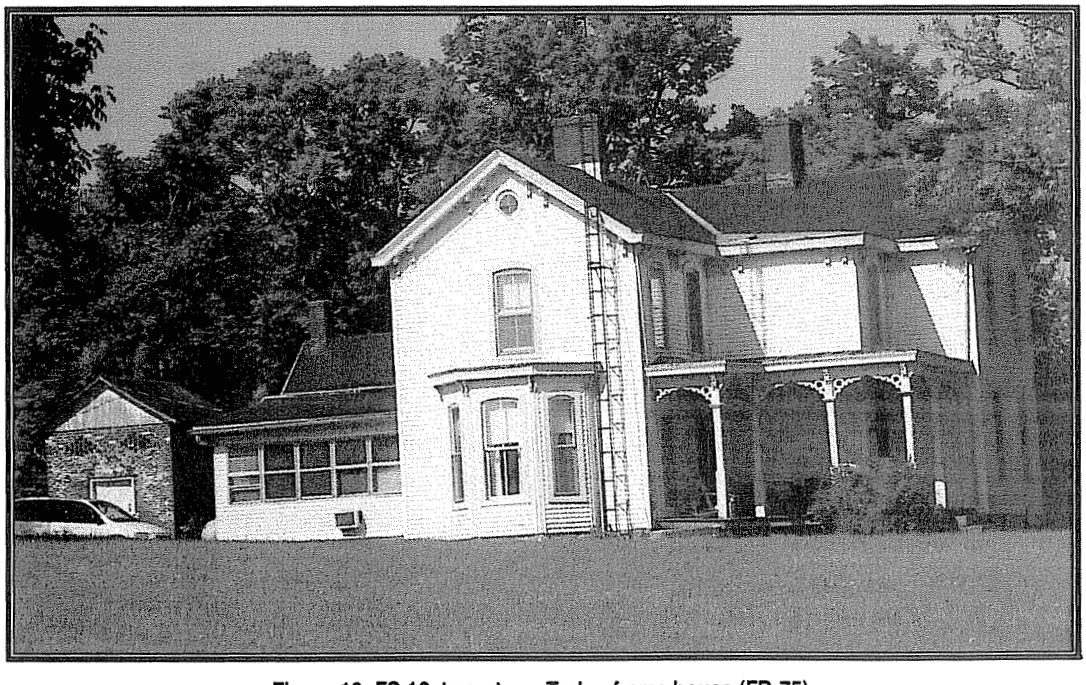


Figure 19. FS 16, two-story, T-plan frame house (FR-75).

Figure 20. FS 17, two-story, three-bay (w/d/w) T-plan house.

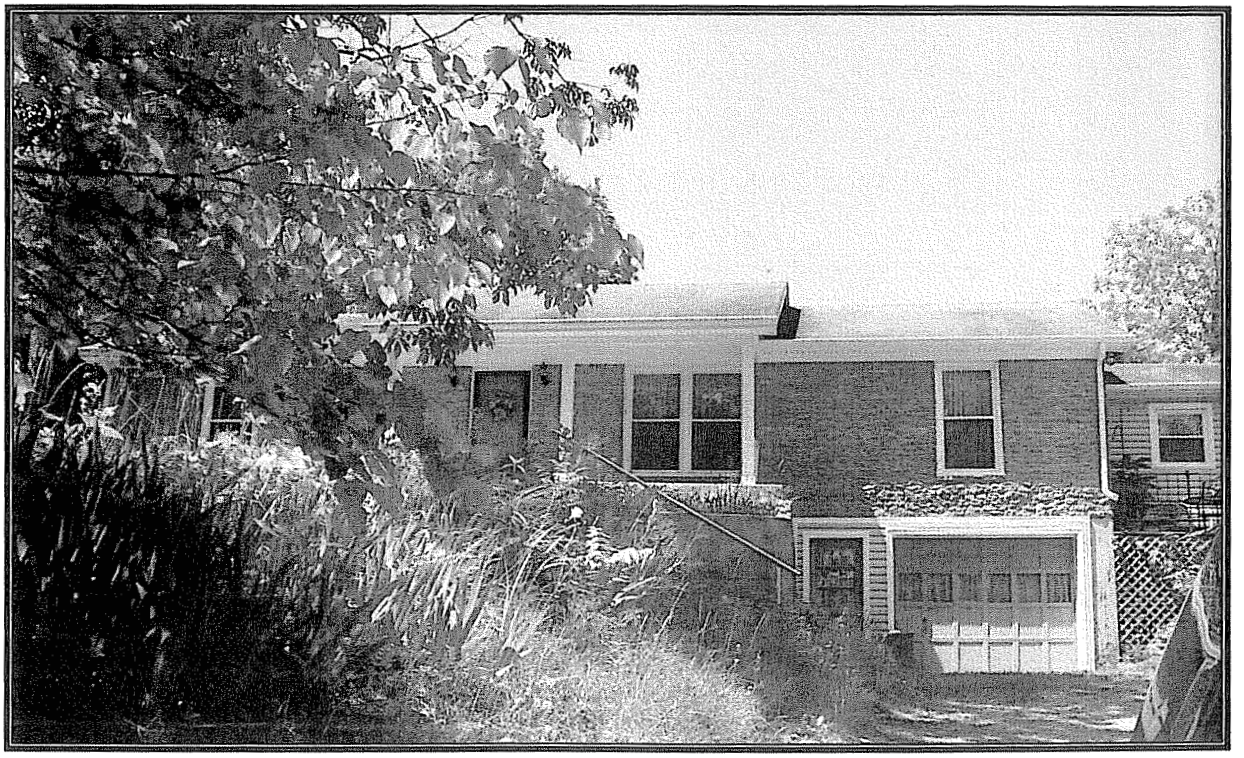


Figure 21. FS 18, one-story, four-bay (ww/d/ww/w), side-gable ranch house.

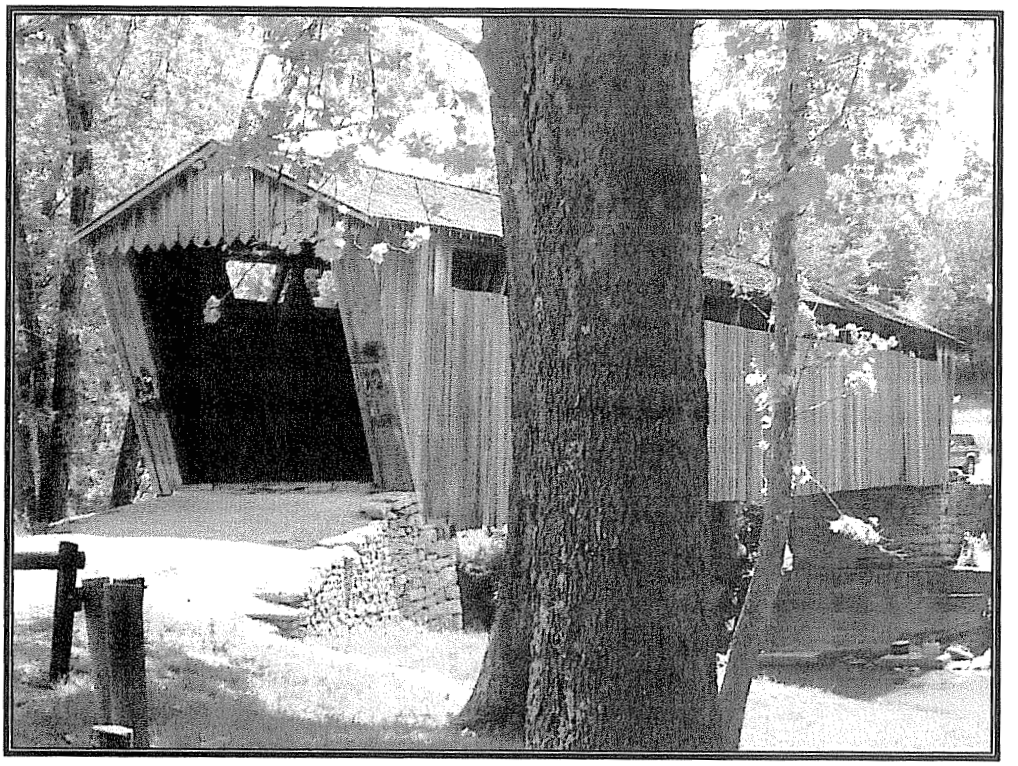


Figure 22. FS 19, Switzer Covered Bridge (FR-61).

Figure 23. FS 20, one-and-one-half-story, three-bay (w/d/w), side-gable frame house (FR-60).

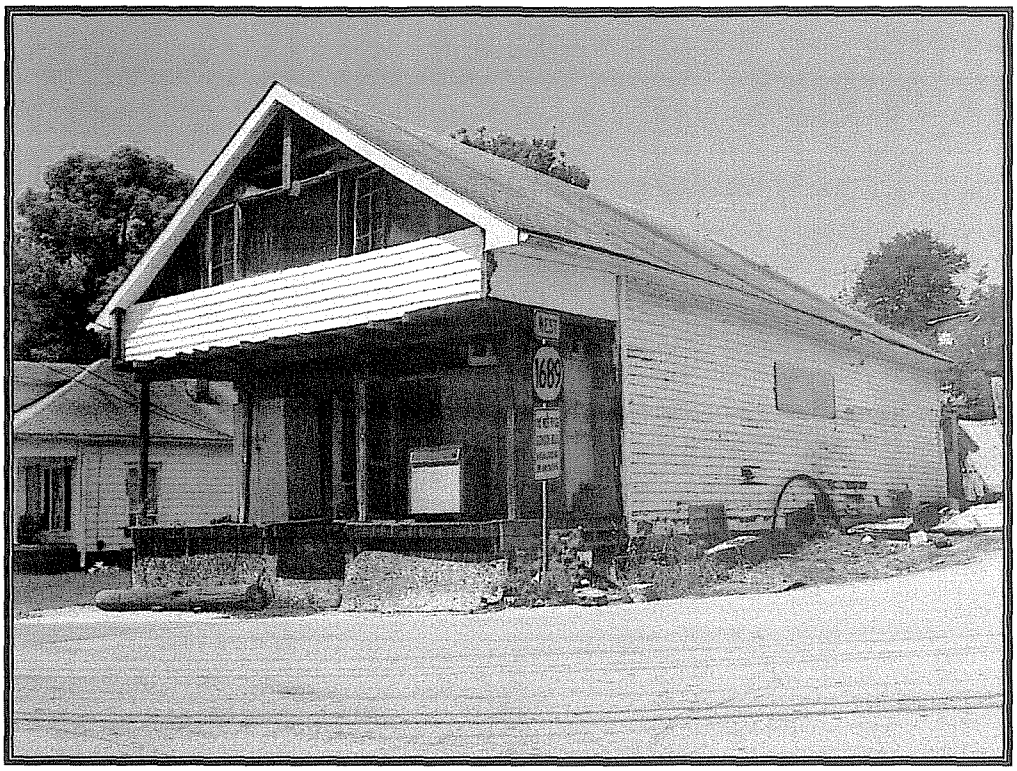


Figure 24. FS 21, one-and-one-half-story, front-gable commercial building.

- FS 22: (Zone 16; Quad: Switzer, Kentucky; E: 696372, N: 4236298) The North Fork Baptist Church is a two-story, three-bay (w/d/w), front-gable building located on the northeast side of KY 1262 approximately .2 mi northwest of its intersection with KY 1689 (Figures 1h, 25, and 26). The church has five bays (w/w/w/w/w) along its eastern and western elevations and a perpendicularly-oriented two-story section at the rear. A cemetery with a dry-laid rock retaining wall is located to the side of the church. At this time, Site 22 does not appear to be eligible for listing in the NRHP.
- FS 23: (Zone 16; Quad: Switzer, Kentucky; E: 691597, N: 4240475) Peaks Mill Elementary School is located on the northeast side of KY 1262 near the southern end of the community of Peaks Mill in Franklin County, Kentucky (Figures 1j and 27). The building is a two-story, 23-bay school building with a brick exterior and Colonial Revival attributes, including a Palladian window above the central entry, a large central pediment, a wide cornice along the façade and side elevations, roof-line balustrades, keystones, and brick quoins at the building's margins. Site 23 is potentially eligible for listing in the NRHP under Criterion A and/or C.
- FS 24: (Zone 16; Quad: Switzer, Kentucky; E: 690459, N: 4242379) This site is a dry-laid rock fence located on the west side of Indian Gap Road approximately .5 mi northwest of its intersection with Camp Pleasant Road (Figures 1j and 28). The rock fence is in fair to good condition. At this time, Site 24 does not appear to be eligible for listing in the NRHP.
- FS 25: (Zone 16; Quad: Switzer, Kentucky; E: 688402, N: 4243817) The Wiley Cemetery is located on the south side of KY 2919 approximately .2 mi southeast of its intersection with U.S.127 North (Figures 1k and 29). The cemetery is surrounded by a concrete wall. Both the stones and the wall are in poor condition. At this time, Site 25 does not appear to be eligible for listing in the NRHP.

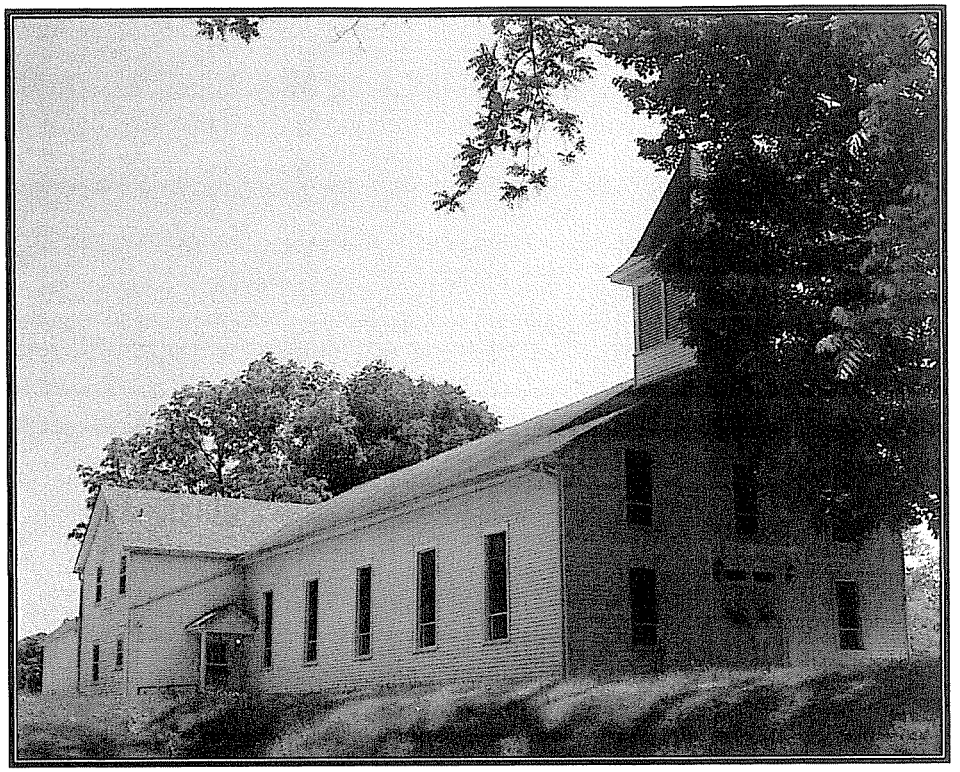


Figure 25. FS 22, North Fork Baptist Church.

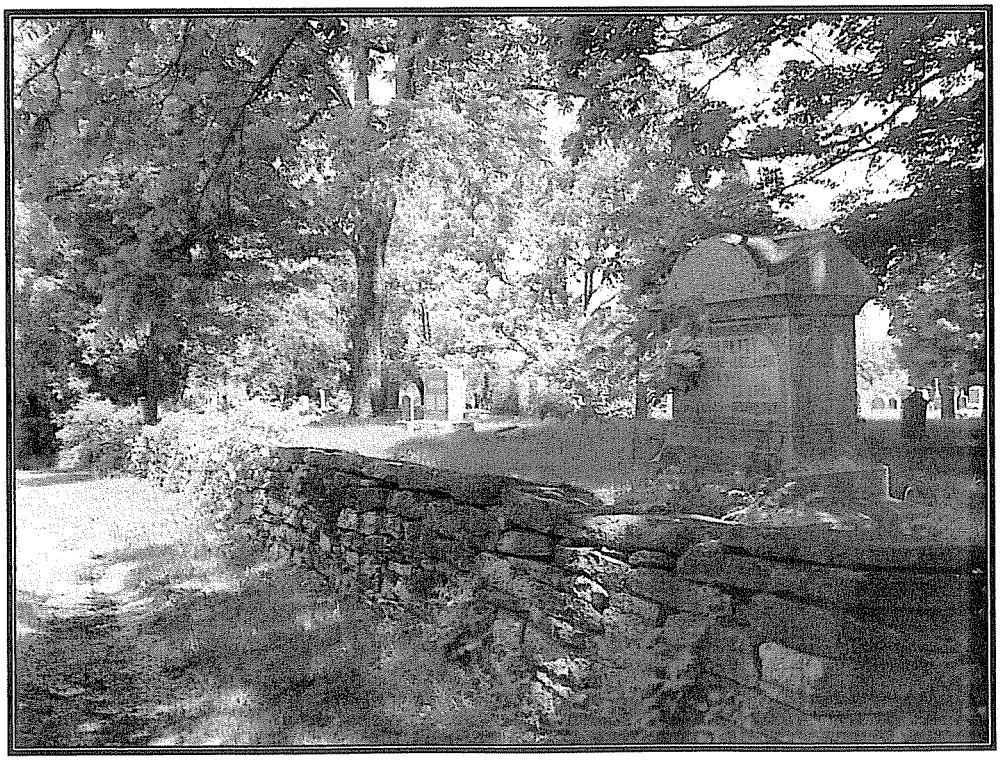


Figure 26. FS 22, associated cemetery with dry-laid rock retaining wall.

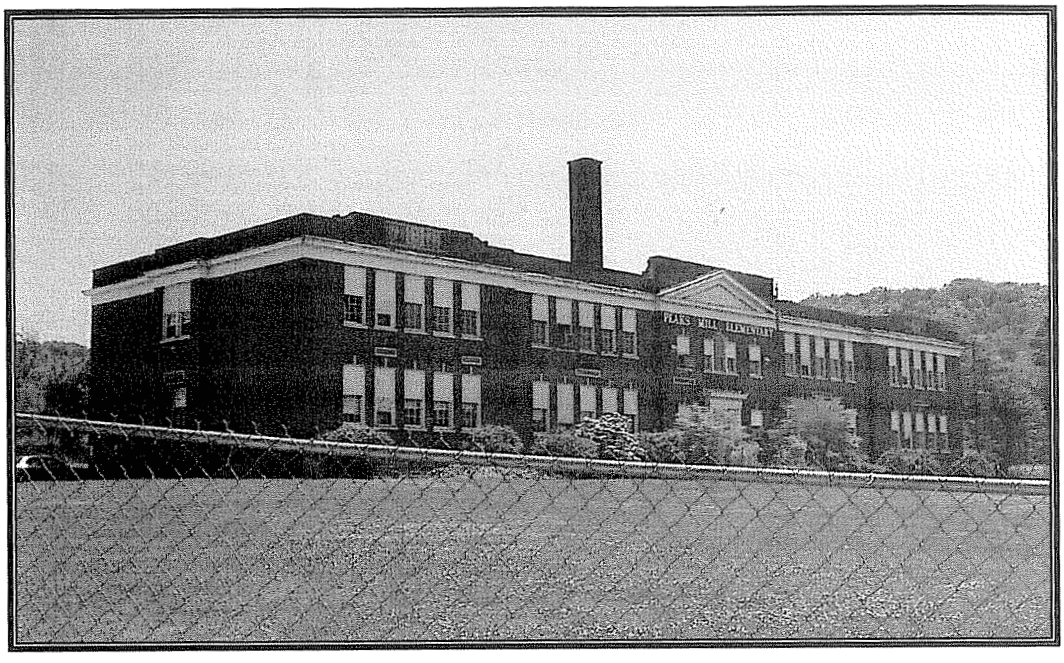


Figure 27. FS 23, Peaks Mill Elementary School.

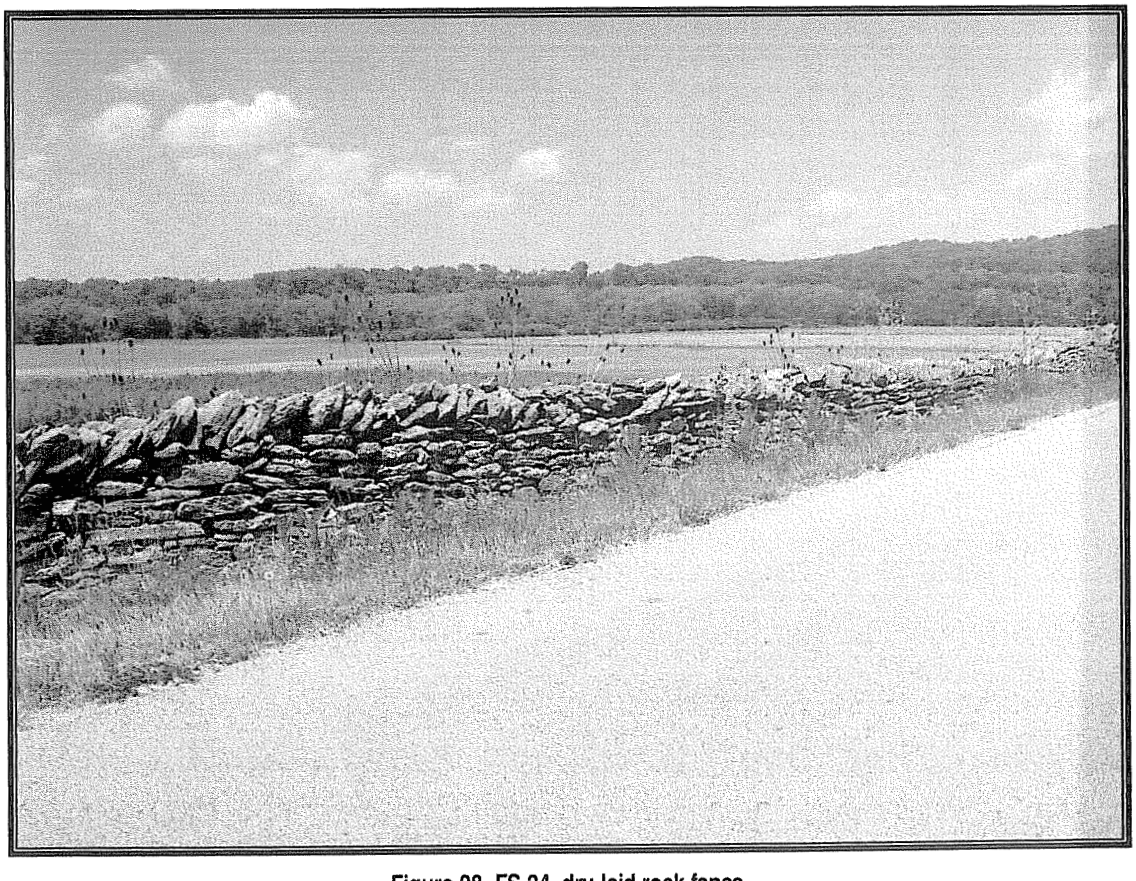


Figure 28. FS 24, dry-laid rock fence.

Figure 29 FS 25, Wiley Cemetery.

Conclusions

Before entering the field, all available surveys, reports, and maps pertinent to the project area were identified and reviewed. This task began with an investigation of the records of the KHC. The KHC files revealed that one site listed in the NRHP, the Switzer Covered Bridge (FR-61), is located in the proposed project's APE. Nine other previously surveyed sites, including Site 8 (SC-79), Site 9 (SC-86), Site 10 (SC-85), Site 11 (SC-142), Site 12 (SC-117), Site 13 (SC-98), Site 14 (SC-116), Site 16 (FR-75), and Site 20 (FR-60), were located within the current project area. Fifteen additional sites were identified during the reconnaissance level field survey. Twelve sites identified in the project corridor appear to be eligible for listing in the NRHP, and one site is listed in the NRHP (Kentucky Heritage Council [KHC], Survey and National Register Files). This reconnaissance level overview survey was completed to provide information to the project team regarding the presence of significant above ground cultural historic sites occurring within or adjacent to the water transmission line portion of the project. A separate baseline cultural historic report was completed for the water storage tank, treatment facility, and pump stations. Sites that have been included in this letter report (Sites 1-25) should be considered before blasting or other earth moving activities take place near them. Additional consultation between Gannett Fleming, Inc., and the KHC may be required if impacts to the above referenced sites are possible. If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

Craig Potts
Principal Investigator
Architectural History

REFERENCES CITED

Bevins, Ann B.
1989 *A History of Scott County As Told By Selected Buildings*. Reprinted. Turner Publishing Company, Paducah, Kentucky. Originally published 1981, Kreative Grafiks, Georgetown, Kentucky.

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2007 *Cultural Historic Survey for the Proposed Kentucky American Water Storage Tank, Treatment Facility, and Pump Stations in Franklin, Henry, and Owen Counties, Kentucky.* Contract Publication Series 07–094. Cultural Resource Analysts, Inc., Lexington, Kentucky.

Kentucky Heritage Council
n.d. Survey and National Register Files, Frankfort, Kentucky.

Contract Publication Series 07-094

CULTURAL HISTORIC SURVEY FOR THE PROPOSED KENTUCKY AMERICAN WATER STORAGE TANK, TREATMENT FACILITY, AND PUMP STATIONS IN FRANKLIN, HENRY, AND OWEN COUNTIES, KENTUCKY

By Jacqueline P. Horlbeck and Matthew D. McMahan

Cultural Resource Analysts, Inc.

Contract Publication Series 07-094

CULTURAL HISTORIC SURVEY FOR THE PROPOSED KENTUCKY AMERICAN WATER STORAGE TANK, TREATMENT FACILITY, AND PUMP STATIONS IN FRANKLIN, HENRY, AND OWEN COUNTIES, KENTUCKY

By

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CRAI Project No.: K06G004

Craig A. Potts
Principal Investigator

July 18, 2007

Lead Agency: Army Corps of Engineers
Kentucky Heritage Council Project Registration Number FY07-0142

ABSTRACT

During May 2007, Cultural Resource Analysts, Inc., completed a cultural historic survey for a proposed water storage tank, treatment facility, and two pump stations in Franklin, Henry, and Owen Counties, Kentucky. The survey was conducted at the request of Gannett Fleming, Inc., on behalf of Kentucky American Water.

Kentucky American Water is proposing to construct a new water supply system that will extract raw water from Pool Number 3 of the Kentucky River. The raw water will be treated at a new water treatment plant near Polsgrove and then transported to Lexington via a new pipeline, the Peaks Mill route. It is anticipated that the project will include the construction of a raw water pump station, a raw water pipeline, a water treatment plant, a transmission main, a booster pump station, and a storage tank. Two areas of potential effect were developed for the cultural historic component of this project. The first is a one-half mile radius surrounding a proposed water treatment facility and pump station adjacent to the Kentucky River on the Franklin and Owen County lines. The second is a one-half mile radius surrounding the proposed water storage tank located in Franklin County, near the Scott County line. Because the remaining portions of the project will be below ground, an area of potential effect for these portions was not delineated, and a cultural historic survey was not completed.

