2011

Pre-Design Scoping Study



KENTUCKY TRANSPORTATION CABINET

Old Henry Road Improvement and Extension

Mile Points:

New Route

Item Number:

05-367.20

Prepared By:

Kentucky Transportation Cabinet

Department of Highways District 5

Division of Planning

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I. INTRODUCTION

A. Study Purpose

The purpose of the Data Needs Analysis (DNA) is to address the nine elements of Purpose and Need as defined by the National Environmental Policy Act (NEPA) in order to develop a draft Purpose and Need Statement for the project. This study will also provide a more defined project scope, possible alternatives, planning-level cost estimates for the alternatives, an identification of possible environmental impacts, and other information that will be beneficial in the Project Development phase of this project.

B. Location

This project is located in eastern Jefferson County and western Oldham County. The western end of the project is near the I-265/KY 3084 (Old Henry Road) interchange. The eastern end of the project is KY 362 (Ash Avenue). The project includes the existing Old Henry Road and an extension that will connect Old Henry Road to KY 362 (Ash Avenue). The total length of the project is approximately 2 miles. A map detailing the project area can be seen below in Figure 1. Maps of the project area, including topographic and orthographic can be found in Appendix A.

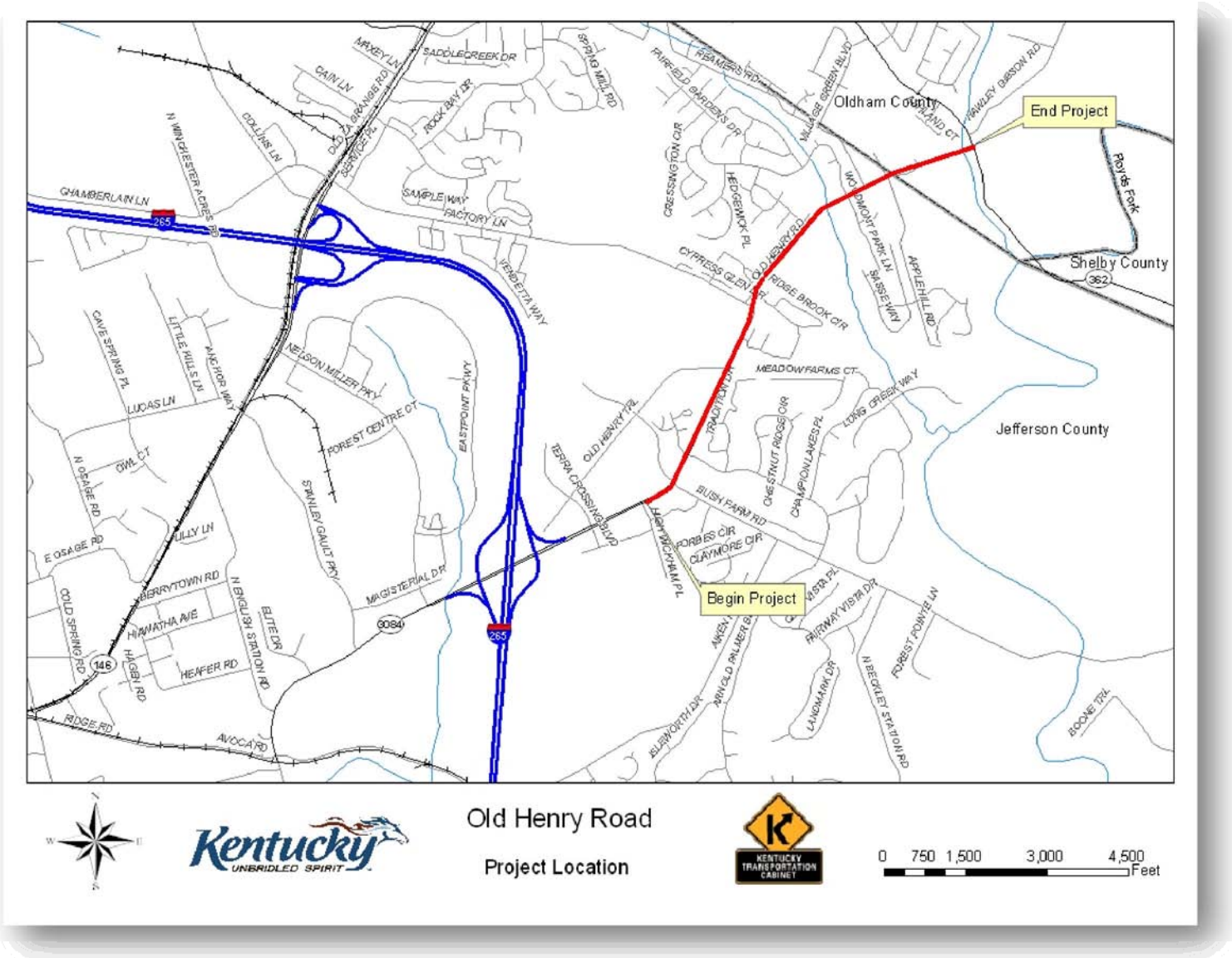


Figure 1: Project Location

II. PROJECT PURPOSE AND NEED

A. Legislation

The following is a description of the project as it is listed in the Six Year Highway Plan:

- Item #05-367.00

Phase	Fund	Year	Estimate
R:	SB2	2011	8,000,000
U:	SB2	2012	3,300,000
C:	SP	2012	4,000,000
	Total:		15,300,000

CONSTRUCT NEW ROUTE FROM OLD HENRY INTERCHANGE AT I-265 TO CRESTWOOD BYPASS. (98CCR)(2004BOPP)(10CCN)

This project has changed since it was listed in the 2010 Enacted State Highway Plan. The project's current item # is 05-367.20 and will now terminate at KY 362 (Ash Avenue) instead of KY 22 near KY 329B (Crestwood Bypass). In addition, the $4,000,000 that is programmed in for construction is not expected to be available for the project. That means there is likely $11,300,000 currently available to fund the project. Additional funds may have to be requested for the project. Refer to Appendix B for the complete listing of the project in the Six Year Highway Plan. In addition, the project is listed in Kentuckiana Regional Planning and Development Agency's (KIPDA) Transportation Improvement Program (TIP). KIPDA is the local Metropolitan Planning Organization (MPO) for the area. An amendment has been added to the TIP to include the modified project. The listing of the project in the TIP is contained in Appendix C.

B. Project Status

The project has been in KIPDA's Metropolitan Transportation Plan (MTP) since 1999. The project was initially intended to begin near the I-265/ KY 3084 (Old Henry Road) interchange and terminate at KY 22 near KY 329B (Crestwood Bypass). This would allow for access between the interchange and Crestwood, KY. In addition, the roadway was planned to have 5 lanes. The 5 lanes included a median or left turn lane in the middle with two lanes in each direction. This project was expected to be open to the public in 2020. Furthermore, both Jefferson and Oldham Counties initiated their own subarea studies of Old Henry Road in 2000 and 2003 respectively. Both of these studies stressed the need for upgraded roads in the area.

In December of 2010 a new breakout project was formed by the Kentucky Transportation Cabinet (KYTC) that significantly altered the original project. The modified project will now terminate at KY 362 (Ash Avenue). Furthermore, the number of lanes has been decreased

from 5 to 3. The 3 lanes include a two way left turn lane in the middle with one lane in each direction. Construction is expected to begin on the project near the end of 2014. Refer to Appendix D for letters from the current and past Oldham County Judge Executives stating the need for this modified project.

The original project is currently listed on the Unscheduled Projects List (UPL):

- Construct new four-lane route from the Old Henry Road interchange at I-265 to KY 22 in the vicinity of KY 329B. To include provisions for bicyclists and pedestrians.

The Project Identification Form (PIF) for the original project is located in Appendix E.

C. System Linkage

The project will create a new route that will connect into the existing 5 lane section of KY 3084 (Old Henry Road) to the west and KY 362 (Ash Avenue) to the east (see Figure 2). The existing KY 3084 is a two mile stretch that spans approximately one mile on both sides of the I-265/KY 3084 (Old Henry Road) interchange. Numerous developments have occurred in the proximity of the interchange. These include industrial sites, commercial sites, office spaces, outpatient medical facilities, and residential areas. Further out from the interchange in the direction of Ash Avenue the area mostly contains residential developments. Many of these residential areas rely on the interchange for access to the interstate system. The new route would provide a viable connection to the interchange. In addition, some traffic from Pewee Valley and Crestwood in Oldham County would likely use the new route instead of the congested KY 146. The road would also improve the access to the interstate for nearby residents in Shelby County.

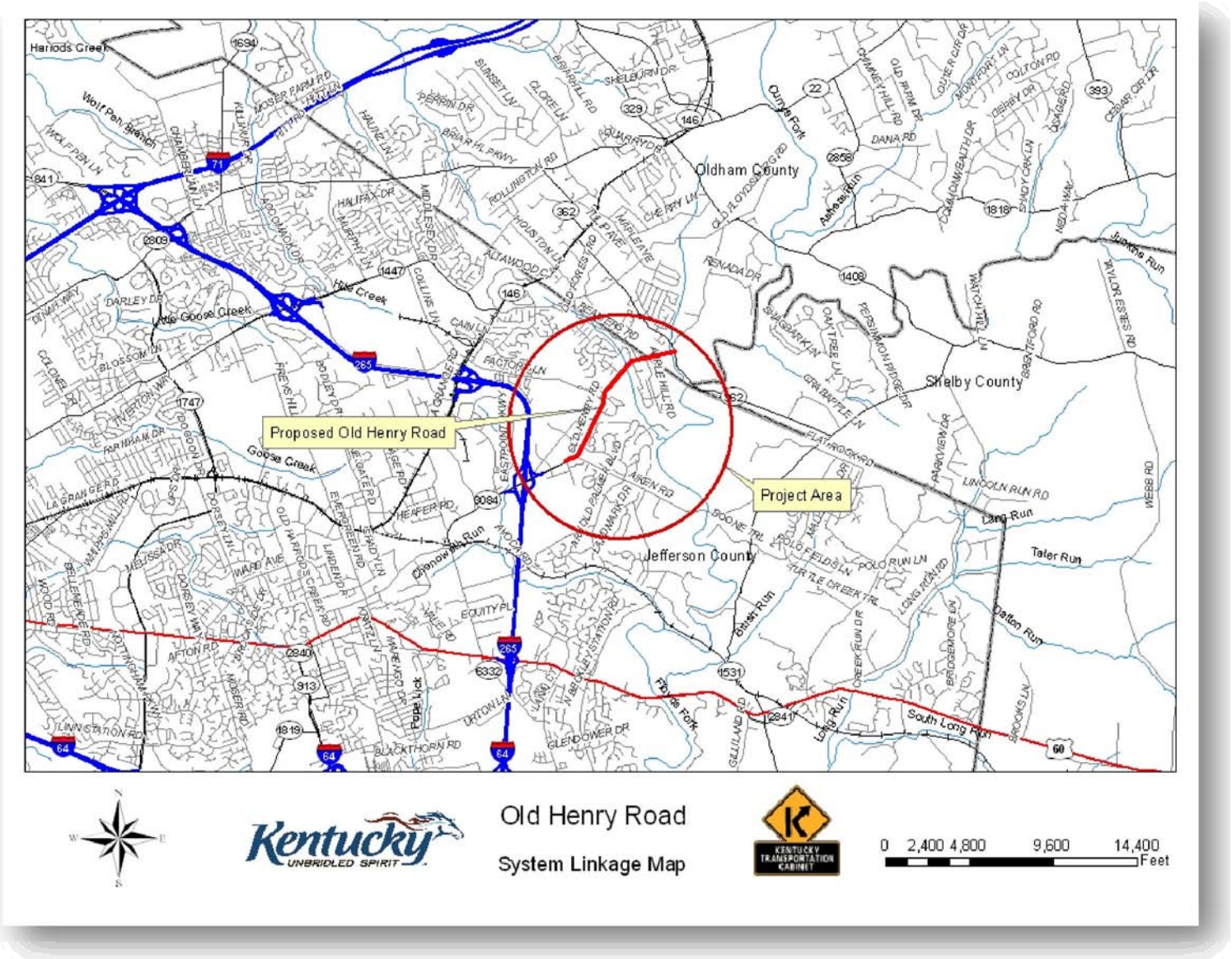


Figure 2: System Linkage

KY 3084 in this section can be summarized by the following roadway classifications:

- Functional Classification – Urban Minor Arterial Street
- State System – State Secondary
- Truck Weight Classification – A (44,000 lbs maximum)
- Not on the National Highway System
- Not on the National Truck Network
- Not a designated Bike Route

The new route is being designed as an Urban Collector which will filter vehicles to the Urban Minor Arterial section and interchange.

D. Modal Interrelationships

According to data the truck traffic that currently exists on KY 3084 is negligible. Additional truck traffic should be minimal due to the new route being built since the area served is largely residential. However, truck traffic could increase near the interchange due to continuing industrial development or from trucks using the new route as a shortcut to access the interstate. Also the new route will not affect any railroads. However, a small airstrip is located adjacent to the existing Old Henry Road and may be impacted by the project. This will require additional study in the future to determine how much of the airstrip will be taken and how much land will need to be added to the far end for the airstrip to remain in regulations. In addition, an interstate pipeline that carries natural gas is located near the project area but will be avoided.

Currently a 10 ft shared use path is planned to the north of the new route and a 5 ft sidewalk to the south. This would provide access for pedestrians and bicycles. Furthermore, the closest public transportation available near the project area is located to the west of the I-265/Old Henry Road interchange. It is unlikely that public transportation would include the new route when it is completed.

E. Social Demands and Economic Development

The majority of the land in the area is for residential use. However, near the interchange numerous industrial sites, commercial sites, office spaces, and outpatient medical facilities exist. This area has been growing rapidly since the interchange was built and there is still developable land in the area. The two mile stretch of KY 3084 serves this area and is a five lane road with a median or left turn lane in the middle. The new route will most likely serve the numerous residential sites that are located to the east of the interchange in Jefferson County and further into Oldham and Shelby Counties. Oldham County has also been growing rapidly and developable land still exists. In addition, the Kentucky State Women's Correctional Institute is located in Shelby County near Jefferson and Oldham Counties and will likely generate traffic to the new route.

F. Transportation Demand

The last actual traffic count on the section of KY 3084 east of the I-265/Old Henry Road interchange was performed in 2010 and had an average daily traffic (ADT) of 15,500 vehicles. The location of this traffic count station can be seen below in Figure 3. Historical data for this traffic count station only goes back to 2004 after the interchange was opened.

Refer to Table 1 for the traffic count data for this station from 2004 to 2010. The data suggests that traffic has been steadily increasing near the interchange. Also the interchange is the location of the largest amount of traffic. The computer estimated that the traffic count in 2011 would be 16,000 vehicles.

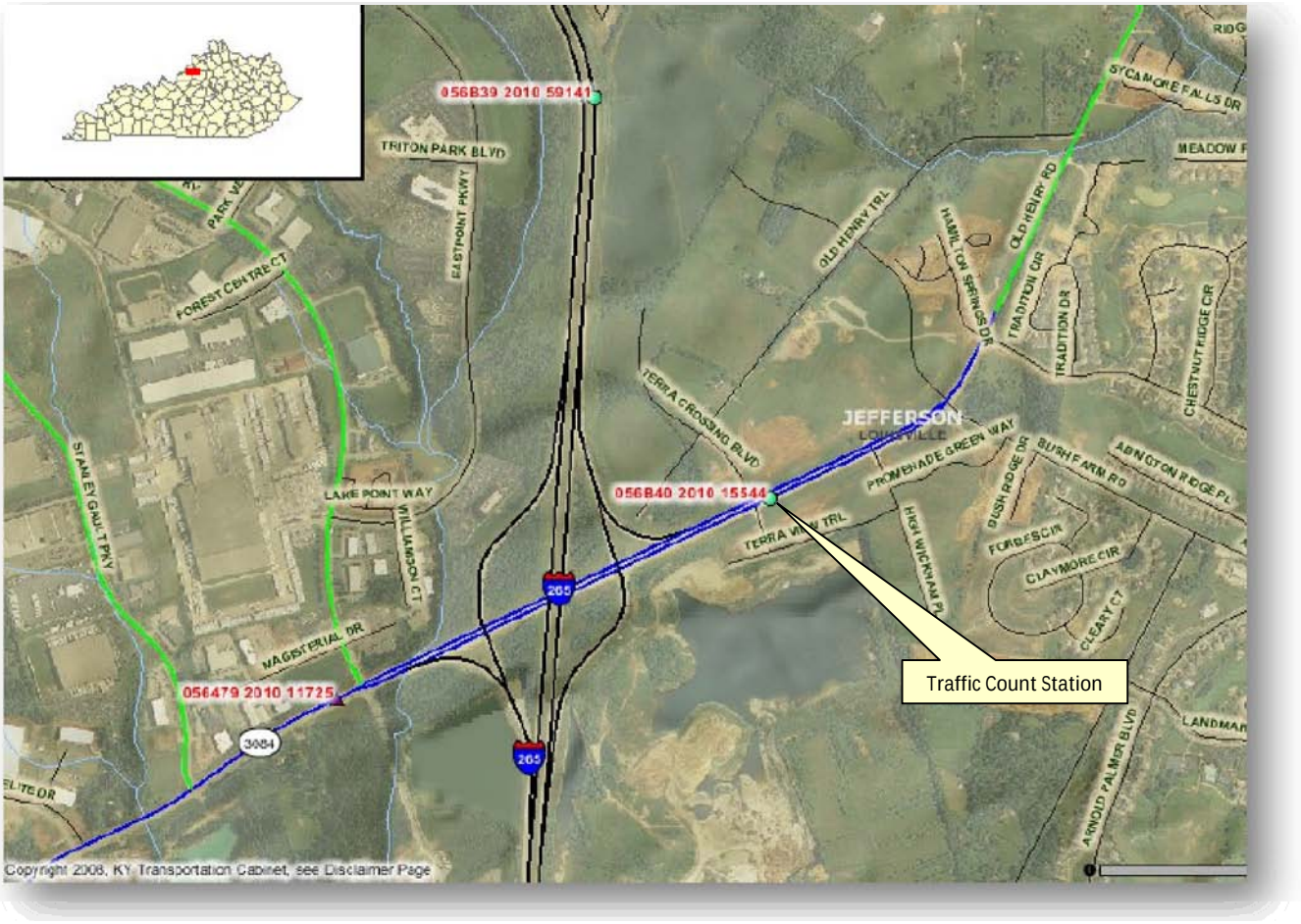


Figure 3: Traffic Count Location

Table 1: Traffic Count Data

I-265 Interchange to Bush Farm Road Traffic Counts	
Year	ADT
2004	9,050
2005	13,100
2006	13,900
2007	14,800
2008	-
2009	-
2010	15,500

In addition to this data, KIPDA has done an extensive traffic forecast for the new section of Old Henry Road. This traffic forecast from KIPDA can be found in Appendix F. The KIPDA study examines how adding the Old Henry Road extension would affect traffic on roads near the project as well as the amount of traffic on the same roads if the project was not built. The forecast includes data for 2030 and 2035. Data is included for a 3 lane urban minor arterial and a 3 or 5 lane urban collector. However, it was determined that the new road would act more like an urban collector than an urban minor arterial and contain 3 lanes. Thus the 3 lane urban collector data is of most importance to this project.

The data from the KIPDA traffic forecast shows that if the Old Henry Road project is not built then the traffic on Factory Lane, Reamers Road, and Village Green Boulevard will increase largely. Traffic on Bush Farm Road will increase slightly. If the Old Henry Road project is built the growth of traffic on these roads will be decreased. In addition, there will be a large increase in traffic on Old Henry Road if the project is built. Hawley Gibson Road and sections of Ash Avenue will also see an increase in traffic due to the road being built. A summary of the KIPDA traffic forecast is included below in Figure 4.

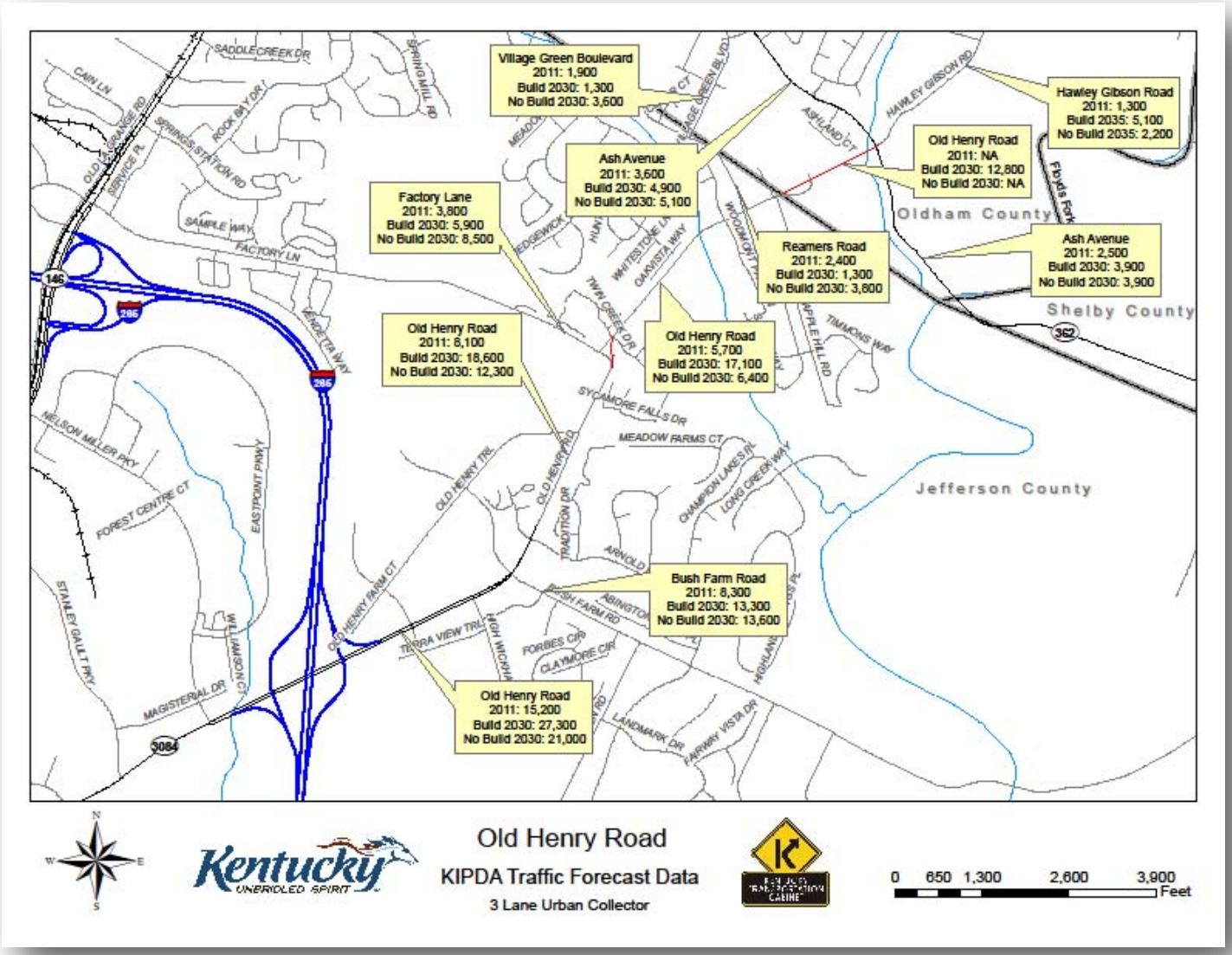


Figure 4: Summary of the KIPDA Traffic Forecast

G. Capacity

The two mile stretch of KY 3084 that currently exists on both sides of the interchange is adequate to handle the current amount of traffic. There should not be any upgrade needed to this section of roadway since it has been built in the last decade and contains two lanes in each direction. The Vehicle/Service Flow (V/SF) for this section of roadway is 0.3, which is adequate.

Old Henry Road will be upgraded from a 2 lane road that is not sufficient to a 3 lane road that will meet the 45 mile per hour design criteria. According to the traffic forecast the road should be able to meet the future traffic demand as a 3 lane urban collector. In addition, the road will have a two way left turn lane in the middle which will enable the road to handle higher amounts of traffic more efficiently. The new 3 lane Old Henry Road should be able to handle an average daily traffic (ADT) of up to 20,000 vehicles.

With the addition of the Old Henry Road extension traffic demand on Bush Farm Road, Factory Lane, Reamers Road, and Village Green Boulevard should be lessened. These roads should not need any improvements to handle more capacity. Traffic demand will likely increase on Hawley Gibson Road and Ash Avenue once the project is built. Oldham County has already made improvements to Hawley Gibson to better accommodate vehicles. Upgrades to Ash Avenue may also be needed in the future if traffic demand surpasses the forecast.

H. Safety

Collision data was obtained from the KY State Police database of collisions from a time period of July 20, 2008 to July 20, 2011. In total 78 collisions resulting in 11 injuries occurred on Old Henry Road and the section that is KY 3084 in this three year span. This includes the section of the road that is to the east and west of the interchange. This data is contained in Appendix G. A summary of the collision data to the east of the interchange (where the project is located) can be seen below in Figure 5.