Prior to initiating fieldwork, a search of records maintained by the Kentucky Heritage Council (State Historic Preservation Office) was conducted to determine if previously recorded cultural historic sites were located in the areas of potential effect. This inquiry indicated that five sites (Sites 1, 11, and 13–15) located within the areas of potential effect had been previously documented. None of these sites has been listed in the National Register of Historic Places, nor do the sites appear eligible for inclusion in the National Register of Historic Places. During the field survey, ten previously unidentified individual historic sites (Sites 2–10 and 12) were documented. None of these sites appear to be eligible for inclusion in the National Register of Historic Places. In summary, the proposed project will have no effect on any site eligible for or listed in the National Register of Historic Places. Thus, a no historic properties affected determination is recommended for the proposed project.

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I. PURPOSE OF REPORT

During May 2007, Cultural Resource Analysts, Inc. (CRAI), completed a cultural historic survey of a proposed water storage tank, water treatment facility, and two pump stations in Franklin, Henry, and Owen Counties, Kentucky (Figure 1). The survey was conducted at the request of Gannett Fleming, Inc., on behalf of Kentucky American Water.

The purpose of the survey was to:

1) identify and document all cultural historic sites (above ground resources 50 years of age or older) located within the areas of potential effect (APEs);

2) evaluate their eligibility for listing in the National Register of Historic Places (NRHP) and recommend boundaries, if eligible; and

3) evaluate the effect of the project on any properties included in or eligible for listing in the NRHP.

Two APEs were delineated for the proposed project. One of these is associated with the proposed water treatment facility and pump station in Franklin and Owen Counties (northern APE), whereas the other is associated with the proposed water storage tank and pump station in Franklin County (southern APE). The APE was defined as a .5 mi radius for each of the proposed projects due to the rural nature of the project areas and the type of project proposed (Figure 2). The survey was conducted to comply with federal regulations concerning the impact of federal actions on sites and structures listed in or eligible for nomination to the NRHP. These regulations include Section 106 of the National Historic Preservation Act of 1966 and the regulations published in the Code of Federal Regulations at 36 CFR Part 800. Federal actions include the use of federal funds or the granting of a federal permit.

The following report is a summary of the survey findings. Fieldwork was completed in eight hours on May 22, 2007, and in six hours on May 23, 2007, by Jacqueline P. Horlbeck, Matthew D. McMahan, and Lori A. O'Connor. Conditions were warm and sunny. One property located on Peyton Bend in Franklin County was inaccessible and therefore not surveyed. Neighbors reported an extant log house overlooking the Kentucky River, purportedly located on the inaccessible property. Fifteen sites were surveyed, including five previously documented sites (Sites 1, 11, and 13–15). None of the sites is listed in the NRHP, nor do any of the sites appear eligible for listing in the NRHP. The proposed project will have no effect on these sites.

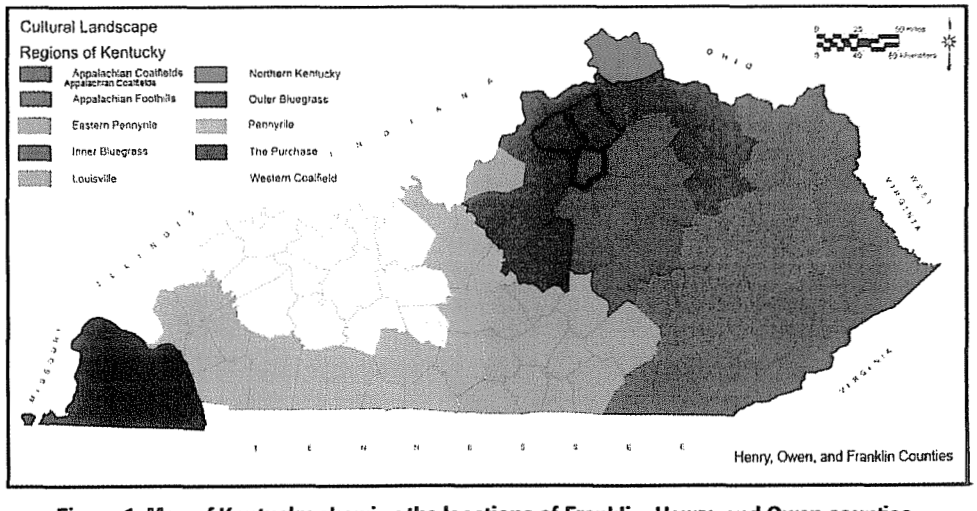

Figure 1. Map of Kentucky showing the locations of Franklin, Henry, and Owen counties.

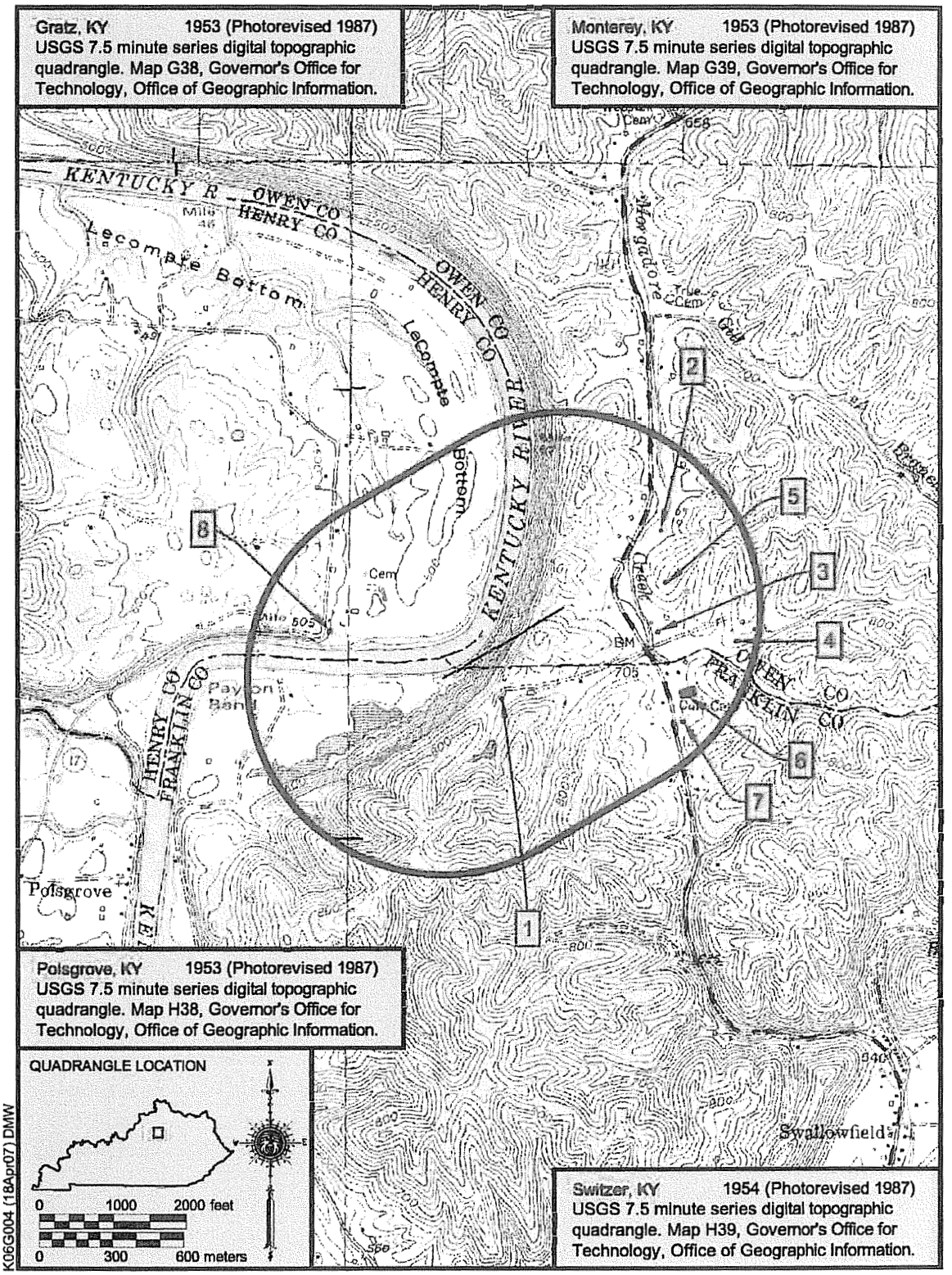

Figure 2. Topographic map showing the northern APE and cultural historic sites.

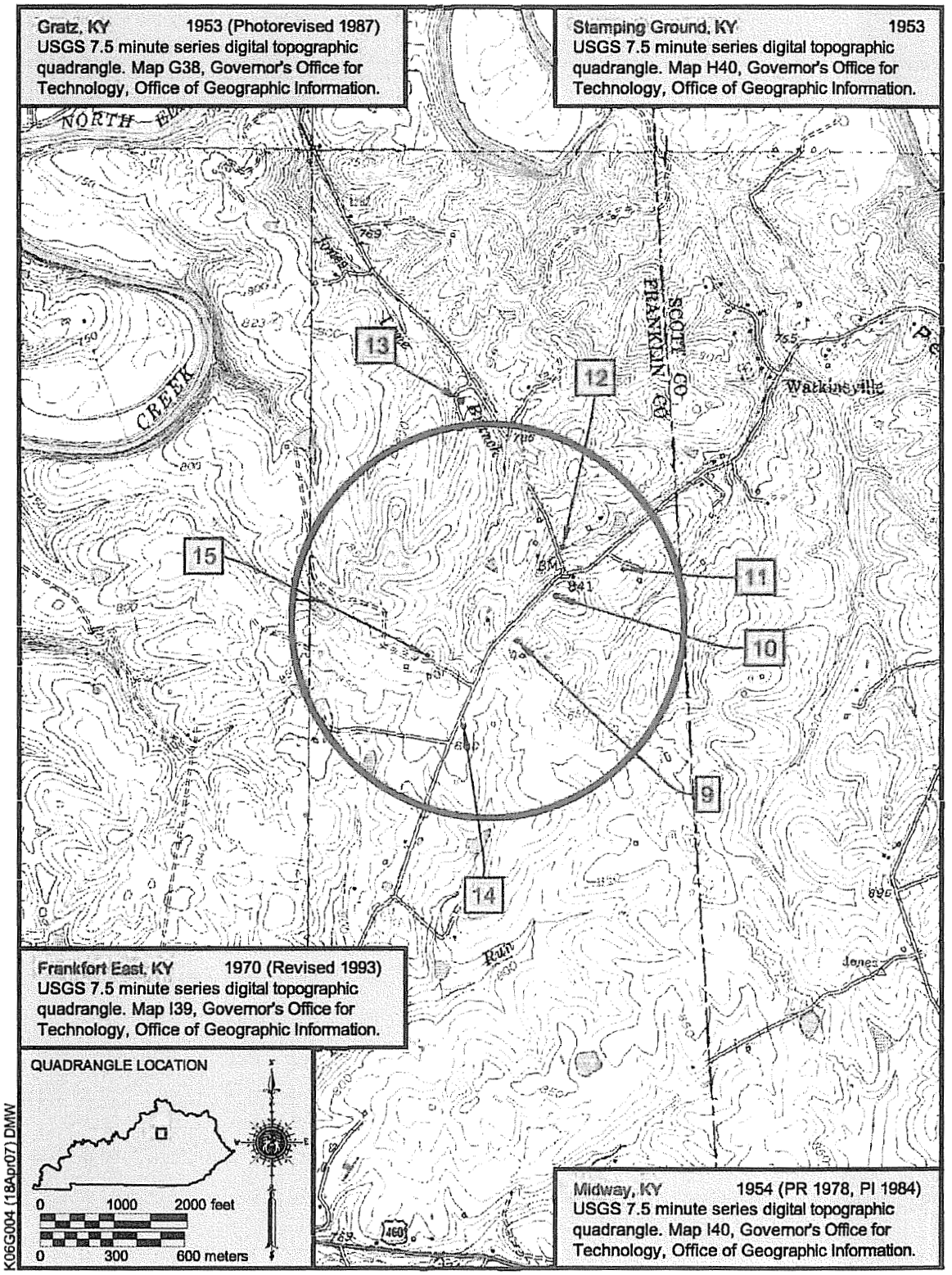

Figure 3. Topographic map showing the southern APE and cultural historic sites.

II. PROJECT DESCRIPTION

Kentucky American Water is proposing to construct a new water supply system that will extract raw water from Pool Number 3 of the Kentucky River. The raw water will be treated at a new water treatment plant near Polsgrove and then transported to Lexington via a new pipeline, the Peaks Mill route. It is anticipated that the project will include the construction of a raw water pump station, a raw water pipeline, a water treatment plant, a transmission main, a booster pump station, and a storage tank. Two APEs were developed for the cultural historic component of this project. The first is a .5 mi radius surrounding a proposed water treatment facility and pump station adjacent to the Kentucky River on the Franklin and Owen County lines (northern APE). The second is a .5 mi radius surrounding the proposed water storage tank located in Franklin County, near the Scott County line (southern APE).

III. ENVIRONMENTAL SETTING

The two project areas are located in Franklin, Henry, and Owen Counties, in the Bluegrass Region of Kentucky. The Bluegrass Region, one of the state's largest physiographic areas, encompasses the north central portions of Kentucky extending from the Ohio River to the north to the hilly Knobs area to the south. The physiography of the Bluegrass Region is characterized by the Ordovician limestone and shale that developed out of the uplifting of the Cincinnati Arch. The Inner Bluegrass contains the most fertile soils within the Bluegrass Region, while the Outer Bluegrass is defined by layers of Eden Shale followed by Devonian and Silurian Shales on the outer perimeters of the region, resulting in less fertile soils. Topographically, the Outer Bluegrass is distinguished by more hilly terrain, while the Inner Bluegrass contains a gently rolling landscape. The limestone enriched soils have historically produced crops such as alfalfa, hay, and tobacco (Kleber 1992:91; Ulack et al. 1998:21).

Early settlers grew crops of corn and later cultivated hemp and raised cattle. The soils of the Bluegrass Region were particularly well suited for growing hemp, and in the latter half of the nineteenth century, residents found that tobacco also grew very well in the area. As agriculture evolved over time, housing reflected changes in both access to local materials and the acquisition of more wealth. Like other areas of the Bluegrass, early settlers constructed log houses, utilizing the readily available timber that had been cleared for agriculture and house construction. Brick and stone were also utilized as early building materials. Larger frame and brick houses also began to be built during the early decades of the nineteenth century, as family farms grew more prosperous and locally milled lumber could be utilized.

The Kentucky River flows through Franklin County and forms the dividing boundary between Henry and Owen Counties. The Kentucky River proved to be a vital transportation route for early settlers and provided a means for locals to sell their agricultural goods to various commercial centers. Various other waterways are interspersed throughout the counties, including Elkhorn Creek in Franklin County. These creeks powered various grist mills and distilleries during the early to mid-nineteenth century. Early roads that helped shape the local landscape within the project area include Woodlake Road (KY 1262 and KY 1688) in the southern APE, which appears as Stamping Ground Pike in the 1882 atlas (Lake 1882a). The current U.S. 127 travels through the northern APE and appears along Rocky Branch Creek in the 1883 atlas (Lake 1883).

Historic residences within the project area range from log houses to mid-twentieth century dwellings constructed in the rural areas of Franklin, Henry, and Owen Counties.

IV. RESEARCH AND SURVEY METHODOLOGY

The survey was conducted in accordance with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (National Park Service 1983). In addition, guidelines offered in the following documents were followed: Guidelines for Local Surveys: A Basis for Preservation Planning: National Register Bulletin #24 (National Park Service 1985); Kentucky Historic Resources Survey Manual (Kentucky Heritage Council); and Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports (Sanders 2001).

Before entering the field, all available surveys, reports, studies, maps, and other data pertinent to the project area were identified and reviewed. This task began with an investigation of the records of the Kentucky Heritage Council (KHC). The KHC files revealed that one property located in the northern APE (Site 1) had been previously documented. Site 1 is no longer extant. The KHC files also indicated that four properties (Sites 11 and 13–15) located in the southern APE had been previously documented. Sites 14 and 15 are no longer extant. Sites 11 and 13 were reevaluated as part of the current project (KHC, survey and National Register files).

Franklin County

In rural Franklin County, 294 sites have been surveyed, 204 in the community of Bellepoint, and 1,034 in the city of Frankfort. In total, 40 individual sites and 5 districts have been listed in the NRHP. The majority of the listed sites in Franklin County are located in the city of Frankfort (KHC, survey and National Register files).

A survey for a Multiple Resource Area NRHP nomination for Franklin County was conducted by Bill Scott during the mid-1980s. The nomination, which was never completed, included 37 properties in rural Franklin County. A summary of the project, completed by the KHC in 2003, concluded that 8 of the original 37 properties are no longer extant, and that 3 have been individually listed in the NRHP (Beach 2003:1–2, 6).

Cultural historic reports pertaining to Franklin County were also located at the KHC during the records review. One of these is entitled *Phase I Architectural Survey of the Proposed Jacksonville Telecommunications Tower, Franklin County, Kentucky.* This report was prepared by Leah Konicki of Gray & Pape, Inc., in 2002. The purpose of this report was to document, evaluate, and assess impacts on historic properties within a 1 mi APE for the proposed tower. The project area is located approximately 6 mi to the southwest of the northern APE for the current project and approximately 11 mi west of the southern APE (Konicki 2002).

A Cultural Resource Survey for US 460 from Equine Way to Woodlake Road in Franklin County, Kentucky, by Helen Powell of H. Powell and Co., Inc., was also located at this time. The purpose of this report was to document, evaluate, and assess impacts on historic properties within the project's APE. The APE was located along a 3.6 mi corridor of U.S. 460, approximately 1.4 mi south of the current southern APE (Powell 2002).

A Cultural Historic Survey of the Proposed Greenhill Telecommunication Tower Site, Northeast of Frankfort, Franklin County, Kentucky (Terracon Project Number 57047405) was also located at this time. The report was prepared for Terracon, Inc., by Rebecca G. Rapier of Cultural Resource Analysts, Inc., in 2004. The purpose of this report was to document, evaluate, and assess impacts on historic properties within the project's .5 mi APE. The APE for the 2004 project was located approximately 4.5 mi southwest of the current southern APE (Rapier 2004).

The archival research continued at the University of Kentucky, the Kentucky History Center, and the Kentucky Department for Libraries and Archives. Sources found in this research include two 15-minute topographic quadrangles (1906 and 1924), a 1954 7.5-

minute topographic quadrangle, a 1914 geological map, and a 1941 county highway map (Kentucky Department of Highways [KDH] 1941; Kentucky Geological Survey [KGS] 1924; United States Geological Survey [USGS] 1906, 1924, and 1954b). Additional documents identified during the archival research are listed in the bibliography. The sources identified in this research were utilized for the development of Section V: Historic Context.

Henry County

KHC records revealed that 217 sites have been surveyed in rural Henry County. In the town of Eminence, 63 sites have been surveyed, and in the town of New Castle, 73 sites have been surveyed. Ten sites in Henry County have been listed in the NRHP, including one district, the Eminence Historic District. The majority of the listed sites are located either in New Castle or in Eminence (KHC, survey and National Register files).

Prior to the documentation report, a Cultural Historic Survey of the Proposed Bridge Replacement and Reconstruction of KY 22, Henry & Owen Counties, Kentucky (5-1031.00) was completed. This report was prepared by Rebecca Lawin McCarley, Kristie Baynard, and James T. Kirkwood of Cultural Resource Analysts, Inc., in March of 2002. The purpose of this report was to document, evaluate, and assess impacts on historic properties within the project's APE for the proposed replacement of the KY 22 bridge (McCarley et al. 2002).

Three cultural historic reports for Henry County, located within 10 mi of the current project area, were found at the time of the records review. One of these reports is entitled *Historic Documentation of the KY 22 (Gratz) Bridge over the Kentucky River at Gratz, Henry and Owen Counties, Kentucky* (Item No. 5-1031.00). This report was prepared by Rebecca G. Rapier of Cultural Resource Analysts, Inc., in January of 2005. The purpose of the report was to document the KY 22 bridge, which the Kentucky Transportation Cabinet had proposed to replace. The project area was in Gratz, which is approximately 9 mi northwest of the current northern APE (Rapier 2005).

The archival research continued at the University of Kentucky, the Kentucky History Center, and the Kentucky Department for Libraries and Archives. Sources found in this research include a 1928 geological map, a 1942 highway map, a 1953 topographic quadrangle map, and a 1954 topographic quadrangle map (KDH 1942; KGS 1928; USGS 1953, 1954b). Additional documents identified during the archival research are listed in the bibliography. The sources identified in this research were utilized for the development of Section V: Historic Context.

Owen County

In Owen County, 80 sites have been surveyed in the rural portions of the county. In the town of Monterey, 95 sites have been surveyed, and 47 sites have been surveyed in New Liberty. In the town of Owenton, 102 sites have been surveyed. All three of these towns have districts listed in the NRHP. Thirteen individual sites in Owen County are listed in the NRHP, with the majority of these located in Owenton (KHC, survey and National Register files).

Few cultural historic reports with project areas located near the current APE were located during the file search. The two Henry County reports related to the proposed replacement of the KY 22 bridge in Gratz also apply to Owen County (McCarley et all 2002; Rapier 2005). Also located at this time was *A Cultural Historic Survey of the Proposed Telecommunication Tower Site, Northwest of Gratz, Owen County, Kentucky*. This report was also prepared by Rebecca G. Rapier of Cultural Resource Analysts, Inc., in April of 2003. The purpose of this report was to document, evaluate, and assess impacts on historic properties within the project's 1 mi APE. The APE for the 2003 project is located approximately 10 mi northwest of the current northern APE (Rapier 2003).

The archival research continued at the University of Kentucky, the Kentucky History

Center, and the Kentucky Department for Libraries and Archives. Sources found in this research include a 1923 geological map, a 1948 highway map, and a 1954 topographic quadrangle map (KDH 1948; KGS 1923; USGS 1954). Additional documents identified during the archival research are listed in the bibliography. The sources identified in this research were utilized for the development of Section V: Historic Context.

Following the preliminary archival research, CRAI staff conducted a survey of the APEs during which all properties 50 years of age or older were documented. The APE was defined as a .5 mi radius surrounding both of the proposed projects due to the rural nature of the areas and the types of projects proposed. The APEs were defined on the topographic maps and project plan maps, and the roads and structures within the APEs were determined. The surveyors then visited the project areas and surveyed all resources within the project boundaries. The areas surveyed are depicted in Figures 2 and 3.

During the field survey, 10 previously unidentified individual historic sites (Sites 2–10 and 12) were documented. These properties, as well as those previously documented, were evaluated to determine their eligibility for listing in the NRHP. The descriptions and evaluations are found in Section VI: Inventory of Historic Resources.

In general, in order for a property to be eligible for listing in the NRHP, it must be at least 50 years old and possess both historic significance and integrity. Significance may be found in four aspects of American history recognized by the National Register Criteria:

A. association with historic events or activities;

B. association with important persons;

C. distinctive design or physical characteristics; or

D. potential to provide important information about prehistory or history.

A property must meet at least one of the criteria for listing. Integrity must also be evident through historic qualities including location, design, setting, materials, workmanship, feeling, and association.

V. HISTORIC CONTEXT

Franklin County

Franklin County was created by the Kentucky General Assembly from portions of Mercer, Shelby, and Woodford Counties in 1794 and was named in honor of Benjamin Franklin. The county, which measures 212 sq mi, is located in the Outer Bluegrass Cultural Landscape. Frankfort is the county seat and the state capitol (Kleber 1992:355).

In 1775, Hancock Lee, along with a group of hunters and settlers, established the county's first settlement on the Kentucky River 1 mi downstream from modern day Frankfort. The settlement was known as Leestown. By the 1780s several settlements were established along Elkhorn Creek, including John Major's Station, Dry Run Station, and Goar's Station. These were followed by Cook and Harry Innes's stations in 1792 as more settlers streamed into the region (Kleber 1992:355).

In 1780, a group of men traveling from Bryan's Station in Fayette County to Mann's Lick in Jefferson County were attacked by Native Americans near a ford in the Kentucky River. Stephen Frank was the group's only casualty. The site, located along a tract of McAfee family land, became known as "Frank's Ford." In 1785, the vacant tract passed to Humphrey Marshall, who sold it to General James Wilkinson the following year. By the end of 1786, the Virginia legislature chartered the town of Frankfort on 100 acres of Wilkinson's land (Kleber 1992:355; Kramer 1986:19, 21).

By the 1790s, farmers in the region produced large quantities of tobacco but had no collection or inspection facility. In 1791, the Virginia legislature granted Wilkinson

permission to establish a tobacco warehouse and inspection station on his land in Frankfort. The next year, Wilkinson sold his warehouse to Andrew Holmes for 300,000 pounds of tobacco. Holmes then offered town lots and building materials to the new state leaders as an inducement to locate the state capital in Frankfort. The General Assembly approved the town as the capital in December 1792 (Kramer 1986:39–40).

By 1800, Franklin County had 5,078 inhabitants and 8,013 by 1810. Frankfort was residence to 1,011 inhabitants during this period. Slaves made up 37 percent of Frankfort's population in 1810. Nearly 57 percent of the 157 households owned one or two slaves (Kramer 1986:62–63).

Franklin County soil has always been well suited for agriculture. The early settlers discovered that the soil was especially good for growing hemp, and by 1790, ropewalks were being operated in the area. Reverend Elijah Craig operated one on the Kentucky River 1 mi from Frankfort, and in 1798, he paid 26 shillings for 100 pounds of hemp (Kramer 1986:55).

Throughout the antebellum period, Franklin County agriculture expanded and diversified. By 1850, the county contained 61,895 total acres of farmland (the lowest in the Bluegrass Region), which was worth $1.74 million. The farms produced 25,335 bushels of wheat, 549,723 bushels of corn, and raised over 5,400 head of cattle worth $305,838 (Amos 1988:73–84).

The Frankfort-Franklin County area emerged as an important trading center on the Kentucky River during the antebellum period. It benefited from being the seat of state government in addition to becoming home to both the state arsenal and the state penitentiary. Frankfort was never entirely secure as the state capital. When fire swept through the first capitol building on November 25, 1813, Franklin County citizens pledged more than $19,600 to guarantee construction of the new state house in Frankfort (Kramer 1986:69–70).

Other towns developed in the county during the first half of the nineteenth century. In the 1820s, a small community developed on Thomas Jett's land near the Woodford County line and took his family's name. Bridgeport formed around Abraham Bailey's tavern on the road to Louisville near the covered bridges spanning Armstrong Branch and South Benson Creek. Other villages included Stedmantown, Forks of Elkhorn, and Switzer. Forks of Elkhorn grew as a community after a Baptist church congregation was organized there, near John Major's Station (just east of Frankfort), in 1788. Later, when the Frankfort & Cincinnati Railroad was built through Forks of Elkhorn, a station was established there. This railroad station also came to be known as Elsinore (Kramer 1986:78, 355; Rennick 1987:105).

In 1831, construction of the Lexington and Ohio Railroad began in Lexington, and the next year it reached the top of Main Street Hill on the east side of Frankfort. The first trains to operate on the track were horse and mule drawn, but by 1835, a steam powered locomotive operated over the route. Construction of the railroad to Louisville stalled, and the railroad became known as the Lexington and Frankfort (Kramer 1986:103; Kleber 1992:353).

In 1847, the state legislature chartered a new company, the Louisville and Frankfort Railroad, to complete the line from St. Clair Street in Frankfort to the Ohio River at Louisville. Because of financial difficulties, the line did not open until 1872. Eventually, the whole system between Lexington and Louisville was absorbed by the Louisville and Nashville Railroad (Kleber 1992:355; Kramer 1986:103, 131–133).

The county grew steadily throughout the first half of the nineteenth century. Despite losing a portion of its population to the creation of Anderson County in 1827 and the creation of Gallatin County in 1838, Franklin County had a population of 12,462 in 1850 and 12,694 by 1860. The county also had 3,384 slaves and 450 free blacks who made up

30.2 percent of the population in 1860 (Lucas 1992:xx; Collins 1882:260).

Due to Frankfort's status as the state capital, Franklin County was a target for Civil War activity in central Kentucky. Beginning on September 3, 1862, Frankfort was occupied by Confederate forces led by General Edmund Kirby-Smith's army during General Braxton Bragg's invasion of Kentucky. The Rebel army held the town for one month. On October 4, 1862, during Benjamin Hawes' inauguration as Confederate governor of Kentucky, a wing of Don Carlos Buell's army started shelling the city. The Confederates abandoned the inauguration and fled the capital (Harrison 1988:42, 48–49).

Other than isolated guerilla activity and a June 10, 1864, raid by Confederate General John Hunt Morgan's cavalry, Frankfort and Franklin County were unaffected by the fighting after the fall of 1862. On November 2, 1864, Confederate guerillas killed Robert Graham, a Unionist, during a raid near Peak's Mill. General Stephen G. Burbridge retaliated by ordering Confederate prisoners Elijah Horton, Thomas Hunt, John Long, and Thornton Lafferty from Lexington to Frankfort. They were executed by the Union Army in a vacant lot at Todd and Shelby streets in retaliation for Graham's death (Kramer 1986:171).

The Civil War had a major impact on Franklin County agriculture. Suffering from major material losses and the loss of a work force, the county's farm production in 1870 dropped below 1850 levels. The character of farms changed. After 1870, the number of farms increased from 664 to 1,296, with an average size of 90 acres, but most were approximately 25 acres (Kramer 1986:183; Johnson 1912:177).

Franklin County farms made a substantial recovery throughout the last quarter of the nineteenth century. By 1880 the number of horses raised in the county was 3,628, and the number of beef and dairy cattle was 5,660. Wheat production increased from 28,981 bushels in 1870 to 103,475 in 1880, and corn production increased from 423,259 bushels to 543,749 bushels (Kramer 1986:183–184; Amos 1988:133–134).

Franklin County's population increased to 15,300 in 1870 and to 18,699 in 1880. Although the success of agriculture in the 1870s was responsible for much of the growth, Frankfort's emergence as a manufacturing center also spurred the county's population increase. Distilling had always been a part of the county's economy. It was not until Colonel Edmund H. Taylor established three distilleries in various parts of the county that the industry had a meaningful impact on the local economy. Other competing distilleries were established in the county during the 1870s. Additional communities became established in the county during the later decades of the nineteenth century. Polsgrove, a community located along the Kentucky River above the mouth of Flat Creek in northern Franklin County, had an established post office by 1870. The post office was originally established as the Palsgrove [sic] Store, with William H. Palsgrove [sic] serving as the first postmaster. A decade later, the post office was established as Polsgrove, the accepted spelling of one of the early families that settled the area. The Polsgrove post office was discontinued in 1962. Switzer, a community located northeast of Frankfort along North Elkhorn Creek, had an established post office by 1882. The first postmaster, John H. Switzer, was a descendent of one of the earliest settlers of the area, James Switzer (Cecil 1999:65–69; Rennick 1987:239–240, 289).

The northern project area is depicted as rural in character on the 1882 map (Figure 4). The current U.S. 127 follows a similar trajectory through the area and into Owen County as it had historically, though the original road follows Rocky Branch Creek more closely than does the current U.S. 127. The Kentucky River appears on the west end of the county, and McDonald's Ferry is indicated along the river. Graves, Gibson, and Harrod are surnames of property owners in the project area. For the southern project area, the current Woodlake Road appears as Stamping Ground Pike on the 1882 map. Along this road

are few residences, indicating the area was agricultural in character. Property owners in the area include Blackburn, Risk, and Jones (Lake 1882a).

Other industries, such as flour mills, sawmills, and cooperages, also contributed to Frankfort's growth. By 1890, the county's population was 21,267, but that number dropped slightly to 20,852 in 1900. The evaporation of the rope and bagging industry was partly responsible for the decline (Kramer 1986:195–198). Figure 5 is composed of two separate 15-minute topographic quadrangle maps joined together to depict the southern project area. The left side of the map dates to 1924 while the right side dates to 1906. The southern APE continues to appear rural in character, with few homes located along the current KY 1262 (USGS 1906, 1924). Figure 6 depicts the northern APE on the 1908 Lockport 15-minute topographic quadrangle. The map shows the Kentucky River bending to the east and then north as it travels between Owen and Henry Counties. Frankfort Pike (also currently known as U.S. 127) travels in a north-south direction on the east side of the Kentucky River with few homes depicted along its route. On the west side of the river is a flood plain called LeCompte's Bottom, located in Henry County (USGS 1908). Named after the pioneer Charles LeCompte, LeCompte's Bottom is a central area between Franklin, Henry, and Owen Counties (LeCompte 2004).

Tobacco became the major cash crop for twentieth-century Franklin County farmers. In 1899, area farmers produced 2.74 million pounds of burley tobacco, and by 1909, the crop was worth $494,399. Two years later, the price of a pound of tobacco increased to 12 cents, and by 1919, tobacco sold for 34 cents a pound. Warehouses were built in Frankfort, and tobacco companies maintained representatives and buyers in town (Amos 1988:134; Kramer 1986:266).

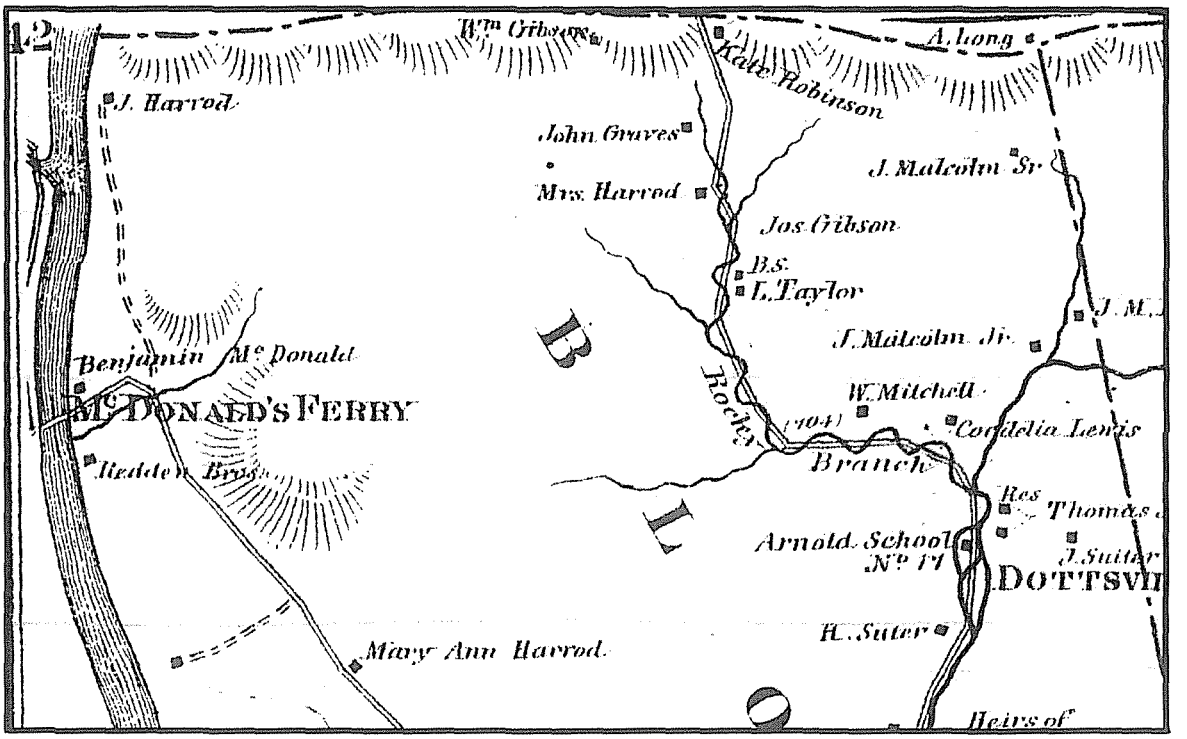

Figure 4. Map of Franklin County, Kentucky (Lake 1882a).

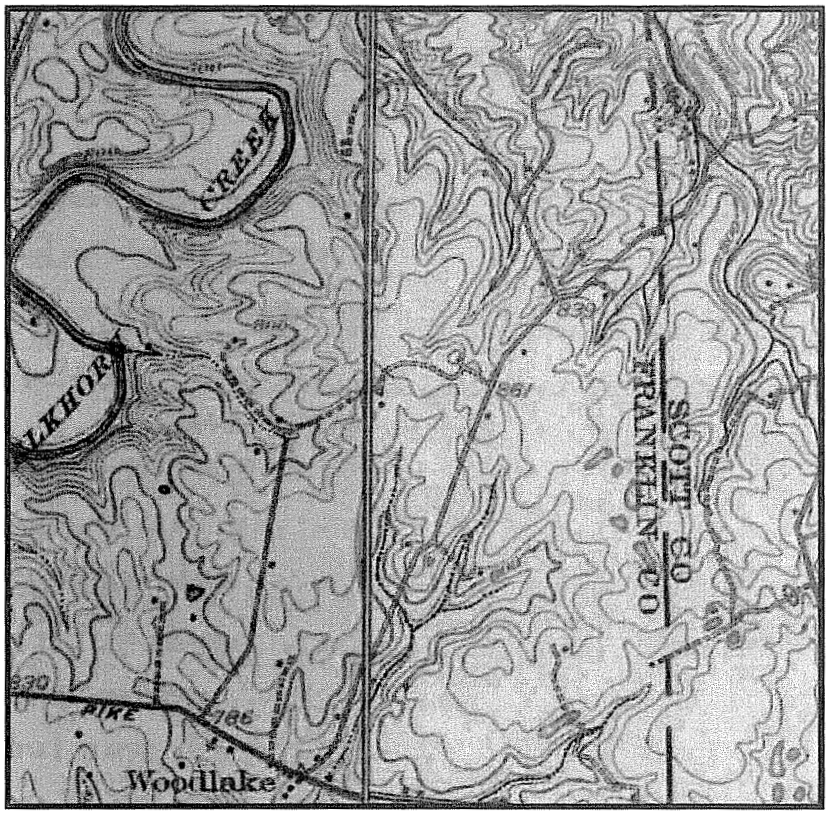

Figure 5. 15-minute topographic quadrangles depicting the southern APE (USGS 1924 and 1906).

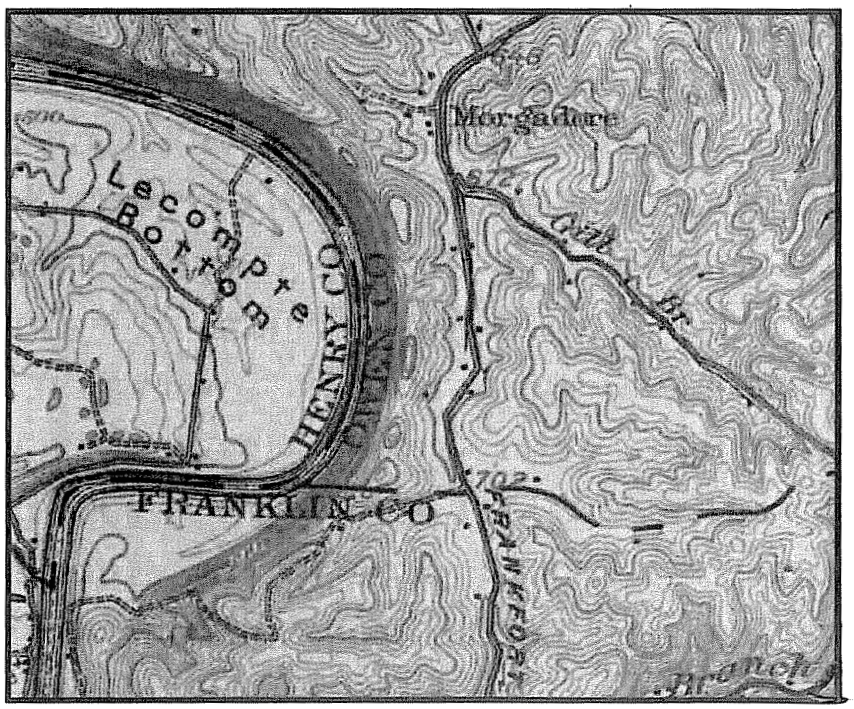

Figure 6. 15-minute topographic quadrangle depicting the northern APE (USGS 1

During the early part of the twentieth century, Franklin County experienced population growth. The county's population grew nearly nine percent from 1920 to 1930. Frankfort experienced growth as well, with a population of 9,805 in 1920 and 11,626 in 1930. During this period, the area of South Frankfort developed along Capitol Avenue. As demands upon state government increased during the period, so did the amount of state employees. This brought even more people to the county, specifically to Frankfort (Kramer 1986:296–297). Figure 7 shows the northern APE on the 1914 geological map of the county. Outside the APE, to the south, is the community of Polsgrove. Frankfort Pike appears east of the Kentucky River, with an unidentified road joining it at the county line. This road no longer exists. Figure 8 shows the southern APE, also on the 1914 geological map. This project area appears largely agricultural, with few houses depicted along Stamping Ground Pike (KY 1262) (KGS 1914).

Although the overall population of Frankfort and Franklin County increased, the population of African Americans decreased. Frankfort was home to 2,246 African American citizens in 1920, but by 1930, this number had dropped to 2,205. The population along some of the rural outskirts of Frankfort suffered due to the rough terrain and poor soils. Families abandoned the areas of Peak's Mill and Bald Knob in particular. Other rural settlements, such as Forks of Elkhorn, Switzer, and Bridgeport, experienced great population increases, possibly as a result of the continued growth of state government jobs (Kleber 1992:355; Kramer 1986:298–299).

Continued growth of state government in the last half of the twentieth century promoted a rapid increase in the county's population. Between 1920 and 1950 the population increased from 19,357 to 25,933; that number increased to 34,481 in 1970 and to 43,781 by 1990. Most of the growth was in and around Frankfort, which experienced an 85.8 percent population increase between 1940 and 1970. (Kleber 1992:354, 355). Both the northern and southern project areas appear on the 1941 county highway map (Figures 9–10). The main roads in each of the project areas are shown with residences along both sides. The road that appears on the 1914 map of the northern APE, which joins Frankfort Pike at the county line, is shown as terminating just below the bend of the river (KDH 1941; KGS 1914).

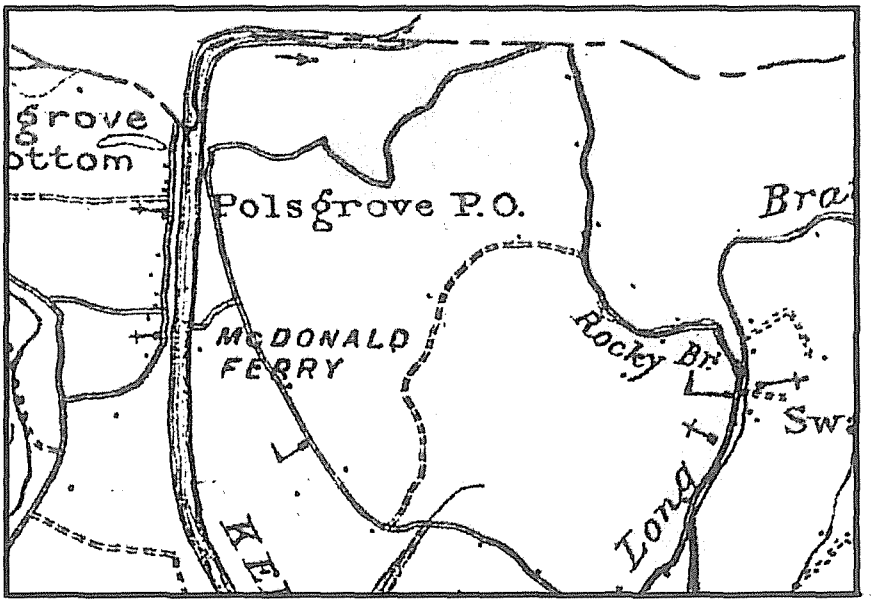

Figure 7. Geological map of Franklin County, Kentucky, depicting the northern APE (KGS 1914).

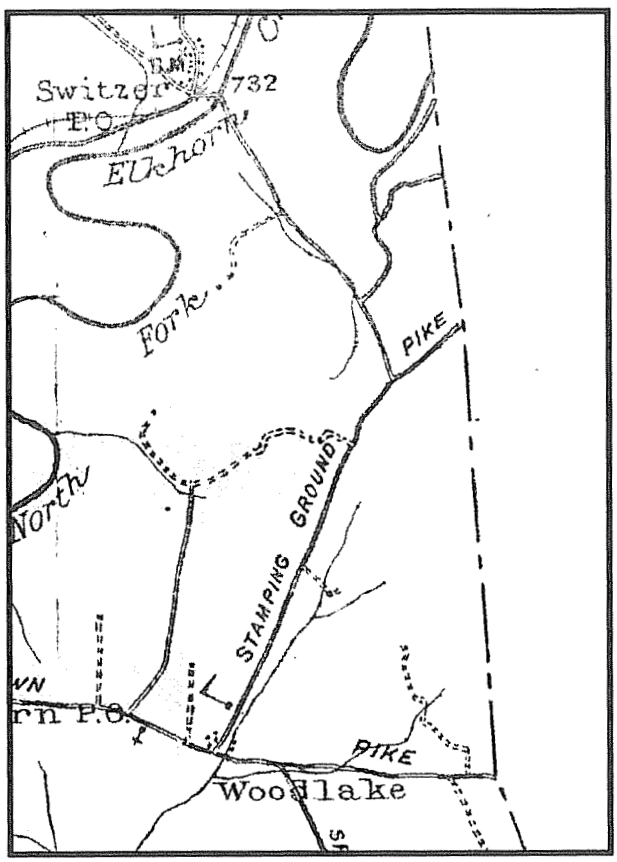

Figure 8. Geological map of Franklin County, Kentucky, depicting the southern APE (KGS 1914).

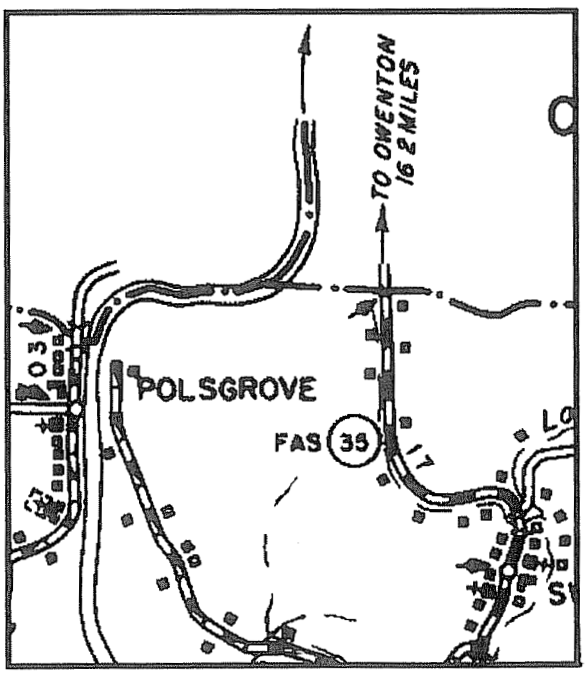

Figure 9. Highway map of Franklin County, Kentucky, depicting the northern APE (KDH 1941).

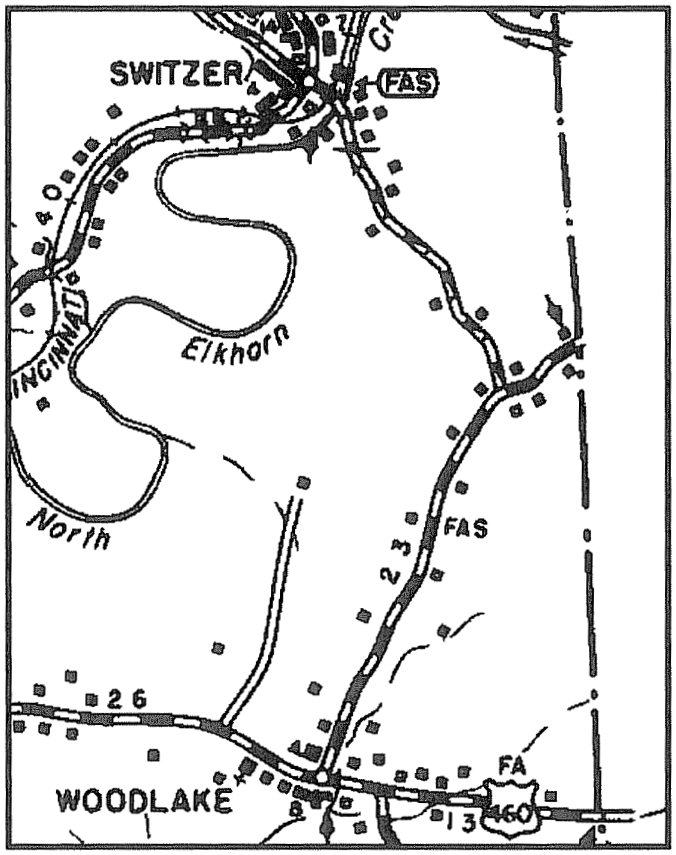

Figure 10. Highway map of Franklin County, Kentucky, depicting the southern APE (KDH 1941).

Between 1945 and 1970, developers platted an estimated ninety new subdivisions on the outskirts of Frankfort. This development centered around two areas in particular: Louisville Road south and southwest of Frankfort, and East Main Street at Versailles Road. Franklin Acres was the first postwar subdivision platted in the East Main-Versailles Road corridor and was recorded in 1946. Only three months later, Crestwood Subdivision was created (Kramer 1986:352–355).

The 1954 Switzer topographic quadrangle depicts the northern project area (Figure 11). U.S. 127, which appears as KY 35, continues its path northward into Owen County. The 1954 Midway, Kentucky topographic map depicts the southern APE (Figure 12). Jones Lane Branch appears along the current KY 1262. The area appears hilly and rural in character, with residences and outbuildings located along KY 1262 (USGS 1954b and 1954a).

State government continued to grow through the end of the twentieth century. In 1952, the Capitol Annex was dedicated. This structure provided needed office space for the growing number of state employees. This state office building was followed in 1971 by the construction of the Capital Plaza Tower in downtown Frankfort. Government continues to be Frankfort's largest employer. In 1970, the population of Frankfort was 21,356, and by 1990, Frankfort's population reached 25,968 (Kramer 1986:370–371; Kleber 1992:354).

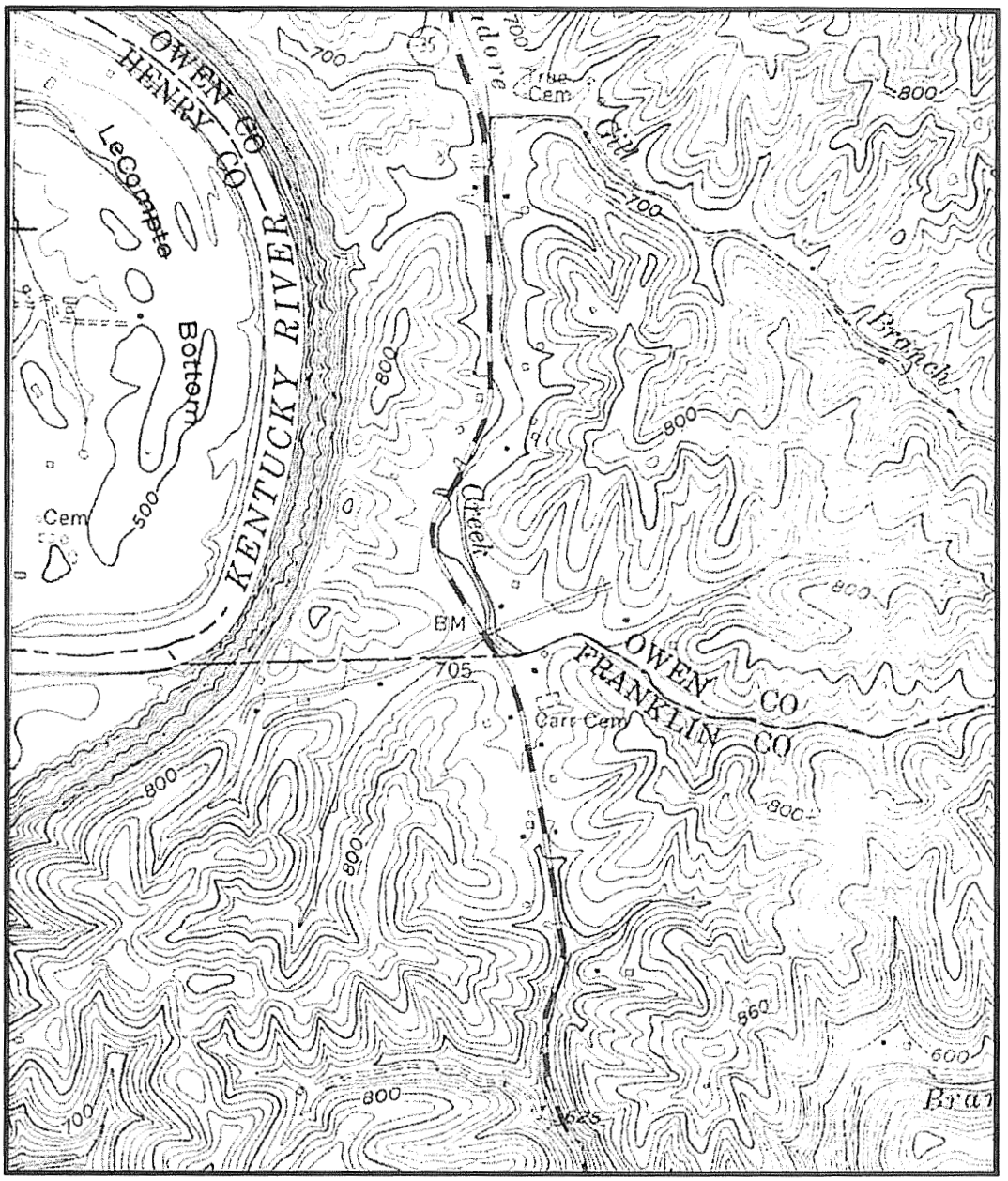

Figure 11. 7.5-minute topographic quadrangle depicting the northern APE (USGS 1954b).