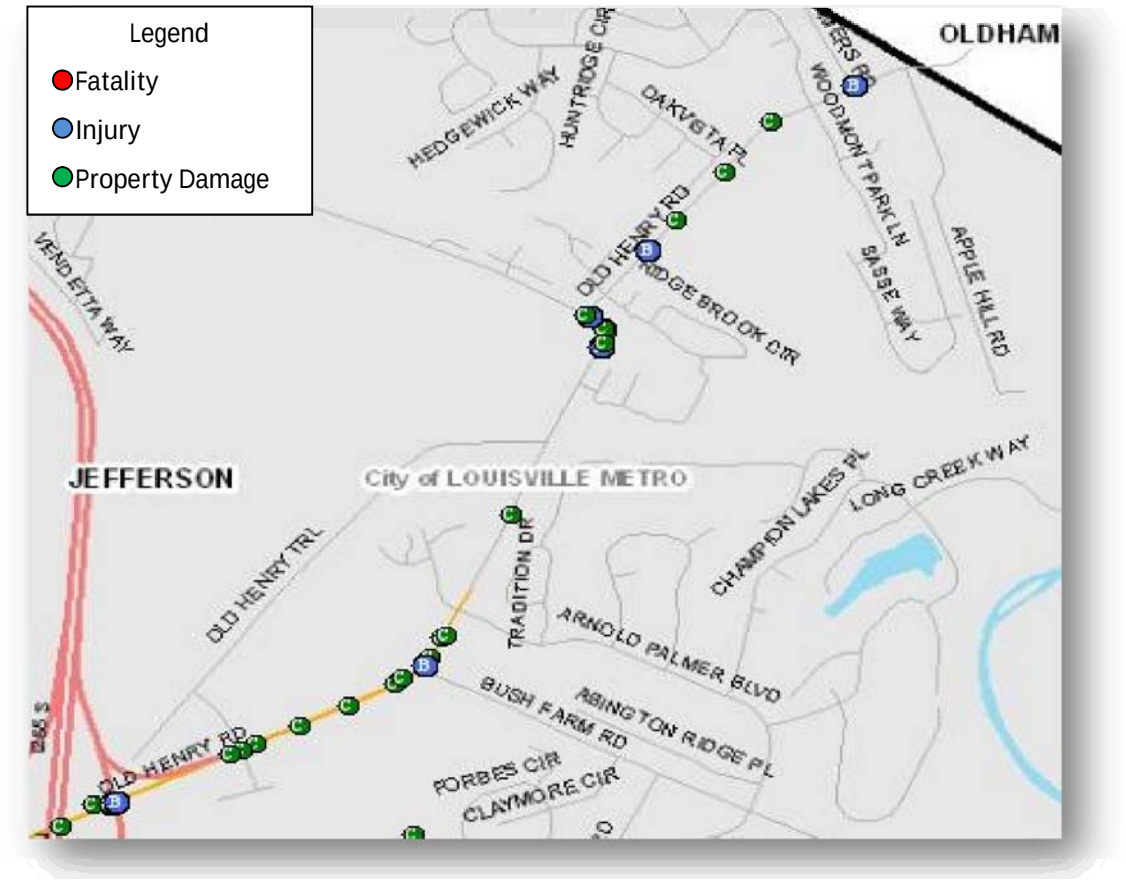


Figure 5: Collisions on Old Henry Road (07/20/2008 to 07/20/2011)

It appears that a large amount of the collisions occur at the 90 degree curve where Factory Lane and Old Henry Road meet. A spot analysis for this section of the road can be seen in Figure 6. The details of the spot analysis are located below in Table 2. This curve will be corrected by the project. The curve near Bush Farm Road where KY 3084 ties in to the existing 2 lane section of Old Henry Road should also be improved by the project. This section contains a superelevation that does not meet the design guidelines. Similar to the 90 degree curve there appears to be an increase in collisions at this location. The spot analysis for this section of the road can be seen in Figure 7 and the details are located below in Table 3. In addition, Old Henry Road will be designed for a 45 mile per hour design speed as a 3 lane urban collector. This will be a major improvement over the existing Old Henry Road, resulting in a much safer road to travel. Furthermore, extending Old Henry Road to Ash Avenue will take the majority of the vehicles off of Village Green Boulevard, which has been used as a connection between Old Henry Road and Ash Avenue. This will greatly increase the safety in the area since Village Green Boulevard is a residential street that is not intended to handle many vehicles.

Table 2: Spot Analysis of the 90 Degree Curve

MILEPOINT DERIVED	MOTOR VEHICLES INVOLVED	INJURED	WEATHER	ROADWAY CONDITION	DIRECTIONAL ANALYSIS	MANNER OF COLLISION	ROADWAY CHARACTER	LIGHT CONDITION
0.479	2	4	CLOUDY	WET	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	CURVE & GRADE	DAYLIGHT
0.488	1	0	RAINING	WET	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
0.508	2	0	RAINING	WET	SIDESWIPE COLLISION - OPPOSITE DIRECTION	SIDESWIPE-OPPOSITE DIRECTION	CURVE & HILLCREST	DAYLIGHT
0.51	2	0	RAINING	WET	VEHICLE GOING IN WRONG DIRECTION	SIDESWIPE-OPPOSITE DIRECTION	CURVE & GRADE	DAYLIGHT
0.511	2	0	RAINING	WET	SIDESWIPE COLLISION - OPPOSITE DIRECTION	SIDESWIPE-OPPOSITE DIRECTION	CURVE & GRADE	DARK-HWY NOT LIGHTED
0.513	1	0	RAINING	WET	COLLISION WITH FIXED OBJECT NON - INTERSECTION	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
0.523	2	1	CLOUDY	DRY	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	CURVE & GRADE	DUSK
0.529	2	0	CLEAR	DRY	ANGLE COLLISION - ONE VEHICLE TURNING LEFT	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
0.536	2	0	CLOUDY	DRY	OTHER ROADWAY OR MID-BLOCK COLLISION	OPPOSING LEFT TURN	STRAIGHT & LEVEL	DAYLIGHT

Table 3: Spot Analysis of the Tie in Curve

MILEPOINT DERIVED	MOTOR VEHICLES INVOLVED	INJURED	WEATHER	ROADWAY CONDITION	DIRECTIONAL ANALYSIS	MANNER OF COLLISION	ROADWAY CHARACTER	LIGHT CONDITION
1.741	2	0	CLOUDY	WET	REAR END - ONE VEHICLE STOPPED	REAR END	CURVE & LEVEL	DAYLIGHT
1.758	1	0	CLEAR	DRY	COLLISION WITH FIXED OBJECT NON - INTERSECTION	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY LIGHTED/OFF
1.796	2	0	CLOUDY	DRY	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	CURVE & LEVEL	DAYLIGHT
1.798	2	1	RAINING	WET	OPPOSITE DIRECTION - BOTH VEHICLES GOING STRAIGHT AHEAD	HEAD ON	STRAIGHT & LEVEL	DAYLIGHT
1.8	2	0	CLEAR	DRY	OPPOSITE DIRECTION - BOTH VEHICLES GOING STRAIGHT AHEAD	HEAD ON	CURVE & GRADE	DUSK
1.818	1	0	CLEAR	DRY	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
1.874	2	0	CLEAR	DRY	SIDESWIPE COLLISION - OPPOSITE DIRECTION	SIDESWIPE-OPPOSITE DIRECTION	CURVE & LEVEL	DAYLIGHT

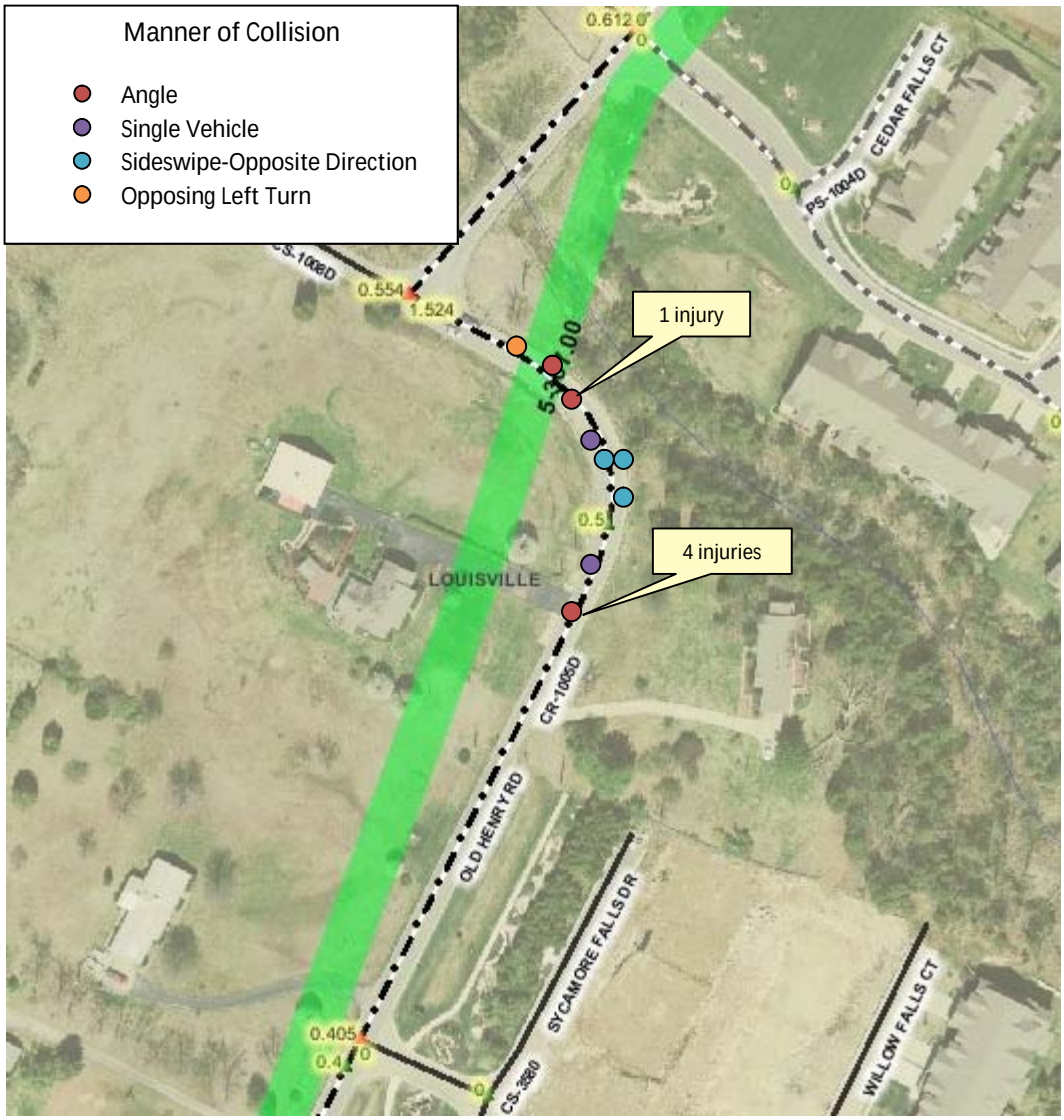


Figure 6: Spot Analysis of the 90 Degree Curve



Figure 7: Spot Analysis of the Tie in Curve

I. Roadway Deficiencies

The existing Old Henry Road has many deficiencies. These include 10 ft lanes, approximately 1 ft shoulders, and substandard geometrics. The section of Old Henry Road that is currently KY 3084 (near the interchange) has been built within the last decade and is adequate. There are 5 lanes on this section (2 lanes in each direction with a median or left turn lane in the middle). The road has 12 ft lanes and adequate shoulders. This 5 lane section ends near Bush Farm Road, which is where the deficient section of Old Henry Road begins. This is also where the project is proposed to tie in at. Substandard geometrics currently exist at this point, but should be corrected by the project.

The existing deficiencies of Old Henry Road will be improved by the project. The new Old Henry Road will contain 3 lanes (1 lane in each direction with a two way left turn lane in the middle). This will include 11 ft lanes, a 13 ft center lane, and a 2 ft curb and gutter for the shoulders. The proposed typical section for Old Henry Road can be found in Appendix H. This will drastically improve the current conditions of Old Henry Road, and the new road will meet the 45 mile per hour design speed. Meeting the 45 mile per hour design speed will include fixing the 90 degree curve that is located near Factory Lane. This is the site of many of the collisions on Old Henry Road. In addition, the proposed alignment will fix the poor superelevation near Bush Farm Road. This section of the road also contains a higher concentration of collisions.

Another major deficiency of Old Henry Road is that there is no good connection to the road from Oldham County and Shelby County. This leads to vehicles cutting through Village Green Boulevard to connect to Old Henry Road (see Figure 8). Currently this is the best way for vehicles to access Old Henry Road and the interchange from this location. However, Village Green Boulevard is a residential street and is not designed to carry large amounts of through traffic. This also creates a safety issue for the residents who live on Village Green Boulevard. Extending Old Henry Road to Ash Avenue will allow vehicles better access to Old Henry Road and the interchange while allowing Village Green Boulevard to function as it is intended. Additional reference to the lack of adequate connection and shortcut problem can be found in Appendix D, which contains a letter from the past Oldham County Judge Executive stating these issues. A letter from the current Oldham County Judge Executive is also contained that states the need for the project.

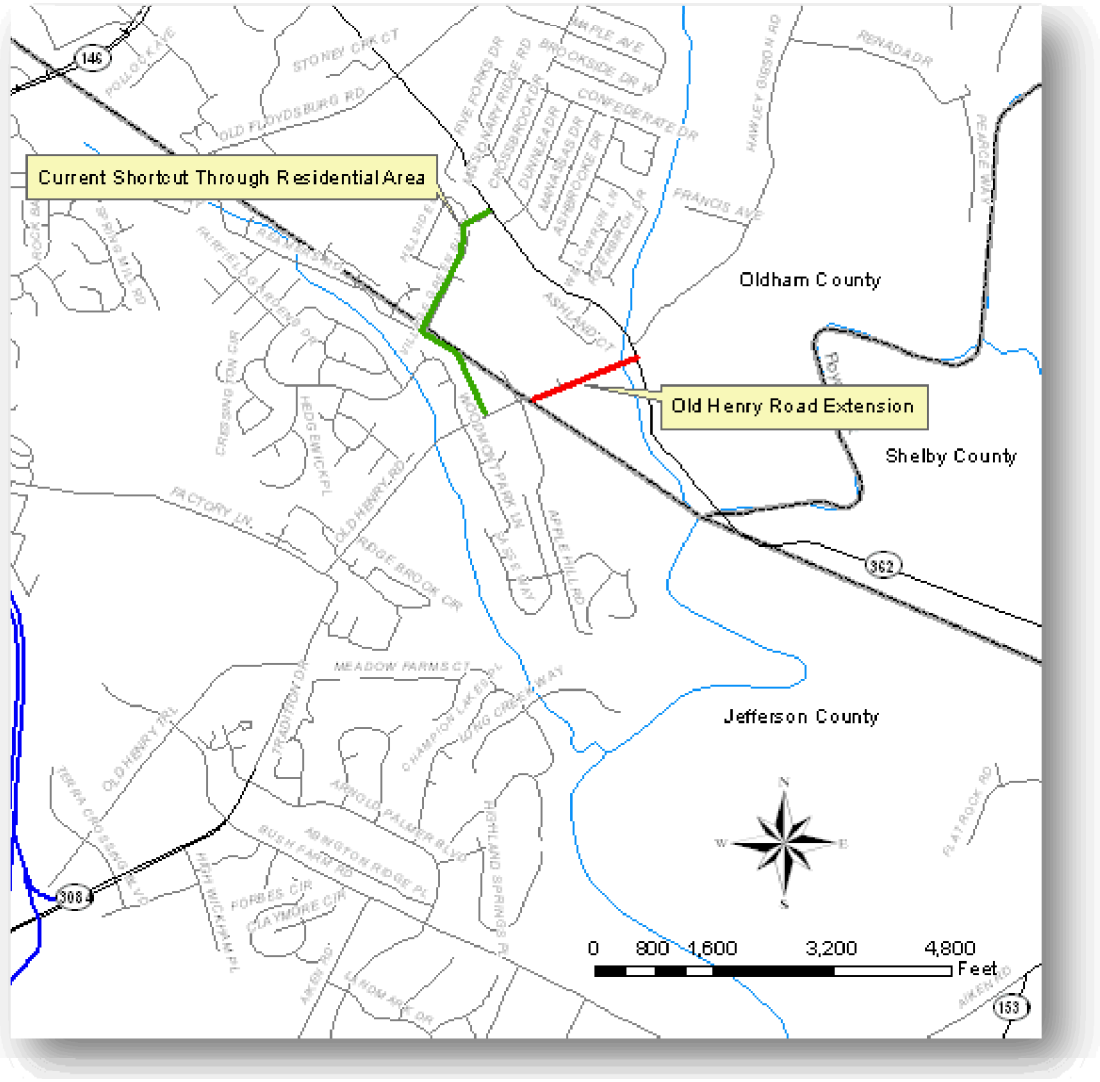


Figure 8: Current Route and Proposed Route to Access Old Henry Road

Another major issue is the drainage problems that occur near where the project terminates at Ash Avenue and along other sections of Ash Avenue. The drainage problems associated with this area have been well documented by the May 2011 KY 362 Drainage Study (see Appendix I) which was prepared for Oldham County. The new Old Henry Road will be raised approximately 10 ft near the intersection with Ash Avenue. This will require modifications to Ash Avenue to properly tie Ash Avenue into the raised extension of Old Henry Road. Raising the elevation by 10 ft should fix most of the problems in this area; however, there are other problem areas along Ash Avenue. According to the study the drainage issues start north of Missionary Ridge Drive and go to Floyds Fork. Some of these drainage problems found during the study occur outside the scope of the project, but it is important to mention them. Flood Insurance Rate Maps (FIRM) of this area can be found in Appendix J. Flooding

does not appear to be an issue along any other parts of the project. Figure 9 details the 100 year floodplain of the project area.

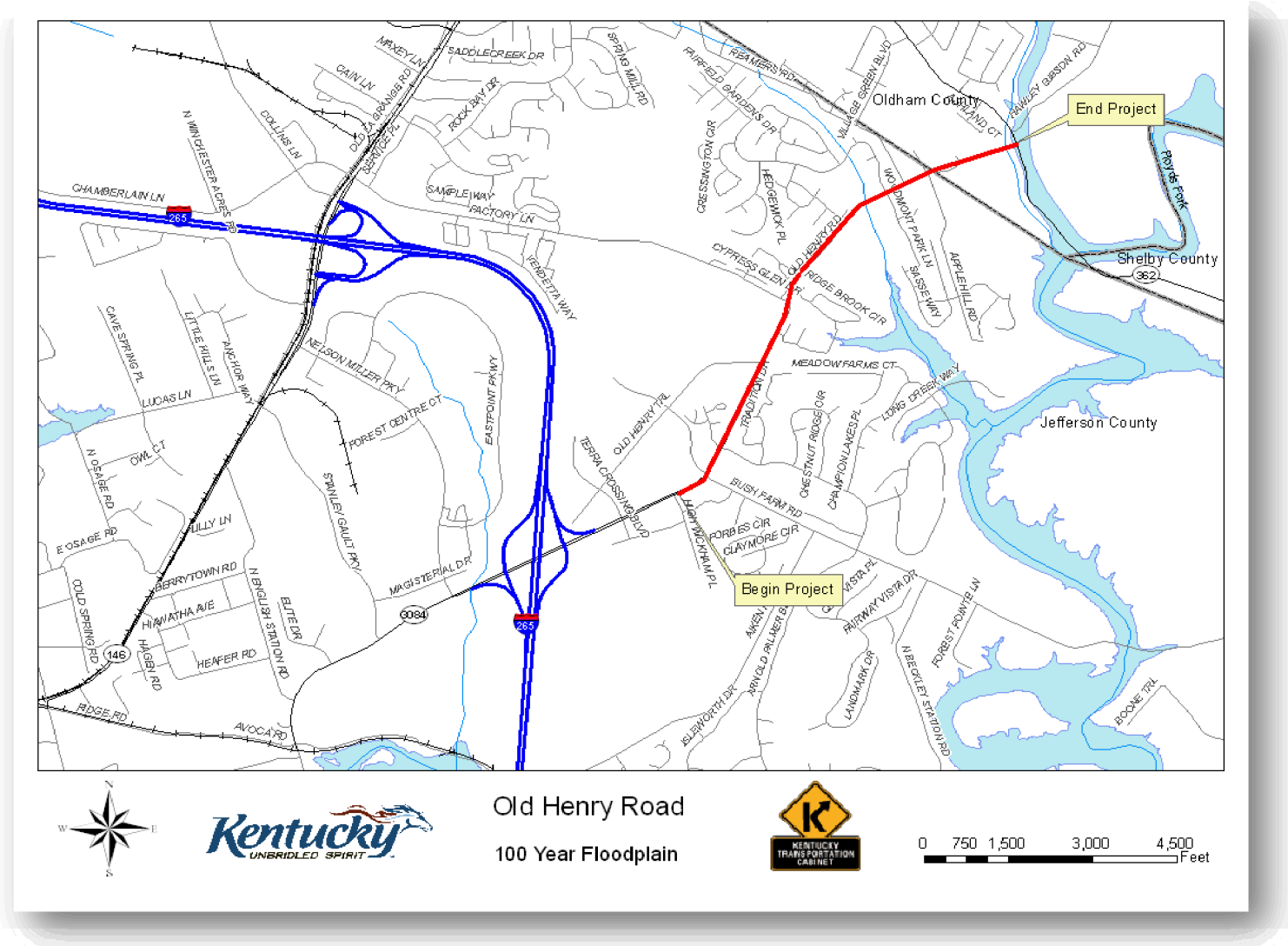


Figure 9: 100 Year Floodplain

The intersection at Ash Avenue and Old Floydsburg Road, which is north of the project, could also become a problem if traffic on Ash Avenue increases significantly due to the new Old Henry Road. This intersection has already been mentioned for improvements before, and sight distance has recently been improved at this intersection by trimming trees. This improved the intersection and may take care of future problems. Also a new intersection will be created due to the Old Henry Road extension. This intersection will likely be controlled by a stop sign on Old Henry Road. Hawley Gibson Road will also likely have a stop sign. If it is determined that Old Henry Road and Hawley Gibson Road should have a direct

connection, this intersection will change from two T intersections to a single 4-way intersection. This would require a 2-way stop or a 4-way stop. Additional analysis will need to be performed in the future to determine the best method for controlling this new intersection. Figure 10 contains a map of the deficiencies mentioned above.

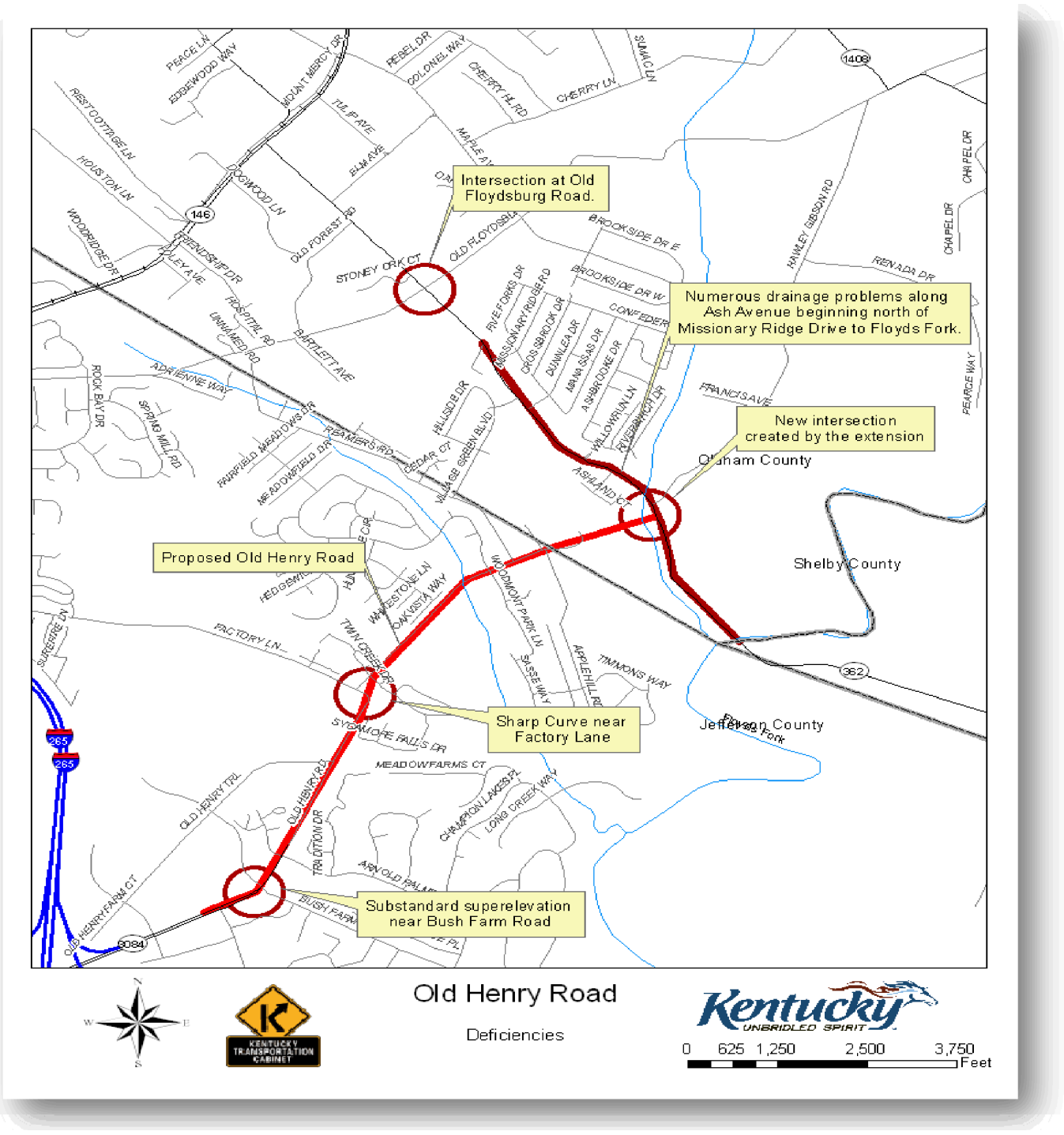


Figure 10: Deficiencies

III. DRAFT PROJECT PURPOSE AND NEED STATEMENT

Based upon the information presented in Section II of this report and discussion of the project team, the following Purpose and Need Statement was drafted for this project:

The purpose of this project is to provide better access to the I-265/Old Henry Road interchange for vehicles traveling from Oldham County, Shelby County, and far eastern Jefferson County that want to access the interstate (Figure 11). This project is needed because vehicles are using a residential street, Village Green Boulevard, to access Old Henry Road and the interchange. In addition, existing sections of Old Henry Road contain many deficiencies that need to be improved.