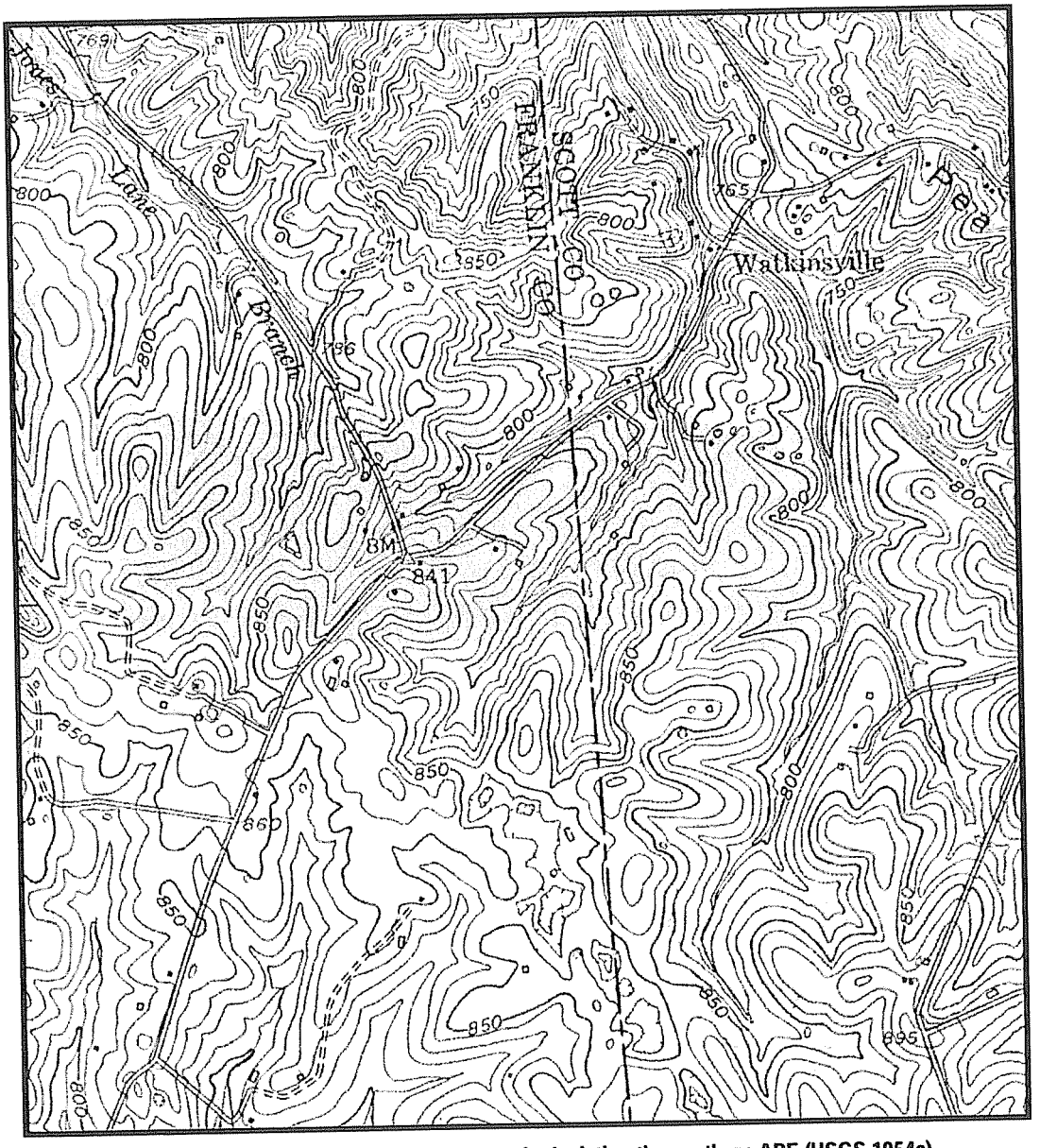

Figure 12. 7.5-minute topographic quadrangle depicting the southern APE (USGS 1954a).

Henry County

Henry County, created in 1798, was formed out of a portion of Shelby County. Sections of the original county boundary were later used to create Oldham and Trimble Counties. Along with Oldham and Trimble Counties, Henry County is bordered by Franklin, Carroll, Owen, and Shelby Counties. The Kentucky River forms the northeastern boundary between Henry and Owen Counties. Henry County is situated to the northwest of the central portion of the state in the Outer Bluegrass region. New Castle is the county seat (Drane 1948:3–4; Kleber 1992:425).

The county's namesake is Patrick Henry, the Revolutionary War veteran who allocated the first land patent to George Rogers Clark in 1785. The land patent was for Drennon Springs, a valuable source of salt located in Drennon's Lick between the Kentucky River and New Castle. The springs were discovered in 1773 by settlers Matthew Bracken and Jacob Drennon. Later, during the mid-nineteenth century, Drennon Springs became a destination for those seeking the purported medicinal benefits of the water. The site also served as the location of the Western Military Institute from 1851 to 1861. LeCompte's Bottom was also an important geographic location for early settlement in Henry County. Located in a significant bend in the Kentucky River, adjacent to Franklin and Owen Counties, LeCompte's Bottom was settled by families such as the LeComptes, Kavanaughs, Kelleys, and Webbs. Named after the pioneer Charles LeCompte, LeCompte's Bottom is a central area between Franklin, Henry, and Owen counties (Drane 1948:32–33; Kleber 1992:426; LeCompte 2004).

New Castle, located 30 mi northeast of Louisville, was established concurrent with the creation of Henry County. A post office was established in New Castle in 1805, with Dennis Abbot serving as the first postmaster. The town, which was incorporated in 1817, has had three courthouses constructed in its history, with the last built in 1875. Even at its earliest stages of growth, New Castle had thriving businesses and was a distribution point for Louisville and Frankfort (Drane 1948:59; Kleber 1992:677–678; Rennick 1987:212).

Tobacco quickly became the foundation for early agriculture in Henry County. Settlers found the soil and climate well suited for the cultivation of burley tobacco crops. Beginning around 1800, fields were cleared throughout the county for tobacco, and when these fields were depleted, more land was cleared. Tobacco barns constructed of vertical boards became common features of the landscape. The tobacco was stored and cured in these barns during late fall and early summer (Henry County Historical Society [HCHS] 1995:1–3).

In 1800, just after its formation, Henry County had a population of 3,258. The thriving agricultural industry was fueled by the 406 slaves in the county at this time, representing 12.5 percent of the population. The county continued its growth in 1810, when its population reached 6,777. Slavery continued to grow, with 1,685 slaves by 1810. Significant growth over the next decade resulted in a general population of 10,816 and 2,004 slaves by 1820. In 1830, the population continued to rise to 11,387. Slaves made up approximately 22 percent of the population in 1830, with a total of 2,463. The population declined slightly to 10,015 in the following decade. By 1840, the slave population had decreased to 2,349 (University of Virginia [UVA] 2004).

Early house building in Henry County was like that of the rest of the state during the settlement period. Log construction became the chief building technology for early settlers in Henry County because of the widespread and immediate availability of logs. Once a farmstead became established, land was cleared of trees, and log houses, sometimes of a more temporary post-in-ground construction, were built. Later, more substantial log houses were built with stone or brick chimneys. Such houses were not only found in rural areas, but in towns as well. New Castle's earliest houses included two-story log houses built on Main Street. Log houses were commonly constructed as rectangular pens with either

single- or double-pen plans. A single-pen house would often be added onto later, resulting in the double-pen plan or the dogtrot form. Other log houses had hall-parlor plans. More substantial brick houses were built by affluent settlers, including some Federal and Greek Revival brick houses that are extant in rural Henry County. These were usually two-story structures with two rooms on both floors, sometimes with a central hall, creating an I-house form. Additional examples of these styles are found in New Castle (Drane 1948:61; Macintire 1998:1–3, 7–8).

Agriculture continued to be the county's economic foundation during the mid-nineteenth century. By 1850, the county boasted 1,029 farms with 118,714 acres in improved farmland. Crops were valued at almost $2.7 million and livestock had a value of $444,948. In 1860, the number of farms declined slightly to 1,010 with 115,169 acres of improved farmland. The value of crops nearly doubled to $4.5 million. The value of livestock also increased to $931,147. The trend for the declining number of farms continued into 1870, with 897 farms counted in the census. The Civil War likely had some effect on the county's agricultural activity, as the cash value of farms declined slightly to $4.3 million in 1870. The value of livestock also declined to $667,401 (UVA 2004).

Henry County's population continued its growing trend from 1850 to 1860. By 1850, the county had a general population of 11,442 with 3,013 slaves recorded in that year's census. The population increased to 11,949 in 1860. There were 676 slaveholders accounted for in 1860, with 3,311 slaves. Slaves represented nearly 28 percent of the county's population in 1860, further driving the growth of the county's tobacco-based economy. The construction of the Louisville & Frankfort Railroad between 1847 and 1851 also helped spur the county's growth. The rail line traveled through communities such as Pleasureville, Eminence, Smithfield, and Jericho along the southwestern portion of the county. In fact, the town of Eminence was created after the construction of the line in 1850, in the area formerly known as Clay Bank. The railroad never came through New Castle, and as a result, Eminence grew to be the county's largest town. Eminence College, which was originally established as a high school, was one of the area's secondary educational facilities from 1855 to 1895 (HCHS 1995:43–45; Kleber 1992:293; Rennick 1987:93; UVA 2004).

As in much of the rest of Kentucky, residents of Henry County were divided over the Civil War. The county did not see significant direct activity from the war, but many of its men were recruited for service. As Henry County lay between Louisville and Frankfort, a few skirmishes did take place, including a raid on Union forces in New Castle on September 21, 1862. The raid resulted in the capture of Provost Marshal George Dickens and his 30 Union men. On December 13, 1864, an engagement took place again near New Castle. In this skirmish, Union Captain James H. Bridgewater, along with 110 Kentucky State Troops and 40 Henry County Homeguards, soundly defeated Colonel George M. Jessee and his men. Although the full effects of the Civil War on Henry County are not known, the general population had declined by 1870 from 11,949 to 11,066. The 1870 census also tells perhaps the greatest effect of the Civil War in the county and throughout the country, with a recorded population of 2,438 free blacks (Drane 1948:125; HCHS 1995:423–424; UVA 2004).

From 1860 to 1870, agriculture in Henry County declined, most likely as a result of the Civil War's overarching effect on the state's economy as a whole. The number of farms in the county declined to 897 with a value of roughly $4.3 million. Perhaps the greatest toll was taken on the cattle industry, which declined from $931,147 to $667,401. In the following decade, agriculture in the county began to flourish once again. Tobacco, which continued to be the chief cash crop, rose in production from 1,738,680 pounds in 1870 to 4,015,708 pounds in 1880. The county had 1,473 farms in 1880, with an average farm size of 109 acres. Tobacco reached its peak during the 1920s, when close to eight million

pounds were produced annually (Drane 1948:14; UVA 2004).

The county's population rose to 14,492 by 1880. There were 2,869 African Americans residing in the county. The population decreased slightly in 1890 to 14,164 residents. The African American population also declined to 2,365. The 1882 map of Henry County depicts the southeast corner of the county, located within the northern section of the project area (Figure 13). By this time, the area had become known as LeCompte's Bottom. The floodplain area appears as rural in character, with the Kentucky River forming its east boundary. Members of the LeCompte, Davis, Webb, and Kavanaugh families resided in the area (Lake 1882b; UVA 2004).

Though some brick houses continued to be built in the second half of the nineteenth century, the construction of frame houses was more common. Small houses followed the traditional hall-and-parlor, saddlebag, and double-pen forms. The I-house, however, proved to be the dominant house form for those of economic means during this period. Applied architectural details, such as decorative turned wood porch supports, spandrels, or brackets, reflect such popular trends in regional architecture as the Italianate and Gothic Revival styles. The cross-gable I-house became a common house type in the decade following the Civil War and continued into the early twentieth century. With the advent of balloon framing in the late nineteenth century, variations on the typical square or rectangular form began to appear, such as the T-plan and cross-plan houses. Often, porches and other decorative Victorian details were added to these dwellings (HCHS 1995:80–102; Southern 1978:79–80).

By the early twentieth century, agriculture in the county was supplemented by a thriving dairy industry. Because of its convenient location between Lexington and Louisville, Henry County developed as a distribution center for dairy products in the region. Before 1940, such products were transported to various locales via the railroad. Cream stations, which purchased both sweet and sour cream, were located throughout the county. By 1930 there were over 6,000 milk cows in the county, and in 1940 there were 275 farms producing and selling milk (HCHS 1995:37).

The population increased only slightly between 1890 and 1900, to 14,620 residents. The number of African Americans residing in Henry County continued its decline, with a population of 1,930. In 1910, the general population decreased to 13,716 with an African American population of 1,792. In 1920, the downward trend continued with a population of 13,411. The African American population also declined to 1,488. The 1928 geological map of the county shows LeCompte's Bottom located within the project area (Figure 14). Little had changed in the area since the 1882 map had been drawn, as the area continues to appear rural, with houses located along secondary roads (KGS 1928; Lake 1882b).

The local residential architecture expanded to include the nationally popular bungalow during the early twentieth century. The one- or one-and-one-half-story bungalow had either a front-gable or side-gable form and often incorporated craftsman elements such as wide eaves, rafter tails, knee braces, full-width front porches with battered columns, and multi-light-over-single-light window sashes. Traditional forms, such as the saddlebag and T-plan houses, continued to be built as well, particularly for tenants and to replace earlier dwellings. The two-door saddlebag house was a popular choice for this purpose. These structures were usually frame structures clad in weatherboards or board-and-batten siding (HCHS 1995:80–102).

The population decline, which began at the turn of the century, continued into 1930, when 12,564 residents were recorded in the census. The population of African Americans also continued to decline, with 1,181 residents. By 1940, there were 1,019 African American residents in the county and a general population of 12,220. The 1942 county highway map continues to depict the area known as LeCompte's Bottom as rural, with one paved curvilinear road traveling through the area (Figure 15). A cemetery is depicted along the east side of the road (KDH 1942; UVA 2004).

During the mid-twentieth century, Henry County's population continued to decline. In 1950, the county had 11,394 residents and 10,987 residents in 1960. The African American

population also declined from 869 in 1950 to 863 in 1960. The project area appears on both the 1953 Polsgrove and the 1954 Switzer topographic quadrangle maps (Figures 16–17). LeCompte's Bottom appears little changed, with the same road system and similar residential layout as found in the previous maps (USGS 1953, 1954b).

Agriculture continued to be the driving force in Henry County's economy during the latter decades of the twentieth century. By the mid 1980s, the county was accruing $34.15 million annually in crops and livestock. Eminence, the county's largest city, is the location of more than 75 percent of the county's industrial jobs (Kleber 1992: 426).

Owen County

The Kentucky General Assembly established Owen County out of portions of Franklin, Gallatin, and Scott counties on February 6, 1819. It was named for Colonel Abraham Owen, a legislator who was killed at the Battle of Tippecanoe during the War of 1812. The county contains 354 sq mi and is bordered by Carroll and Gallatin Counties to the north, Grant County to the east, Scott and Franklin Counties to the south, and Henry County to the west. Owenton is the county seat (Kleber 1992:200).

Several pioneers located land grants along the streams in Owen County, including the Lee, Lewis, Kemper, and Glass families. In 1780 John Guill, a native of Caroline County, Virginia, constructed a house along a tributary of Big Eagle Creek that would eventually carry his name. He drowned while trying to ford Guill's Branch while it was in flood. Several other families from South Carolina settled along Big Eagle Creek near the Lusby's Mill area in 1795 (Williamson 1962:2; News-Herald: 1958; Jones and Cobb 1948:1)

By the 1790s, Owen County farmers were producing enough surplus to market part of their crops. Several productive farms sprang up along the Kentucky River, which forms the county's western boundary, and the farmers started shipping their produce down the river on flatboats to markets in Louisville or even as far south as New Orleans. Trading centers such as Monterey, Gratz, and Perry Park developed along the Kentucky River, and farms and communities along the river developed rapidly (News-Herald 1958:1; Houchens 1976:10–11).

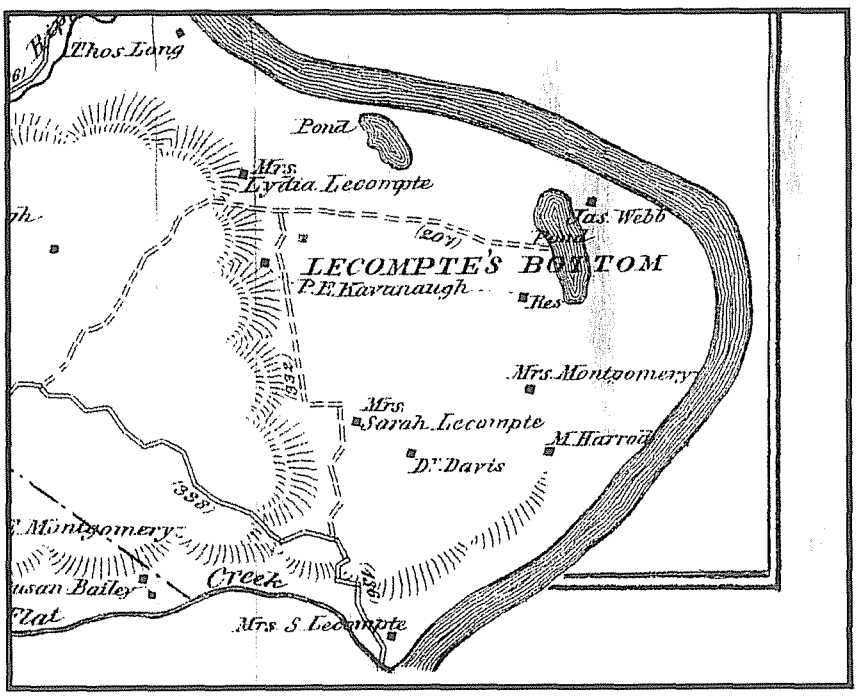

Figure 13. Map of Henry County, Kentucky depicting a portion of the northern APE (Lake 1882b).

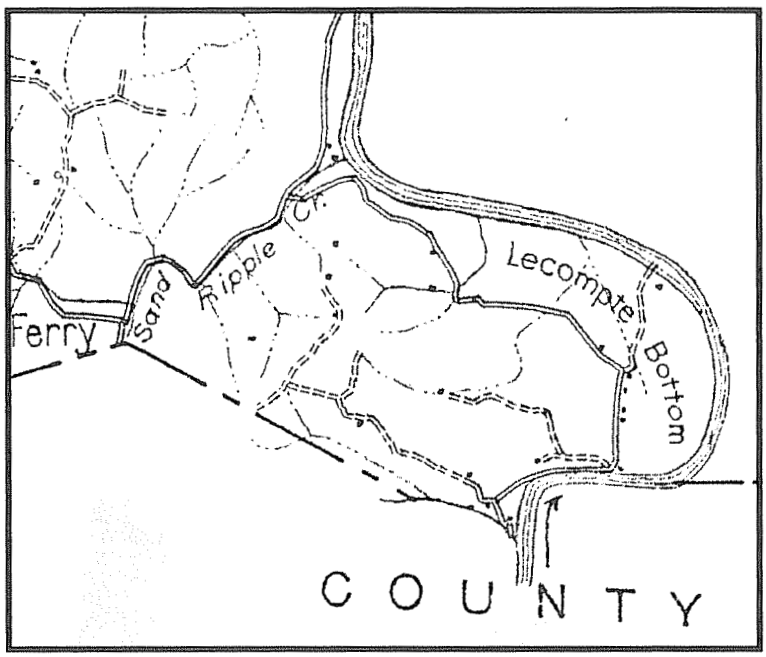

Figure 14. Geological map of Henry County, Kentucky, depicting a portion of the northern APE (KGS 1928).

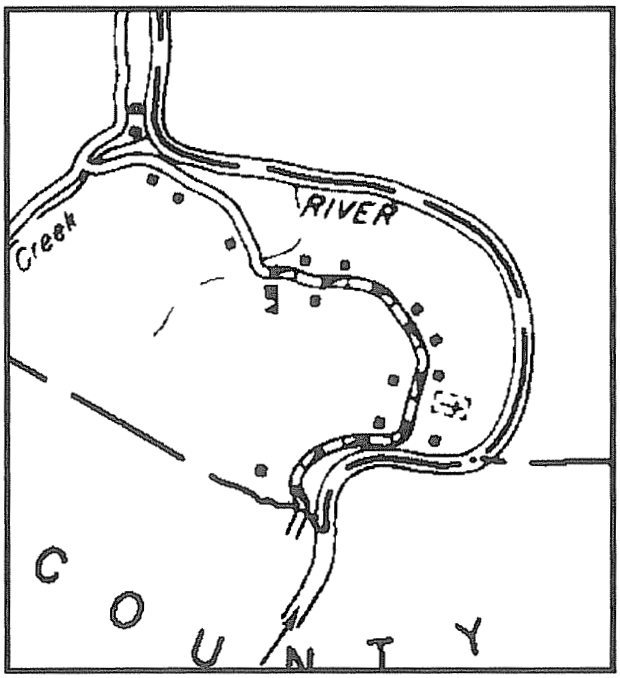

Figure 15. Highway map of Henry County, Kentucky, depicting the northern APE (KDH 1942).

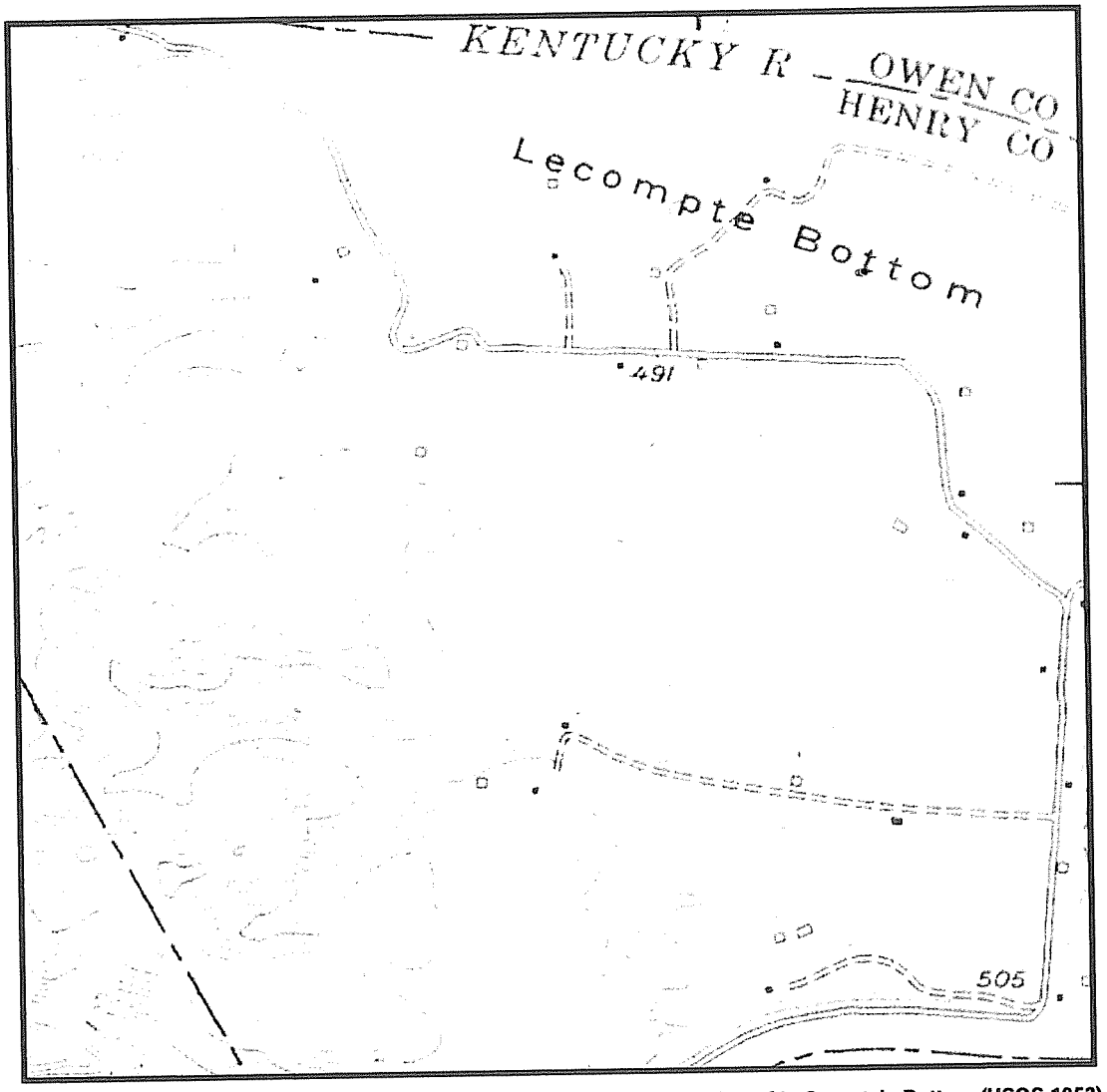

Figure 16. 7.5-minute topographic quadrangle depicting the western portion of LeCompte's Bottom (USGS 1953).

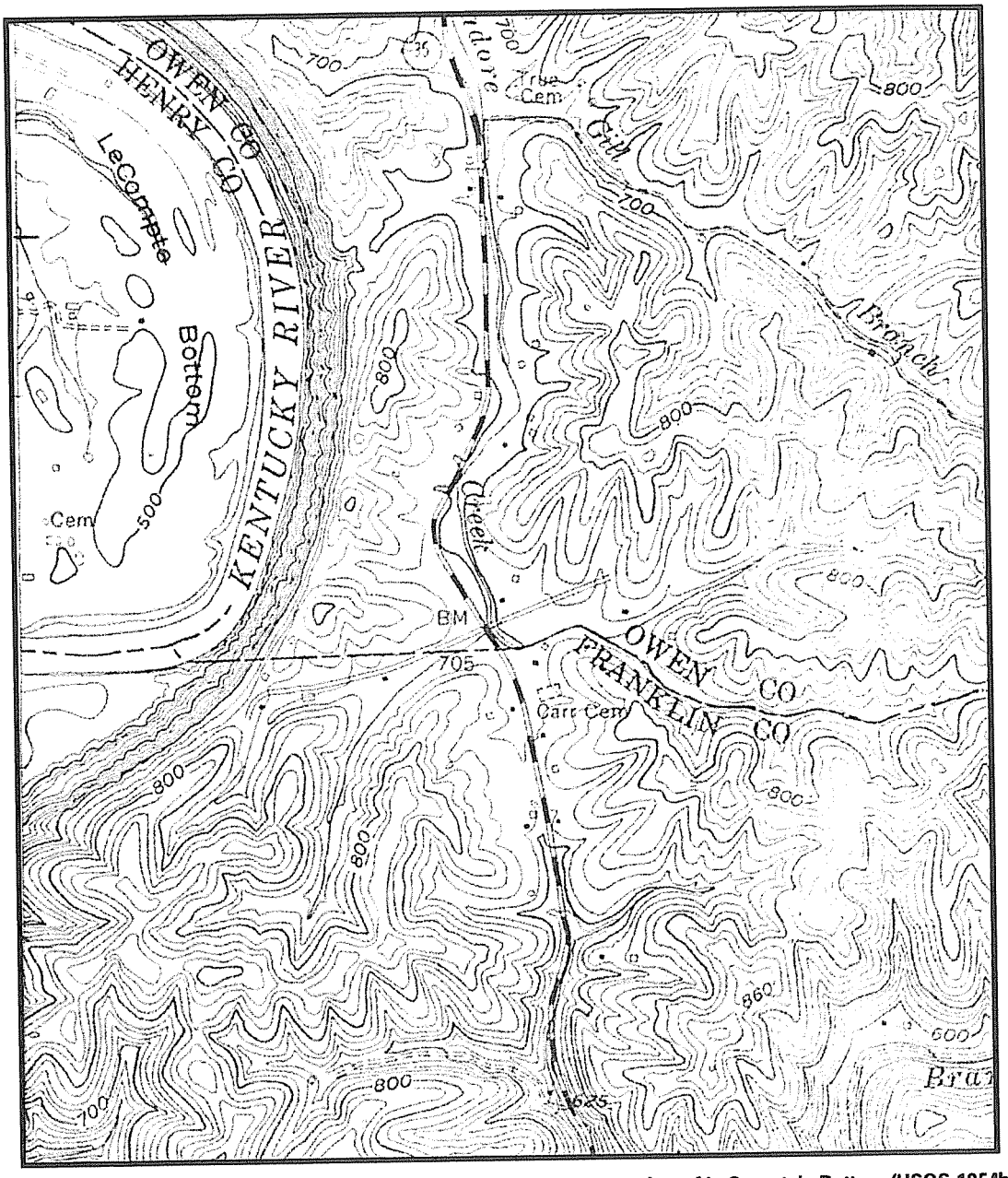

Figure 17. 7.5-minute topographic quadrangle depicting the eastern portion of LeCompte's Bottom (USGS 1954b).

One of the centers of trade and commerce in Owen County was disconnected from the Kentucky River. New Liberty, located on a ridge between Big Eagle and Big Twin creeks, was a flourishing town at the beginning of the nineteenth century. Merchandise bound for the town, which was the most populated in the county, was shipped to Ghent, Kentucky, along the Ohio River, then transported over land to its merchants. New Liberty prospered until the railroad, which was built through Carroll and Gallatin Counties in 1869, shifted the area's commerce to Worthville and Sparta (Houchens 1976:15–16, 36).

The Kentucky River trade continued to flourish throughout the antebellum period. In 1836, the state began construction of a series of locks and dams on the river to provide easier navigation for steamboats. By 1842, it was navigable up to Frankfort, and several steamboats made regular trips between Frankfort and Louisville. Owen County farmers had access to markets all along the Ohio and Mississippi Rivers (Houchens 1976:25–26).

Owen County grew steadily throughout the antebellum period. Just after its creation, the census indicated 2,031 residents in the county. By 1830, the number had more than doubled to 5,786. Between 1830 and 1840, the population increased by 42.2 percent to 8,232. By 1850, it totaled 10,444 and reached 12,719 by 1860. In 1840, Owen County contained 1,281 slaves, making up 15.5 percent of the population. By 1850, the number had increased 18.1 percent to 1,514, but the percentage of slaves in the total population dropped to 14.4 percent. In 1850, 107 slaveholders owned only one slave, and 159 owned between two to five slaves. Only three slaveholders owned more than 20 slaves. In 1860, the county's population included 1,660 slaves and 70 free blacks, making up 13.6 percent of the total population (Collins 1882:261; Houchens 1976:29–30).

Log houses dominated the architectural landscape of the first half of the nineteenth century in Owen County, as they did throughout the rest of Kentucky. The earliest and smallest log houses were single-pen, rectangular or square structures. Larger structures included the two-room double-pen and saddlebag plans, often with an upper loft. Additionally, single-pen structures were expanded by the addition of a second pen, creating a double-pen, saddlebag, or dogtrot form. More substantial brick houses were built by affluent settlers, including some Federal and Greek Revival brick houses. These were often larger two-story structures with two rooms on both floors.

During the Civil War, Owen County residents tended to support the cause of the Confederacy. Only 2.14 percent of the white population served in the Union Army, which was the 11th lowest percentage in the state. In 1861, Confederate General Humphrey Marshall, a native of neighboring Franklin County, established a recruiting camp on a steep hill overlooking Lusby's Mill along Big Eagle Creek in the northern section of the county. Another smaller camp was established on a nearby farm. Both camps supplied soldiers to the Rebel cause throughout much of the war. No major battles were fought in Owen County, but guerilla activity was prevalent throughout the duration of the war (Kleber 1992:700; Jones and Cobb 1948:3; Houchens 1976:47, 56, 62).

Throughout the last half of the nineteenth century, Owen County remained dependent upon the Kentucky River. No railroads were constructed through the county, though the Louisville and Nashville Railroad line near the boundary with Carroll and Gallatin counties was close by. The population of the county continued to increase. In 1870, it reached 14,309, and by 1880, Owen County had 17,401 inhabitants. In 1890, the county reached its largest population number ever recorded with 17,676 residents, but it dropped slightly to 17,553 in 1900 (UVA 2004).

Though some brick houses continued to be built in the second half of the nineteenth century, frame houses were most often constructed. Small houses followed the traditional hall-and-parlor, saddlebag, and double-pen forms. The I-house, however,

proved to be the dominant form for those of economic means in this period in Kentucky. These I-houses often reflected the latest styles in the details applied to the form, including decorative elements, such as the brackets of the Gothic Revival and Italianate styles. With the advent of balloon framing in the late nineteenth century, variations on the typical square or rectangular form began to appear, particularly T-plan houses. Often, porches and other decorative Victorian details were added to these dwellings.

The 1923 geological map of the county depicts the portion located within the northern APE (Figure 18). The map shows the bend of the Kentucky River, just above the Franklin County line. The current U.S. 127 retains its approximate location from the 1923 geological map (KGS 1923).

Just prior to the turn of the century, an abundance of lead ore was discovered along the Kentucky River at Gratz. In 1900, the Gratz Lead Mining Company was organized in Portsmouth, Ohio, and it started an extensive mining operation just north of Gratz. Production at the mine peaked during World War I and World War II, but the mine was abandoned later in the century. Large quantities of cobalt were also discovered near Gratz, but speculators never utilized the resource (News-Herald 1958:2–3).

The residential architectural vocabulary expanded to include the nationally popular bungalow in the early twentieth century. The one- or one-and-one-half-story bungalow had either a front-gable or side-gable form and often incorporated craftsman elements such as wide eaves, rafter tails, knee braces, full-width porches with battered columns, and multi-light-over-single-light windows. One-story, hip-roof, or pyramidal-roof double-pile cottages were also constructed in this period. Traditional forms, such as one-story eave-oriented houses and T-plan houses, continued to be built as well. The one-and-one-half-story, double-pile, eave-oriented minimal traditional house also began being built in the 1930s and 1940s.

The 1948 highway map of Owen County depicts the project area as rural with scattered residences (Figure 19). The map illustrates the Owenton Monterey Turnpike as following roughly the same route as the present U.S. 127 (KDH 1948).

The county's population dropped throughout much of the twentieth century. Between 1900 and 1910, it dropped almost 19 percent to 14,248 inhabitants. The population continued to decline until it reached 10,710 in 1930. The 1940 census registered a slight increase to 10,942 inhabitants, but the exodus from the county continued after World War II. By 1970, Owen County's population dropped to 7,470 residents, 762 fewer inhabitants than in 1840. Growth returned to the county after 1970. By 1980, it had 8,924 residents, and by 1990, it had 9,035 (Kleber 1992:700; UVA 2004).

The 1954 Switzer topographic quadrangle depicts the still rural landscape of Owen County (See Figure 11 in Franklin County historic context). U.S. 127 continues to approximate its historic course through the northern APE.

Owen County remained a heavily agricultural area throughout the twentieth century. Tobacco evolved as a major cash crop, but area farmers continued to produce wheat, corn, and livestock. In 1987, 79 percent of the county was farmland, and 52 percent of that was cultivated. A small industrial base developed in Owenton, but industry remained a small part of the county's economy (Kleber 1992:700, 702).

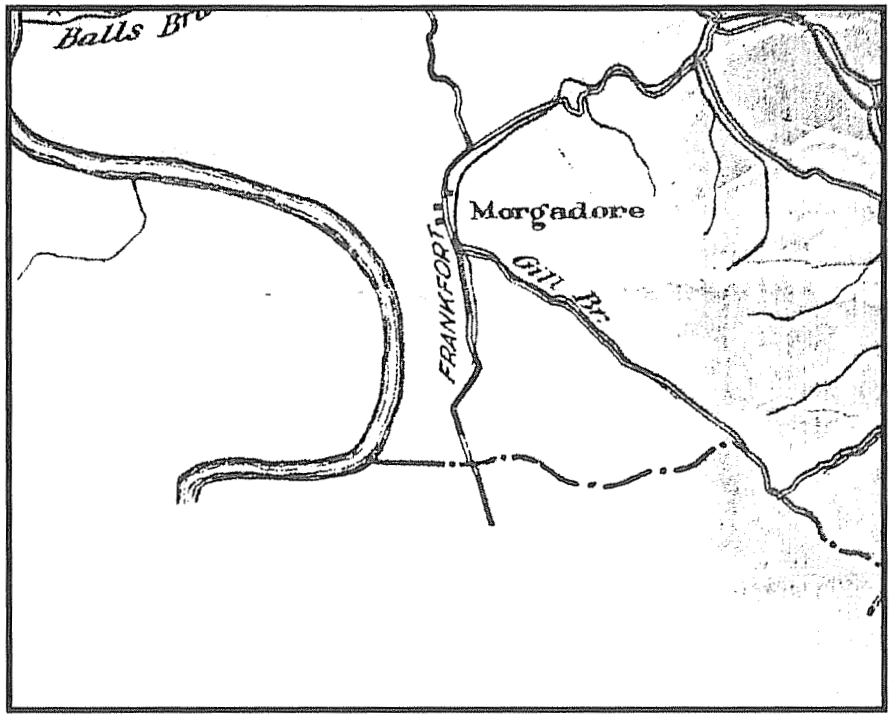

Figure 18. Geological map of Owen County, Kentucky, depicting a portion of the northern APE (KGS 1923).

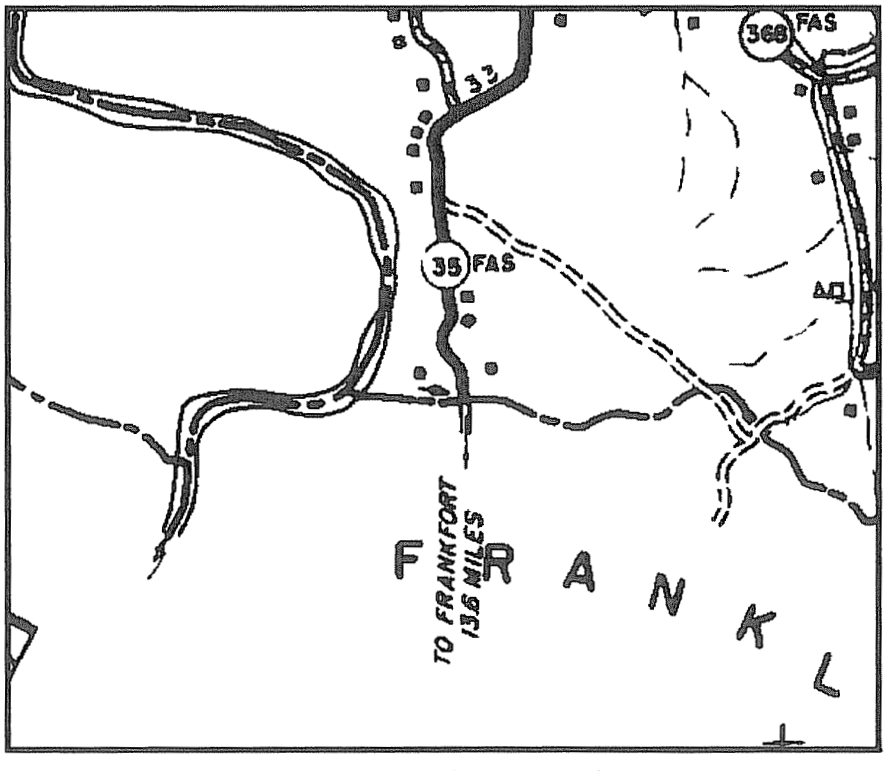

Figure 19. Highway Map of Owen County, Kentucky depicting a portion of the northern APE (KDH 1948).

VI. INVENTORY OF HISTORIC RESOURCES

The results of the cultural historic survey are presented in Table 1 and mapped in Figures 2 and 3. All historic sites (at least 50 years old) are described below. Each site has been assessed to determine if it appears eligible for the NRHP. Evaluations are found after each description. Survey forms with negatives for each site are included with the report.

Site 1

KHC Survey #: FR-25

Photographs: N/A

Map: Figure 2

Zone: 16

Quad: Switzer, KY 1954 (Photorevised 1987)

UTMs: E: 686313, N: 4247173

Description: This is a previously surveyed, no longer extant house formerly located approximately 500 ft south of the Owen County line at the western terminus of Scantland Road in Franklin County, Kentucky. According to the KHC inventory form dated 1976, the William Gibson House was a one-and-one-half-story, side-gable, single-pile log house with clapboard siding, a stone foundation, and a shed-roof frame addition on the eastern elevation (KHC, survey and National Register files).

NRHP Determination: N/A.

Site 2

KHC Survey #: ON-82

Photographs: Figures 20–21

Map: Figure 2

Zone: 16

Quad: Switzer, KY 1954 (Photorevised 1987)

UTMs: E: 686954, N: 4247888

Description: This site is a single-story, three-bay (w/d/w), side-gable frame house located approximately .5 mi north of the Franklin County line on an access road running east of and parallel to U.S. 127 in Owen County, Kentucky (Figure 20). The house is oriented to the northwest facing U.S. 127 and Morgadore Creek, which also run roughly parallel to one another. The central single-leaf entry with a half-light door is flanked by two windows with missing sashes. The entry and the window to its left are sheltered by partially collapsed metal awnings. The foundation consists of fieldstone piers under pressed-metal foundation sheathing, and the exterior of the house is clad in rolled asphalt siding designed to imitate Bedford Stone. The roof of the house is missing, and an interior brick chimney protrudes through the rafters near the southern end of the ridgeline.

Table 1. Cultural historic sites (50 years or older).

CRA Site #	KHC Site #	Description of Building	NRHP Eligibility	Effect of Project	Photo Figure #
1	FR-25	William Gibson House	N/A	N/A	N/A
2	ON-82	1 story, 3-bay, side-gable frame house	No	N/A	19–20
3	ON-83	1½ story, 3-bay, side-gable house	No	N/A	21
4	ON-84	1 story, 2-bay, side-gable log house	No	N/A	22–25
5	ON-85	Ruins of house site	No	N/A	26
6	FR-307	Carr Cemetery	No	N/A	27
7	FR-308	1 story, 3-bay, side-gable house	No	N/A	28–30
8	HY-241	1 story, 3-bay, side-gable house	No	N/A	31–38
9	FR-310	1½ story, 3-bay, side-gable house	No	N/A	39–42
10	FR-311	1½ story, 3-bay, side-gable bungalow	No	N/A	43–44
11	FR-80	1½ story, 3-bay, cross-gable house	No	N/A	45–48
12	FR-312	1 story, 3-bay, side-gable house	No	N/A	49–53
13	FR-62	Rectangular single-pen house	No	N/A	54–55
14	FR-81	Stamping Ground Turnpike Toll House	N/A	N/A	N/A
15	FR-79	T.W. Jones House	N/A	N/A	N/A

Figure 20. Site 2, single-story, three-bay, frame house with rolled asphalt faux-stone siding (ON-82)

The historic rear shed-roof frame addition has single-leaf entries with half-light doors on both the northeastern and southwestern elevations. The rear elevation has windows with three-over-one-light double-hung wood sashes.

A collapsing shed-roof frame outbuilding with vertical board siding is located behind the house (Figure 21).

NRHP Determination: Not Eligible.

This site was evaluated under Criteria A, B, and C and appears to be ineligible for listing in the NRHP. While the house retains its original location and setting, large portions of its historic fabric are missing. The house's materials, workmanship, design, and feeling have been compromised as a result. Furthermore, the dwelling is not an outstanding example of a common house type in rural Owen County, and it does not appear to be associated with a significant event or person in history. Therefore, the site does not appear to be eligible for listing in the NRHP under Criteria A, B, or C.

Site 3

KHC Survey #: ON-83

Photograph: Figure 22

Map: Figure 2

Zone: 16

Quad: Switzer, KY 1954 (Photorevised 1987)

UTMs: E: 686944, N: 4247466

Description: This site is a one-and-one-half-story, three-bay (w/d/w), side-gable house located approximately 425 ft north of the Franklin County line on an access road extending north and parallel to U.S. 127 in Owen County, Kentucky (Figure 22). The house is oriented to the west facing U.S. 127 and Morgadore Creek, which also run roughly parallel to one another. A steel gate prevented access to the property. A full-width concrete porch with a

shed roof supported by non-historic decorative metal posts shelters the central single-leaf entry and two flanking windows with non-historic replacement sashes. Both the massing of the house and placement of the porch roof are indicative of log construction, though no determination could be made due to lack of access. The foundation material could not be determined. The roof and porch roof are both clad in asphalt shingles, and the exterior of the house is covered in synthetic siding. No chimney was visible on the main block of the house.

The house has a long rear addition that appears to have been built in two stages, as indicated by a screen porch located at the distal end of the addition. A concrete-block chimney protrudes from the north slope of the roof near the center of the addition. Two windows with non-historic replacement sashes are located on the southern elevation. A second addition appears to be located on the north side of the original portion of the house but was obscured by vegetation.

A gable-roof outbuilding with sheet metal roofing and vertical board siding is located behind the house. Two non-historic outbuildings, possibly used for equipment or hay storage, are also associated with the house. Photos of the outbuildings could not be taken due to their distance from the steel gate.

NRHP Determination: Not Eligible.

This site was evaluated under Criteria A, B, and C and appears to be ineligible for listing in the NRHP. While the house retains its original location and setting, the replacement siding, window sashes, porch supports, and the large rear addition have compromised the house's historic design, materials, workmanship, and feeling. The site does not appear to be associated with a significant event or person in history. Therefore, the site does not appear eligible for listing in the NRHP under Criteria A, B, C, or D.

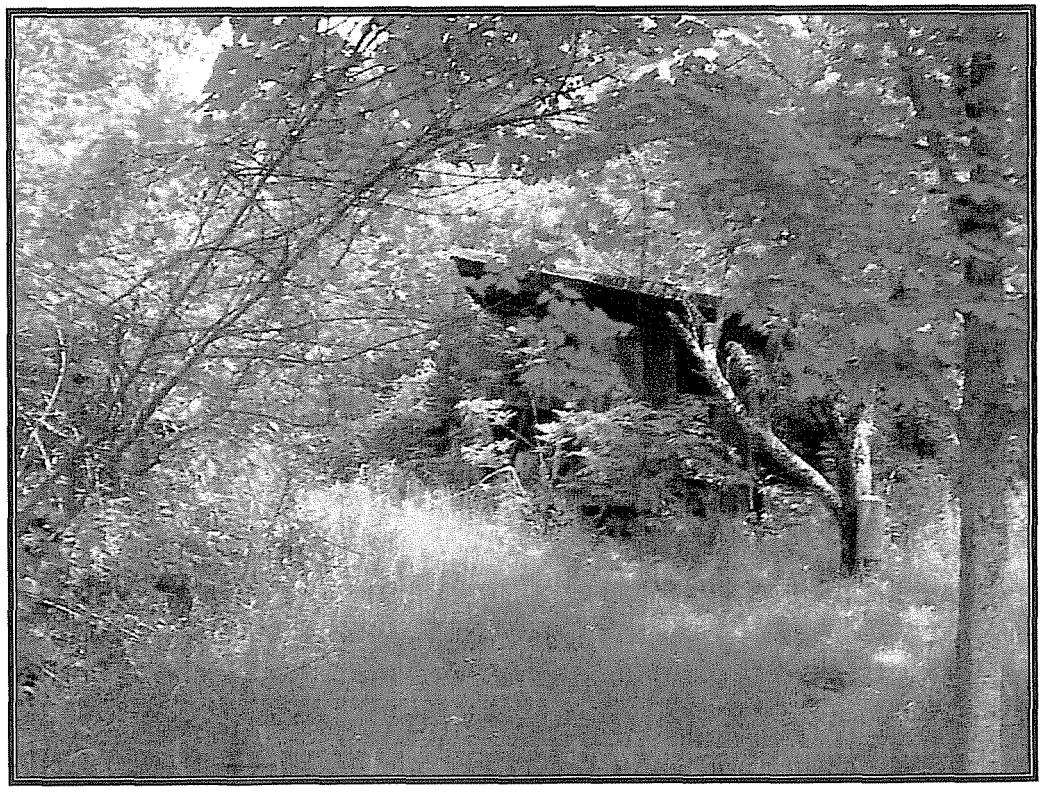

Figure 21. Site 2, shed-roof outbuilding with vertical board siding

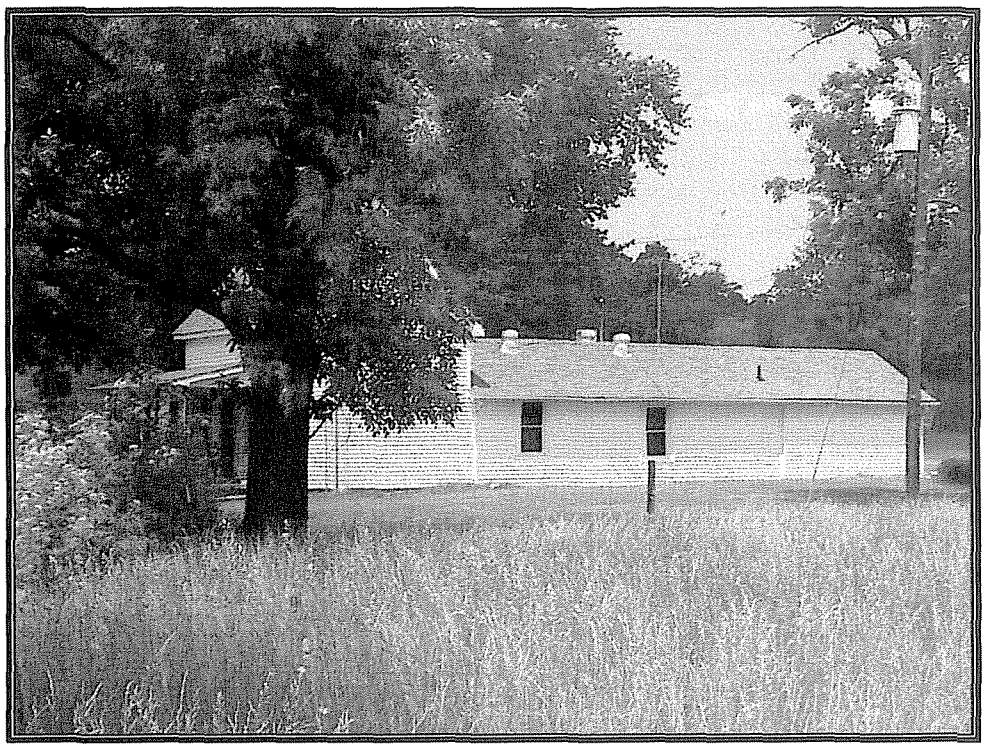

Figure 22. Site 3, one-and-one-half-story, three-bay, side-gable house with replacement siding (ON-83)

Site 4

KHC Survey #: ON-84

Photographs: Figures 23–26

Map: Figure 2

Zone: 16

Quad: Switzer, KY 1954 (Photorevised 1987)

UTMs: E: 687279, N: 4247441

Description: This site is a single-story, two-bay (w/d), side-gable log house with a side addition located approximately 330 ft north of the Franklin County line at the end of a gravel drive that extends eastward from U.S. 127 at its intersection with Scantland Road in Owen County, Kentucky (Figure 23). The house is oriented to the west facing U.S. 127 and Morgadore Creek, which run roughly parallel to one another. The original portion of the house has a central single-leaf entry with a multi-light door. Left of the entry is a window with horizontal two-over-two-light double-hung wood sashes. This portion of the house is constructed of square-hewn logs with V-notched joints and stone and mortar chinking under vertical board siding in varying states of deterioration. The continuous foundation underlying the house is composed of fieldstones, except for a portion under the original façade that has been replaced with dry-stacked concrete-block. What was originally a gable-end chimney on the house's north elevation is now located near the center of the ridgeline due to the presence of the addition.

A three-bay (w/d/w) frame addition is located at the north gable end of the house and features a central, single-leaf entry with a three-light door flanked by windows with horizontal two-over-two-light double-hung sashes, all with wood frames. No windows or entries are located on the north elevation of the dwelling. The addition is roughly 2 ft narrower on the rear elevation than the original log portion and is clad in horizontal wood siding. A continuous roof of sheet metal covers both portions of the house (Figure 24).

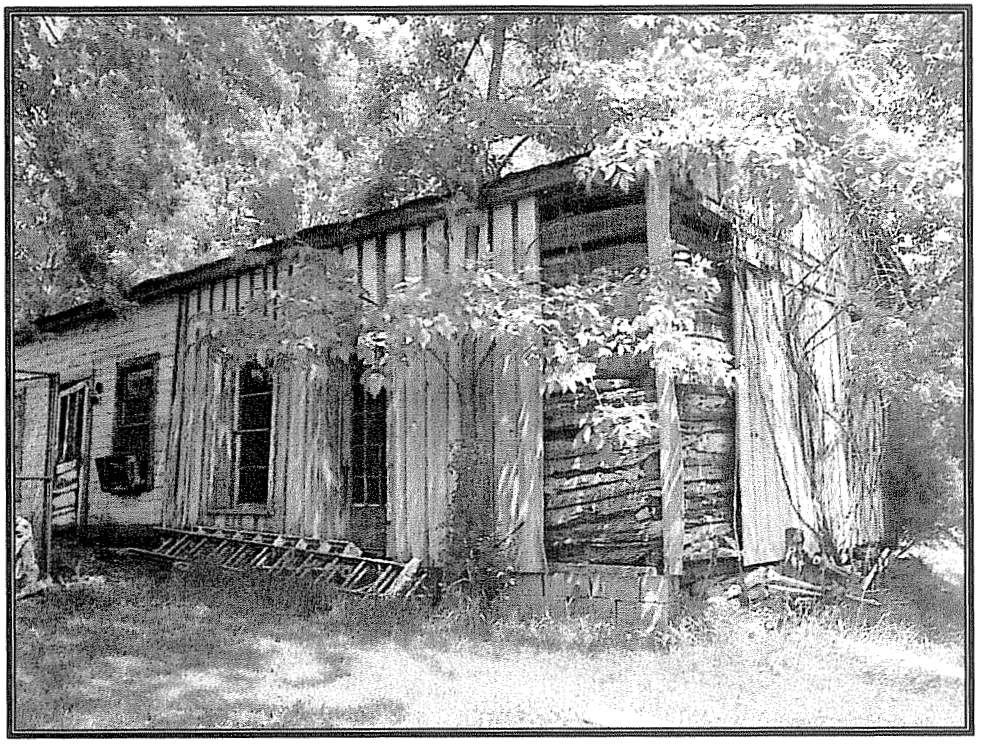

Figure 23. Site 4, single-story, two-bay, log house with side addition (ON-84)

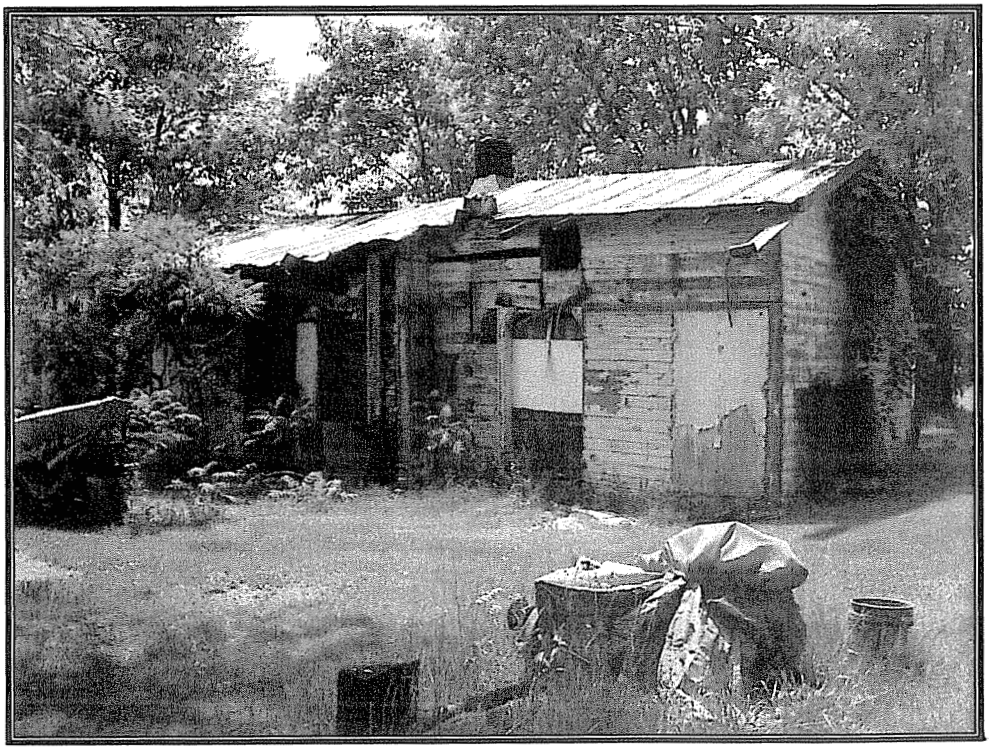

Figure 24. Site 4, rear elevation

The house is currently being used to store hay, and according to the owners, will soon be demolished. A non-historic dwelling is located north of the log house, and a front-gable outbuilding with vertical board siding and a concrete-block foundation is located north of the non-historic house (Figure 25). A tobacco barn with vertical board siding and a corrugated-metal roof is located east-southeast of the log house (Figure 26). The west elevation of the tobacco barn is in a state of disintegration.