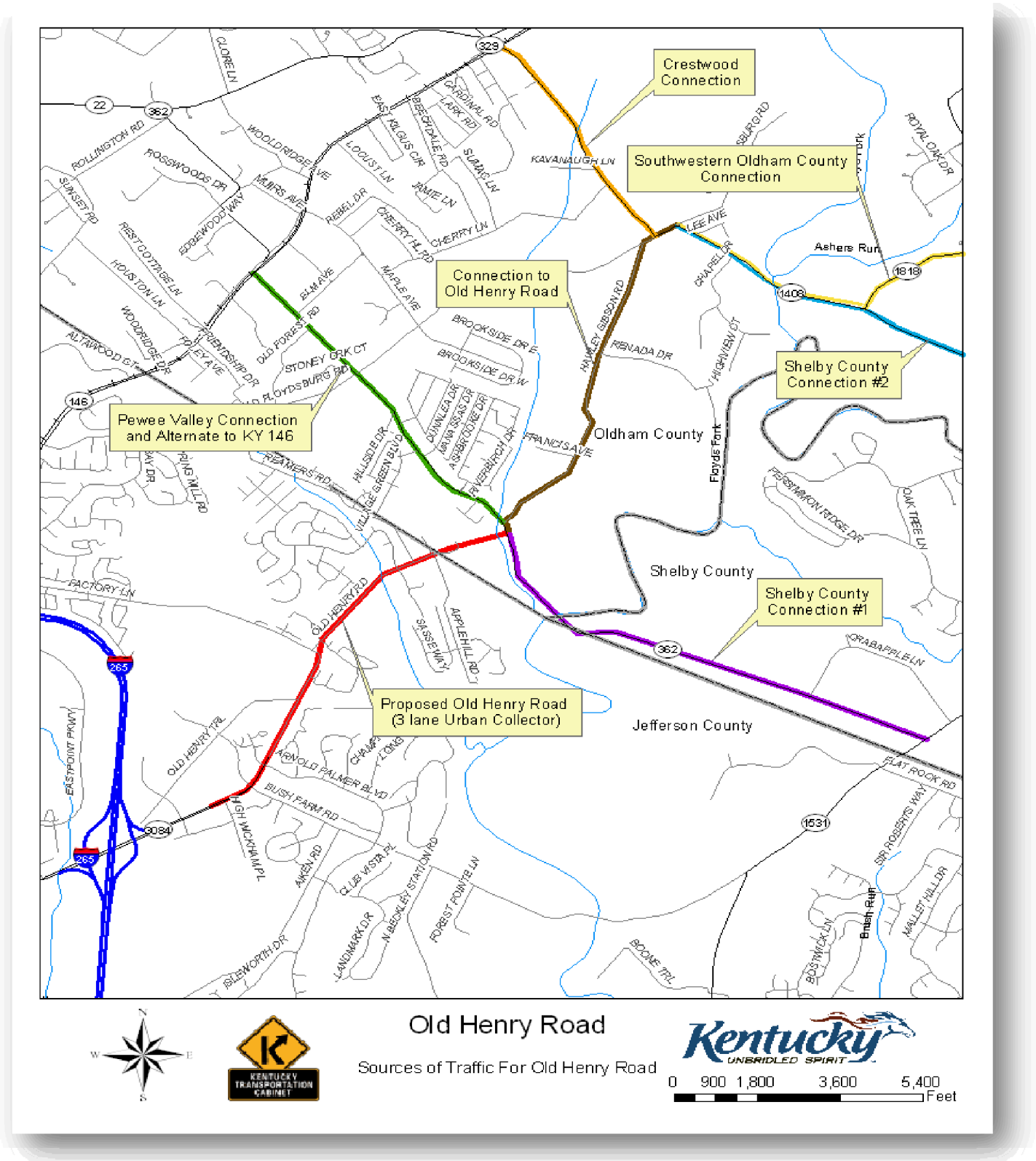


Figure 11: Sources of Traffic for the Proposed Old Henry Road

IV. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

Jefferson County is currently designated as a Nonattainment Area for the fine particulate ($PM_{2.5}$) standard and Jefferson and Oldham Counties are designated as Maintenance Areas for the 8 hour-ozone standard. Air quality analysis was performed for the 2005 Environmental Assessment. At this time the project had a much larger scope (5 lane regional arterial connecting to KY 22). The analysis concluded that Carbon Monoxide (CO) levels are below the National Ambient Air Quality Standards (NAAQS). The maximum 1 hour CO concentration was 3.7 ppm, which was under the standard set by NAAQS of 35 ppm. The maximum 8 hour CO concentration was 2.39 ppm, which was also under the standard set by NAAQS of 9 ppm. This analysis was performed using traffic volumes for 2002 and 2028. The computer models that were used were acceptable to the United States Environmental Protection Agency (US EPA). Considering that the scope of the project has lessened (5 lane arterial to 3 lane collector) it is doubtful that air quality analysis would result in higher concentrations for the current project. $PM_{2.5}$ coordination with Interagency Consultation (IAC) may be required since the project is a significant project in the KIPDA region. In addition, the project is listed in the Transportation Improvement Program (TIP), which means that transportation conformity has been examined. Transportation conformity is a process in which transportation and air quality models are used to examine future emissions and ensure that planned projects do not worsen air quality.

B. Archaeology

An archaeology Phase I survey has already been completed for the Environmental Assessment in 2005. According to the survey only one site (15OL129) was found to have the potential for listing on the National Register of Historic Places. This site was a mid nineteenth century residence and is located in the general vicinity of Reamers Road. Additional Phase II investigations will be required for this site if the project cannot avoid it. No other impacts to archeological resources are expected for this project.

C. Threatened and Endangered Species

The United States Fish and Wildlife Service (USFWS) has identified the known and potential presence of threatened and endangered species in Jefferson and Oldham Counties, which can be viewed below in Table 4 and 5. In addition, threatened and endangered species reports from the Kentucky Department of Fish and Wildlife Resources (KDFWR) and the Kentucky State Nature Preserves Commission (KSNPC) can be found in Appendix K. According to the 2005 Environmental Assessment agency coordination resulted in the possible occurrence of 15 federal and/or state threatened, endangered, or special concern

species. Based on field studies and review, it was found that the project has potential impacts to 5 of the species. These include the Indiana bat, barn owl, sharp-shinned hawk, Henslow's sparrow, and Savannah sparrow. In June 2003 bat netting was set up at potential sites. No Indiana bats or gray bats were recovered. The bat netting survey is 8 years old. Another survey or Conservation Memorandum of Agreement (CMOA) may be required prior to construction since Corps of Engineer permits will be required. Also no running buffalo clover habitat was found to exist. The project should have minimal impact to any threatened and endangered species.

Table 4: USFWS Threatened and Endangered Species in Jefferson County

Group	Species	Common name	Legal* Status	Known** Potential
Mammals	*Myotis grisescens*	gray bat	E	K
	Myotis sodalis	Indiana bat	E	K
Mussels	*Pleurobema clava*	clubshell	E	K
	Cyprogenia stegaria	fanshell	E	K
	Potamilus capax	fat pocketbook	E	K
	Plethobasus cooperianus	orangefoot pimpleback	E	K
	Obovaria retusa	ring pink	E	K
	Lampsilis abrupta	pink mucket	E	K
	Plethobasus cyphyus	sheepnose	C	P
	Pleurobema plenum	rough pigtoe	E	P
Plants	*Trifolium stoloniferum*	running buffalo clover	E	K
Birds	*Sterna antillarum*	interior least tern	E	K
Insects	*Nicrophorus americanus*	American burying beetle	E	historic
	Pseudanopthalmus troglodytes	Louisville cave beetle	C	K

* Key to notations: E = Endangered, T = Threatened, C = Candidate, CH = Critical Habitat

**Key to notations: K = Known occurrence record within the county, P = Potential for the species to occur within the county based upon historic range, proximity to known occurrence records, biological, and physiographic characteristics.

Table 5: USFWS Threatened and Endangered Species in Oldham County

Group	Species	Common name	Legal* Status	Known** Potential
Mammals	*Myotis sodalis*	Indiana bat	E	P
	Myotis grisescens	gray bat	E	K
Mussels	*Lampsilis abrupta*	pink mucket	E	P
	Obovaria retusa	ring pink	E	P
	Plethobasus cooperianus	orangefoot pimpleback	E	P
	Plethobasus cyphyus	sheepnose	C	K
	Pleurobema clava	clubshell	E	P
	Pleurobema plenum	rough pigtoe	E	P
	Cyprogenia stegaria	fanshell	E	P
Plants	*Trifolium stoloniferum*	running buffalo clover	E	P

* Key to notations: E = Endangered, T = Threatened, C = Candidate, CH = Critical Habitat

**Key to notations: K = Known occurrence record within the county, P = Potential for the species to occur within the county based upon historic range, proximity to known occurrence records, biological, and physiographic characteristics.

D. Hazardous Materials

The 2005 Environmental Assessment identified 5 hazardous material sites that are within or near the project area. The majority of the sites are associated with Red Penn Landfill, which is a superfund site. This site contains approximately 13,000 drums of paint and copper waste located in the eastern portion of the landfill near Floyd's Fork. The western portion of the landfill near Hawley Gibson Road was used for borrow material in the capping process of the hazardous area. Appendix L contains a map of Red Penn Landfill. Approximately 40 crushed drums were found in the borrow area during the capping of the landfill. These drums and surrounding soil were removed from the landfill and properly disposed of. The western portion of the landfill does not possess any hazardous materials, and the borrow process left the area with exposed rock. This area will likely require fill for any roadway work. There is also a monitoring well that is located off of Ash Avenue that may need to be relocated or raised due to the project. The Record of Decision (ROD) for the Red Penn Landfill from the Environmental Protection Agency (EPA) can be viewed in Appendix M. In addition, 3 other sites located adjacent to the landfill were found to have hazardous materials. All of these sites are associated with the landfill. The last site is not associated

with the landfill and is an above ground storage tank for diesel. Phase II hazardous materials investigation has been previously performed on all of these sites within the proposed right of way. A map outlining the approximate locations of the hazardous sites determined from the 2005 Environmental Assessment can be seen below in Figure 12.

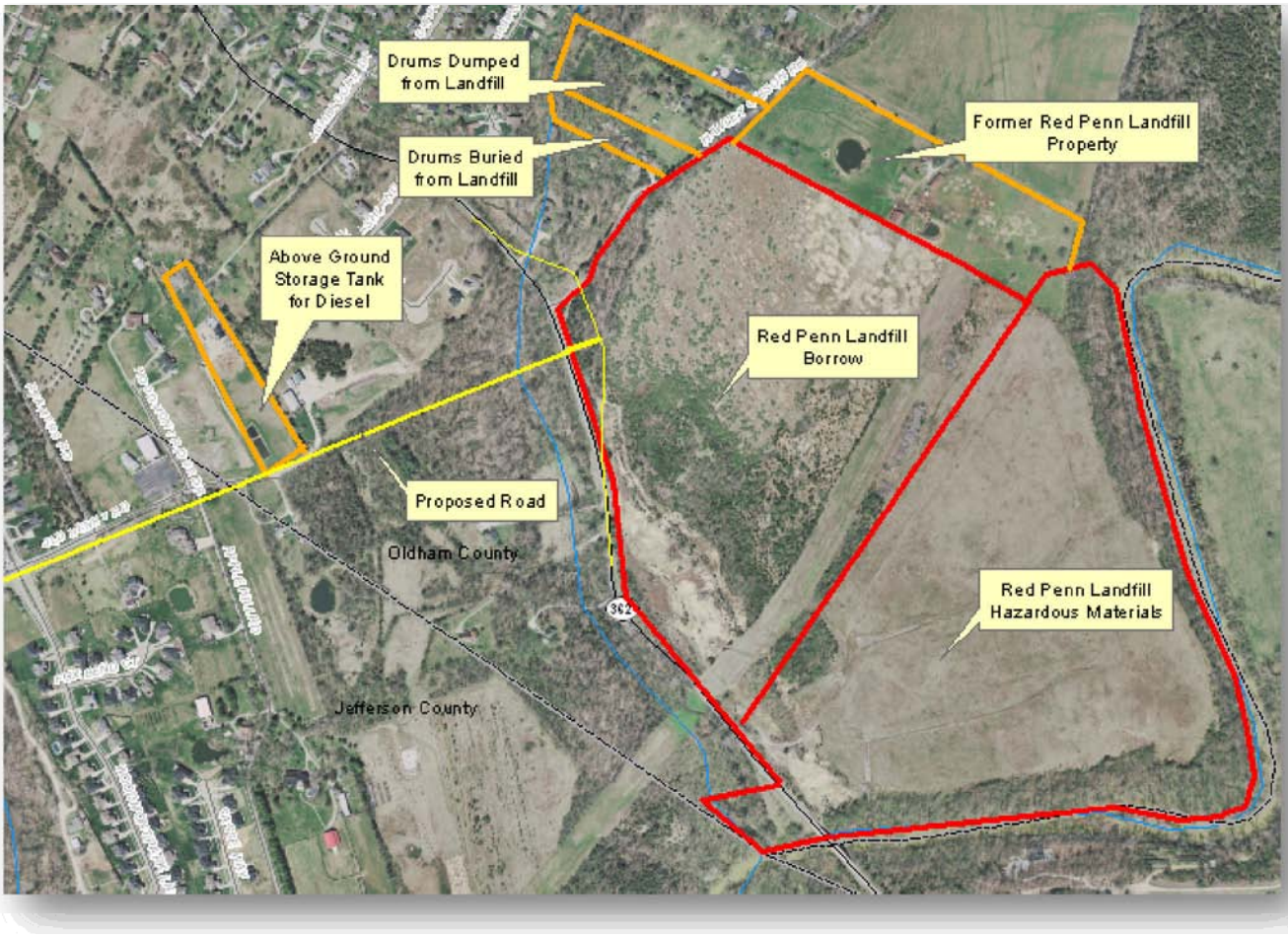


Figure 12: Hazardous Sites

E. Historic Resources

Several surveys and field investigations of the project area were performed for the 2005 Environmental Assessment. No impacts to any historical resources were found. The current project should not affect any historical resources.

F. Permitting

Stream crossings for the project will likely require an US Army Corps of Engineers (USACE) Section 404 permit and a Kentucky Department of Water (KDOW) Section 401 water quality

certification. Furthermore, Floyds Fork is considered as a protected conservation area in Jefferson County. However, none of the streams in the area are considered special use waters. Sediment control structures will be set up to minimize the impact of construction at the streams that have to be crossed.

G. Noise

It was determined from the 2005 Environmental Assessment that a 5 lane road would have noise impacts to Lake Forest Subdivision, Woodmont Subdivision, and Fox Run Subdivision. Considering that the project has been downsized to a 3 lane road, it is not expected that noise impacts will be great enough for a barrier.

H. Socioeconomic

The Old Henry Road area has seen significant development over the last decade due to the I-265/Old Henry Road interchange. This interchange opened the area up allowing access to the interstate system. The majority of the project area has been converted from rural land to residential use. Near the interchange, industrial, commercial, office, and residential land use occur. This area was one of the last developed parts of Jefferson County. Many subdivisions have been developed along Old Henry Road including Lake Forest, Woodmont, and Fox Run. Additional subdivisions have been built or are in development along this corridor. Oldham County has also seen tremendous growth over the last decade, and there are many subdivisions located near the Jefferson County line including Village Green and Ashbrook. The road network in Oldham County will be a limiting factor to the amount of growth that the county can continue to have. Oldham County has traditionally been rural in nature; however, residential uses of the land have continued to increase. See Figure 13 for a map detailing the major landmarks near the project area.

According to Census Data from 2000 two census tracts (103.06 in Jefferson County and 305.01 in Oldham County) make up the project area. Figures 14, 15, 16, and 17 contains detailed information of the census tracts including minority population, population below the poverty line, population over 65 years old, general economic characteristics, and family household information. Based on the data for the census tracts the minority population, population living below the poverty line, and population over 65 years old is below the state and national averages. For both census tracts the median household income is above the state and national averages. For census tract 103.06, which contains the majority of the project area, the median household income is over double that of the state and national averages. It also appears that in both census tracts the majority of workers work in management and professional or sales and office positions. Furthermore, the vast majority of the workforce drives alone to get to work. In addition, both census tracts are made up largely of family households.

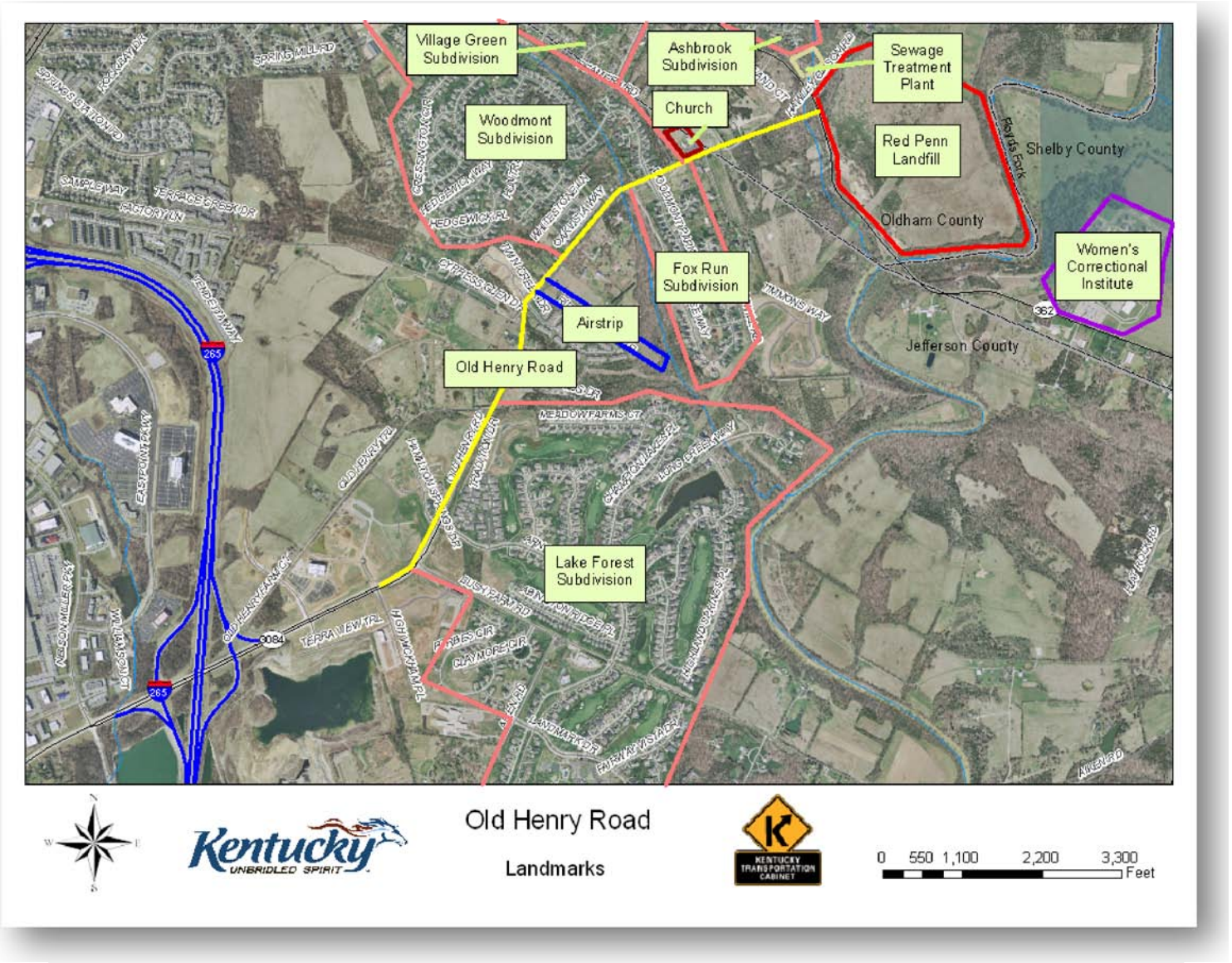


Figure 13: Landmarks

Subject	Census Tract 103.06, Jefferson County, Kentucky		Census Tract 305.01, Oldham County, Kentucky	
	Number	Percent	Number	Percent
Total population	7,476	100.0	3,827	100.0
SEX AND AGE				
Median age (years)	35.7	(X)	36.0	(X)
18 years and over	5,082	68.0	2,802	73.2
62 years and over	540	7.2	454	11.9
65 years and over	411	5.5	368	9.6
RACE				
One race	7,391	98.9	3,799	99.3
White	6,886	92.1	3,678	96.1
Black or African American	285	3.8	96	2.5
American Indian and Alaska Native	9	0.1	2	0.1
Asian	188	2.5	8	0.2
Native Hawaiian and Other Pacific Islander	4	0.1	1	0.0
Some other race	19	0.3	14	0.4
Two or more races	85	1.1	28	0.7
HISPANIC OR LATINO AND RACE				
Total population	7,476	100.0	3,827	100.0
Hispanic or Latino (of any race)	146	2.0	48	1.3

Figure 14: Age and Race

Subject	Census Tract 103.06, Jefferson County, Kentucky		Census Tract 305.01, Oldham County, Kentucky	
POVERTY STATUS IN 1999 (below poverty level)	Number	Percent	Number	Percent
Families	36	(X)	37	(X)
Percent below poverty level	(X)	1.6	(X)	3.3
Individuals	197	(X)	203	(X)
Percent below poverty level	(X)	2.6	(X)	5.3

Figure 15: Poverty Status

Subject	Census Tract 103.06, Jefferson County, Kentucky		Census Tract 305.01, Oldham County, Kentucky	
	Number	Percent	Number	Percent
EMPLOYMENT STATUS				
Population 16 years and over	5,278	100.0	2,899	100.0
In labor force	3,766	71.4	2,168	74.8
Civilian labor force	3,766	71.4	2,167	74.7
Employed	3,703	70.2	2,093	72.2
Unemployed	63	1.2	74	2.6
Percent of civilian labor force	1.7	(X)	3.4	(X)
Armed Forces	0	0.0	1	0.0
Not in labor force	1,512	28.6	731	25.2
COMMUTING TO WORK				
Workers 16 years and over	3,669	100.0	2,045	100.0
Car, truck, or van -- drove alone	3,153	85.9	1,773	86.7
Car, truck, or van -- carpooled	277	7.5	188	9.2
Public transportation (including taxicab)	8	0.2	5	0.2
Walked	40	1.1	21	1.0
Other means	8	0.2	11	0.5
Worked at home	183	5.0	47	2.3
Mean travel time to work (minutes)	24.0	(X)	21.3	(X)
Employed civilian population 16 years and over	3,703	100.0	2,093	100.0
OCCUPATION				
Management, professional, and related occupations	2,098	56.7	719	34.4
Service occupations	221	6.0	298	14.2
Sales and office occupations	1,068	28.8	607	29.0
Farming, fishing, and forestry occupations	0	0.0	12	0.6
Construction, extraction, and maintenance occupations	163	4.4	196	9.4
Production, transportation, and material moving occupations	153	4.1	261	12.5
INCOME IN 1999				
Households	2,546	100.0	1,445	100.0
Median household income (dollars)	103,426	(X)	53,785	(X)

Figure 16: General Economic Characteristics

Subject	Census Tract 103.06, Jefferson County, Kentucky		Census Tract 305.01, Oldham County, Kentucky	
	Number	Percent	Number	Percent
HOUSEHOLD TYPE				
Total households	2,530	100.0	1,443	100.0
Family households	2,158	85.3	1,112	77.1
FAMILY TYPE AND PRESENCE OF OWN CHILDREN				
Families	2,158	100.0	1,112	100.0
With related children under 18 years	1,250	57.9	593	53.3
Married-couple families	2,043	100.0	935	100.0
With related children under 18 years	1,179	57.7	470	50.3
Female householder, no husband present	82	100.0	137	100.0

Figure 17: Households and Families

I. Section 4(f) Resources

Since this project is state funded, no section 4(f) statement will be required for this project.

J. Section 6(f) Resources

There are no known resources in the project area that are protected under Section 6(f) of the Land Water Conservation Fund.

V. PRELIMINARY PROJECT INFORMATION

A. Existing Conditions/Roadway Data

Table 6: Existing Conditions and Data Summary			
County:	Jefferson/Oldham	Route Number:	KY 3084/New Route
Road Name:	Old Henry Road	Item No.:	05-367.20
BMP:	New Route	EMP:	New Route
Project Length:	2 miles	State Class:	State Secondary (Existing)
Functional Class:	Urban Minor Arterial (Existing)/ Urban Collector (New)	Truck Class:	A (Existing)
Funding Type:	SB2	Median Type:	Left Turn Lane
ADT(current):	15,500	Posted Speed:	45 MPH
Roadway Data			
	Existing Conditions	Proposed	
No. of Lanes:	2	3	
Lane Width:	10 ft	11 ft	
Shoulder Width:	1 ft	2 ft curb and gutter	
Minimum Radius:	-	711 ft	
Maximum Grade:	-	8 %	

From the I-265/Old Henry Road interchange to approximately Bush Farm Road Old Henry Road is a state maintained route (KY 3084). This section of the road has been improved and is a 5 lane urban minor arterial with two lanes in each direction and a median or left turn lane in the middle. 12 ft lanes exist on this section along with adequate shoulders. The only section of this roadway that will need improved is the tie in with the new 3 lane section of Old Henry Road. Many developments exist along this section of the road and access to the interchange is in the immediate area. Information for this section of roadway was pulled from KYTC's Highway Information System (HIS) and can be seen below in Table 7.

Table 7: KY 3084 (Old Henry Road)

Begin	End	Begin Description	Horizontal Design Adequacy	Drainage Adequacy	Percent Sight Distance >= 1500 Feet	Terrain
1.146	1.799	I 265 INTERCHANGE	Some Curves<Standard, Safe At Speed Limit	Good	100	Rolling
1.799	1.978	BUSH FARM RD	Some Curves<Standard, Safe At Speed Limit	Good	0	Rolling

Past Bush Farm Road Old Henry Road is maintained by Louisville Metro and is a two lane rural road consisting of 10 ft lanes and 1 ft shoulders. This section of roadway has numerous geometric deficiencies including a 90 degree curve near Factory Lane. Currently Old Henry Road comes to a dead end near the Jefferson/Oldham County line. The Woodmont and Fox Run subdivisions are located along this portion of the road along with a condominium development and a small airstrip. In addition, Reamers Road is located near the end of Old Henry Road and is being used to access Oldham County and KY 362 (Ash Avenue) through the use of Village Green Boulevard, which is a residential street that runs between Reamers Road and Ash Avenue.

KY 362 (Ash Avenue) runs through the southwestern portion of Oldham County and into Shelby County. The road has approximately 9 ft lanes and 2 ft shoulders. Furthermore, Ash Avenue connects to KY 146 in Oldham County and KY 1408 in Shelby and Oldham Counties (directly in Shelby County and through Hawley Gibson Road in Oldham County). Red Penn Landfill, the Ash Avenue Sewage Treatment Plant, the Kentucky State Women's Correctional Institute, Floyd's Fork, and the Texas Gas transmission line are all located near where Ash Avenue and the Old Henry Road extension will intersect. In addition, numerous subdivisions exist off of Ash Avenue in Oldham County. Village Green Boulevard, which is being used as a shortcut to access Old Henry Road, also connects to Ash Avenue.

Hawley Gibson Road is a county road in Oldham County that connects to KY 362 (Ash Avenue) and Old Floydsburg Road near KY 1408 and the community of Floydsburg. KY 1408 has approximately 9 ft lanes and 2 ft shoulders and contains two back to back 90 degree

curves in this area. Hawley Gibson Road has recently been improved by Oldham County. However, it still is rural in character like the other roads in this area. This road is also bounded by the Ash Avenue Sewage Treatment Plant, Red Penn Landfill, and the Texas Gas transmission line near the intersection with Ash Avenue.

B. Right of Way

Along the existing Old Henry Road much of the right of way needed exists. Many of the new developments were required to dedicate a certain amount of right of way and have buffer zones that could not be developed in anticipation of the future development of Old Henry Road. All new right of way will have to be purchased for the new section of the road (extension), which is approximately 0.2 miles. It is not anticipated that any houses will have to be purchased and no relocations should occur. Strips of land will need to be purchased along the existing Old Henry Road. There are no major improvements (buildings, miscellaneous structures, etc.) within the projected right of way. However, one airstrip will be affected. Approximately 45 parcels will be affected by the project. Appendix N1-N8 contains all of the right of way information that has been gathered as of August 2011.

C. Utilities

The following is a list of the utility companies that have responded that they are in the project area. The contacts for these utility companies that are in the project area are shown below.

Electric and Gas: LG&E KU
Greg Geiser
820 West Broadway
Louisville, KY 40202
(502) 627-3708
LG&E Emergency Number (502) 589-1444
KU Emergency Number 1-800-331-7370
Greg.Geiser@lge-ku.com

Water: Louisville Water Company
Daniel Tegene, PE
550 South Third Street
Louisville, KY 40202
(502) 569-3649
dtegene@lwcky.com

Sewer: Metropolitan Sewer District

Steve Emly (502) 540-6509
Brad Selch (502) 540-6614
700 West Liberty Street
Louisville, KY 40202
emly@msdlouky.org
selchb@msdlouky.org

Telephone: AT&T KY
Morgan Herndon
3719 Bardstown Road - 2nd Floor
Louisville, KY 40218
(502) 458-7312
morgan.herndon@att.com

Additional utilities may exist in the project area. A more in depth assessment of utilities in the area will need to be done as the project moves further along. Appendix O1-O4 contains all of the utility information that has been gathered as of August 2011.

D. Agency Coordination

There have been numerous meetings throughout the history of the project. A Citizen Advisory Committee was selected by the Judge Executives of Jefferson and Oldham Counties in 1999 to guide the original project. 10 meetings were held by the committee and these were open to the public. In addition, four separate public information meetings were held for the original project. A phase I design meeting was held at KYTC's district 5 office in February of 2011 to kick off the new modified project (current project). An early status review meeting was also held in the same month and location. In June a preliminary line and grade inspection meeting was held at the district 5 office. The last meeting to be held was a local public officials meeting, which was held in August at the district 5 office. The meeting minutes for all four of these meetings can be found in Appendix P. In addition, the previous and current Judge Executives of Oldham County have expressed their approval of the project. Appendix D contains their letters.

VI. POSSIBLE ALTERNATIVES

The following is a description of the alternatives analyzed and discussed during the development of this study. Figure 18 shows the alignments of Alternatives #2A and #2B. An image of the preliminary line and grade is included in Appendix Q.

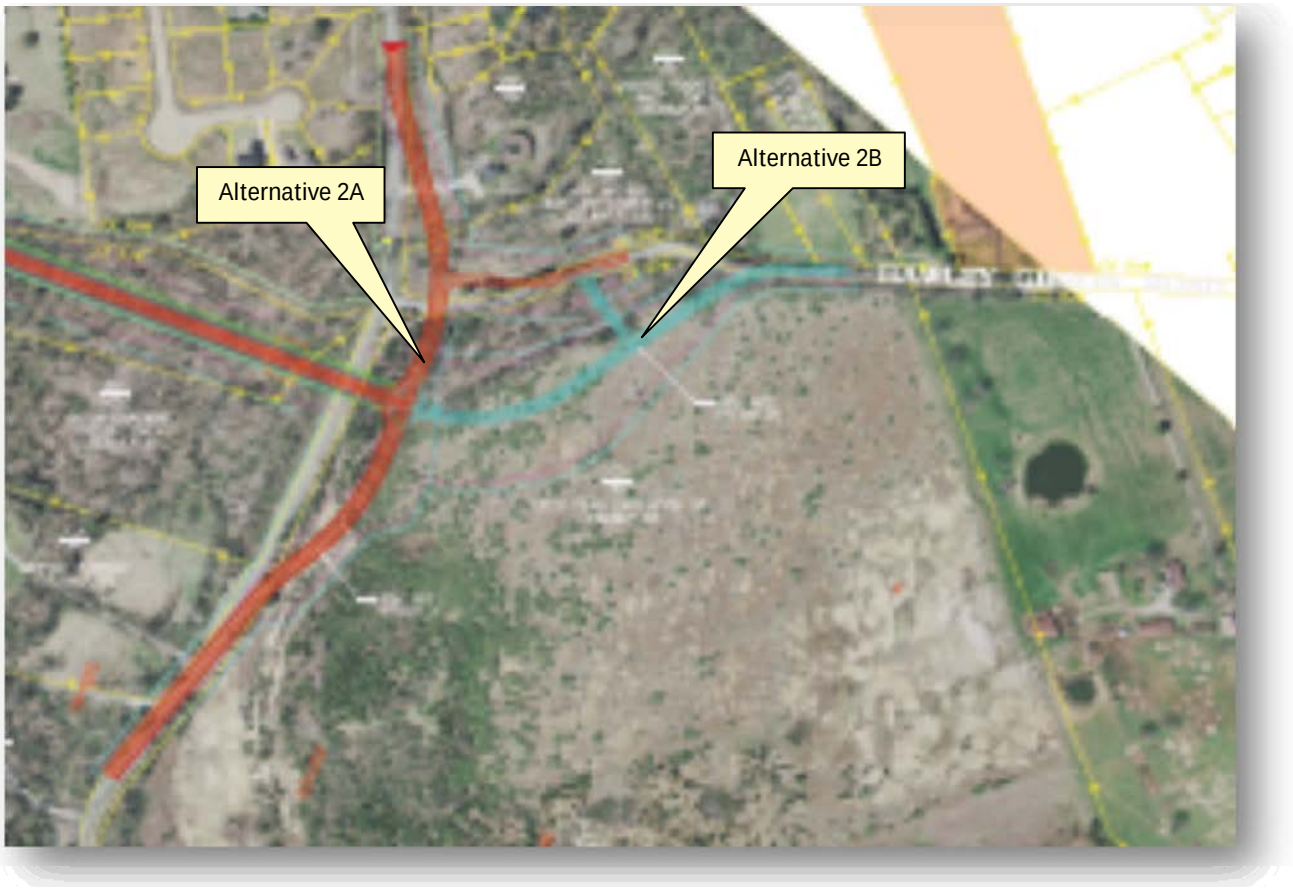


Figure 18: Alignments of Alternatives #2A and #2B

A. Alternative #1 – No Build

The no build alternative would leave the current conditions as they are. This includes the lack of a good connection to the I-265/Old Henry Road interchange for vehicles traveling from Oldham County and Shelby County. Vehicles will likely continue to use residential streets in the area to access the interchange. The no build alternative would not address the draft purpose and need statement defined for this project.

B. Alternative #2A – Alignment to Ash Avenue

This alignment would tie the new extension of Old Henry Road into KY 362 (Ash Avenue). This alignment would be the same as the preferred alignment that was chosen for the original project. Keeping with this alignment would allow for the project to be continued further into Oldham County in the future as the original project intended to. Ash Avenue will have to be reconstructed due to the Old Henry Road extension being raised approximately 10 ft. There has been numerous drainage problems associated with this area

of Ash Avenue. By raising the elevation by 10 ft many of these problems should be resolved. Furthermore, this alignment would create two separate T intersections. One of these would be at Hawley Gibson Road and Ash Avenue, and the other one would be at Old Henry Road and Ash Avenue. Both intersections would likely have stop signs with traffic on Ash Avenue being the through traffic. Also auxiliary lanes may need to be added to allow for turning movements. Phase II design will need to determine the best method of controlling this intersection.

C. Alternative #2B –Alignment to Hawley Gibson Road

This alignment would directly tie in the Old Henry Road extension to Hawley Gibson Road. The negative to this alternative is the extra cost associated with construction and the possibility of running into hazardous sites that are located near the landfill. Costs associated with right of way and utilities for this alternative should be of minimal difference to alternative #2A. Also this section conflicts with the alignment chosen by the original project. This could cause a problem in the future if the project was continued further into Oldham County. However, for the time being the alternative would create a direct connection to both Ash Avenue and Hawley Gibson Road. This would likely increase the amount of traffic using Hawley Gibson Road more than alternative #2A. Furthermore, this alternative would create a single 4-way intersection. Phase II design would need to determine the best way to control this intersection if this alternative is selected. The reconstruction of Ash Avenue would still be needed in this alternative as in alternative #2A. Cost estimates for the two alternatives can be seen below in Table 8.

Table 8: Cost Estimates

Phase	Alternative #2A	Alternative #2B	Highway Plan
Design	$1,250,000	$1,250,000	-
Right of Way	$2,000,000	$2,000,000	$8,000,000 (SB2)
Utilities	$4,000,000	$4,000,000	$3,300,000 (SB2)
Construction	$8,800,000	$9,000,000	$4,000,000 (SP)
Total	$16,050,000	$16,250,000	$15,300,000

VII. SUMMARY

This study is a Data Needs Analysis (DNA) of the Old Henry Road project that will create a 3 lane urban collector that ties in to the existing 5 lane section of Old Henry Road to the west and KY 362 (Ash Avenue) to the east. Through analysis of existing roadway geometrics, crash data, site visits, and discussion with the project team the following needs were identified:

- The need for Old Henry Road to be extended and/or improved to Ash Avenue.

The purpose of this project is to allow for better access to the I-265/Old Henry Road interchange.

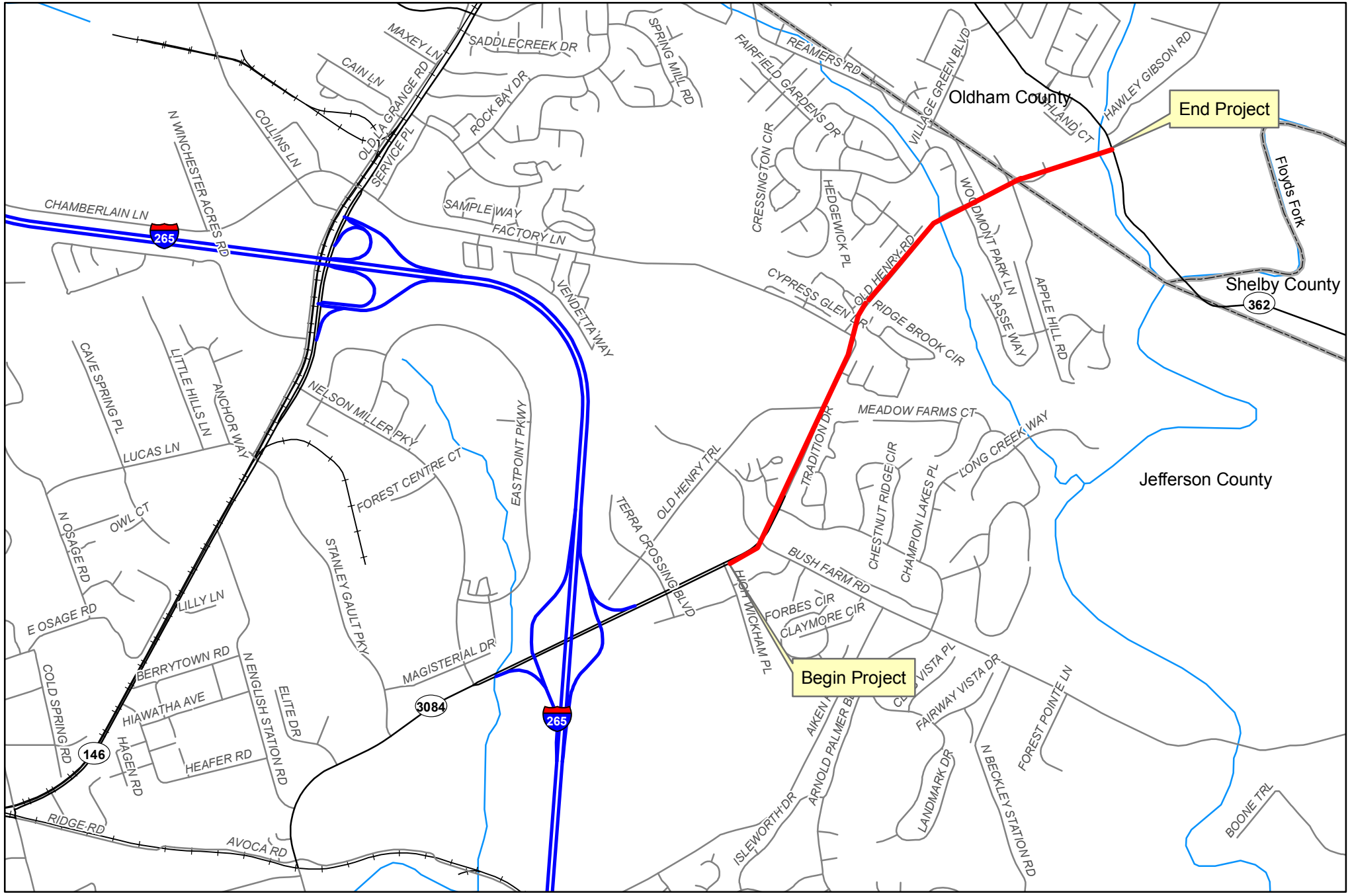
The project was originally intended to be a 5 lane arterial that connected the I-265/Old Henry Road interchange to KY 22 near Crestwood. The project was modified in 2010 to a 3 lane collector that connects the I-265/Old Henry Road interchange to KY 362 (Ash Avenue). Phase I design has been done by KYTC, and the project will be advertised for phase II design soon.

Important consideration will need to be given to the KY 362 (Ash Avenue) tie in. The alignment for the majority of the project has been chosen; however, it has yet to be determined if the project should tie directly in to Hawley Gibson Road or indirectly through Ash Avenue. The method for controlling these newly created intersections will also need to be determined. For the future it would make more sense to not tie the road directly into Hawley Gibson Road. If the road was directly tied into Hawley Gibson Road this section would likely not be used for future expansion of the road. In addition, the project is already operating within a tight budget. Costs are an important factor, and additional funds may be required to complete the project. It is possible that some portions of the project, for example the shared use path or additional work to fix geometrics near Bush Farm Road, may need to be cut out to fall within the budget of the project. This all depends on the amount of further funding that is available for the project. Furthermore, there have been drainage issues documented along Ash Avenue. These drainage issues need to be looked at since the project is in the same area. Lastly the airstrip could result in additional costs if large amounts of fill are needed to meet regulations. Phase II design will need to determine the best solution to many of the problems brought forth in this study.

For more information regarding this study please contact:

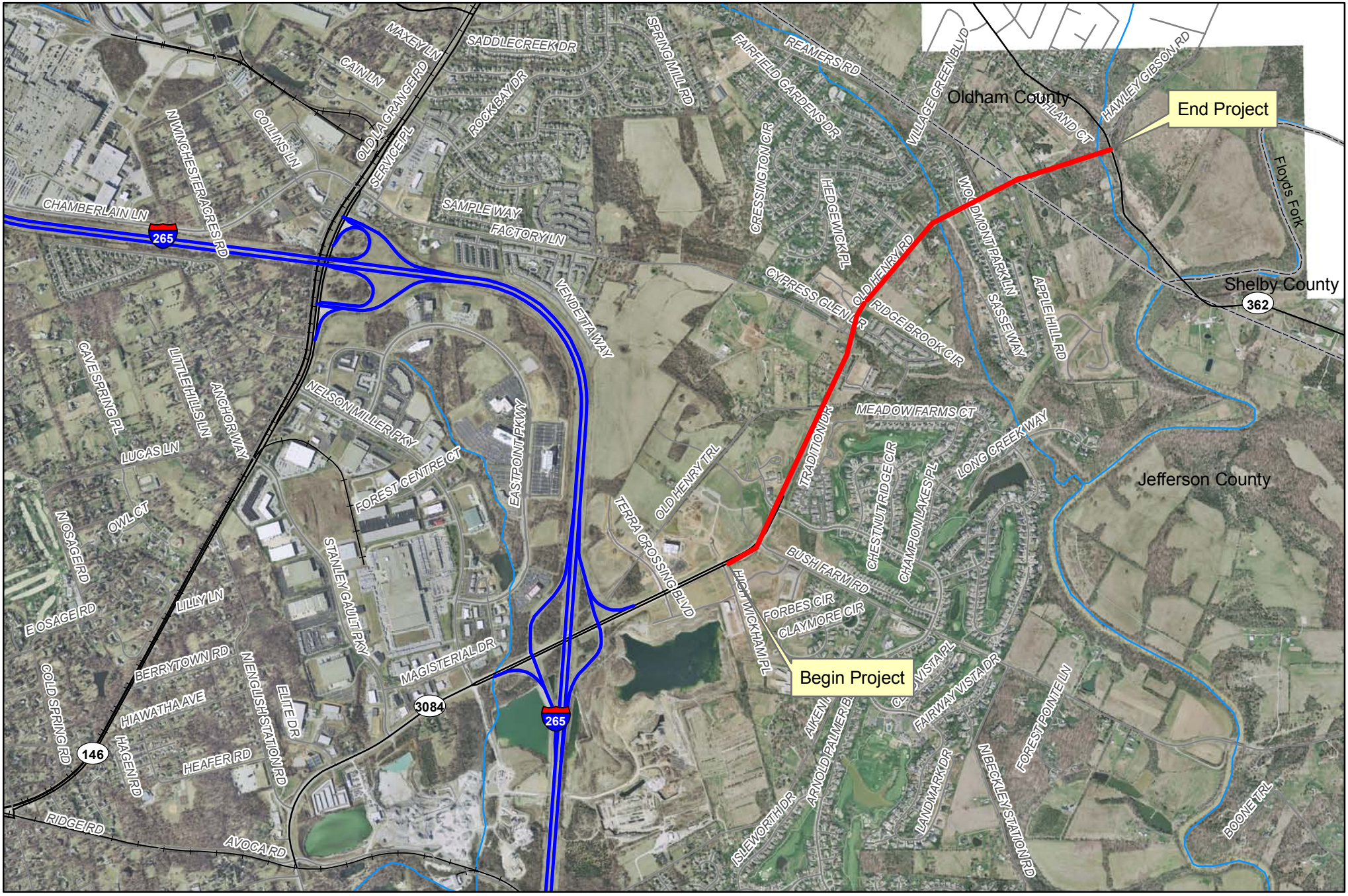
Kentucky Transportation Cabinet
Division of Planning, 5th Floor West
200 Mero St.
Frankfort, KY 40622
Phone: (502) 564-7183

Appendix A – Maps of the Project Area Including Orthographic and Topographic



Old Henry Road

Project Location



N
W E
S

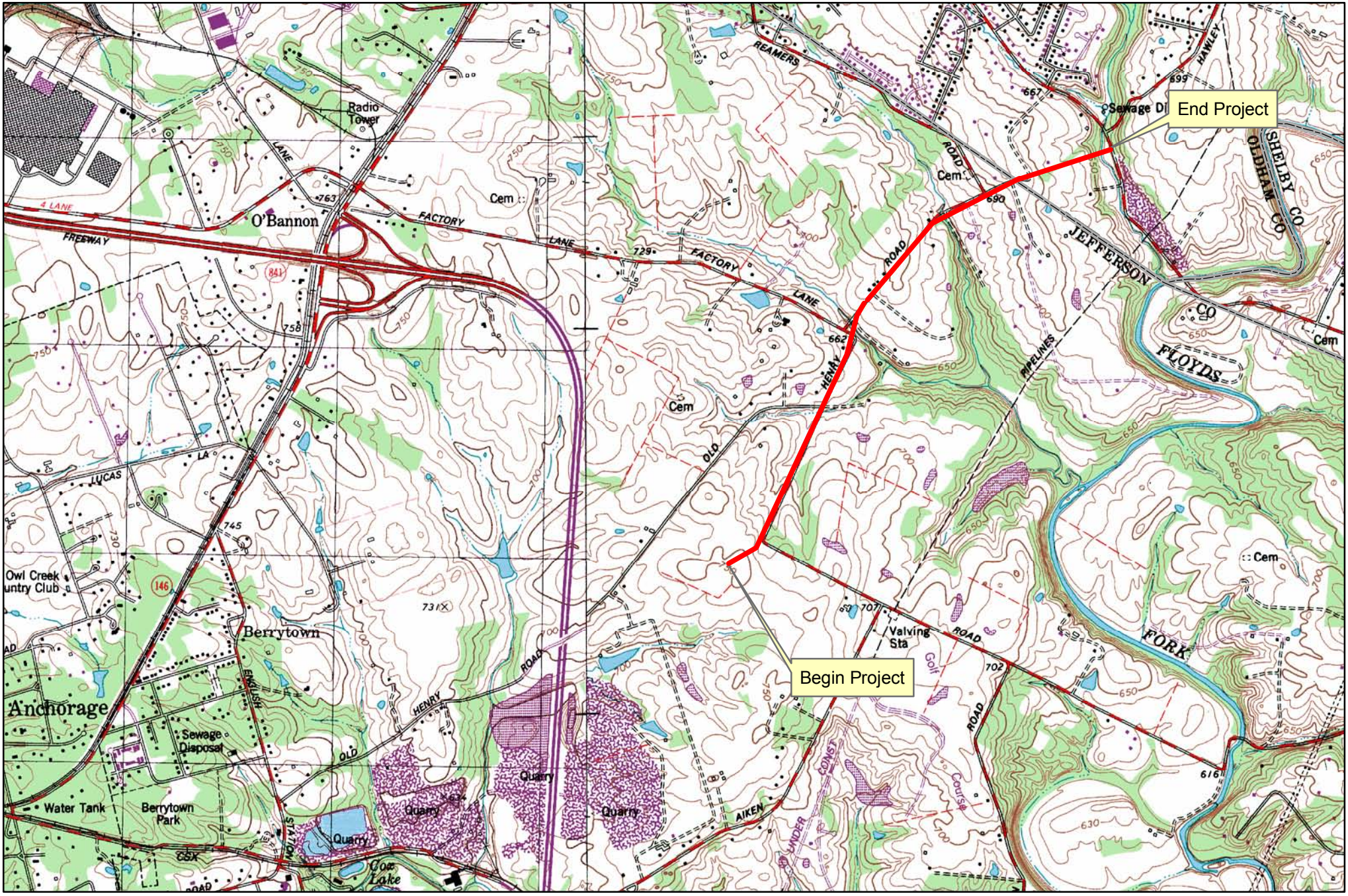
Kentucky
UNBRIDLED SPIRIT

Old Henry Road

Orthographic Map

KENTUCKY TRANSPORTATION CABINET

0 750 1,500 3,000 4,500 Feet



N
W E
S

Kentucky
UNBRIDLED SPIRIT

Old Henry Road

Topographic Map

KENTUCKY TRANSPORTATION CABINET

0 750 1,500 3,000 4,500 Feet

Appendix B – Six Year Highway Plan Listing

COUNTY	ITEM NO. & PARENT NO.	ROUTE	LENGTH	DESCRIPTION	FUND-SCHEDULING INFORMATION
OLDHAM	2000 05 - 234.00 Parent No.: 1996 05 - 230.00	KY-393	1.243	KY-393 RECONSTRUCT FROM NORTHERN RAMP OF I-71 TO NORTH OF KY-146 (STATIONS 10+100 TO 12+100)(DESIGN UNDER 5-230.00) Milepoints: From:4.672 To: 5.868 Purpose and Need: RELIABILITY / MAJOR WIDENING(O)	FUNDING PHASE YEAR AMOUNT STP C 2010 $9,310,000 Total $9,310,000
OLDHAM	2004 05 - 304.10 Parent No.: 1996 05 - 304.01	KY-22	2.100	RECONSTRUCT KY-22 TO 3-LANES FROM KY-329 TO KY-329B AND TO 3-LANES FROM KY-329B TO ABBOTT LANE. ("BRIDGE HILL")(2004BOPC)(08CCR)(10CCR) Milepoints: From:3.25 To: 5.32 Purpose and Need: RELIABILITY / MAJOR WIDENING(O)	FUNDING PHASE YEAR AMOUNT SPB R 2010 $2,100,000 SPB U 2010 $2,080,000 SP C 2011 $9,740,000 Total $13,920,000
OLDHAM	2004 05 - 304.20 Parent No.: 1996 05 - 304.01	KY-22	2.200	RECONSTRUCT KY-22 TO 5-LANES FROM ABBOTT LANE TO PROPOSED KY-393 INTERSECTION AND CONTINUING WITH 3-LANES TO EXISTING KY-393. (2004BOPC) Milepoints: From:5.32 To: 7.5 Purpose and Need: RELIABILITY / MAJOR WIDENING(O)	FUNDING PHASE YEAR AMOUNT SP D 2010 $840,000 SP R 2012 $3,310,000 SP U 2012 $2,170,000 Total $6,320,000
OLDHAM JEFFERSON	1996 05 - 367.00 Parent No.: 1996 05 - 367.00	-	5.000	CONSTRUCT NEW ROUTE FROM OLD HENRY INTERCHANGE AT I-265 TO CRESTWOOD BYPASS. (98CCR)(2004BOPP)(10CCN) Milepoints: From: To: Milepoints: From: To: Purpose and Need: RELIABILITY / NEW ROUTE(O)	FUNDING PHASE YEAR AMOUNT SB2 R 2011 $8,000,000 SB2 U 2012 $3,300,000 SP C 2012 $4,000,000 Total $15,300,000
OLDHAM	2004 05 - 434.00 Parent No.: 2004 05 - 434.00	CR-1002	.750	CONSTRUCT AN UNINTERRUPTED RAIL UNDERPASS WEST OF LAGRANGE. (LOCAL MATCH)(ALL WORK BY OLDHAM COUNTY) (SUBJECT TO FISCAL CONSTRAINT PENDING MPO TIP). Milepoints: From:0 To: .747 Purpose and Need: SAFETY / SAFETY(P)	FUNDING PHASE YEAR AMOUNT SLO R 2010 $3,032,000 SLO U 2011 $1,240,000 SLO C 2012 $8,662,000 Total $12,934,000
OLDHAM	2004 05 - 441.01 Parent No.: 2004 05 - 441.00	US-42	.900	RECONSTRUCT US-42 FROM THE JEFFERSON/OLDHAM COUNTY LINE TO RIDGEMOOR DRIVE. (2004BOPC) (SUBJECT TO FISCAL CONSTRAINT PENDING MPO TIP). Milepoints: From:0 To: .942 Purpose and Need: RELIABILITY / RECONSTRUCTION(O)	FUNDING PHASE YEAR AMOUNT SLO D 2010 $180,000 SLO R 2010 $2,205,000 SLO U 2010 $811,000 SLO C 2012 $3,600,000 Total $6,796,000
OLDHAM	2004 05 - 444.00 Parent No.: 2000 99 - 219.05	KY-53		ACCESS MANAGEMENT AND INTERSECTION/SIGNAL IMPROVEMENTS TO PROVIDE CONGESTION RELIEF ON KY-53 FROM DOWNTOWN LAGRANGE TO I-71. (2004BOPC) Milepoints: From:6.488 To: 7.137 Purpose and Need: RELIABILITY / CONGESTION MITIGTN(O)	FUNDING PHASE YEAR AMOUNT CM C 2010 $1,120,000 Total $1,120,000