NRHP Determination: Not Eligible.

This site was evaluated under Criteria A, B, and C and appears to be ineligible for listing in the NRHP. The house retains its original location and setting, but alterations such as the replacement concrete-block foundation and mortared chinking, as well as the general disrepair into which the house has fallen, have compromised its original design, materials, workmanship, and feeling. As a result of deferred maintenance, the wood siding has disintegrated from the house in several areas, exposing the structural materials to the elements. Voids in the wall planes occur in these areas. Vegetation has developed along the foundation of the house and is beginning to interrupt the fabric of the foundation, walls, and roof. Furthermore, the site does not appear to be associated with a significant event or person in history. Therefore, the site appears to be eligible for listing in the NRHP under Criteria A, B, or C.

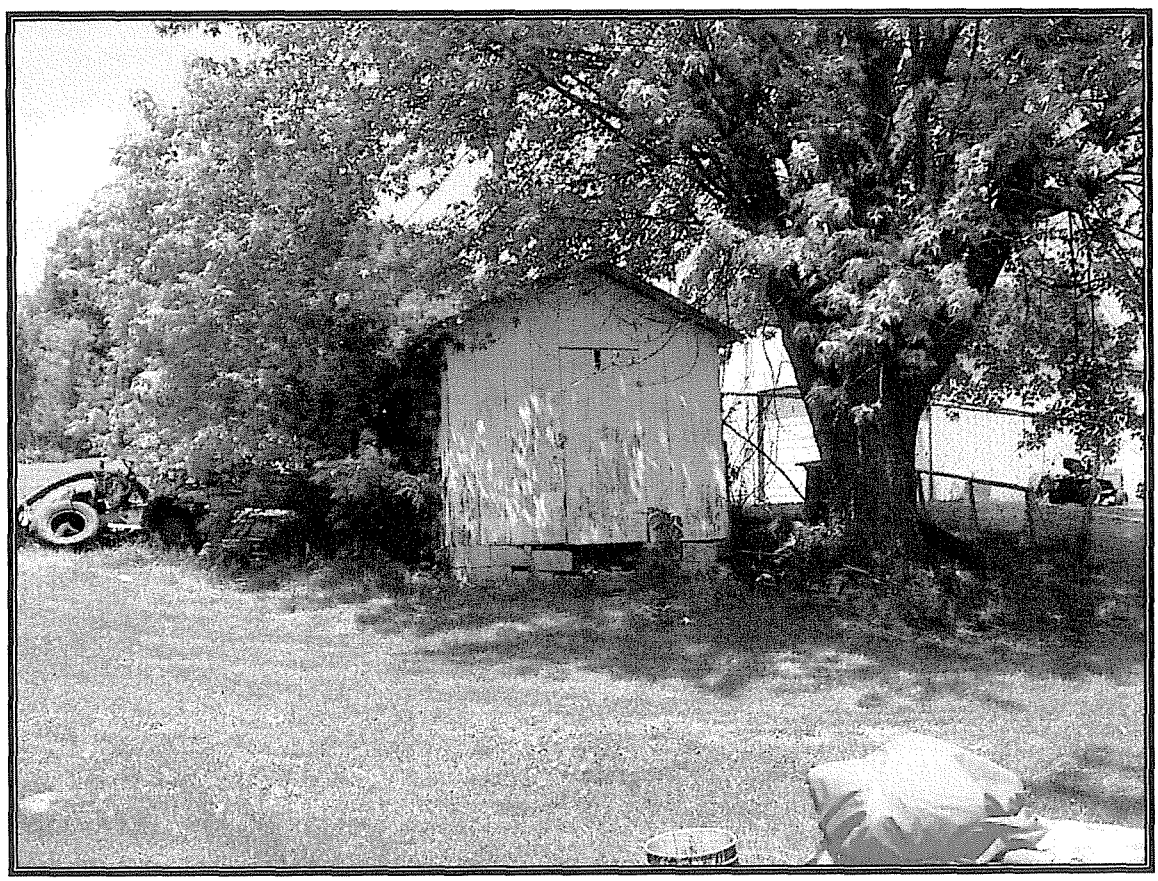

Figure 25. Site 4, front-gable outbuilding with vertical board siding

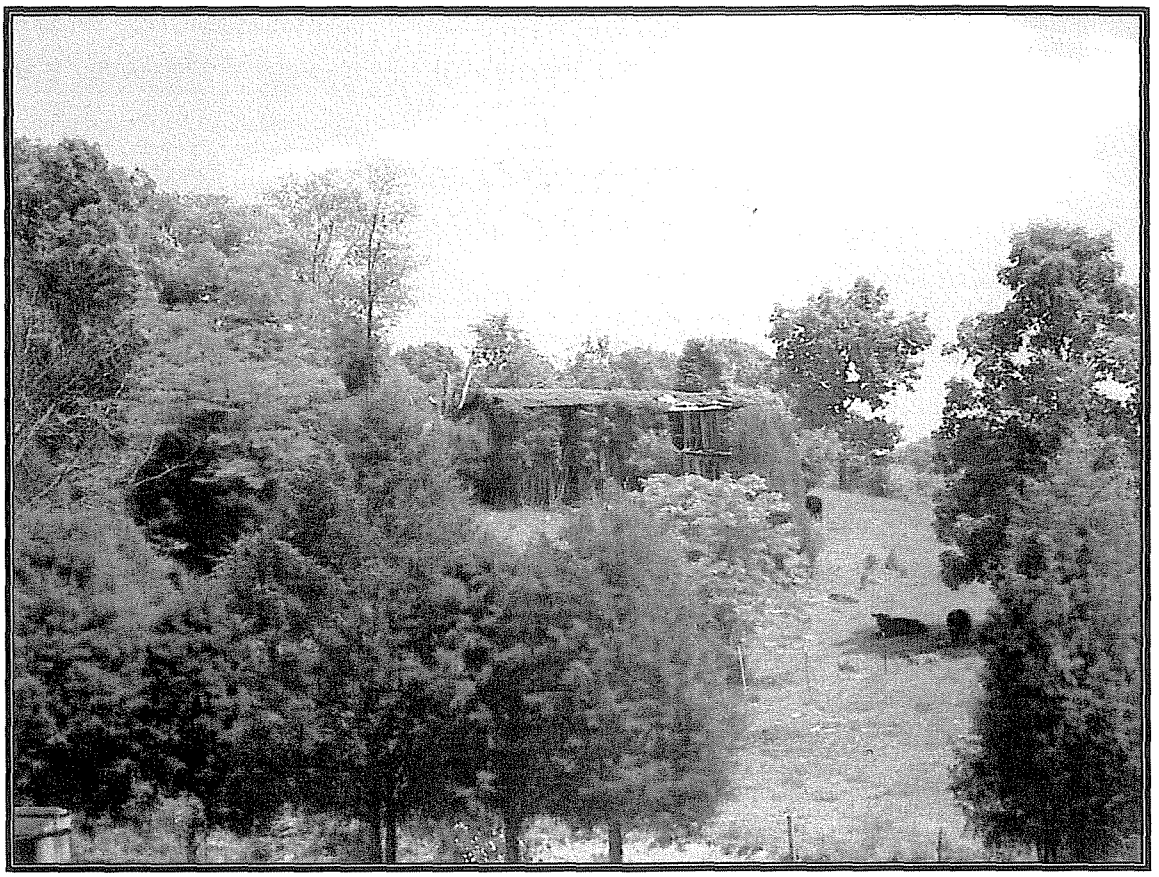

Figure 26. Site 4, tobacco barn with vertical board siding

Site 5

KHC Survey #: ON-85

Photographs: Figure 27

Map: Figure 2

Zone: 16

Quad: Switzer, KY 1954 (Photorevised 1987)

UTMs: E: 686963, N: 4247671

Description: This site consists of the remains of two mortared stone chimneys and associated foundation stones affiliated with a house site overlooking Morgadore Creek approximately .2 mi north of the Franklin County line in Owen County, Kentucky (Figure 27). The chimney remnants appear to have been located on the exterior gable ends of an historic dwelling. No other extant structures that may have been associated with the house site were identified.

NRHP Determination: Not Eligible.

This site was evaluated under Criteria A, B, and C and found to be ineligible for listing in the NRHP. The ruins retain their original location and setting, but the site's design, materials, workmanship, and feeling have been lost due to the removal of the dwelling. The site does not appear to be associated with a significant event or person in history. Therefore, the site does not appear to be eligible for listing in the NRHP under Criteria A, B, or C.

Figure 27. Site 5, ruins of house site (ON-85)

Site 6

KHC Survey #: FR-307

Photographs: Figure 28

Map: Figure 2

Zone: 16

Quad: Switzer, KY 1954 (Photorevised 1987)

UTMs: E: 687086, N: 4247223

Description: This is the Carr Cemetery, located on the west side of U.S. 127 approximately 600 ft south of the Owen County line in Franklin County, Kentucky. A pedestrian survey revealed nine visible headstones (Figure 28). Other stones may have gone unidentified, as dense vegetation obscured the cemetery's dimensions. Headstones identified during the survey date from between 1888 and 1918. The burials are memorialized with stone markers bearing the following surnames and dates of interment: Graves (1900), Robertson (1918), Taylor (1892), and Thorn-ton (1888, 1899, 1911, 1916). Landowners with the surnames Graves, Robertson, and Taylor were identified as landowners in the 1882 Franklin County atlas (Lake 1882a). Inscriptions on two of the stones were illegible. No stones bearing the surname Carr were observed, though several Carrs were identified in the 1882 atlas as property owners in the areas of the county south and southeast of the northern APE (Lake 1882a).

NRHP Determination: Not Eligible.

The Carr Cemetery does not appear to be eligible for listing in the NRHP. In addition to meeting Criteria Consideration D, cemeteries (like any site) must retain their integrity of location, design, setting, materials, workmanship, feeling, and association to be eligible under Criteria A, B, and C. Research did not reveal this cemetery to contain the graves of persons of transcendent importance. It is not associated with an historic event, nor does it contain distinctive design features. Though the Carr Cemetery has a number of historic buri-als, it does not appear to be eligible for listing in the NRHP under Criteria A, B, or C.

Figure 28. Site 6, the Carr Cemetery (FR-307)

Site 7

KHC Survey #: FR-308

Photographs: Figures 29–31

Map: Figure 2

Zone: 16

Quad: Switzer, KY 1954 (Photorevised 1987)

UTMs: E: 687065, N: 4247096

Description: This site is a single-story, three-bay (w/d/w), side-gable house located approximately 850 ft south of the Owen County line at 15348 U.S. 127 in Franklin County, Kentucky (Figure 29). The house is oriented to the west toward U.S. 127. The fenestration is composed of a central single-leaf entry with a multi-light door flanked by two windows with one-over-one light double-hung replacement sashes. Two windows with similar sashes are located on the southern elevation. A shed-roof porch with non-historic decorative metal supports extends over the three bays. The foundation and porch are constructed of mortared stone. The house is clad in vinyl siding and has an asphalt-shingle roof. Octagonal attic vents are located near the peaks of the gables. An exterior concrete-block chimney located on the southern elevation extends through the eave and above the rear roof slope.

The upper-story, two-bay (w/w), front-gable portion of the house is likely an addition, based on the massing of the main block of the house. However, alterations to the dwelling's exterior limit this assessment. This front-gable portion lends the appearance of a bungalow to the residence. Two windows with one-over-one-light non-historic replacement sashes are located on the upper-story façade. A shed-roof addition is located at the rear of the house. The addition is clad in the same vinyl siding as the main block of the house and features a window with non-historic one-

over-one-light double-hung sashes on both its north and south elevations. The rear addition sits flush with the south elevation of the dwelling's main block but stops several feet short of its north elevation. The east elevation of the addition was not visible from within the surveyable area. A shed-roof appendage occurs on the north elevation and features a single window with non-historic one-over-one-light double-hung sashes. A vent stack and a window with non-historic one-over-one-light double-hung sashes are located on the north elevation to the left of the shed-roof appendage.

A front-gable outbuilding with vertical wood siding and a metal roof is located south of the residence (Figure 30). The two-bay (d/w) outbuilding features a single-leaf entry with a multi-light door and a window with non-historic one-over-one-light double-hung sashes. A small, central brick chimney capped with a decorative weathervane extends through the ridgeline, and an air-conditioner or exhaust system has been installed into the wall between the entry and the window. A front-gable barn with vertical board siding and a metal roof is located further south of the residence (Figure 31). The barn features a two-story half-width shed-roof addition on the southern half of its façade, as well as a shed roof addition with a metal livestock gate on its west elevation. A non-historic metal barn is also associated with the house.

NRHP Determination: Not Eligible.

This site was evaluated under Criteria A, B, and C and appears to be ineligible for listing in the NRHP. While the house retains its original location and setting, alterations such as the vinyl siding, replacement windows, and additions have compromised its historic design, materials, workmanship, and feeling. The site does not appear to be associated with a significant event or person in history. Therefore, the site does not appear eligible for inclusion in the NRHP under Criteria A, B, or C.

Figure 29. Site 7, single-story, three-bay, side-gable house with probable second-story addition (FR-308)

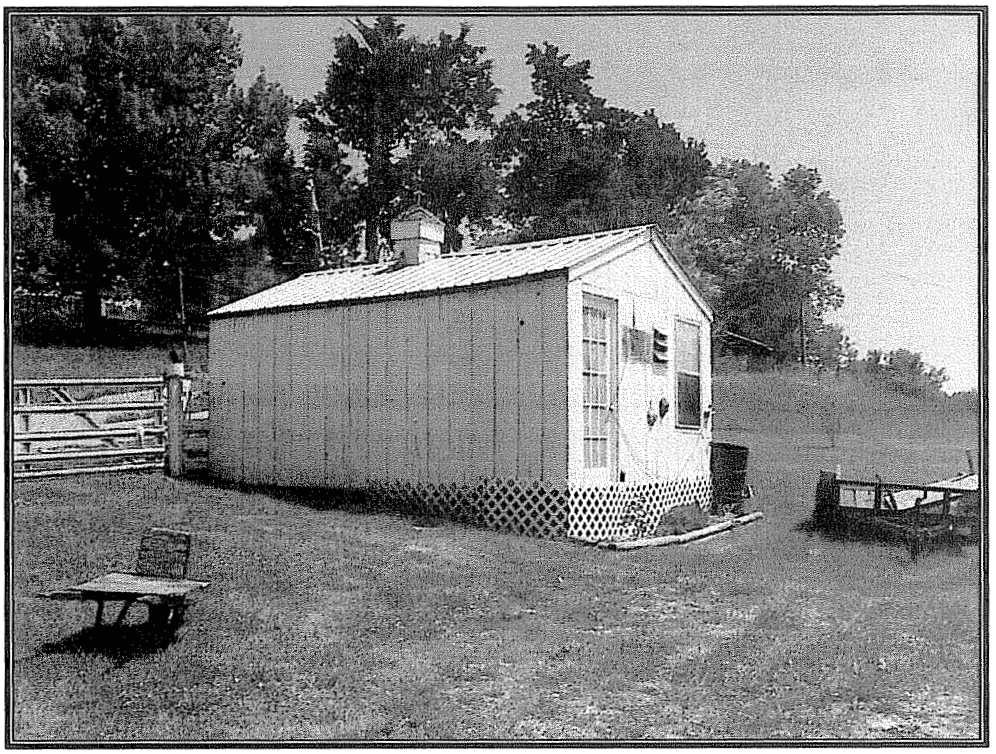

Figure 30. Site 7, front-gable outbuilding with vertical wood siding

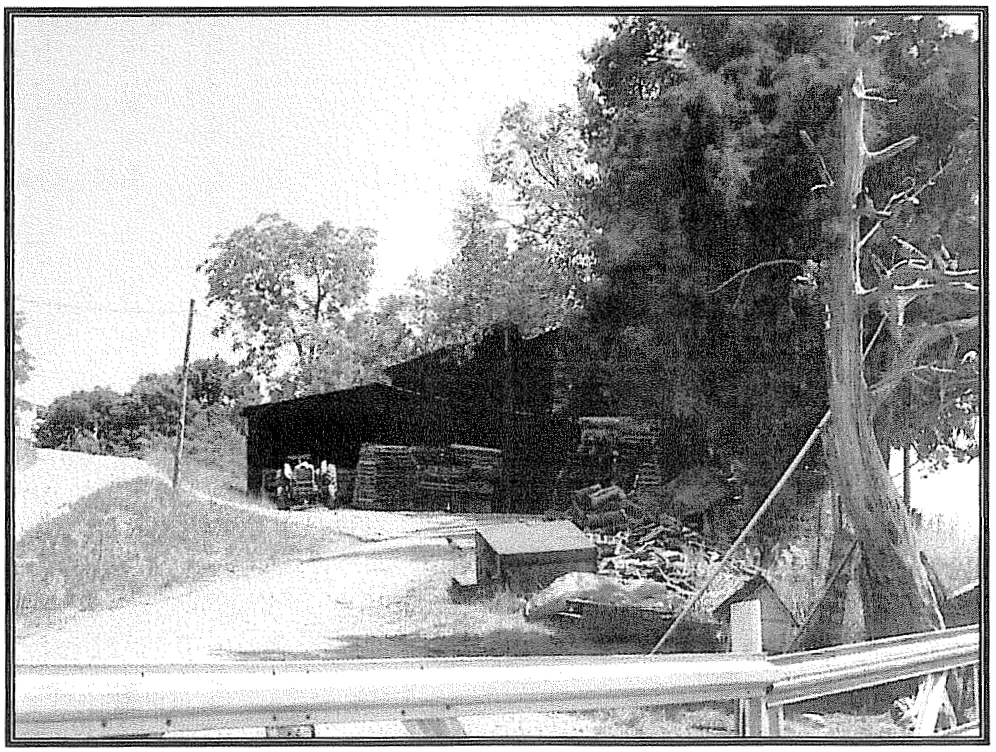

Figure 31. Site 7, front-gable, vertical board barn with a shed-roof appendage

Site 8

KHC Survey #: HY-241

Photographs: Figures 32–39

Map: Figure 2

Zone: 16

Quad: Polsgrove, KY 1953 (Photorevised 1987)

UTMs: E: 685612, N: 4247430

Description: This site is a single-story, two-bay (w/d), side-gable house with additions located approximately 350 ft north of the Kentucky River on the east side of LeCompte Bottom Road in Henry County, Kentucky (Figure 32). The house is oriented to the west facing LeCompte Bottom Road. The original portion of the house has a single-leaf entry with a multi-light door located near the southern end of the façade. A shed-roof porch supported by two turned-wood posts shelters the entry. The posts rest on a poured concrete deck supported by a concrete block foundation. To the left of the porch is a window with horizontal two-over-two light sashes. The foundation of the original portion of the house is covered in pressed-metal sheathing, while the remaining portions of the house rest on a continuous mortared concrete-block foundation. The exterior of the house is clad in Masonite siding applied over asbestos shingles. A parged-brick interior chimney protrudes from the ridgeline of the asphalt-shingle roof near the southern end of the original portion of the house.

A shed-roof addition is located at the rear of the original portion of the house (Figure 33). This addition features a single window that appears to contain a fixed or casement one-over-one-light sash on its rear elevation and a single-leaf entry covered with plywood on its north elevation. A larger two-bay (ww/d) addition is located at the northern end of the house and features a single-leaf entry with a multi-light door and a set of paired windows with six-over-six-light wood sashes on its façade elevation. An exterior chimney and a single window with two-over-two-light double-hung sashes occur on the north elevation of the two-bay addition. A single-leaf entry with a non-historic replacement door and a single window with one-over-one-light double-hung sashes with snap-in grids approximating six-over-six-light sashes are located on its rear elevation.

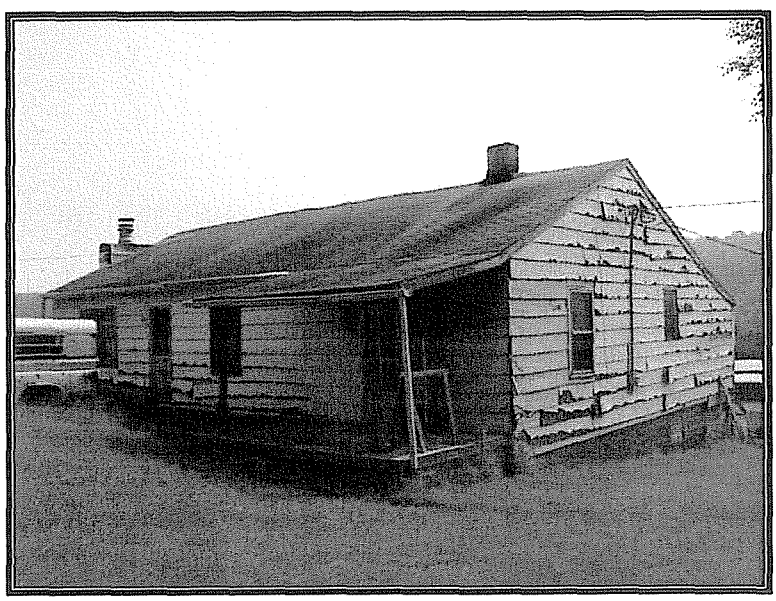

Figure 32. Site 8, single-story, two-bay house with additions (HY-241)

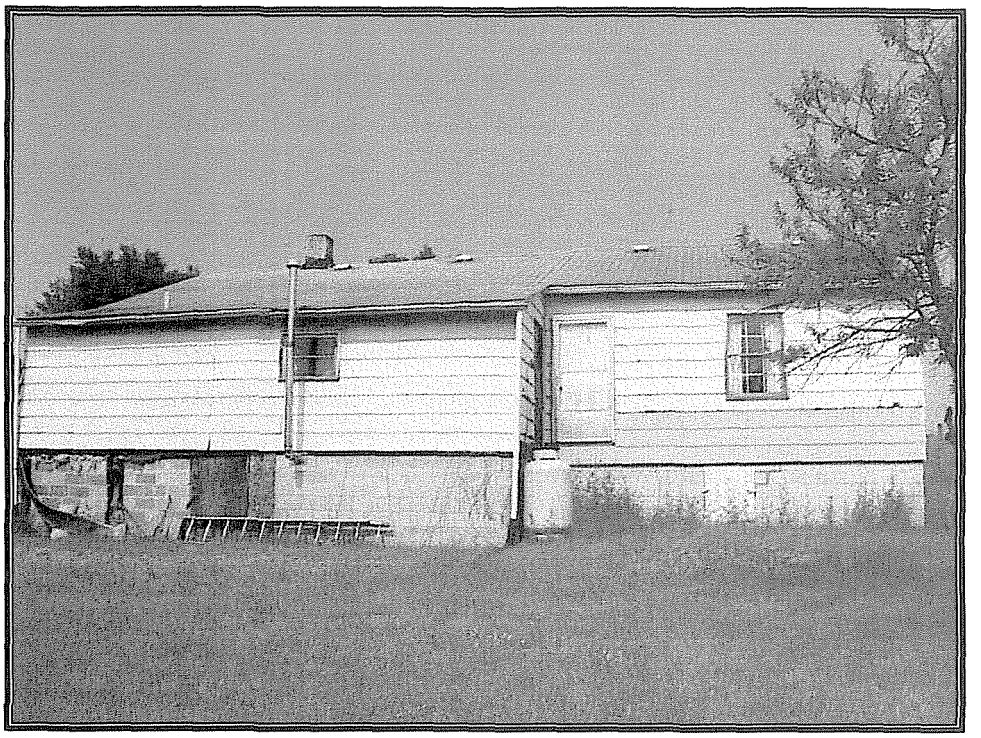

Figure 33. Site 8, rear elevation

Several outbuildings are located on the property. South of the house is a front-gable outbuilding clad in plywood and resting on a concrete block foundation (Figure 34). The main block of the outbuilding is flanked by two corrugated-metal shed roof additions that do not appear to be historic. A side-gable outbuilding with a corrugated-metal roof and vertical board siding is located southeast of the house next to a third outbuilding with vertical board siding and a flat corrugated-metal roof supporting what appears to be a metal hopper or chute (Figure 35). The functions of these buildings appear to be agricultural in nature. A front-gable livestock barn is located east of the house (Figure 36). The livestock barn is clad in vertical board siding and features a central aisle flanked by stalls. An open-sided shed-roof addition is located on the barn's southern elevation. The livestock barn has a poured-concrete foundation and what appears to be a recently replaced metal roof. The livestock barn has wood supports cut from decorticated trees and a cattle chute with a fieldstone foundation. North of the livestock barn is a front-gable tobacco or multi-use barn with vertical board siding and interior supports cut from decorticated trees (Figure 37).

A historic cemetery is also associated with the property (Figure 38). A pedestrian survey of the cemetery indicates that there are approximately 63 burials, although the number could be greater as interments may be unmarked or obscured by the vegetation at the western boundary of the cemetery. Headstones identified during the survey date from 1854 to 2000, with the greatest number of interments occurring during the first half of the twentieth century. The burials are memorialized with fieldstones or with granite, marble, poured concrete, and other stone headstones (Figure 39). Several cylindrical poured-concrete markers of unknown function occur throughout the cemetery. Representative surnames identified from historic markers include Downey, Graves, Kelley, LeCompte, and Webb.