Appendix C – Transportation Improvement Program (TIP) Listing

Amendment 1 of Horizon 2030 Metropolitan Transportation Plan

Amendment 1 of FY 2011 - FY 2015 Transportation Improvement Program

April 2011

KIPDA ID	State ID	Project Name	Project Description	Project Sponsor	Description of Plan Amendment	Description of TIP Amendment	Effect on AQ Analysis
	367.10	Old Henry Road	Extend Old Henry Road as a 3 lane roadway (3rd lane will be a center turn lane)from I-265 east to Ash Avenue (KY 362).	KYTC	Parent Project is KIPDA #198	Parent Project is KIPDA #198 Old Henry Road. Add FY 2011 Design $1,250,000; Add FY 2011 ROW $6,750,00; Add FY 2012 Utilities $3,000,000; Add FY 2012 Construction $4,000,000; State funds. Open to public date is 2014.	Regionally Significant -- This project is a child of KIPDA project number 198. Model roadway as having 1 lane in each direction and a continuous center-turn lane for the 2020 and 2030 scenarios.
		Ring Road	Construction of a new 4 lane connector between the new I-71 overpass and Highway 53.	Oldham County	Add Project to Plan. Plan Project Cost is $12,100,000. Open to Public date is 2014.		Regionally Significant -- Add project to 2020 and 2030 scenarios
		South 3rd Street/National Turnpike Bicycle Facility Improvements	This project involves reducing travel lane widths along W. Kenwood Way, Southside Drive and National Turnpike to 10 feet; reducing the number of travel lanes along S. 3rd Street from four lanes (2 in each direction) to three lanes (1-lane in each direction and a 2-way left turn lane); and marking Seneca Trail as a shared roadway to provide bike lanes (see typical sections).	Louisville Metro Public Works	Add Project to Plan. Plan Project Cost is $2,310,000. Open to Public date is 2017.		Regionally Significant -- Add project to 2020 and 2030 scenarios
585		TARC Capital Improvement Program	Annual formula funding allocations to TARC that provide revenue for vehicle maintenance, facility rehabilitation, equipment, and for replacement of vehicles.	TARC		Add revised Table 10 in text - Capital Improvement Program for FY 2010 through FY 2015. (SEE ATTACHED)	Exempt
		TARC Improvements in Downtown Louisville	TARC bus traffic circulation plan and passenger facilities improvements in the downtown area.	TARC	Add Project to Plan. Plan Project Cost is $150,000. Open to Public date is 2012.		Exempt per 93.126

Appendix D - Letters Received by KYTC from Judge Executives

NOV 23 2009

DUANE MURNER
JUDGE-EXECUTIVE
dmurner@oldhamcounty.net

PAULA GISH
DEPUTY JUDGE-EXECUTIVE
pgish@oldhamcounty.net

OLDHAM COUNTY FISCAL COURT

OFFICE 502-222-9357 FAX 502-222-3210
100 WEST JEFFERSON STREET, SUITE 4, LAGRANGE, KENTUCKY 40031
www.oldhamcounty.net

November 10, 2009

Secretary Mike Hancock
Kentucky Transportation Cabinet
200 Mero Street
Frankfort, KY 40622

2009 NOV 23 P 5

Re: Old Henry Road Extension

Dear Mike:

Since about 2000, there has been active discussion and planning by the Cabinet for a road around Crestwood, linking Old Henry Road in Jefferson County to Hwy 22 in Oldham County. This road has been variously known as the "Old Henry Extension" or the "Crestwood Bypass". In fact, when Bill Monholland started with the Transportation Cabinet as a young engineer, his first job was to begin discussions with Crestwood leaders about this road. Bill has been retired from KYTC for about 7 years.

The cost of that project and activity that has taken place in the intervening years (e.g., placement of property on the National Historic Register) combine to make it unlikely that the project will be funded or completed in the near future. That is unfortunate because the road would result in a major traffic improvement for Oldham County commuters. But in the meantime an interim proposal has presented itself and the purpose of this letter is to ask you to consider it seriously. The proposal is to extend the present Old Henry Road in Jefferson County to Ash Avenue in Oldham County. This would siphon traffic from Hwy 146 and from shortcuts that drivers are presently using through crowded subdivisions. It would also provide needed relief for the commercial development taking place in eastern Jefferson County.

We would be glad to meet with members of your staff to provide specifics for this proposal which is so important to both our communities.

Yours sincerely,

Judge Exec Duane Murner

Mayor Jerry Abramson

Oldham County
Quietly Amazing

"An Equal Opportunity Employer"

DAVID VOEGELE
JUDGE-EXECUTIVE
DVOEGELE@OLDHAMCOUNTY.NET

JOHN BLACK
DEPUTY JUDGE-EXECUTIVE
JBLACK@OLDHAMCOUNTY.NET

TINA SCHAAF
EXECUTIVE ASSISTANT
TSCHAAF@OLDHAMCOUNTY.NET

OFFICE OF THE JUDGE-EXECUTIVE

Ky 5-367.20

JAN 25 2011

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON STREET, SUITE 4, LA GRANGE, KENTUCKY 40031
OFFICE 502-222-9357 • FAX 502-222-3210
WWW.OLDHAMCOUNTY.NET

January 20, 2011

Mr. Matt Bullock
Executive Director
Department of Highways, District 5
8310 Westport Road
Louisville, KY 40242

Dear Matt,

Thank you for the time and attention given to John Black, Beth Stuber and me during our visit last week. I appreciate you putting up with the continuing 'hand-holding' I put you through every now and then, but as I am sure you probably recognize, improved transportation impacts almost everyone of our key goals for Oldham County-bringing in new business, safer roads to and around our schools, expanded recreation, a better home building market, etc, etc…

Here is what we left the meeting hoping were our action items:

1. You will look into what we can do to create a two lane road to connect the approximate 2000' between Old Henry and Hawley Gibson Road. All we are looking for now is the simplest thing that would open up a couple of lanes connections as soon as possible.
2. MOA to allow creation of an east bound passing lane at Hwy 146 and Hwy 393 along the area known as the Buckner Mall.
3. A stop light at KY 22 & KY 329 (Waldeck Farm).
4. You will set an appointment for us with Brian Meade to review our pending road projects.

We also discussed the turning lane work at KY 22 and KY 146 in Crestwood.

We are looking forward to your annual visit to Oldham Fiscal Court to review our rural and secondary road plans and appreciate all the help you have given me thus far and as both magistrate and county judge.

Sincerely,

David Voegele
Judge-Executive

Appendix E – Project Identification Form (PIF) for Original Project #05-367.00

PIF Revised: Aug. 2004

KYTC Project Identification Form

Cycle Year: ____
Priority: L : ___ R: ___ D: ___
Tier: ____
Tier Rank: R: ___ D: ___
Overall Top Ten: R: ___ D: ___

Section I – General Information

Requested by:
Title/Organization: **KYTC D-5**
Date:

Form Completed by: **Stacey Burton**
Title/Organization: **KIPDA**
Date: **08/115/2008**

Revision 1 by:
Title/Organization:
Date:

Revision 2 by:
Title/Organization:
Date:

UPL Control #: **05 093 C0000 123.00** Co. #: **093**
Parent Control #: **05 093 C0000 123.00**
RSE Unique Number: ____

District: **5** County: Oldham Route: **NEW**
ADD: **KIPDA** MPO: **KIPDA-MPO** SUA: ____

Mode: **Highway** State System: **State Primary**
Type: **New Route** Funct'l Class: **Urban Prin Art**

Project Length: ____ **Total Cost Estimate: $** ____
(P: D: R: U: C:)

Possible Funding Sources (Check all that apply):
☒IM ☒NH ☐HES ☐BR ☒STP ☒SP ☐TE ☐CMAQ
☐PLH ☐Other: ____

Highway Networks (Check all that apply):
☒Non NHS ☐NHS
☐NN ☐Scenic Byway ☐Coal Haul ☐Bike ☐Forest
☐Defense ☐Strahnet ☐Ext. Wt. ☐ADHS ( )

Existing Project Studies (Year):

Section II – Problem Statement

Route Number: **NEW**
Beginning MP: ____
Ending MP: ____
Total Length: ____

Primary Purpose: **New System Mileage**

(Use Report Year)	Original	Rev. 1	Rev. 2
AdequacyRating:	: ( )	: ( )	: ( )
• CRF: (Year)	: ( )	: ( )	: ( )
• IRI: (Year)	: ( )	: ( )	: ( )
• V/SF: (Year)	: ( )	: ( )	: ( )
Current ADT: (Year):	: ( )	: ( )	: ( )
Percent Trucks: (Year):	: ( )	: ( )	: ( )
Projected ADT (HDO): Year:	%Growth:	ADT:	

Please provide a clear problem statement for this project:

There is no clear connection between I-265/Old Henry Road interchange and the KY 329 extension (Crestwood Bypass) from KY 146 to KY 22. Existing two-lane KY 146 through PeWee Valley has poor roadway geometrics, numerous roadside obstacles, and high traffic volumes contributing to unsafe travel conditions.

Section III – Project Description

Project Description Narrative:

Construct new four-lane route from the Old Hery Road interchange at I-265 to KY 22 in the vicinity of KY 329B. To include provisions for bicyclists and pedestrians.

Regional Goals/Objectives Addressed: **1. Improve traffic flow on roadways during peak travel hours. 2. Improve air quality. 3. Improve mobility within designated freight corridors. 4. Improve safety on roadways.**

Section IV – Project Area Information:

1. Miscellaneous Roadway Conditions

Access Control:	Existing: _____ Proposed: _____	Median Type:	Existing: _____ Width: ____ Proposed: _____ Width: ____
Lane No./Width:	Existing: ____/____ Proposed: ____/____	Shoulders:	Existing: _____ Width: ____ Proposed: _____ Width: ____
No. of Bridges:	Existing: ____ Proposed: ____	Other Improvement Projects in Area:	☐None ☒SYP ☐Resurface ☒Other ____

Comments:

2. Right of Way

Avg. Width: Existing: ____ Source: ☐ HIS ☐Plans ☐Microfilm ☐Other ____

Current Primary Use: ☐Industrial ☐Commercial ☐Residential ☐Farmland ☐Other: ____

☐ No ☒ Yes Project may require additional R/W. | Possible Relocations : Homes: ____ Businesses: ____

Comments:

3. Utilities

Existing Utilities: ☐Power ☐Gas ☐Telephone ☐Cable ☐Sewer ☐ Water ☐ ITS ☐None ☐ Other: ____

☐ No ☐ Yes Project may require Utility Relocations. | Comments:

4. Environmental Impacts

(Check all that apply):

☒Blueline Streams ☐Wetlands ☒Floodplain ☐Wildlife Managed Areas ☐Historic Properties
☐Cemeteries ☐Schools ☐Churches ☐Endangered Species ☐Public Land/Park
☐Noise Impact ☐Arch. Sites ☐NR Properties ☐Potential NR Properties ☐Other:

☐ Potential Contaminated sites: ☐ Gas Stations ☐ Landfills ☐ Auto Repair ☐ Junkyards ☒Other

Comments:

5. Air Quality

☐No ☒Yes	Project is located in a Maintenance or Nonattainment Area	☒ Ozone ☒ PM 2.5
☐No ☒Yes	Project adds through lane capacity	
☒No ☐Yes	Project results from a Congestion Management Plan	
☒No ☐Yes	Project is included in TIP/STIP	TIP Page # STIP Page #

Comments:

6. Economic Impacts

☐No ☒Yes Planning/Zoning Regulations exist in Community

☐No ☒Yes Project may affect established Business, Commercial or Industrial Districts.

☐ No ☒ Yes This project has economic impacts on regional/local economy:
☒ Development ☒Tax Revenues ☒Employment Opportunity ☒Retail Sales ☐ Other
Please Describe:

☒ No ☐ Yes This project provides direct access to major points of interest:
☐ Nat'l/State Parks ☐Monuments ☐Historic Sites ☐Amusement Parks ☐US Public Land ☐ Other
Please Describe:

☒ No ☐ Yes This project provides direct access to major traffic generators:
☐ Shopping Centers ☐Schools ☐Industries ☐Military Installations ☐ Other
Please Describe:

7. Multimodal Opportunities	This project is a candidate for: (check all that apply)	☒ Bicycle Paths ☒ Sidewalks ☒ Shared-Use Paths ☒ Park/Ride Lots ☐ N/A
	This project improves direct access to: (check all that apply)	☐ Airports ☐ Railways ☐ Riverports ☒ Trucking Routes ☐ N/A
	Type of Public Transportation available:	☒ Fixed Route ☒ Demand Response
	Comments:	**TARC provides some express route service; MedTrans provides demand-response service.**
8. Social Impacts	This project may affect: (Check all that apply)	☒ Neighborhood or Community Cohesion ☒ Travel Patterns (Vehicular, commuter, bicycle, pedestrian) ☒ Household Relocations ☐ Elderly, disabled, nondrivers, minorities, low-income persons ☐ No adverse effects to neighborhoods apparent.
	Comments/Impact Descriptions:	**Additional direct access may cause travel patterns to change.**

Section V – Cost Estimate Information (to be completed by Hwy District Office):

Cost Estimate by Phase:

Phase	Original Estimate	By:	Revision 1	Date	By:	Revision 2	Date	By:
Planning								
Design								
ROW								
Utilities								
Construction								
Total Cost								

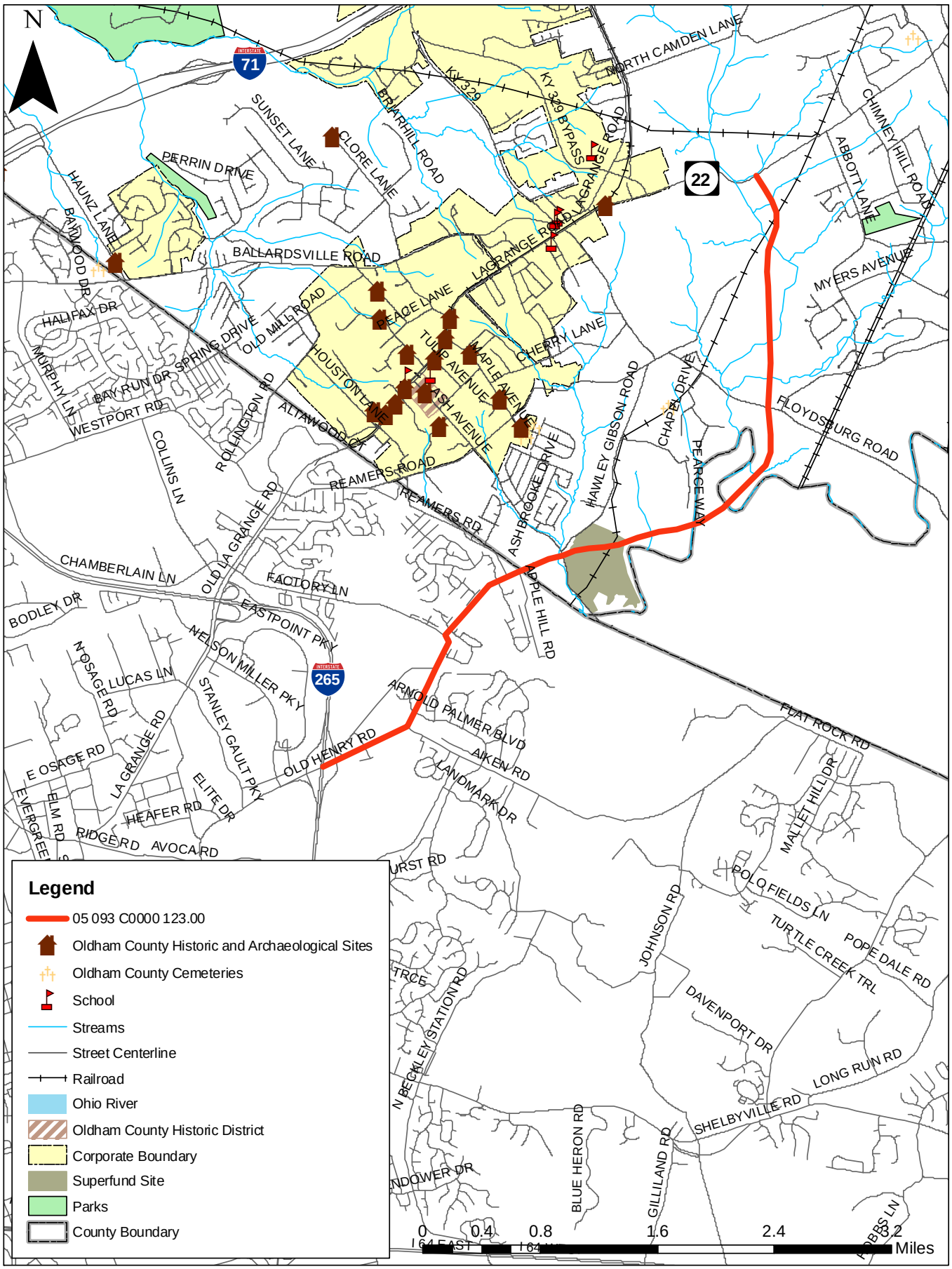
Estimate Procedure Used:

Original Estimate:	Revision 1:	Revision 2:
☐ Per Mile@ $ _____ Terrain: _____	☐ Per Mile@ $ _____ Terrain: _____	☐ Per Mile@ $ _____ Terrain: _____
☐ Detailed Estimate with Calculations Attached	☐ Detailed Estimate with Calculations Attached	☐ Detailed Estimate with Calculations Attached
Estimate Assumptions:	Estimate Assumptions:	Estimate Assumptions:
Estimate Class: _____	Estimate Class: _____	Estimate Class: _____

Section VI – Attachments:

The following items are attached to this document: ☒ Location Map ☐ Photograph(s) ☐ Other:

Comments: **Alignment is conceptual. New route, so no photographs are attached.**



Filename: 05 093 C0000 123^00

Appendix F – KIPDA Traffic Forecast with Updated Numbers for Urban Collector

Old Henry Road Extension Traffic Forecast

KYTC ID: 5-367.00

KIPDA Project ID: 198

General Background

The Kentucky Transportation Cabinet (KYTC) has requested that the Kentuckiana Regional Planning & Development Agency (KIPDA) provide them traffic forecasts in the vicinity of Old Henry Road by utilizing KIPDA's regional travel demand model. The study area is located in northeastern Jefferson County and southern Oldham County. Shelby County is located a few miles to the east of the immediate study area however Shelby County is not part of the Louisville (KY-IN) Metropolitan Planning Area and is therefore not a part of the modeling domain of the regional travel demand model.

Project Background

This project, which will widen, extend, and re-align Old Henry Road from near I-265 in northeastern Jefferson County to KY 22 in Oldham County (near Crestwood), has been in KIPDA's Metropolitan Transportation Plan (MTP) since 1999. It is currently scheduled to be open to the public in 2020. The project as is currently shown in the MTP is scheduled to have five lanes (two lanes in each direction with a median and/or center left-turn lane). A breakout project was provided to KIPDA in December 2010 by KYTC that would significantly modify the project as is currently described in the MTP. The details of the new breakout project are as follows:

- The eastern (or northern) terminus of the breakout project is KY 362 (Ash Avenue) in southern Oldham County.
- The number of lanes has been reduced from 5 to 3 (one lane in each direction, with a continuous center left-turn lane)
- The Open to Public date for the breakout project is 2014.

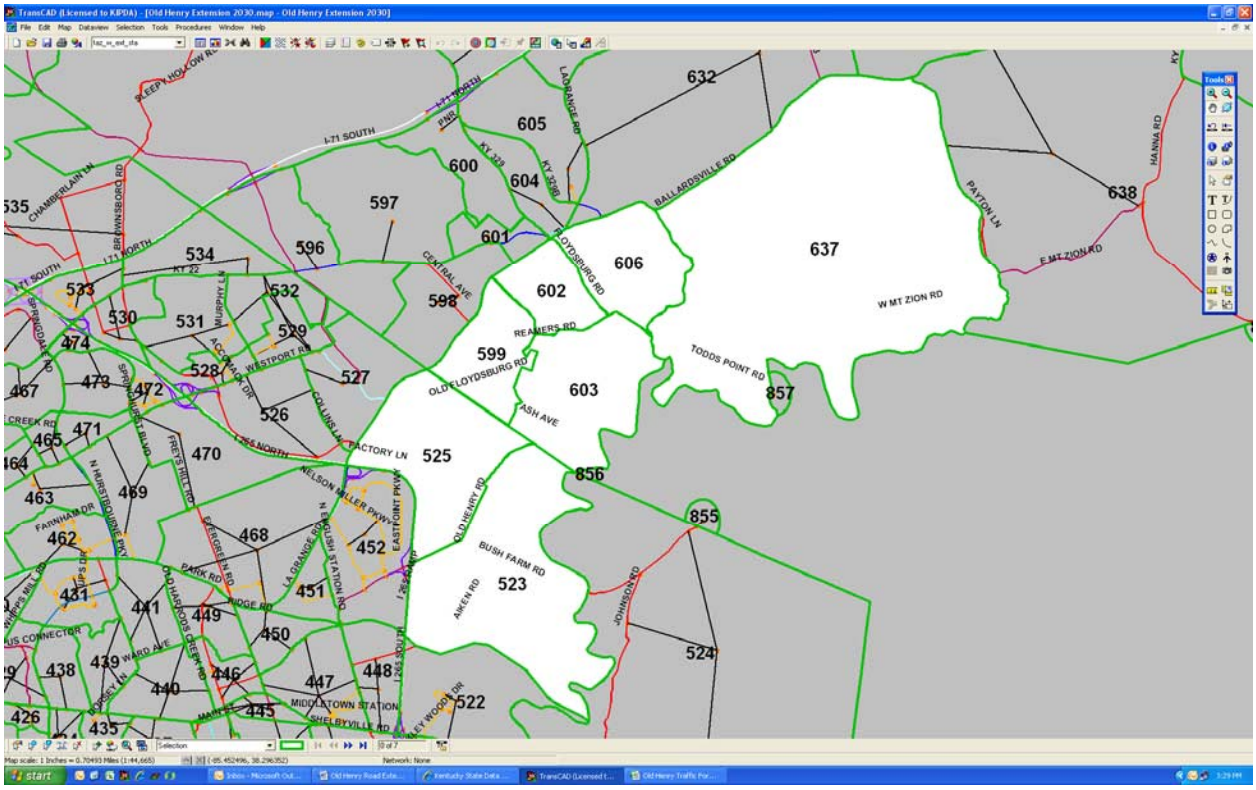
This new breakout project is part of an ongoing (at the date of this writing) amendment of KIPDA's *Horizon 2030* MTP and the Transportation Improvement Program (TIP). This amendment was presented to KIPDA's Transportation Policy Committee (TPC) on April 28, 2011 for their approval, and subsequently has been presented to the federal planning partners for their review and approval, for which they have 60 days to do so.

All model analyses include the project as it is described in its new description above.