NRHP Determination: Not Eligible.

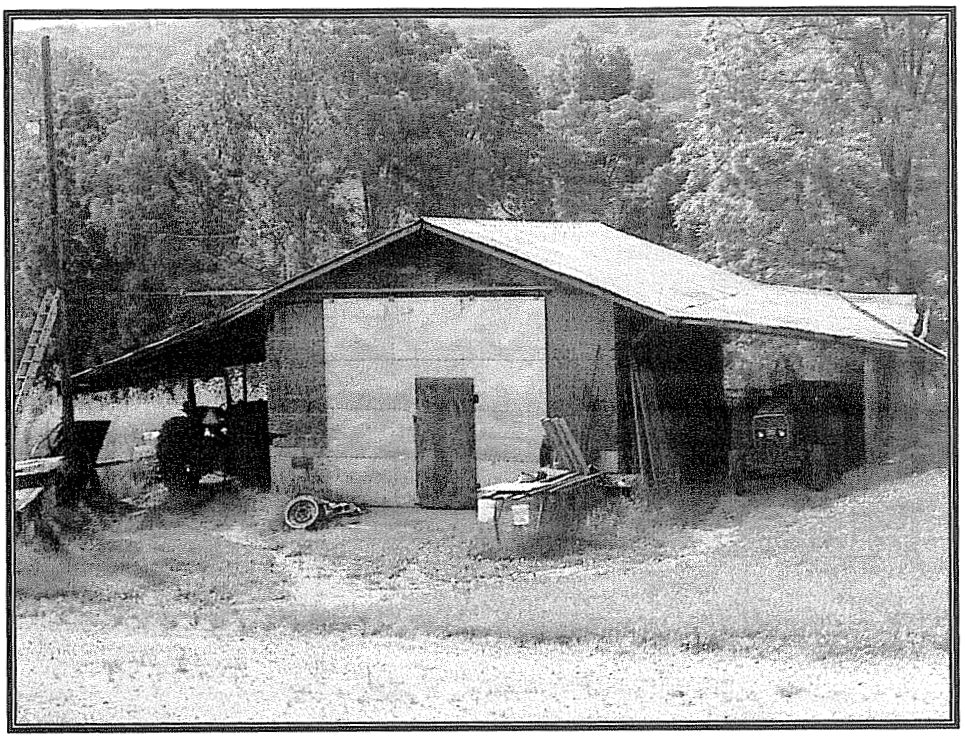

Figure 34. Site 8, front-gable outbuilding with ply-wood siding

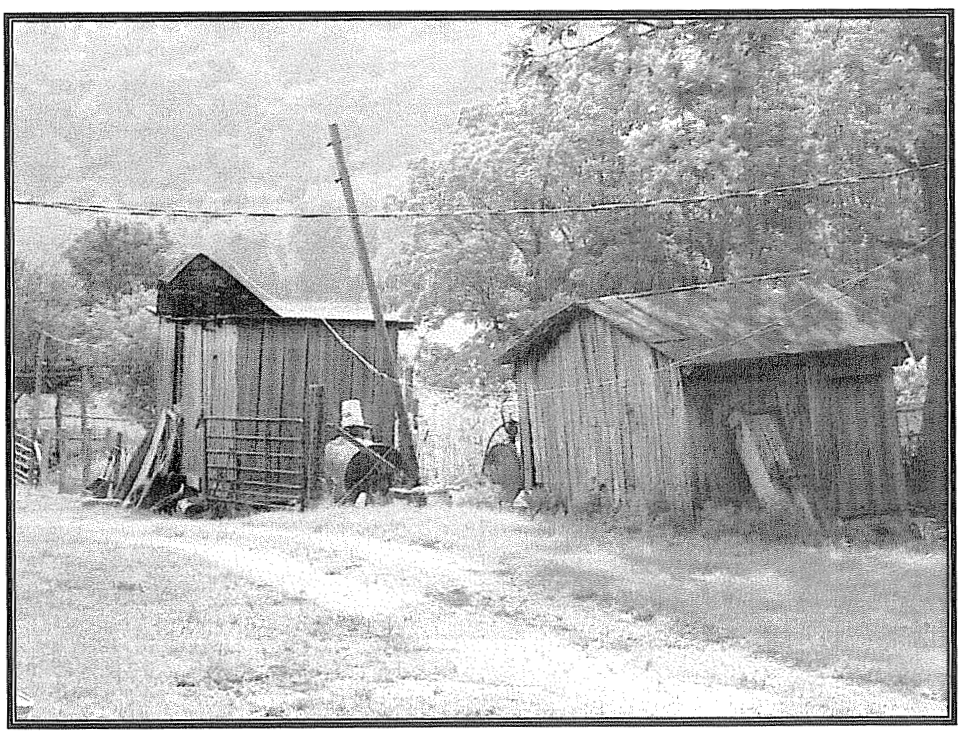

Figure 35. Site 8, side-gable and flat-roof outbuildings

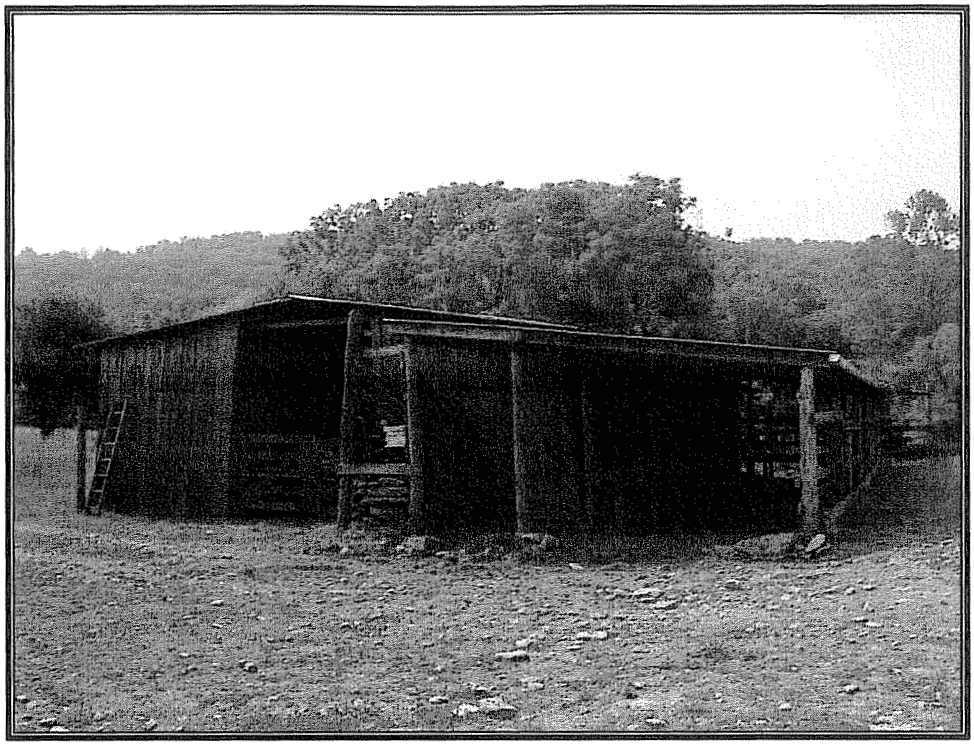

Figure 36. Site 8, front-gable livestock barn

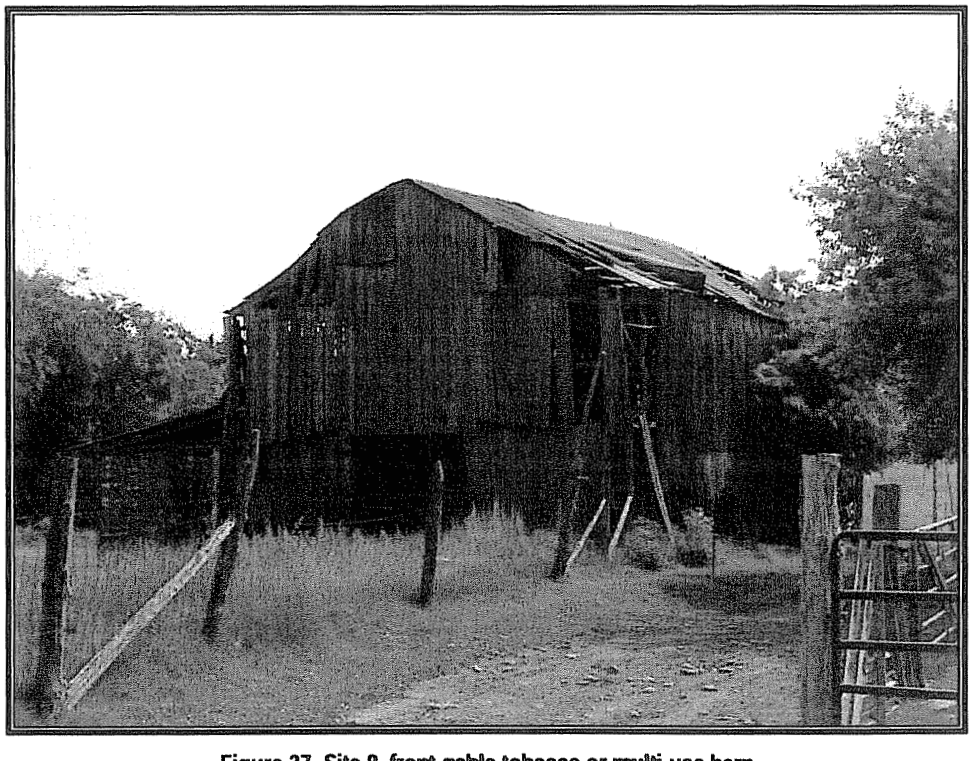

Figure 37. Site 8, front-gable tobacco or multi-use barn

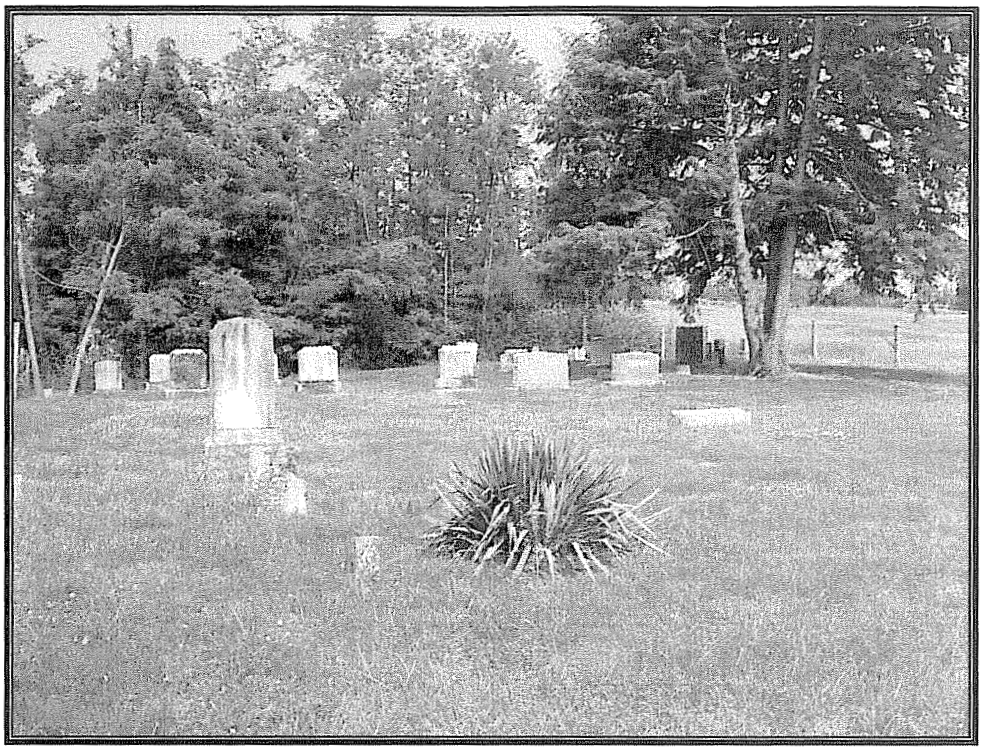

Figure 38. Site 8, overview of associated cemetery

Figure 39. Site 8, historic markers in associated cemetery

This site was evaluated under Criteria A, B, and C and appears to be ineligible for listing in the NRHP. The house retains its original location and setting, but additions and alterations compromise its historic design, materials, workmanship, and character. The site does not appear to be associated with a significant event or person in history.

The associated cemetery also does not appear to be eligible for listing in the NRHP. In addition to meeting Criteria Consideration D, cemeteries (like any site) must retain their integrity of location, design, setting, materials, workmanship, feeling, and association to be eligible under Criterion A, B, or C. The burials in the associated cemetery are a mixture of historic and non-historic interments. Research did not reveal this cemetery to contain the graves of persons of transcendent importance, nor is the cemetery associated with an historic event. The cemetery does not exhibit distinctive design features. Therefore, the site, including the residence, outbuildings, and cemetery, does not appear eligible for listing in the NRHP under Criteria A, B, or C.

Site 9

KHC Survey #: FR-310

Photographs: Figures 40–43

Map: Figure 2

Zone: 16

Quad: Midway, KY 1954 (Photorevised 1978, Photoinspected 1984)

UTMs: E: 697795, N: 4233757

Description: This site is a one-and-one-half-story, three-bay (ww/ww/ww), side-gable house located at 1658 KY 1262 approximately .5 mi southwest of the Scott County line in Franklin County, Kentucky (Figure 40). The house is oriented to the west facing KY 1262. A central, recessed front porch shelters paired windows with horizontal two-over-two-light double-hung wood sashes and stone sills. A northerly single-leaf entry is located to the right of the central windows. The recessed porch area is flanked by two sets of paired windows with horizontal two-over-two-light double-hung wood sashes and stone sills. The central gable-roof dormer features vinyl siding and paired windows with horizontal two-over-two-light double-hung sashes. Several more windows with horizontal two-over-two-light double-hung sashes and stone sills occur on the north, south, and rear elevations of the dwelling. A single-leaf side entry is located on the north elevation. A central shed-roof porch supported by two square brick piers shelters a single-leaf rear entry with a non-historic door (Figure 41). A pair of non-historic sliding glass doors provides access to a non-historic wood deck near the southern end of the rear elevation. A basement garage flanked by poured-concrete retaining walls is located below the wood deck. A large interior brick chimney protrudes near the northeast corner of the roof. The house has a wire-cut brick exterior and an asphalt-shingle roof. Both porches, as well as the house's continuous foundation, are constructed of poured concrete.

A non-historic, gable-roof, two-bay (d/d) garage is associated with the house (Figure 42). A gable-roof tobacco barn with vertical board siding and a metal roof is located south of the house (Figure 43). The barn has a shed-roof side addition and an associated gable-roof stripping shed with a metal roof. A non-historic metal silo is located near the barn and stripping shed.

NRHP Determination: Not Eligible.

This site was evaluated under Criteria A, B, and C and appears to be ineligible for listing in the NRHP. While the house draws from elements of the Bungalow and Colonial Revival styles, it is not an outstanding example of either. The dwelling is constructed using materials and techniques common to mid-twentieth century American houses and lacks character-defining features. The house retains its original location and setting, but alterations such as the non-historic rear doors, rear deck, and vinyl siding have compromised its original design, materials, workmanship, and feeling. The site does not appear to be associated with a significant event or person in history. Therefore,the site does not appear eligible for listing in the NRHP under Criteria A, B, or C.

Figure 40. Site 9, one-and-one-half-story, three-bay house (FR-310)

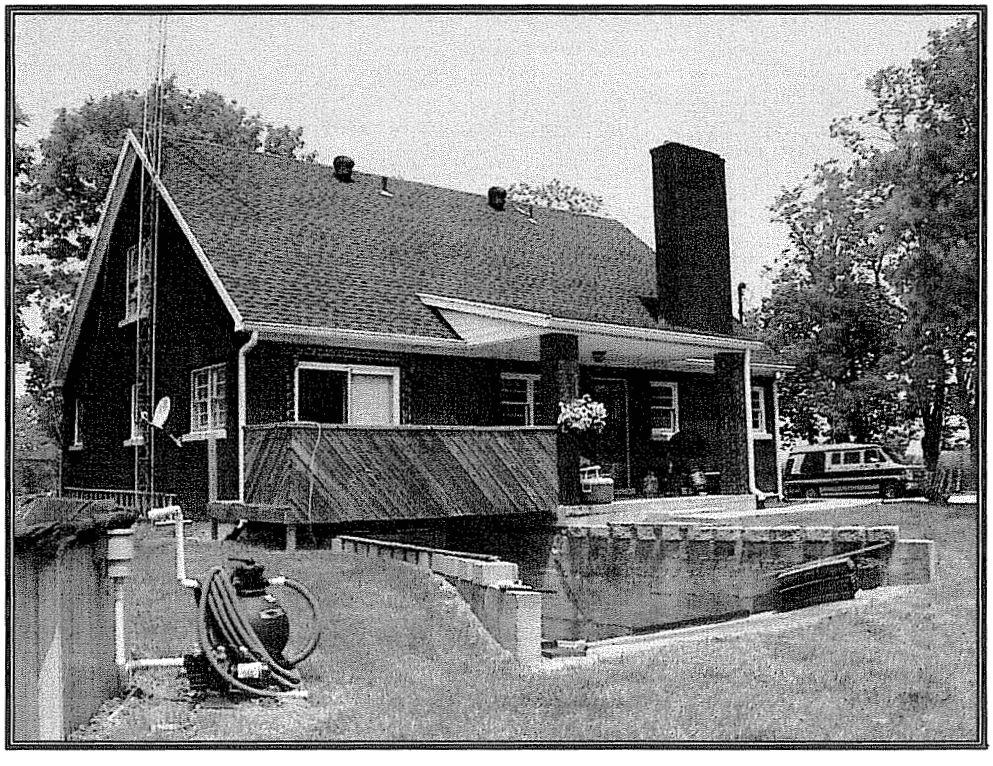

Figure 41. Site 9, rear elevation

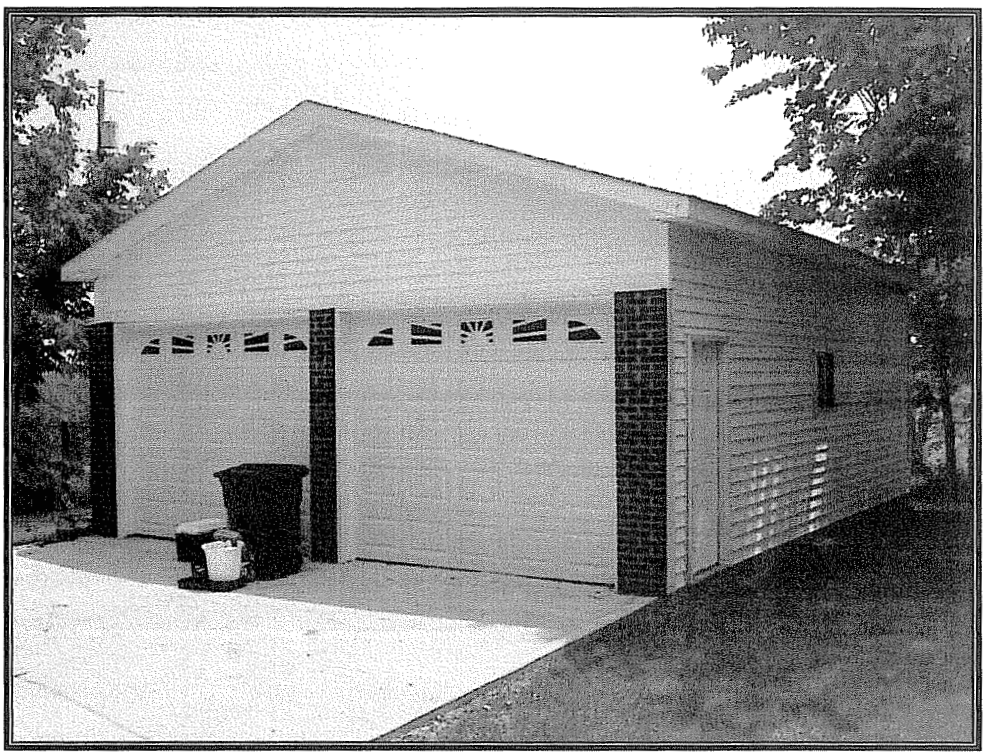

Figure 42. Site 9, non-historic gable-roof, two-bay garage

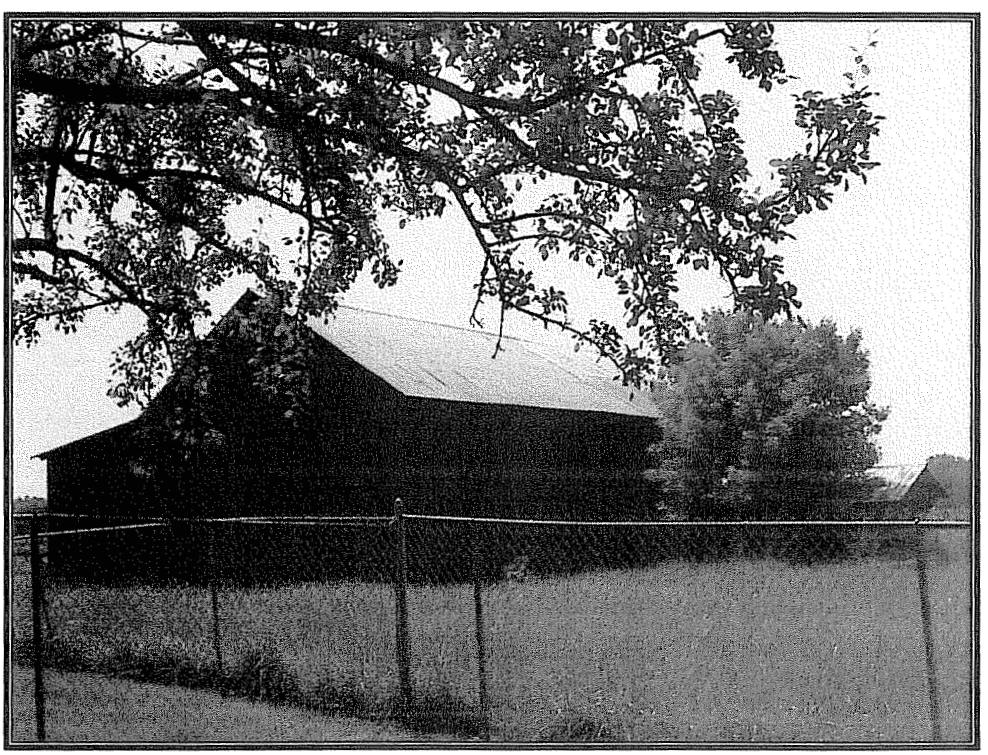

Figure 43. Site 9, gable-roof tobacco barn

Site 10

KHC Survey #: FR-311

Photographs: Figures 44–45

Map: Figure 2

Zone: 16

Quad: Midway, KY 1954 (Photorevised 1978, Photoinspected 1984)

UTMs: E: 697948, N: 4233934

Description: This site is a one-and-one-half-story, three-bay (w/d/w), side-gable bungalow located approximately .4 mi southwest of the Scott County line on the east side of KY 1262 in Franklin County, Kentucky (Figure 44). The house is oriented to the northwest facing KY 1262. A shed-roof porch supported by non-historic ornamental metal posts shelters a central single-leaf entry with a non-historic door flanked by two windows with three-over-one-light double-hung wood sashes. The porch has a concrete-block foundation. The central gable-roof dormer features a ribbon of three windows with three-over-one-light double-hung wood sashes and is clad in weatherboard siding. Windows with three-over-one-light double-hung wood sashes occur throughout the remainder of the residence. The house is clad in vinyl siding and has an asphalt shingle roof with a central ridgeline brick chimney. The foundation is covered in pressed-metal sheathing, and an elongated cel-lar bulkhead is located to the left of the front porch. A shed-roof addition is located on the rear elevation of the house and is clad in the same vinyl siding as the main block of the house. A single window with three-over-one-light double-hung sashes is located on the northeast elevation of the rear addition. The rest of the addition is obscured from view by vegetation growing behind and around the house.

A front-gable, single-bay concrete-block garage with a large, eave-oriented two-bay addition extending from the northeast elevation and an asphalt-shingle roof is associated with the house (Figure 45). The original bay is covered with a vertical board overhead garage door. The two additional bays house paneled six-light overhead garage doors.

NRHP Determination: Not Eligible.

Figure 44. Site 10, one-and-one-half-story, three-bay bungalow (FR-311)

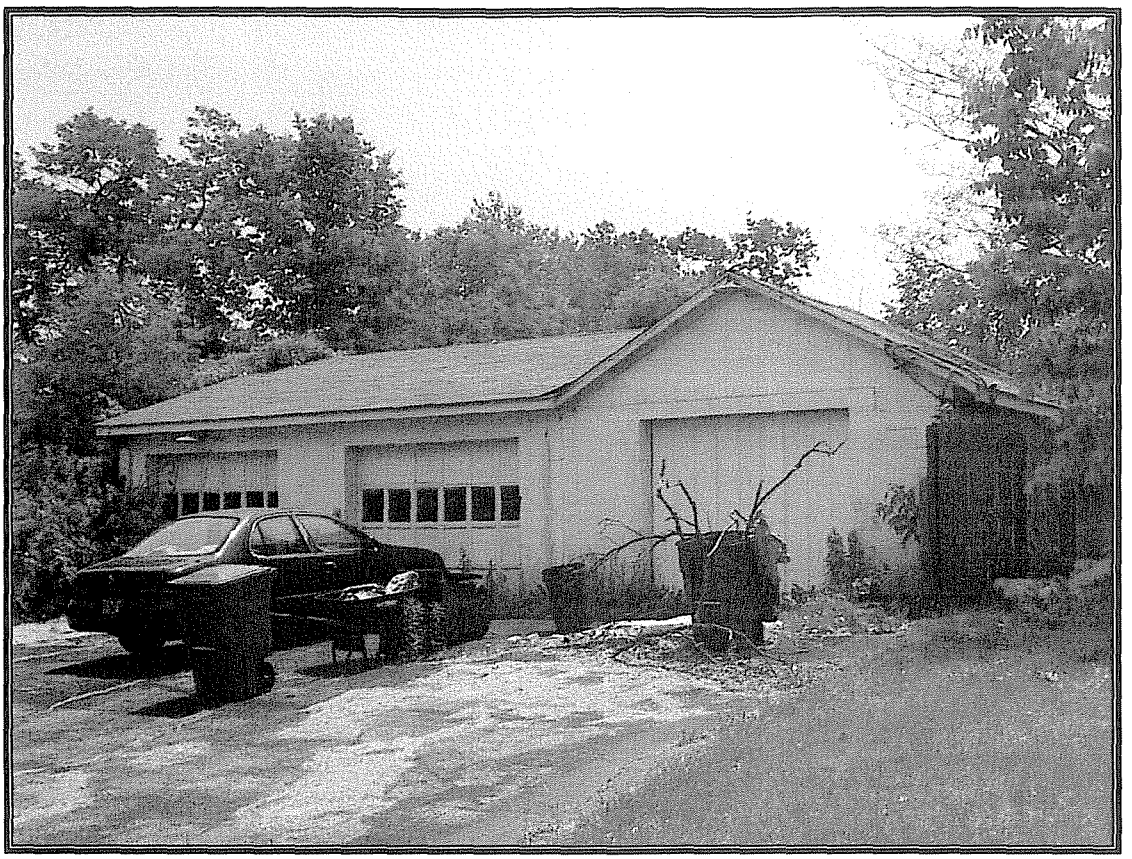

Figure 45. Site 10, front-gable, single-bay garage with eave-oriented, two-bay addition

This site was evaluated under Criteria A, B, and C and appears to be ineligible for listing in the NRHP. The house retains its original location and setting, but alterations such as the ornamental metal porch supports, replacement door, vinyl siding, and bulkhead basement doors have compromised its historic design, materials, workmanship, and feeling. The site does not appear to be associated with a significant event or person in history. Therefore, the site does not appear eligible for listing in the NRHP under Criteria A, B, or C.