Description of Study Area

The immediate study area analyzed for this traffic forecast is approximately 21 square miles. It includes seven Traffic Analysis Zones (TAZ's) in the KIPDA model surrounding the existing and proposed Old Henry Road corridor. TAZ's are small geographical areas used for analyses in the model that are accumulations of Census blocks. The study area includes portions of both Jefferson and Oldham

Counties. In Jefferson County, the study area includes 5.85 sq. mi., which includes the portion of northeastern Jefferson County that is northeast of I-265 (Gene Snyder Freeway) between KY 146 and Floyds Fork. In Oldham County the immediate study area is 15.36 sq. mi. and includes the portion of the county between the Shelby County border and KY 146 (west of Crestwood) and KY 22 (east of Crestwood). The study area is on the eastern boundary of the Louisville (KY-IN) Metropolitan Planning Area and therefore it is also on the eastern limit of the KIPDA modeling domain. Additional traffic forecasts are provided for interstates and other major roadways in this portion of the region that are near the study area. However, detailed socioeconomic analysis and traffic counting were only performed in the immediate study area as described above. A map showing the location of the traffic count locations can be found at the end of this document. A map showing the location of the TAZ's within the study area (outlined in green) is provided in the screenshot below:



Population Growth

Oldham County and eastern portions of Jefferson County have experienced significant population growth over the last few decades. Oldham County has almost doubled in population over the last 20 years. Jefferson County has grown at a much slower rate, yet the county has still added over 75,000 residents over the same time period. Countywide population totals are shown in the table below:

Year	Oldham Co.	Jefferson Co.
1990	33,263	664,937
2000	46,178	693,604
2010	60,316	741,096
2020 est.	73,755	744,311
2030 est.	89,470	771,658
2040 est.	103,931	792,179
2050 est.	117,956	808,880

Sources: Census Data & Kentucky State Data Center Estimates

The growth experienced in the study area is no exception to the countywide numbers. From 2010 to 2030, the population in the study area is expected to approximately double. Just within the past several years, the area near the I-265/Old Henry Road Interchange has undergone significant development, which includes outpatient medical facilities, industrial facilities, office space, and continued residential development. The table below compares 3 estimates of population within the study area by individual TAZ's. The 2007 and 2030 estimates are the populations used in the model analysis. These estimates are based on population forecasts provided to KIPDA by local agencies in the region, Louisville Metro Planning & Design Services and Oldham County Planning in this case. The recently released 2010 Census population is provided for comparison purposes only. The 2010 Census data will be fully incorporated into the KIPDA model at a later date. One difference between the estimates and the Census data is that the estimates do not include population housed in group quarters (prisons, nursing homes, dormitories, etc.). This difference is not expected to be significant within the established study area.

TAZ	2007 Base Model Population	2010 Census Population	2030 Forecasted Population	2010 - 2030 Total Population Growth	2010 - 2030 Annual Population Growth Rate
Jefferson					
523	2,704	2,456	6,839	178.5%	5.3%
525	4,037	7,144	11,966	67.5%	2.6%
Oldham					
599	1,221	593	1,588	167.8%	5.0%
602	1,106	1,372	1,163	-15.2%	-0.8%
603	1,720	1,278	1,531	19.8%	0.9%
606	490	426	1,501	252.3%	6.5%
637	3,437	5,017	4,113	-18.0%	-1.0%
Total					
Sub-Area	**14,715**	**18,286**	**28,701**	**57.0%**	**2.3%**

Sources: *PL 94-171 Data from the 2010 Census. 2007 & 2030 Estimates/Forecasts from Louisville Metro and Oldham County.*

Note: *2010 Population includes group quarters. 2007 & 2030 Estimates/Forecasts do not include group quarters.*

Employment Growth

Similar to the growth that is forecasted in population, this study area is expected to experience significant employment growth over the next 20 years. The table below shows estimated place-of-work employment estimates from the 2007 base model as well as the 2030 model. This is place-of-work employment, meaning that this represents the number of workers that work in the TAZ, not the number of workers that live in the TAZ. Even though total employment is forecasted to grow by a greater percentage over a similar time period, the growth in employment is not nearly as great in absolute numbers (approximately 10,000 new residents vs. 2,700 new employees). These growth estimates show that this study area will likely remain primarily a residential area into the future.

TAZ	2007 Model Employment	2030 Forecasted Employment	2007 - 2030 Total Employment Growth	2007 - 2030 Annual Employment Growth Rate
Jefferson				
523	262	480	83.2%	2.7%
525	413	529	28.1%	1.1%
Oldham				
599	587	562	-4.3%	-0.2%
602	395	848	114.7%	3.4%
603	196	473	141.3%	3.9%
606	646	2,379	268.3%	5.8%
637	270	232	-14.1%	-0.7%
Total				
Sub-Area	**2,769**	**5,503**	**98.7%**	**3.5%**

Existing Roadway Descriptions

Old Henry Road

Old Henry Road is located at approximately the center of the study area. It runs from the southwest to the northeast, roughly parallel to the KY 146, KY 22, and Interstate 71 corridors. It currently connects northeastern Jefferson County to southern Oldham County, near the border of Shelby County. An interchange at I-265 (Gene Snyder Freeway) has been opened over the last decade, spurring additional development near the interchange. The development in the immediate vicinity of the interchange has been primarily commercial and industrial land uses, including new outpatient healthcare facilities. The development that has occurred farther east of the interchange has been exclusively residential.

Continued residential development is expected in both Jefferson and Oldham (and Shelby) Counties near this corridor.

There are 5 lanes (2 in each direction with a two-way center turn lane) on Old Henry Road from the vicinity of the I-265 Interchange to Bush Farm Road. From Bush Farm Road to Reamers Road, there are only 2 lanes. Recent (April 2011) traffic counts are listed below:

Segment	AADT	Lanes
I-265 to Bush Farm	15,200	5
Bush Farm to Factory	8,100	2
Factory to Reamers	5,700	2

Traffic is heaviest near the I-265 Interchange, and it decreases until Old Henry Road ends at Reamers Road, near the Jefferson/Oldham Co. line. Existing truck traffic is negligible. KYTC maintains a count station in the CTS Traffic Counts Database between I-265 and Bush Farm Road. This station was opened after the interchange was opened, so the historical traffic count data only goes back to 2004. From 2004 to 2011, traffic at this count station increased by more than 70*%.* This data is listed below:

Year	AADT
2004	9,050
2005	13,100
2006	13,900
2007	14,800
2010	15,500

Bush Farm Road

Bush Farm Road is a short (less than ½ mile) two lane road that connects Old Henry Road in the west to Aiken Road in the east. A center turn lane has recently been added to Bush Farm Road near Old Henry Road. Several subdivisions are located along Bush Farm Road and there is an elementary school on Aiken Road near the intersection of Bush Farm Road and Aiken Road. A recent (April 2011) traffic count on this road showed an AADT of approximately 8,300 vehicles per day. Bush Farm Road is used primarily as a means to get from the school or these subdivisions to Old Henry Road and its interchange with I-265. Additional historical traffic counts are not available on this roadway, but it is expected that this roadway has experienced significant growth in traffic as this area has added new residential development and the elementary school.

Factory Lane

Factory Lane is a two lane road in northeastern Jefferson County that connects Old Henry Road in the east to KY 146 (LaGrange Road) in the west. It is approximately 1.5 miles long. West of KY 146, Factory Lane turns into Chamberlain Lane, which is a 4 lane road that carries

significant truck traffic since Ford's Kentucky Truck Plant is located on this road. Factory Lane almost exclusively contains residential development along its entire length. This includes a large apartment complex and an entrance to a large subdivision near KY 146. A recent (April 2011) traffic count taken on Factory Lane near its intersection with Old Henry Road showed an AADT of approximately 3,800 vehicles per day. There are no historical traffic counts that are available to use as a comparison.

Reamers Road

Reamers Road is a rural two lane road that connects KY 146 at its intersection with KY 1447 (Westport Road) to Old Henry Road at its existing northern terminus. It is approximately 1.9 miles long and runs very close to the Jefferson/Oldham County line. It currently contains residential development over its entire length, but with much less density than the roads described above. A recent (April 2011) traffic count taken on Reamers Road between Old Henry Road and Village Green Boulevard showed an AADT of approximately 2,400 vehicles per day. There are no historical traffic counts that are available to use as a comparison.

Village Green Boulevard

Village Green Boulevard is a local street through a subdivision in southern Oldham County that connects Reamers Road, near its intersection with Old Henry Road to KY 362 (Ash Avenue). It is less than 0.4 miles long. There are fewer than 100 homes in this subdivision. A recent (April 2011) traffic count taken on Village Green Boulevard near Reamers Road showed an AADT of approximately 1,900 vehicles per day. This road is thought to be used as a shortcut or a cut-through for drivers going to/from north of KY 362 to access Old Henry Road and its interchange with I-265. There are no historical traffic counts that are available to use as a comparison.

KY 362 (Ash Avenue)

Ash Avenue is a rural two lane roadway that connects KY 146 in Pewee Valley to northwestern Shelby County. KY 362 (Central Avenue) continues north of KY 146 to its northern terminus at KY 22. The portion of KY 362 within the immediate study area (KY 146 to Shelby County) is approximately 2.1 miles long. Development along this portion of KY 362 is primarily residential, with the exception of the Kentucky Correctional Institution for Women (KCIW), which is located on KY 362 just east of the Oldham/Shelby County line. KCIW houses almost 700 inmates and employs a staff of more than 200. The ITE Trip Generation Manual does not contain reliable data for trip generation rates for prisons, but it can be expected to contribute significant traffic to the study area's roadways, particularly around the time of a shift change and during visiting hours.

There were 4 recent (April 2011) traffic counts performed along KY 362. This data is listed below:

Segment	AADT
KY 146 to Old Floydsburg	1,500
Old Floydsburg to Village Green	3,300
Village Green to Hawley Gibson	3,600
Hawley Gibson to Shelby County	2,500

The segments are listed from west to east. Traffic increases (in both directions) near Village Green Boulevard, which is consistent with Village Green Boulevard being utilized as a shortcut for drivers. There are two count stations on KY 362 in KYTC's CTS Traffic Counts Database. Station ID 260 is located between KY 146 and Old Floydsburg Road. Station ID 267 is located near Hawley Gibson Road. However, it is not known whether the historical counts were performed east or west of Hawley Gibson Road, which could have a significant impact on how useful the historical data is for this study. The historical data is shown below:

CTS Station 260	
Year	AADT
1992	3,190
2000	4,020
2003	4,120
2004	2,990
2007	3,470
2010	3,190

CTS Station 267	
Year	AADT
1992	1,120
2000	1,210
2003	1,920
2006	2,460
2009	2,230

Traffic has not increased as much on this road as it has on other roads in the study area. This is likely attributable to the residential development being older than most of the other developments in this area, as well as KCIW contributing to the level of traffic for many years.

Hawley Gibson Road

Hawley Gibson Road is a rural two lane road in southeastern Oldham County that connects KY 362 (Ash Avenue) in the south to Old Floydsburg Road in the north, near KY 1408 south of Crestwood. It is approximately 1.5 miles long and runs roughly parallel to KY 146 and I-71. The southern terminus of Hawley Gibson Road is at/near the proposed northern terminus of the Old Henry Road Extension Project. Therefore, Hawley Gibson Road could serve as an extension of the Old Henry Road Corridor to Crestwood once the project is completed. Currently, there is very sparse development along this roadway. A recent (April 2011) traffic count showed an AADT of approximately 1,300 vehicles per day. There are no historical traffic counts available for this roadway.

KY 146 (LaGrange Road)

KY 146 is a 5-lane roadway in northeastern Jefferson County near its interchange with I-265 that narrows to a 2-lane roadway between Chamberlain Lane/Factory Lane and KY 1447

(Westport Road). It continues as a 2-lane roadway into Oldham County. It connects the Oldham County communities of Pewee Valley, Crestwood, Buckner, and LaGrange. Current traffic volumes in the study area range from near 18,000 vehicles per day near I-265 to 12,000 vehicles per day in southern Oldham County. This roadway runs parallel to Old Henry Road, KY 22, and I-71. CSX operates a railroad line just north of KY 146 throughout the study area. Trains will sometimes block crossings, leading to significant congestion on KY 146 at those times. Historical traffic data is available on KY 146 and it does not indicate a significant increase in traffic on this roadway over the past 10-15 years, despite the significant residential development along the corridor.

KY 22

KY 22 is a roadway that changes from an urban section with up to 7 lanes of traffic near I-265 to a 2-lane rural roadway in northeastern Jefferson County and through Oldham County. This corridor has seen significant development over the last 10-20 years. This includes significant commercial development at the I-265 interchange in the past decade. Traffic volumes range from over 20,000 vehicles per day near I-265 to approximately 7,000 vehicles per day near the Jefferson/Oldham County line. Historical traffic counts exist on KY 22, and they approximately doubled around 2000, when much of the development near I-265 was opened. The more rural portions have not experienced nearly as much of an increase in traffic.

Interstate 71

I-71 is an interstate that begins near downtown Louisville and runs parallel to the Ohio River through Oldham County and eventually to Cincinnati, Columbus, and Cleveland, Ohio. There are 4 lanes on I-71 (2 in each direction) throughout the KIPDA Region. Traffic volumes range from near 70,000 south of I-65 to around 50,000 near Crestwood. These current traffic volumes are very high for a 4-lane interstate. There are only 5 interchanges on I-71 in the 14 miles between where I-71 begins and KY 329 near Crestwood, including those at both ends of these limits. Of these 5 interchanges, only Zorn Avenue and KY 329 are interchanges with non-interstate facilities. This interchange density is extremely low for urban interstates in this region.

Interstate 265

I-265 (Gene Synder Freeway) is a circumferential interstate route that connects I-65 in southern Jefferson County to I-71 in northeastern Jefferson County. It is 4 lanes for almost its entire length, including the entirety of the study area. There is another portion of I-265 in Southern Indiana that will be connected to the Kentucky portion upon completion of the Ohio River Bridges Project. Similar to the other corridors, development along the I-265 has increased significantly in recent years. Within the study area, traffic volumes on I-265 range from around 50,000 vehicles per day between KY 146 and KY 1447 to near 75,000 vehicles per day south of I-71. Historical traffic volumes are available on I-265, and many of the

count stations have indicated that traffic has approximately doubled over the past 15-20 years (or less).

Future Conditions

KIPDA Model

A series of 4 model runs of the KIPDA Regional Travel Demand Model were run for this analysis. These 4 runs were 1) Year 2007, 2) Year 2012, 3) Year 2030 Build, and 4) Year 2030 No-Build. The 2007 and 2012 model runs were used to create current year traffic estimates for 2011. These current year estimates were used to compare to the recent traffic count data and to adjust future year model estimates, as well as to provide supplemental data for the links where recent traffic counts are not available. The 2030 Build and No-Build runs were performed to measure the impact of the project on this area's forecasted traffic. To create the Year 2035 estimates, the growth (or decline) from 2011 to 2030 was extrapolated for 5 additional years.

The KIPDA Regional Travel Demand Model is designed to develop regional estimates of travel within the 5-county metropolitan planning region. It is not specifically designed to generate project-level forecasts. Therefore, a significant amount of uncertainty or margin of error can be applied to all of the estimates provided in this report, particularly for the forecasts that are 20+ years in the future. There are 2 fundamental inputs to the model that create much of this uncertainty: 1) the modeled network and 2) the socioeconomic data used in the model. These are described below:

1. **Model Network:** The modeled network consists of all major roadways (generally collectors and above) in the 5-county KIPDA Region. The future year model scenarios contain all of the projects in the *Horizon 2030* Metropolitan Transportation Plan (MTP) based on the Open to Traffic date of each project provided by the project's sponsor. The links in the KIPDA model are capacity-constrained. As a result, increasing traffic volumes will not necessarily correlate with increases in population and employment near a roadway. This process encourages trips in the model to divert to alternate paths until an equilibrium between several paths is reached. Additional links (Reamers Rd., Old Floydsburg Rd., and Hawley Gibson Rd.) were added to the existing KIPDA model for this analysis for connectivity purposes.

2. **Socioeconomic Data:** Compared to a future year model network, the socioeconomic inputs to the model are a much greater challenge to forecast. KIPDA relies on 2 sources for these inputs to the model. First, the base year estimates of population, households, and employment are based on the most recent Census data. Second, the planning staff from local agencies in the KIPDA Region provide forecasts of population and employment for the horizon year of the MTP. These estimates are revised each time the MTP is updated (at least once every 4 years). At this time, 2010 Census data is not available at a level of geography to use in the model (KIPDA staff expect this data to become available in late 2012-early 2013). Therefore, the model continues to rely on data from the 2000 Census which likely creates some errors in the more rapidly growing portions of this region, including the study area of this project.

External Stations

As mentioned throughout this report, this study area is on the eastern edge of the KIPDA modeling domain. The modeling domain includes Jefferson & Oldham Counties, but does not include Shelby County. At the boundaries of the modeling domain, external stations exist where roadways enter or exit the KIDPA Region. There are approximately 50 external stations surrounding the region where external trips are loaded on the network. These trips are representing those trips whose origin is outside of the region. This includes external-internal trips, as well as through trips which do not stop in the region. To generate future year traffic projections at the external stations, a historical growth rate is used based on historical traffic growth. In this study area, all external stations between Interstate 64 (on the eastern boundary of the modeling domain) to Interstate 71 (on the northeastern boundary) are shown below. These volumes are held constant in all modeled scenarios of the same year. So, there will never be a difference (in the modeled traffic projections) between a Build scenario and a No Build scenario for the same year.

External Station ID	Roadway	2007 Model	2012 Model	2011 Model Estimate	2030 Model	Recent Count	Recent Count Year
853	I-64	52,042	58,280	57,030	72,195	51,400	2009
854	US 60	8,737	9,512	9,360	11,094	8,900	2008
855	KY 1531	3,266	4,005	3,860	6,667	4,100	2008
856	KY 362	2,340	2,747	2,670	4,211	2,470	2011
857	KY 1408	1,210	1,397	1,360	2,070	1,270	2010
858	KY 1315	810	912	890	1,278	710	2009
859	KY 53	1,766	2,008	1,960	2,877	1,700	2008
860	KY 22	2,475	2,745	2,690	3,719	2,260	2010
861	KY 712	1,758	1,928	1,890	2,274	1,350	2009
862	I-71	35,949	39,171	38,530	48,168	35,500	2009

Future Roadway Descriptions

This report discusses Year 2030 conditions since that is the horizon year of the MTP and in the travel demand model. A yearly (compound) growth rate from 2011-2030 was developed for each link and applied to the 2030 traffic volumes to extrapolate them to generate the Year 2035 estimates that can be found in the attached table and maps. Please refer to the maps at the end of the report and the table at the end of the section to see all of the forecasted traffic volumes. In addition to the traffic forecasts, the table includes existing and forecasted truck percentages as well as peak hour data. A series of intersection turning movement forecasts are included as well.

Old Henry Road

The 2030 Build scenario contains Old Henry Road as a 3 lane roadway from Bush Farm Road to KY 362. It is also slightly realigned near the Old Henry Road/Factory Lane intersection so that the through movement is for traffic that remains on Old Henry Road. No changes are made on Old Henry Road near the I-265 Interchange.

Forecasted traffic volumes increase significantly for all portions of Old Henry Road in the 2030 Build scenario. Traffic along each section of Old Henry Road increased by approximately 15,000 vehicles per day in this scenario over the 2011 traffic counts. In terms of (compound) percentage growth, the traffic increases by approximately 3.6% per year near I-265 and by over 7% per year near the county line. While the KIPDA model analysis does not provide specific information as to the origins and destinations of the vehicles that are forecasted to use an extended Old Henry Road, it does appear that much of the additional traffic forecasted to utilize Old Henry Road continues to the northeast along Hawley Gibson Road to Crestwood and points east of Crestwood. The model also shows significant increases in traffic on KY 362 (Ash Avenue) which, with the extension of Old Henry Road, will provide an additional connection between Crestwood and I-265 beyond what currently exists.

In the 2030 No-Build scenario, traffic is projected to increase by a much lesser amount. Traffic is forecasted to grow approximately 2% per year near I-265 and less than 1% per year near the county line. Trips to/from near the I-265/Old Henry Road Interchange to near Crestwood are forced onto existing roadways in the No-Build scenario. Many of these roadways (KY 146, I-71, and KY 22) are at or near capacity in the 2030 runs, which forces diversion of some portion of these trips onto other roadways. This diversion would likely include additional trips utilizing Village Green Boulevard as a cut-through from KY 362 to Reamers Road and Old Henry Road. The forecasted 2030 traffic volumes are in the table below:

Segment	Projected 2030 Build AADT	Projected 2030 No Build AADT	Lanes
I-265 to Bush Farm	29,500	21,000	5
Bush Farm to Factory	23,600	12,300	3
Factory to Reamers	21,200	6,400	3
Reamers to KY 362	17,000	N/A	3

From the recent classification traffic count, trucks currently constitute approximately 3.6% of the traffic on Old Henry Road east of I-265. 48-hour classification counts were not available for the other portions of Old Henry Road, but based on the peak-hour turning movement counts at its intersections with Factory Lane and Reamers Road, the truck percentages appear to decrease farther from the interchange. With the development near the county line being almost exclusively residential development, a low truck percentage is expected. Future development along this corridor is expected to be primarily residential, which should keep truck percentages down somewhat. The KIPDA model does not explicitly model trucks, so estimates of future year truck traffic are based on roads with similar functional classification around the state. Using this methodology, the assumed truck percentage growth rate for Urban Minor Arterials and Urban Collectors is estimated at 2.5% per year. This results in a forecasted 2030 truck percentage on Old Henry Road of approximately 3-6%.

Bush Farm Road

Due to the location of the intersection of Old Henry Road and Bush Farm Road, the model shows that increases in traffic on Bush Farm Road in future year scenarios are independent of Old Henry Road being extended. Old Henry Road is not planned to be widened between Bush Farm Road and I-265 in any scenario. Both the 2030 Build and No-Build analyses show approximately a 50% increase in traffic on Bush Farm Road over current levels. The No-Build scenario forecasts traffic to be slightly higher since less traffic will be on Old Henry Road in this scenario, making it a much less congested route to get to/from I-265.

Current Truck traffic is estimated at approximately 4.6% of total traffic. Bush Farm Road is an Urban Local road, so there are no standard adjustment factors to apply to the current truck percentage. Assuming a 2.5% per year growth rate (the rate for Urban Collectors), 2030 truck traffic is estimated to be approximately 7% on Bush Farm Road.

Factory Lane

Similar to Bush Farm Road, the model shows only a slight difference between 2030 Build and No-Build scenarios. Each 2030 scenario projects traffic will approximately double (100% increase) on Factory Lane. Since Old Henry Road will only be slightly modified (two-way center turn lane and minor realignment) between Factory Lane and I-265, only a minor impact in traffic should be expected.

Factory Lane had the greatest percentage of truck traffic of any of the classification counts performed for this analysis. The current truck percentage on Factory Lane is approximately 6.8% of total traffic. This is likely due to the development along Factory Lane not being exclusively residential as it is with many of the roadways being analyzed in this study. Ford Motor Company's Kentucky Truck Plant is a major freight generator that is located on Chamberlain Lane just across KY 146 from Factory Lane. Utilizing KYTC's 2.5% per year growth rate for Urban Collectors, 2030 truck traffic is estimated to be approximately 11%.

Reamers Road

Unlike Bush Farm Road and Factory Lane, the model shows a major difference in traffic on Reamers Road between the 2030 Build and No-Build scenarios. In the Build scenario, the portion of the traffic that would use Reamers Road to get to/from Village Green Boulevard from/to Old Henry Road would no longer use this road. This traffic would now get to KY 362 directly via Old Henry Road. In the No-Build scenario, traffic is estimated to increase by approximately 50% over current levels.

Truck traffic is currently very low on Reamers Road (approximately 2%). Using KYTC's standard growth rate for truck percentages on Urban Collectors of 2.5%, the percentage of trucks in 2030 is estimated to be less than 4% of total traffic.

Village Green Boulevard

Similar to Reamers Road, projected 2030 traffic volumes on Village Green Boulevard vary greatly in the Build and No-Build scenarios. In the 2030 No-Build scenario, traffic is forecasted to approximately double as compared to the recent traffic count. This road would likely remain a shortcut from KY 362 to Old Henry and only get worse as development continues in this portion of the region. This amount of traffic on a local neighborhood street is far from ideal and other solutions to limiting the amount of cut-through traffic would likely be pursued.

In the 2030 Build scenario, the model shows traffic decreasing by nearly half of the existing traffic. Traffic that may use Village Green Boulevard in the No-Build scenario would shift over to the new parallel route that the Old Henry Extension would provide.

Current year classification data from the recent count is not available. However, truck traffic on Village Green Boulevard will be no more than the truck traffic along Reamers Road or KY 362. Using a similar growth rate that was used for those roads, the 2030 truck percentage is likely to be less than 4%. In the Build scenario, it is likely to be much less since only local delivery and service vehicles would need to use this roadway while the larger vehicles would use Old Henry Road.

KY 362 (Ash Avenue)

Traffic volumes on KY 362 are also projected to be strongly impacted by the addition of the Old Henry Extension Project. In the Build scenario, Old Henry Road provides a more viable alternative path for drivers to get between the Crestwood and I-265. Forecasted 2030 traffic volumes are forecasted to triple on KY 362 near Village Green Boulevard. The forecasted traffic volumes east of Hawley Gibson Road are not impacted by the project in the model analysis since it is on the edge of the KIPDA modeling domain and are controlled by the external station volume in the model. Traffic growth along this portion of KY 362 will depend heavily on the amount of future development in Shelby County and at the Kentucky Correctional Institute for Women.

The No-Build scenario shows much more modest traffic growth than the Build scenario does. Forecasted traffic levels are well below the capacity of this roadway and are forecasted to grow by only 0-3% per year. The heaviest traffic is expected between Village Green Boulevard and Hawley Gibson Road as it exists today.

Current truck percentages on KY 362 are between 4-5%. By applying the standard (KYTC) truck percentage growth rate for urban collectors of 2.5% per year, 2030 truck traffic would grow to approximately 7%. Similar to the overall 2030 traffic levels, this amount of truck traffic depends on the type of development that occurs in this area. If the future development is primarily residential, the truck percentage is likely to remain near the existing 4-5% level.

Hawley Gibson Road

Hawley Gibson Road currently carries the least amount of traffic in the study area that traffic count data was collected for. The current ADT of less than 1,300 vpd reflects the rural character of this roadway and of the development near it. In the 2030 Build scenario, traffic is forecasted to more than triple with the Old Henry Extension Project in place. With the removal of the portion of the Old Henry Extension project from KY 362 to Crestwood, Hawley Gibson Road could essentially serve as a continuation of the Old Henry corridor. Should additional development occur along the Old Henry/Hawley Gibson corridor beyond what is currently expected, the forecasted traffic levels could increase significantly. Similarly, if Hawley Gibson

Road is upgraded to a roadway similar to the proposed Old Henry Extension (3 lanes, reduced curvature, reduced grade), additional development could follow, leading to even more traffic.

The No-Build scenario shows only modest growth on Hawley Gibson Road in 2030. It remains an option to get between I-265 and Crestwood, but not a truly viable one until either the corridor is upgraded or the congestion on the parallel routes gets significantly worse.

Truck traffic is minimal now and is not expected to grow beyond 5% even after applying the KYTC standard growth rate for rural collector of 2.0% per year. Only significant changes in development patterns or upgrading Hawley Gibson (i.e. widening, less curvature, less grade) would have a major impact on the amount of truck traffic.

KY 146

KY 146 is the parallel route is closest proximity to the proposed Old Henry Road Extension. It directly connects Crestwood to I-265. It is likely to remain the primary route for those trips from Crestwood to eastern and southern Jefferson County via I-265 until capacity on this roadway(s) is exceeded. There are capacity adding projects on KY 146 included in the 2030 model scenarios. This includes a widening project on KY 146 from Factory Lane to KY 1447 (Westport Road) / Reamers Road to 5 lanes. Similarly, there is a series of widening projects on KY 146 in Crestwood. Additional capacity adding projects will likely be limited due to the road's proximity to the CSX railroad line, among other reasons. Even with the capacity adding projects on KY 146 and Old Henry Road included in the analysis, both 2030 model scenarios show traffic levels on KY 146 that exceed the roadway's capacity.

In the 2030 Build scenario, traffic is forecasted to more than double over the next 20 years near I-265. This is the portion where capacity will be added by the KYTC project mentioned above (currently scheduled to be open to traffic in 2015 in the KIPDA MTP). The portions of KY 146 in the study area in Oldham County are expected to see little traffic growth by 2030. The model shows traffic growth of less than 1.0% per year. This is an example of the capacity constraint in the model. With the amount of development in the model and the amount of traffic on other portions of KY 146, the forecasted traffic volume is being constrained as trips that would use KY 146 are shifted to other routes.

The 2030 No-Build scenario shows that traffic on KY 146 would be impacted by the Old Henry Road Extension project. For the portion of KY 146 that parallels Old Henry Road, 2030 traffic is forecasted to be approximately 5-10% greater in the No-Build scenario as compared to the Build scenario.

Current truck percentages on KY 146 are in the range of 3-6%. Assuming a consistent truck percentage throughout this corridor within the study area and the standard KYTC 2.5% per year

growth rate for urban minor arterials, trucks can be expected to constitute approximately 5-9% of the total traffic mix in 2030.

KY 22

Similar to KY 146, KY 22 provides another parallel route to the proposed Old Henry Road Extension from I-265 to the Crestwood area. Also similar to KY 146, KY 22 currently experiences very high traffic volumes near I-265 as compared to the traffic volumes on this road in Oldham County, at least partly due to recent development that has occurred near I-265. There are several KY 22 improvement projects currently listed in the MTP. These include projects that would involve widening KY 22 to (at least) 5 lanes from I-265 to KY 329 in Crestwood. Other projects would widen KY 22 in Crestwood and east of Crestwood as well. All of these projects are included in both 2030 model scenarios, which provide substantial added capacity beyond what presently exists. Any changes (including delays or reduction in the number of lanes) to the projects would likely have a significant impact to all of the forecasts provided in this report.

In both 2030 scenarios, traffic on all sections of KY 22 is consistent over the entire route within the study area, which is unlike the current traffic counts which are much less in what are currently rural portions of Oldham County. Both scenarios show traffic increasing by nearly 8% year between now and 2030 on the Oldham County portions of KY 22. KY 22 is one corridor that the model over-assigns traffic in the current scenario, meaning that it overestimates traffic when compared to the traffic counts. Once the future scenario forecasts are adjusted to account for this, the adjusted traffic volumes are still at or near the capacity of this roadway. The No-Build scenario is forecasted to carry more than traffic than the Build scenario over all sections of KY 22. The amount of additional traffic carried by KY 22 in the No-Build scenario versus the Build scenario is actually greater than the difference on KY 146. This would indicate that KY 22 is as much of a viable alternative route (especially considering capacity constraint) to the Old Henry Extension as KY 146 is. The model appears to indicate that KY 22 will carry a significant portion of the traffic that diverts from the other capacity constrained roadways in the area (primarily I-71 and KY 146) once capacity is added to it.

Trucks do not currently constitute a large percentage of traffic on the KY 22 corridor. Current truck percentages range from 2-5%, with the higher truck percentages in the more heavily developed portion of the corridor in Jefferson County. Applying a 2.5% per year growth rate to these percentages equals a truck percentage of approximately 4% in Oldham County and near 8% near I-265.

Interstate 71

I-71 is another route that the model shows additional traffic on in the 2030 No-Build scenario as compared to the Build scenario. The percent difference is not as great on I-71 as KY 146 and KY 22, but the number of vehicles estimated to "shift" to I-71 is similar to the amount that shifts to KY 22 and would shift to KY 146 if it had additional capacity available. Growth on I-71 is limited between the current traffic levels and either 2030 scenarios. Less than 1% per year growth is forecasted on all sections of I-71 near the study area. This is due to I-71 being near the capacity for a 4-lane interstate in the model, which limits the amount of additional traffic assigned to it in the model. If a widening project was included in the MTP for this portion of I-71 (as there once was) and therefore included in the model, the forecasted traffic volumes over the entire study area would likely be very different. The significant capacity adding projects on KY 22 should also contribute to this slow growth in traffic on I-71

Truck traffic is a major issue on I-71. Currently, trucks constitute between 12-18% of the total traffic on I-71 in this area. I-71 is the only viable option for intercity trips between Louisville and Cincinnati (and points beyond each). Therefore, the truck traffic on all of the other routes is likely to be local traffic. Only in extreme congestion would a long-haul truck utilize any of the arterial routes in this study area to get through this study area. Applying the 2.5% per year growth rate yields truck percentages in the range of 20-30%. As residential development expands farther out from downtown Louisville, local commuters will make up a greater amount of the traffic on I-71 in this area. Therefore, truck percentages are likely to remain around the current percentage on I-71.

I-265

The impact of the Old Henry Extension project on I-265 is seen in the model on the portion of I-265 between the Old Henry Road Interchange and the I-71 Interchange. Without the Old Henry Road Extension in place in the 2030 No-Build scenario, traffic volumes are approximately 5% higher than in the 2030 Build scenario. In each of the 2030 scenarios, it is assumed that I-265 will be 6 lanes wide as the KYTC's projects in the MTP indicate.

Currently, trucks make up about 8-9% of the total traffic on I-265. By applying the 2.5% per year growth rate for urban interstates, 2030 truck percentages are estimated to be around 13%. Providing added uncertainty to these estimates is the Louisville Southern Indiana Ohio River Bridges Project (LSIORB). Both bridges are included in the 2030 model scenarios, and include tolling. Any changes to this project, including a changed to the assumed tolling rate, will affect all traffic, including truck traffic on I-265 and throughout this study area.

Peak Hour Conditions

The Design Hour Volume (DHV) or K-Factor was calculated for each of the count stations in the study area. Additional data from KYTC's Highway Information Systems (HIS) Data was utilized to calculate these volumes and percentages. For the counts that were performed by Louisville Metro, KIPDA, and KYTC District 5 staff, the K-Factor was calculated by dividing the single highest peak hour (AM or PM) of the entire count (some were 48-hour counts while others were 7 days) by average weekday (unadjusted) traffic volumes.

K-Factors were calculated on the other roadways in a similar fashion by dividing the reported peak hour traffic by the reported ADT. Hour by hour data were not available for these routes, but this should yield a similar result for comparison purposes.

The K-Factors in the immediate study area range from 10-15%. These are higher than the average roadways around the state, where the average is around 10%. The high K-Factors in this area are likely attributable to the nature of the development in this area. With this area being almost exclusively developed as a residential area at this time, coupled with the lack of commercial developments in the immediate area, it is logical that a higher percentage of trips are those to/from work or school in the morning or afternoon peak hours. Should the area add additional commercial development, the K-Factors would likely decrease to a level closer to the statewide average.

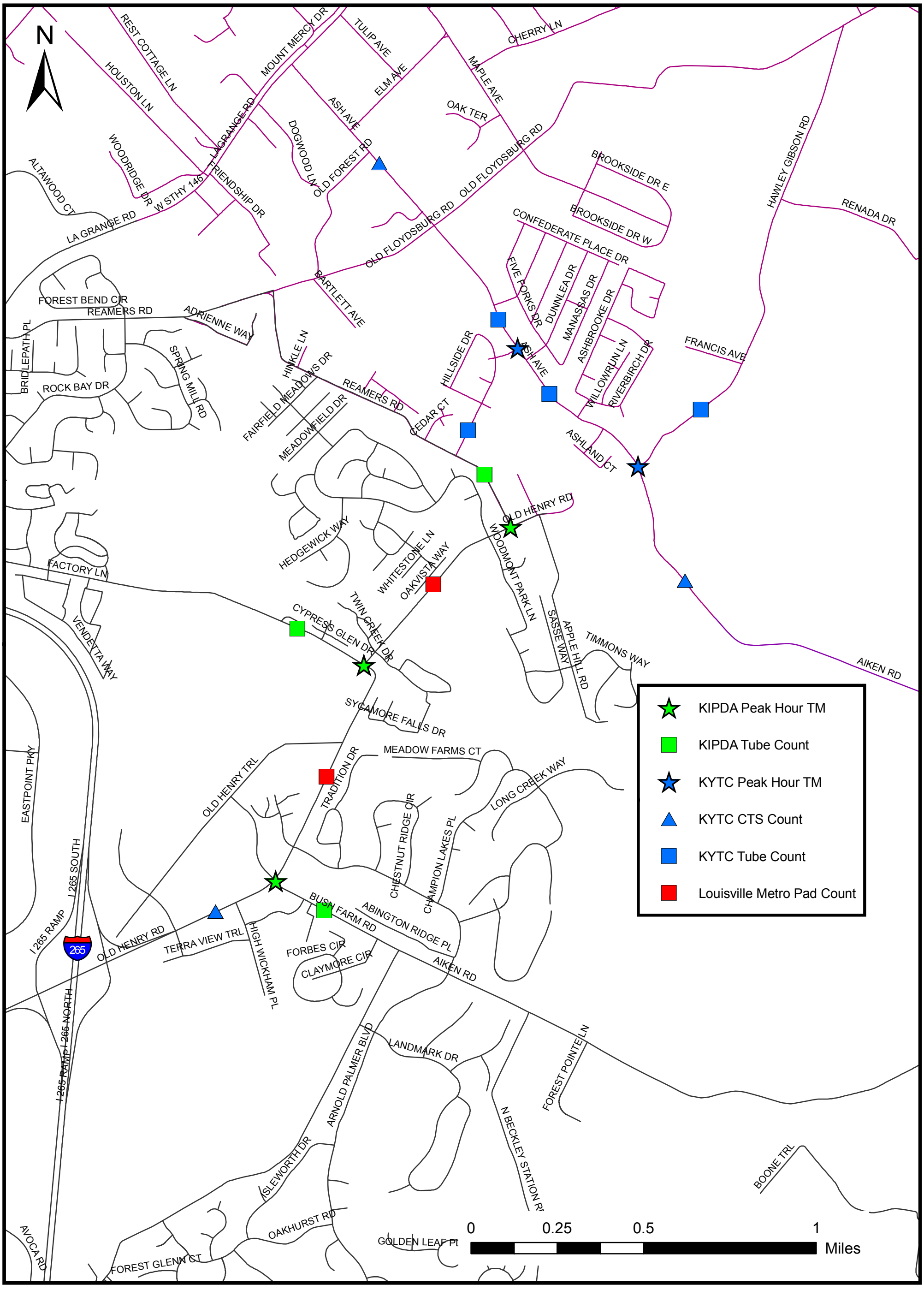
On the major roadways where data was analyzed from CTS counts and HIS data, the K-Factors were lower. They ranged from 8-9%. The interstates in the area will always carry a larger number of trips in the off-peak hours due to the nature of the longer distance trips that traditionally utilize interstate facilities. On KY 22 and KY 146, each of these corridors has a good amount of commercial development along them and industrial development nearby, contributing to a lower K-Factor. These types of development will spread the traffic out more evenly throughout the day than on a corridor that contains almost exclusively residential development.

Peak hour turning movement counts and 2035 estimates can be found in the intersection diagrams on the following pages.

Old Henry Road (KY 3084)/Crestwood Connector Traffic Forecasts

	Station	Recent Count	2030 Build	2030 NoBuild	2011 Truck %	Truck % GR	2030 Truck %	Peak Hour %	2011 - 2035 Build GR	2011 - 2035 NoBuild GR	2035 Build	2035 NoBuild
Old Henry Road (KY 3084)												
south of Bush Farm		15,161	29,500	21,000	3.6%	2.5%	5.8%	13.3%	3.6%	1.7%	35,100	22,900
Bush Farm to Factory		8,099	23,600	12,300	2.5%	2.5%	4.0%	14.2%	5.8%	2.2%	31,300	13,700
Factory to Reamers		5,736	21,200	6,400	2.0%	2.5%	3.2%	15.0%	7.1%	0.6%	29,900	6,600
Reamers to KY 362		N/A	17,000	N/A	1.5%	2.5%	2.4%	14.2%	5.5%	N/A	22,200	N/A
Bush Farm Road												
east of Old Henry		8,317	12,500	13,600	4.6%	2.5%	7.4%	10.9%	2.2%	2.6%	13,900	15,500
Factory Lane												
west of Old Henry		3,758	7,200	8,200	6.8%	2.5%	10.9%	10.3%	3.5%	4.2%	8,500	10,100
Reamers Road												
west of Old Henry		2,420	1,300	3,800	2.1%	2.5%	3.4%	12.0%	-3.2%	2.4%	1,100	4,300
Ash Avenue (KY 362)												
KY 146 to Old Floydsburg		1,465	8,000	2,900	4.5%	2.5%	7.2%	10.7%	9.3%	3.7%	12,500	3,500
Old Floydsburg to Village Green		3,318	9,400	3,500	4.1%	2.5%	6.6%	10.3%	5.6%	0.3%	12,400	3,500
Village Green to Hawley Gibson		3,552	8,200	5,100	4.5%	2.5%	7.2%	10.2%	4.5%	1.9%	10,200	5,600
east of Hawley Gibson		2,465	3,900	3,900	4.3%	2.5%	6.9%	11.0%	2.4%	2.4%	4,400	4,400
Hawley Gibson Road												
east of KY 362		1,289	4,300	2,000	2.9%	2.0%	4.2%	12.4%	6.5%	2.3%	5,900	2,200
Village Green Blvd.												
north of Reamers		1,937	1,300	3,600				11.9%	-2.1%	3.3%	1,200	4,200
KY 146												
east of Chamberlain	112	18,100	37,500	39,700	3.5%	2.5%	5.6%	8.1%	3.9%	4.2%	45,400	48,800
near Jefferson/Oldham Co. line	B01	12,800	13,200	15,400	3.5%	2.5%	5.6%	8.1%	0.2%	1.0%	13,300	16,200
at Pewee Valley/Crestwood line	B08	12,700	15,200	13,700	5.6%	2.5%	9.0%	8.1%	1.0%	0.4%	15,900	14,000
KY 22												
east of I-265	V28	20,700	36,700	38,300	4.9%	2.5%	7.8%	8.4%	3.1%	3.3%	42,700	45,000
east of Jefferson/Oldham Co. line	500	7,000	29,100	34,000	2.5%	2.5%	4.0%	8.4%	7.8%	8.7%	42,300	51,500
near Clore Ln.	B23	8,970	37,900	38,600	2.5%	2.5%	4.0%	8.4%	7.9%	8.0%	55,400	56,700
I-71												
south of I-265	A07	69,000	70,100	70,500	12.4%	2.5%	*19.8%*	7.7%	0.1%	0.1%	70,400	70,900
north of I-265	A05	56,600	64,500	67,000	18.5%	2.5%	*29.6%*	7.8%	0.7%	0.9%	66,800	70,000
north of KY 329	311	50,700	56,400	57,900	17.8%	2.5%	*28.5%*	8.1%	0.6%	0.7%	58,000	60,000
I-265												
south of Old Henry	B14	56,600	99,700	99,100	8.2%	2.5%	13.1%	8.4%	3.0%	3.0%	115,700	114,800
north of Old Henry	B39	52,700	91,800	98,200	8.9%	2.5%	14.2%	8.0%	3.0%	3.3%	106,200	115,700
south of KY 1447	A76	50,800	95,100	99,600	8.7%	2.5%	13.9%	8.6%	3.4%	3.6%	112,200	118,900
south of KY 22	A13	53,500	95,800	100,500	8.7%	2.5%	13.9%	8.6%	3.1%	3.4%	111,700	118,600
south of I-71	A11	74,800	125,200	128,200	8.7%	2.5%	13.9%	9.3%	2.7%	2.9%	143,400	147,700

*Note: Cells in **red** are estimates based on other values*



PROPOSED TRAFFIC COUNT LOCATIONS
OLD HENRY RD. TRAFFIC FORECAST

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TRAFFIC FORECASTS
OLD HENRY RD. TRAFFIC FORECAST

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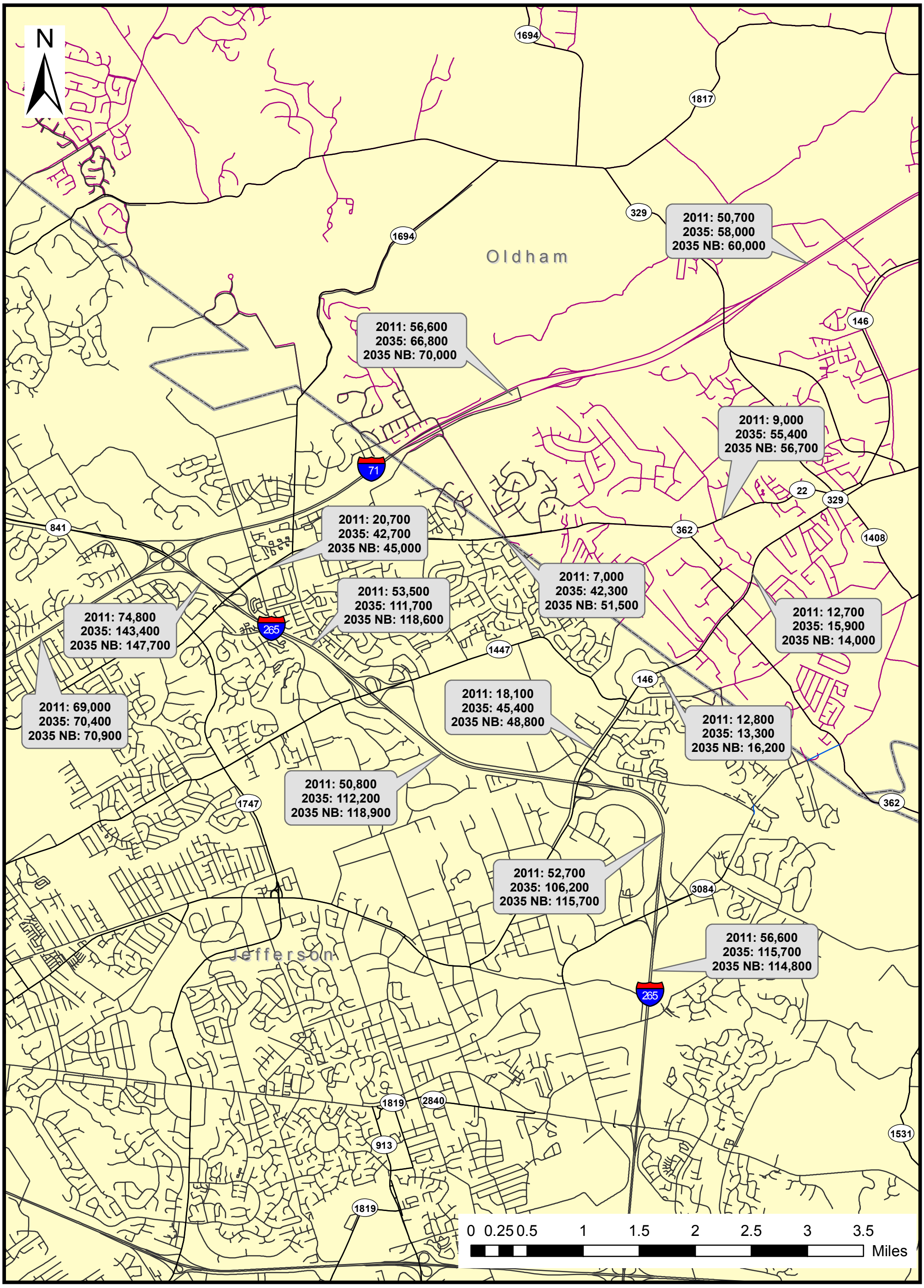

TRAFFIC FORECASTS
OLD HENRY RD. TRAFFIC FORECAST

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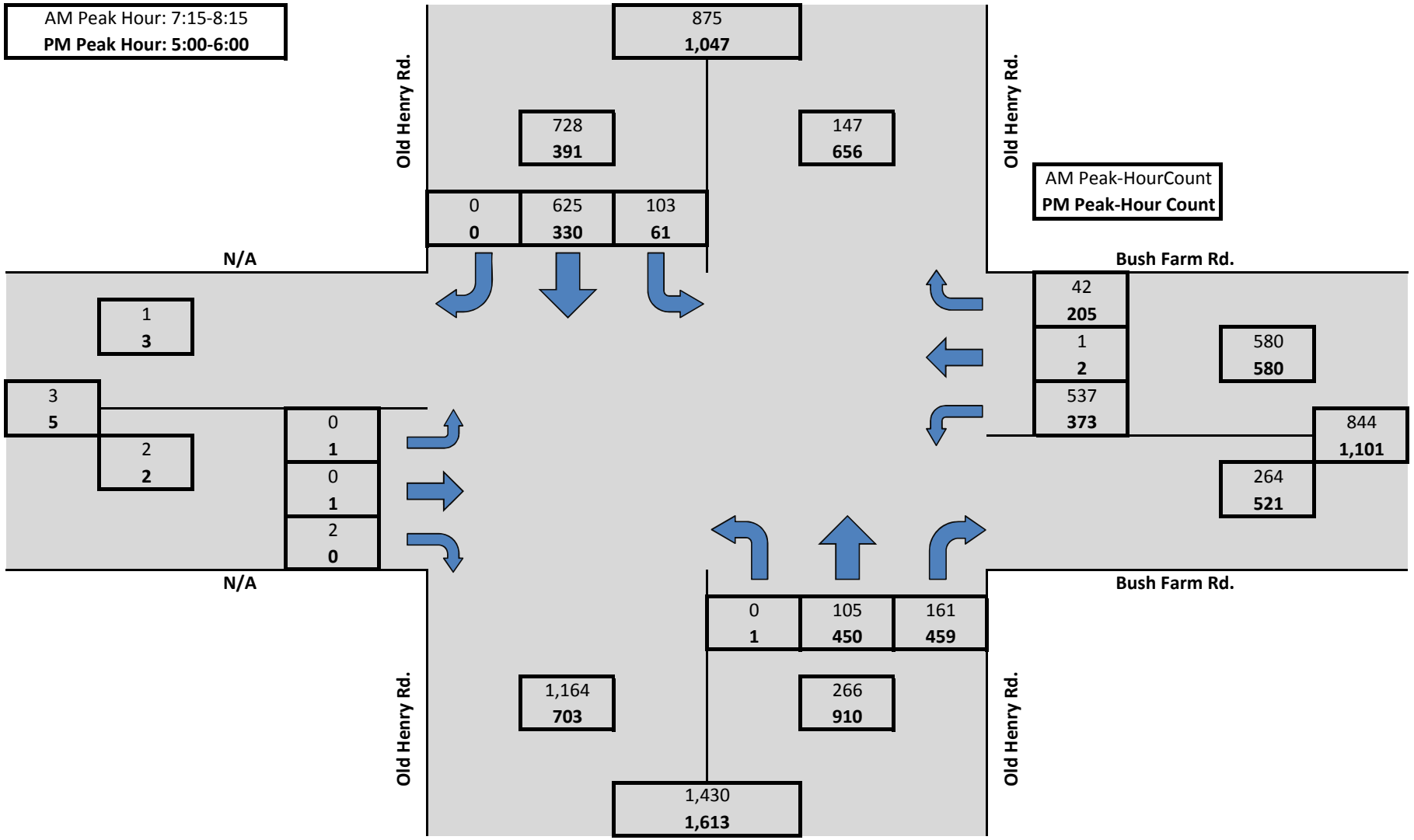
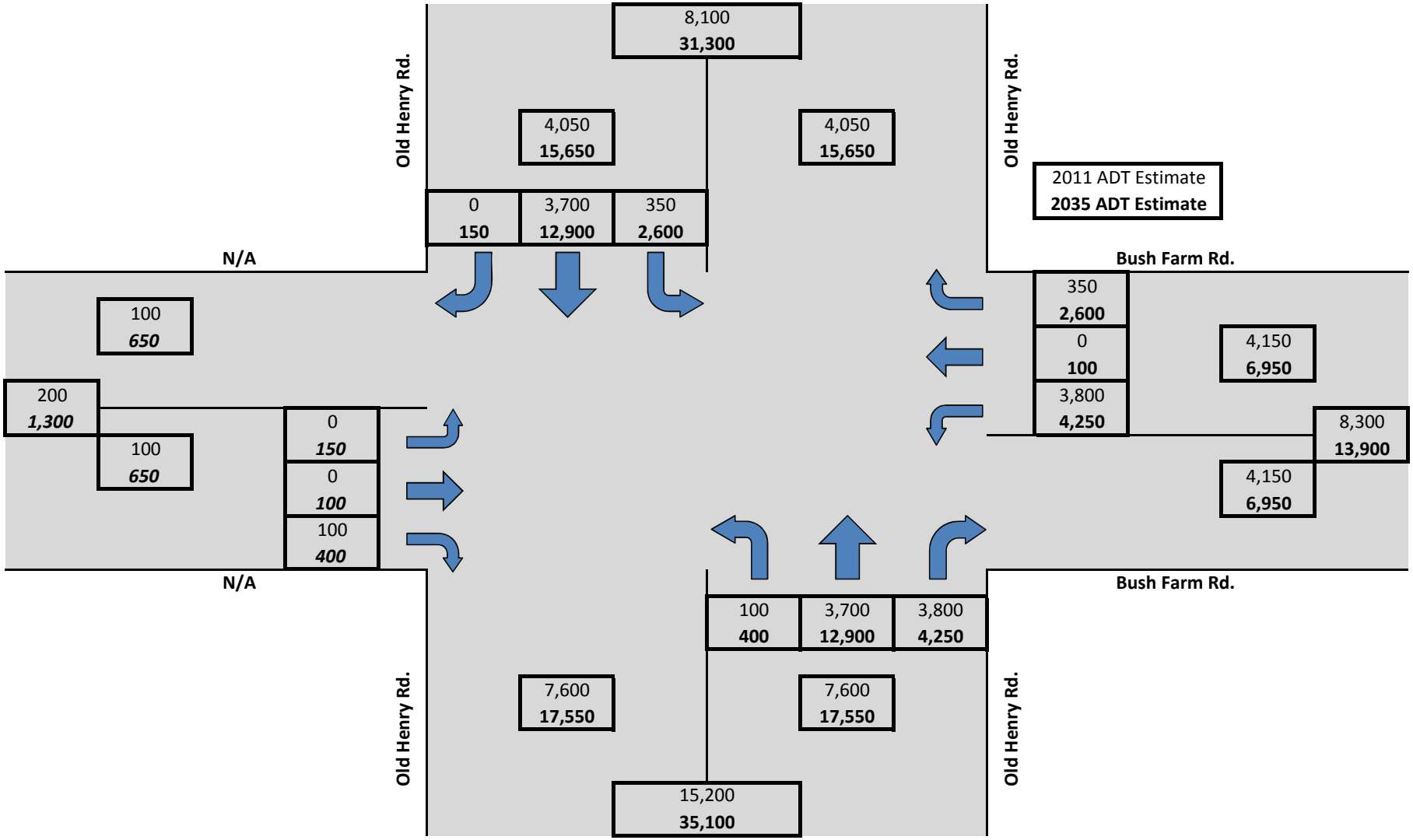
Old Henry Road @ Bush Farm Road Intersection