Site 11

KHC Survey #: FR-80

Photographs: Figures 46–49

Map: Figure 2

Zone: 16

Quad: Midway, KY 1954 (Photorevised 1978, Photoinspected 1984)

UTMs: E: 698232, N: 4234057

Description: This site is a one-and-one-half-story, three-bay (w/d/w), cross-gable house located approximately .24 mi southwest of the Scott County line on an easterly drive just off of KY 1688 in Franklin County, Kentucky (Figure 46). The house is oriented to the west. A gable-roof porch with square wood posts and a poured-concrete foundation shelters a central single-leaf entry with a half-light wood door. The entry is flanked by two windows with one-over-one-light double-hung replace-ment sashes with snap-in grids that approximate two-over-two-light sashes. A pair of windows with one-over-one-light double-hung replacement sashes is also located above the porch roof; these replacement sashes occur throughout the remainder of the house. A mortared-stone

foundation underlies the original portion of the residence. The house has a shed-roof rear addition with a panel-faced concrete-block foundation (Figure 47). The northeast corner of the rear addition is a screen porch with a single-leaf side entry. A central third chimney pierces the roof of the addition. A small gable-roof addition with a poured-concrete foundation is located on the south elevation of the house. The house is clad in vinyl siding and has a non-historic metal roof with two symmetrical interior brick chimneys protruding through the ridge.

The residence was previously surveyed in 1976, according to the inventory form maintained by the KHC. The gable-roof addition on the south elevation and replacement windows are not mentioned on the inventory form, but the rear shed-roof addition and front porch, as well as the main block of the house, appear otherwise relatively unchanged (KHC, survey and National Register forms).

Two gable-roof outbuildings are associated with the residence (Figure 48). The larger of the two is clad in board-and-batten siding under a metal panel roof and features a central gable-end single-leaf pedestrian entry covered by a vertical board door. The smaller front-gable outbuilding is clad in vertical board siding under an asphalt-shingle roof. This outbuilding has a vertical board door covering its central gable-end single-leaf pedestrian entry. A dry-laid stone root cellar is also located behind the house (Figure 49).

NRHP Determination: Not Eligible.

This site was evaluated under Criteria A, B, and C and appears to be ineligible for listing in the NRHP. The house retains its original location and setting, but alterations such as the vinyl siding, replacement windows, and roof have compromised its historic design, materials, workmanship, and feeling. The site does not appear to be associated with a significant event or person in history. Therefore, the site does not appear eligible for listing in the NRHP under Criteria A, B, or C.

Figure 46. Site 11, one-and-one-half-story, three-bay, cross-gable house with addition (FR-80)

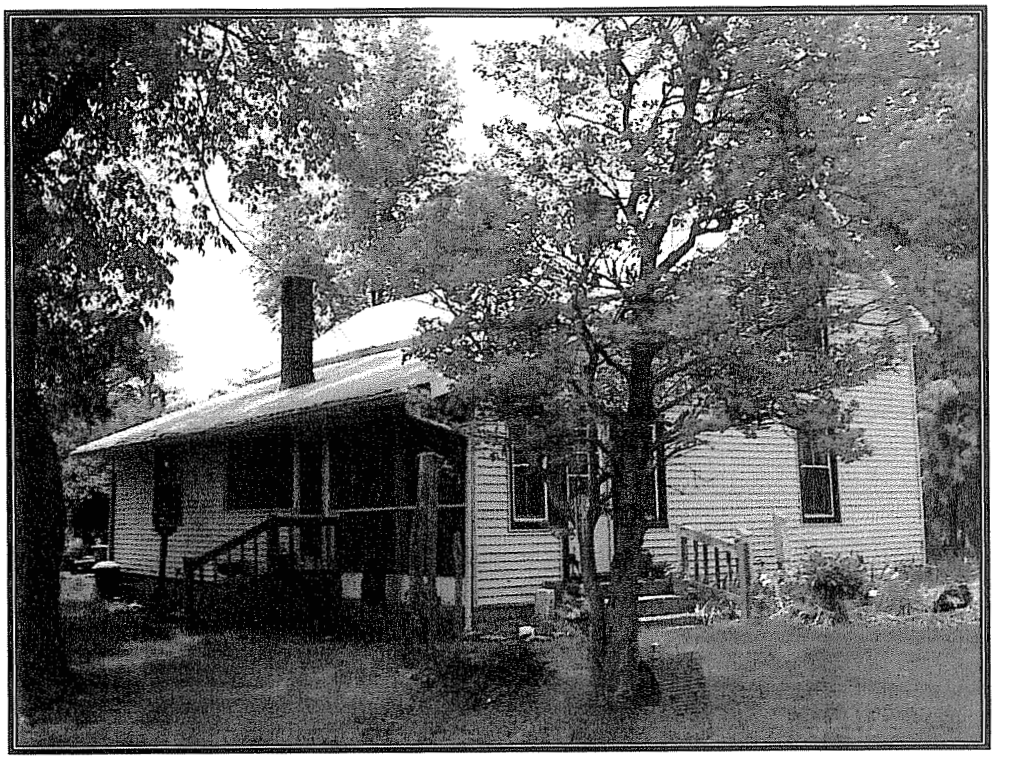

Figure 47. Site 11, rear elevation

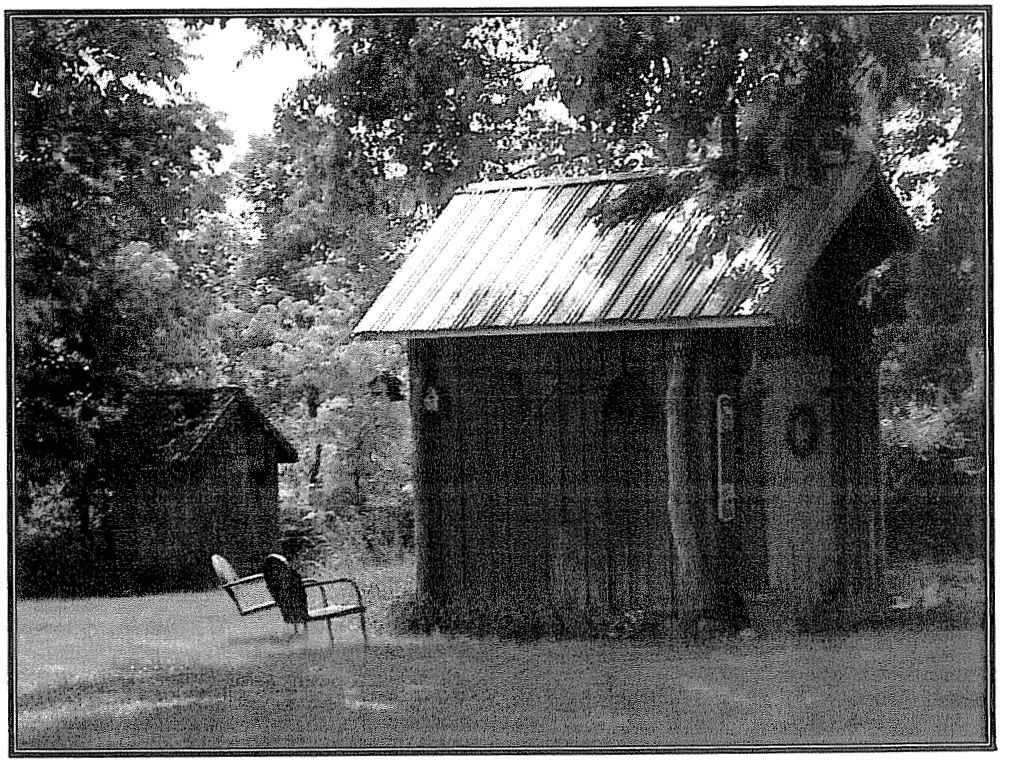

Figure 48. Site 11, gable-roof outbuildings

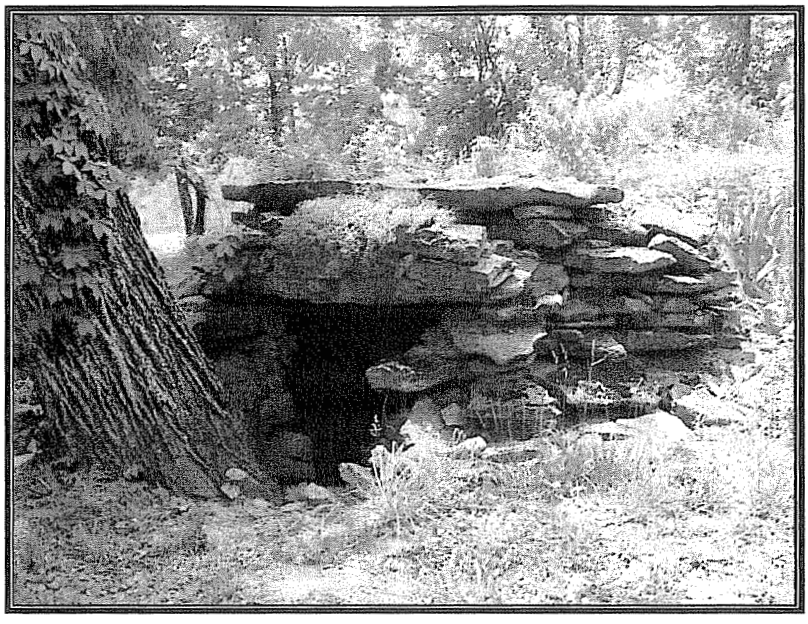

Figure 49. Site 11, dry-laid stone cellar

Site 12

KHC Survey #: FR-312

Photographs: Figures 50–54

Map: Figure 2

Zone: 16

Quad: Midway, KY 1954 (Photorevised 1978, Photoinspected 1984)

UTMs: E: 697968, N: 4234143

Description: This site is a single-story, three-bay (w/d/w), side-gable house located approximately .3 mi west of the Scott County line on the east side of KY 1262, just north of its intersection with KY 1688 in Franklin County, Kentucky (Figure 50). The house is oriented westward toward KY 1262. A shed-roof porch with square wood posts shelters a single-leaf entry with a paneled wood door flanked by two windows with three-over-one-light double-hung sashes. The house is clad in vinyl siding and rests on a concrete-block foundation. A central interior brick chimney protrudes from the asphalt-shingled roof on the rear roof slope. The northern elevation features a window with horizontal two-over-two-light double-hung sashes. The house has a shed-roof rear addition featuring a single-leaf side entry with a three-light door, as well as a window with one-over-two-light double-hung sashes (Figure 51). A single non-historic win-dow with horizontal sliding sashes is located on the rear of the original portion of the house to the right of the rear addition.

Two small gable-roof outbuildings with vertical board siding are associated with the residence (Figure 52). A poultry house, a gambrel-roof outbuilding, and a gable-roof outbuilding, all non-historic, are also located on the property (Figures 53 and 54).

NRHP Determination: Not Eligible.

This site was evaluated under Criteria A, B, and C and found to be ineligible for listing in the NRHP. The house retains its original location and setting, but alterations such as the horizontal sliding rear window, vinyl siding, and the rear addition have compromised its original design, materials, workmanship, and feeling. This site does not appear to be an excellent example of a mid-twentieth-century residence, nor does it appear to be associated with a significant event or person in history. Therefore, the site is not considered eligible for listing in the NRHP under Criteria A, B, or C.

Figure 50. Site 12, single-story, three-bay, side-gable house (FR-312)

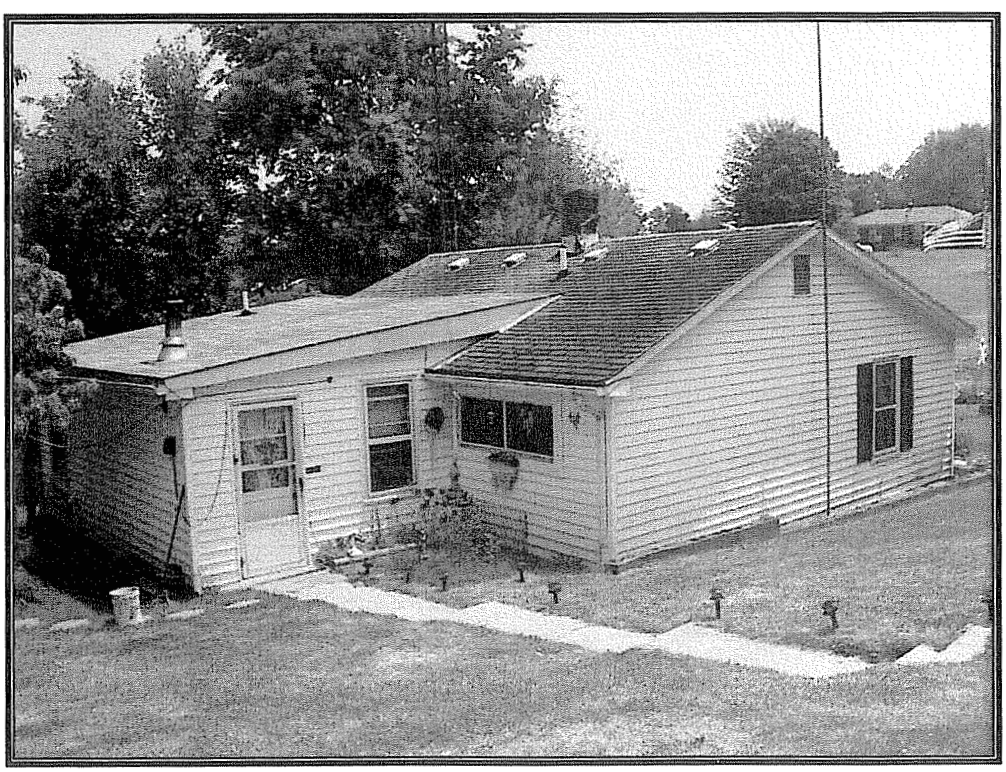

Figure 51. Site 12, rear elevation

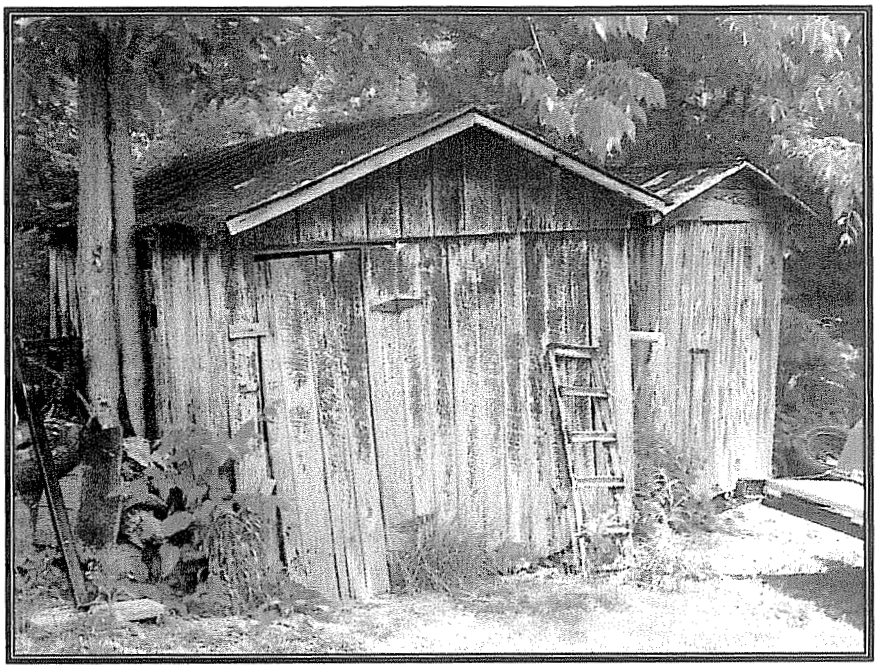

Figure 52. Site 12, historic gable-roof outbuildings

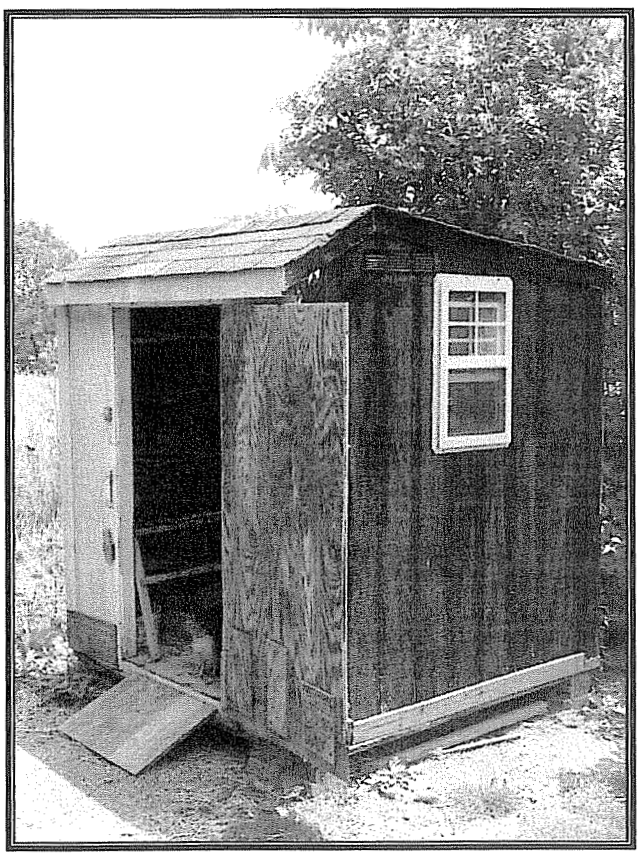

Figure 53. Site 12, non-historic poultry house

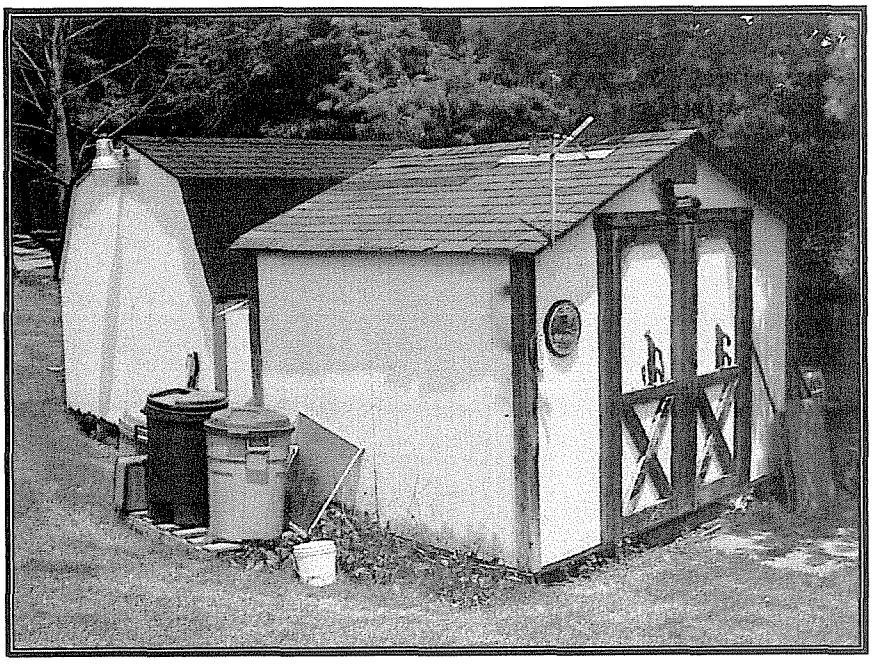

Figure 54. Site 12, non-historic gambrel- and gable-roof outbuildings

Site 13

KHC Survey #: FR-62

Photographs: Figures 55–56

Map: Figure 2

Zone: 16

Quad: Midway, KY 1954 (Photorevised 1978, Photoinspected 1984)

UTMs: E: 697526, N: 4234621

Description: This site is a rectangular, single-pen house located on an unpaved drive on the south side of KY 1262 approximately .5 mi north-northwest of its intersection with KY 1688 in Franklin County, Kentucky (Figure 55). The residence falls outside the current APE but was associated with a previously surveyed residence that is no longer extant. The house is obscured by vegetation but appears to be of frame construction with wood siding. The façade features a shed-roof porch sheltering a single-leaf entry with a wood panel door. A small stone chimney with a brick top is located on the west gable end. The house has a fieldstone-pier foundation and a metal-panel roof. The site is vacant and in a state of disrepair. The windows have been covered with wood. A non-historic tobacco barn with vertical board siding is located on the property (Figure 56). The front-gable barn features three double-leaf entries, each covered with double vertical board doors. The barn has a metal-panel roof.

According to a KHC inventory form completed in 1986, a one-and-one-half-story, rectangular, single-pen log house with clapboard siding and an aluminum roof was surveyed on the property, but this residence is no longer extant (KHC, survey and National Register files).

NRHP Determination: Not Eligible.

This site was evaluated under Criteria A, B, and C and appears to be ineligible for listing in the NRHP. While the site may retain its original location and setting, the state of disrepair in which it exists has compromised the original design, materials, workmanship, and feeling of the dwelling. The site does not appear to be associated with a significant event or person in history. Therefore, the site does not appear eligible for listing in the NRHP under Criteria A, B, or C.

Figure 55. Site 13, rectangular, single-pen house (FR-62)

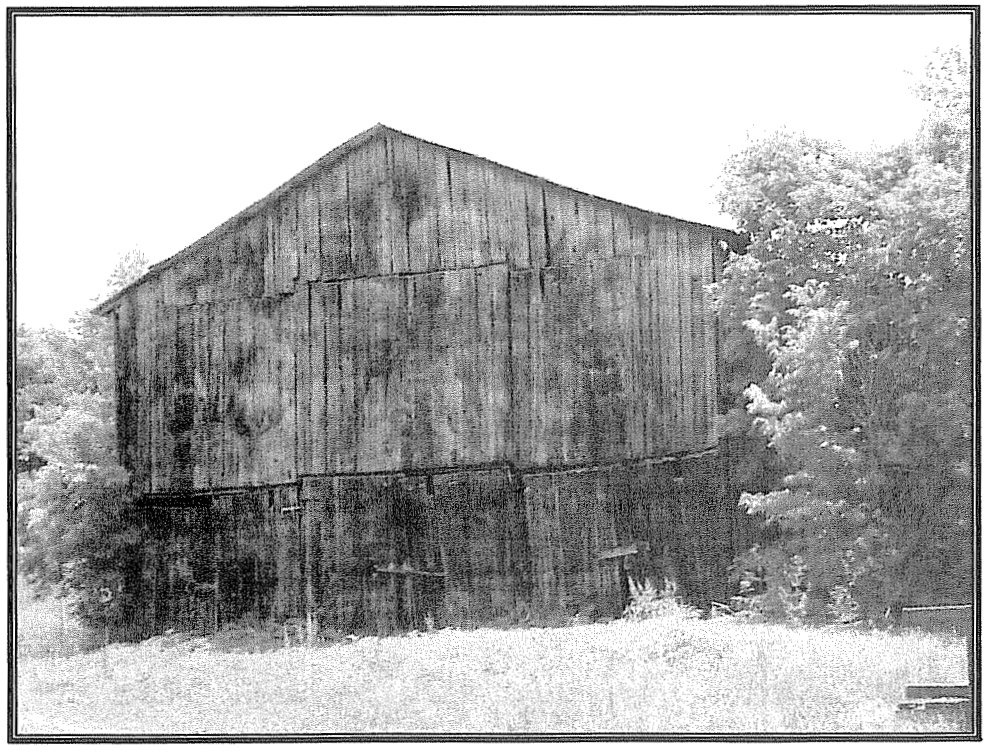

Figure 56. Site 13, non-historic tobacco barn with vertical board siding

Site 14

KHC Survey #: FR-81

Photographs: N/A

Map: Figure 2

Zone: 16

Quad: Midway, KY 1954 (Photorevised 1978, Photoinspected 1984)

UTMs: E: 697572, N: 4233392

Description: This is a previously surveyed, no longer extant structure formerly located on the southeast side of KY 1262 approximately .8 mi southwest of the Scott County line in Franklin County, Kentucky. According to the KHC inventory form dated 1986, the Stamping Ground Turnpike Toll House was a two-story, front-gable frame structure with a stone foundation, metal roof, and clapboard siding. According to the inventory form, the structure was built circa 1870 (KHC, survey and Na-tional Register files).

NRHP Determination: N/A.

Site 15

KHC Survey #: FR-79

Photographs: N/A

Map: Figure 2

Zone: 16

Quad: Midway, KY 1954 (Photorevised 1978, Photoinspected 1984)

UTMs: E: 697425, N: 4233676

Description: This is a previously surveyed, no longer extant house formerly located on the north side of an access road approximately 800 ft west of the intersection of the access with KY 1262, which occurs approximately .7 mi southwest of the Scott County line in Franklin County, Kentucky. According to the KHC inventory form dated 1976, the T.W. Jones House was a one-and-one-half-story brick structure with two-bay central dormers (KHC, site and National Register files).

NRHP Determination: N/A.

VII. CONCLUSIONS

During May 2006, CRAI completed a cultural historic survey of a proposed water storage tank, water treatment facility, and two pump stations in Franklin, Henry, and Owen Counties, Kentucky. The survey was conducted at the request of Gannett Fleming, Inc., on the behalf of Kentucky American Water.

Prior to initiating fieldwork, a search of records maintained by the KHC was conducted to determine if previously recorded cultural historic sites were located in the areas of potential effect. The KHC files revealed that one property located in the northern APE (Site 1) had been previously documented. Site 1 is no longer extant. The KHC files also indicated that four properties (Sites 11 and 13–15) located in the southern APE had been previously documented. Sites 14 and 15 are no longer extant. Sites 11 and 13 are not considered eligible for inclusion in the NRHP. During the field survey, 10 previously unidentified individual historic sites (Sites 2–10 and 12) were documented. None of these sites appears eligible for inclusion in the NRHP.

In summary, the proposed project will have no effect on any site eligible for or listed in the NRHP. Thus, a no historic properties affected determination is recommended for the proposed project.

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KENTUCKY-AMERICAN WATER COMPANY
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9. Provide the status of Kentucky American Water's efforts towards obtaining a beneficial reuse of solids permit.

Response:

KAW has retained an engineering firm, who is preparing the application for submission to the Division of Waste Management, and we now expect the application to be submitted in January 2008.

KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2007-00134

HEARING DATA REQUESTS TO KENTUCKY AMERICAN WATER
Item 10 of 15

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10. Provide the incremental cost of increasing the capacity of the proposed water treatment plant from 20 MGD to 25 MGD.

Response:

The estimated incremental cost to increase the water treatment plant capacity from 20 MGD to 25 MGD ranges from $5,250,000 to $10,000,000. Kentucky American Water used $10,000,000 in the financial information provided in the case to date. It should be noted that due to economies of scale, incremental changes to the plant capacity do not correlate to direct proportional changes in the plant cost estimates or the project cost estimates.