2011 Peak-Hour Turning Movements



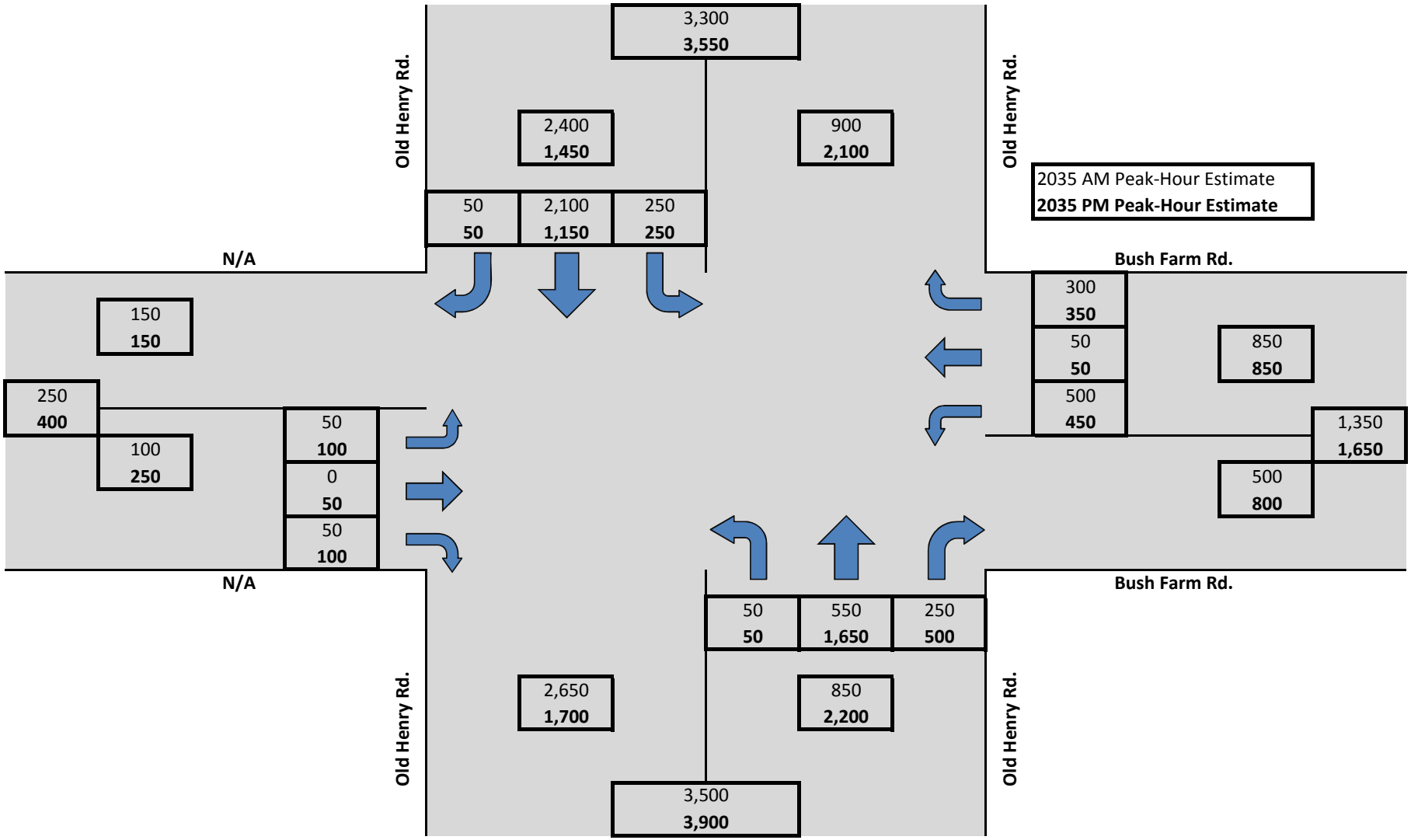
Old Henry Road @ Bush Farm Road Intersection

2011/2035 Build Turning Movement Estimates



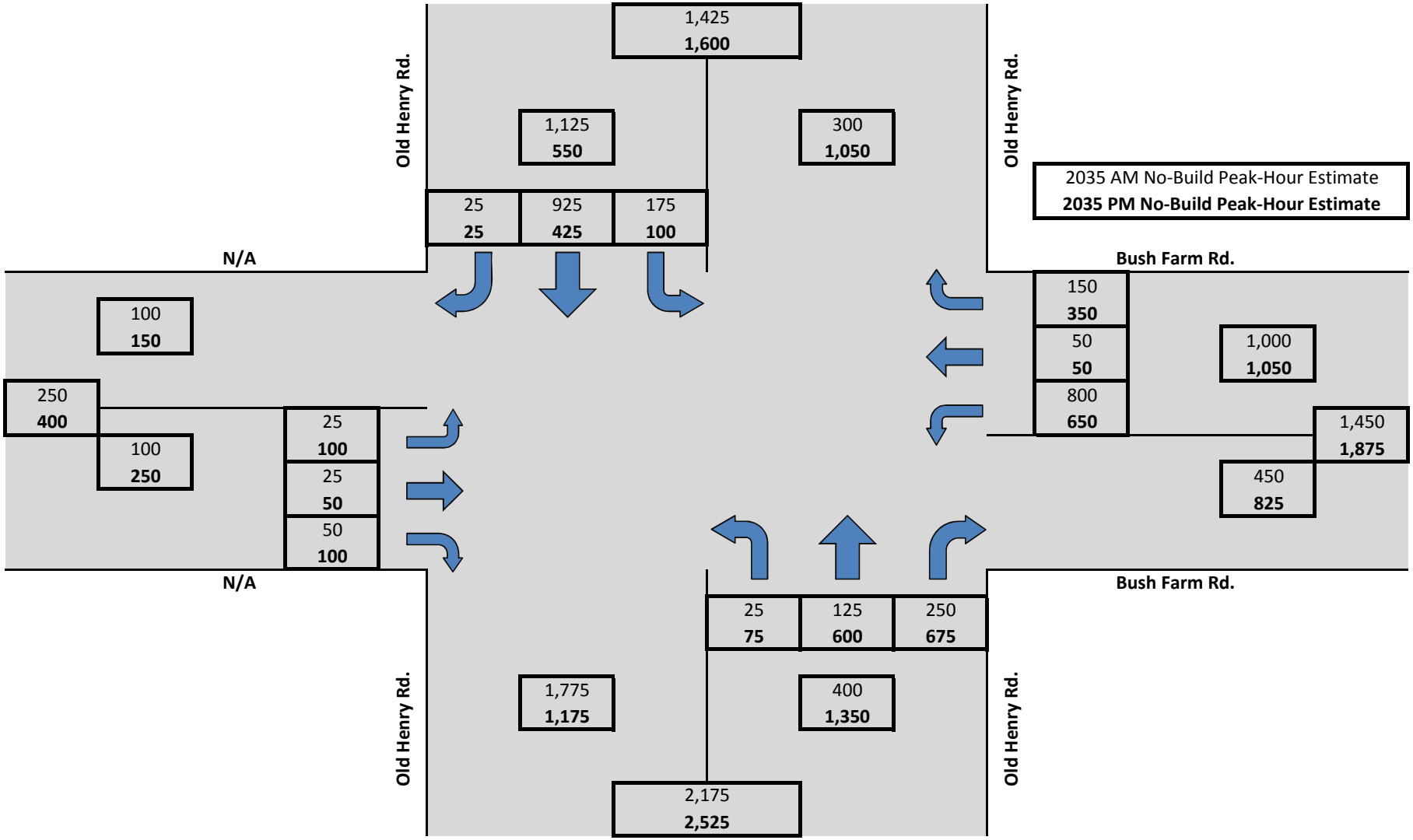
Old Henry Road @ Bush Farm Road Intersection

2035 Build Peak-Hour Turning Movement Estimates



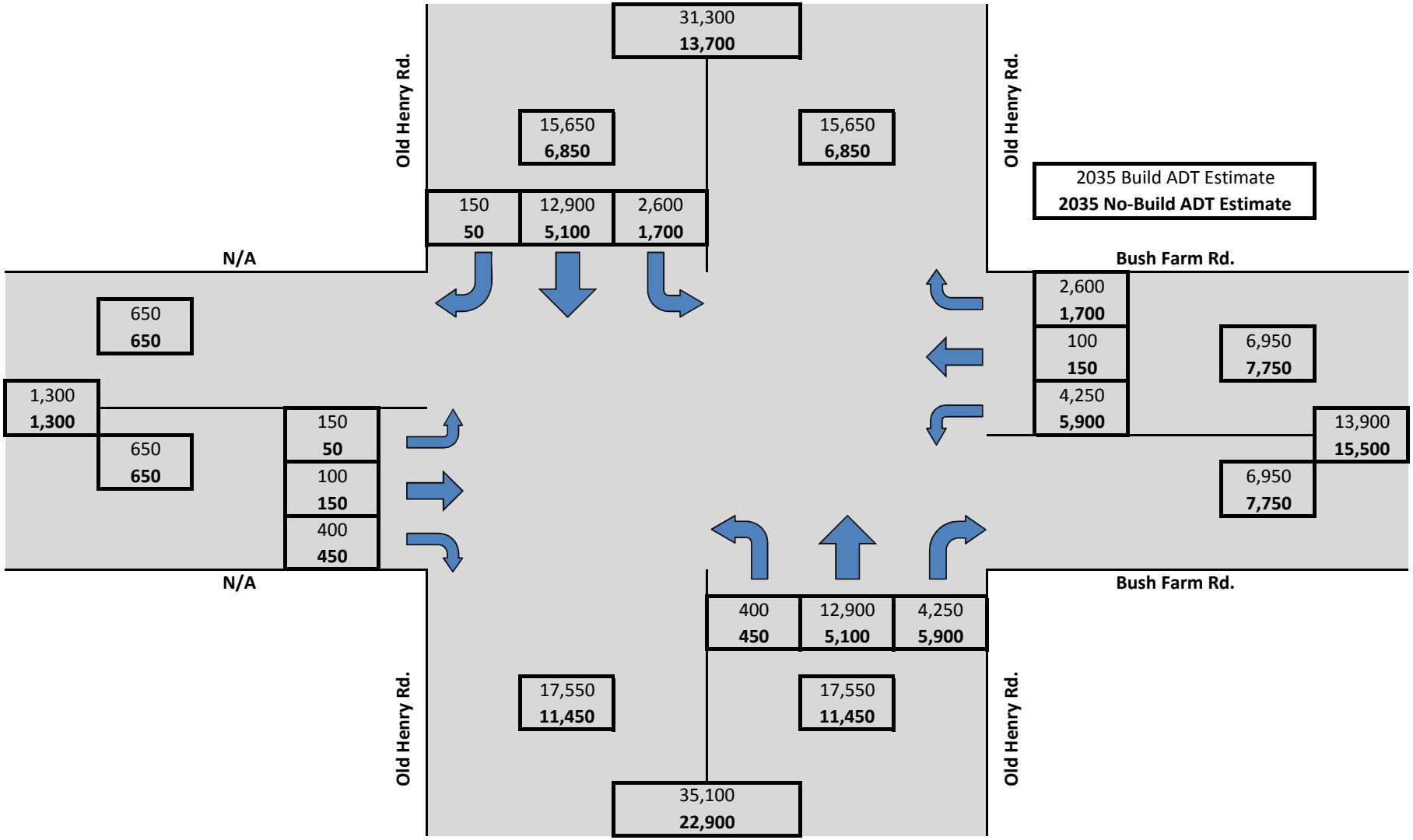
Old Henry Road @ Bush Farm Road Intersection

2035 No-Build Peak-Hour Turning Movement Estimates



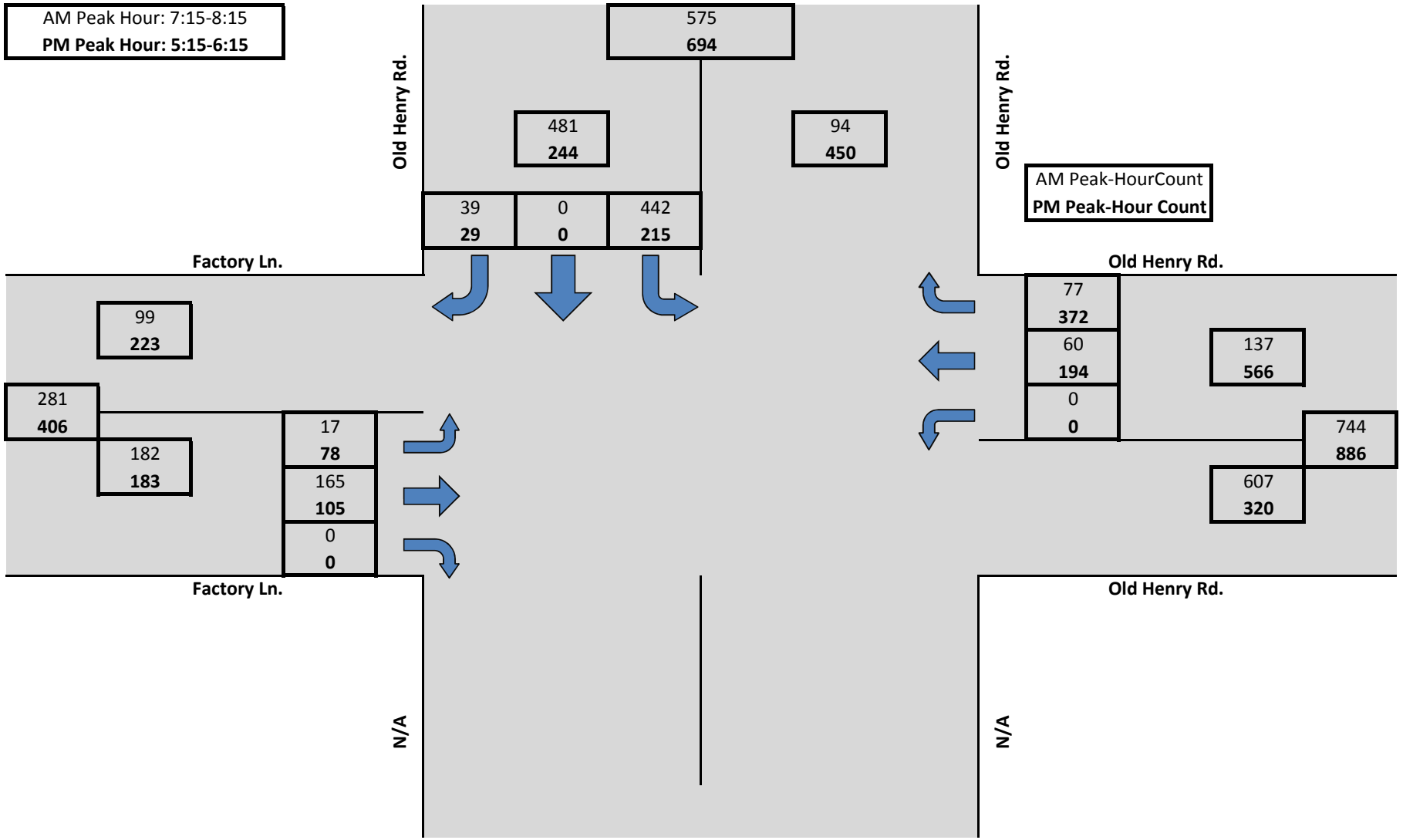
Old Henry Road @ Bush Farm Road Intersection

2035 Turning Movement Estimates



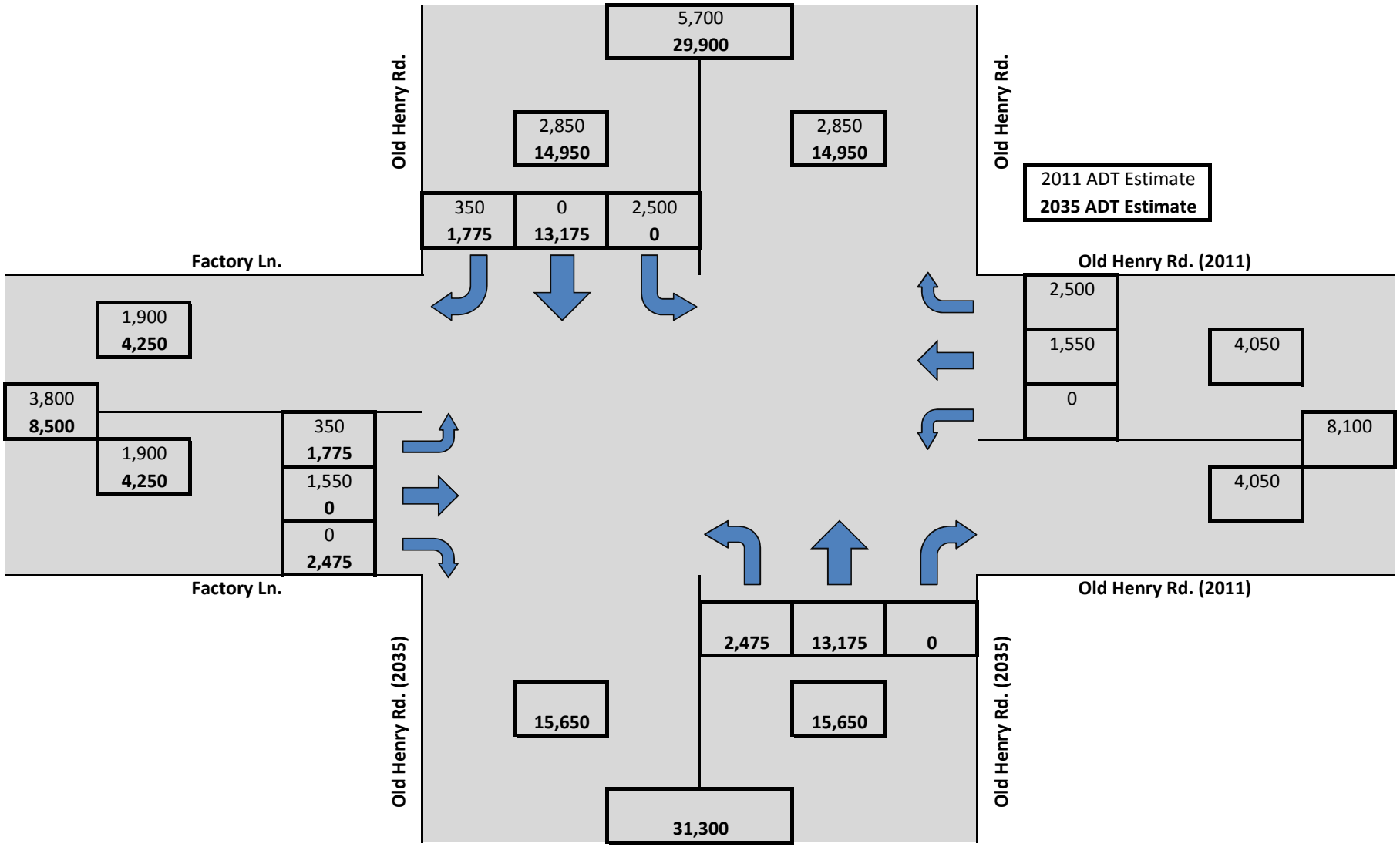
Old Henry Road @ Factory Lane Intersection

2011 Peak-Hour Turning Movements



Old Henry Road @ Factory Lane Intersection

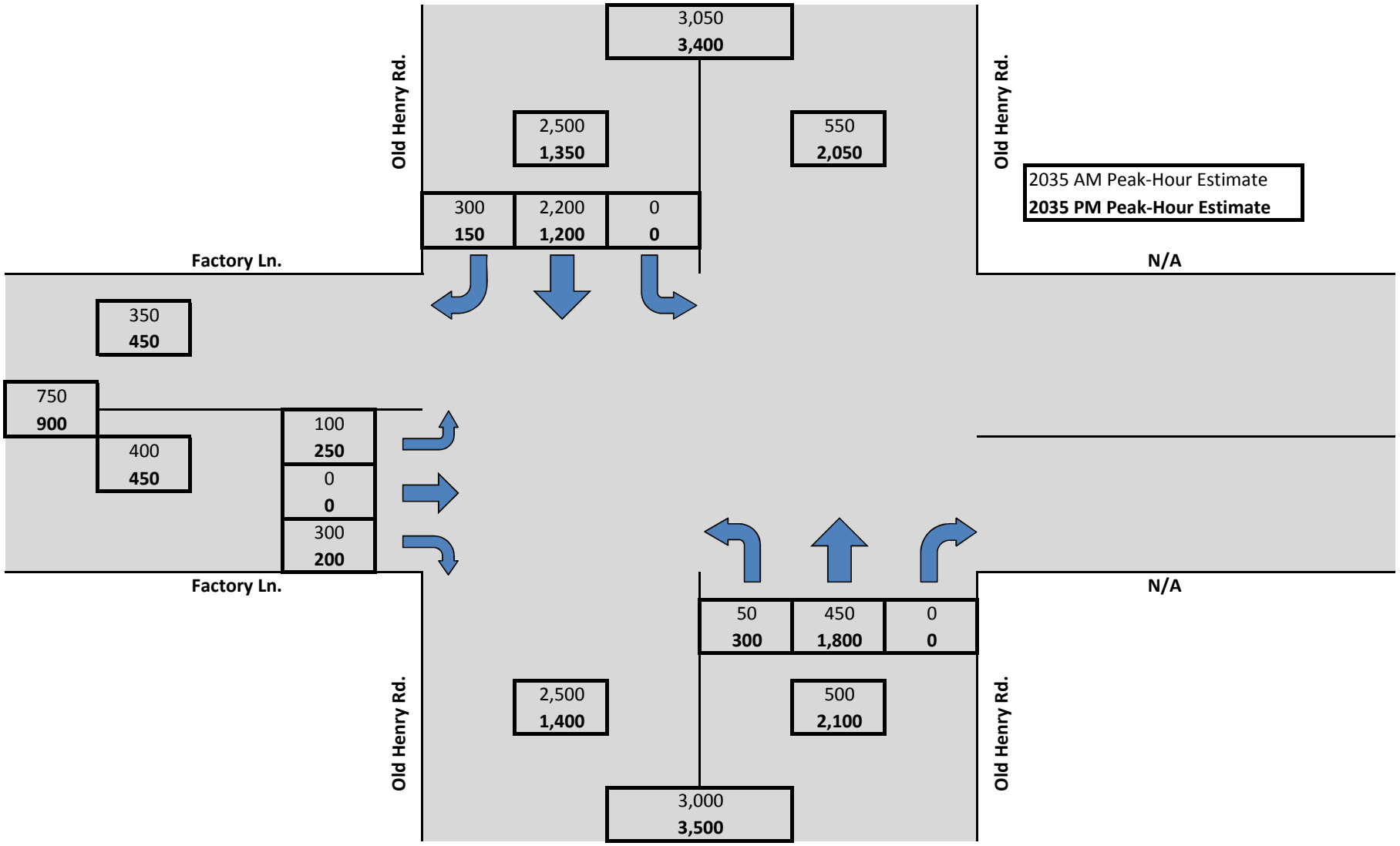
2011/2035 Build Turning Movement Estimates



Note: Intersection will be re-aligned so that Old Henry Road is a N/S through movement.

Old Henry Road @ Factory Lane Intersection

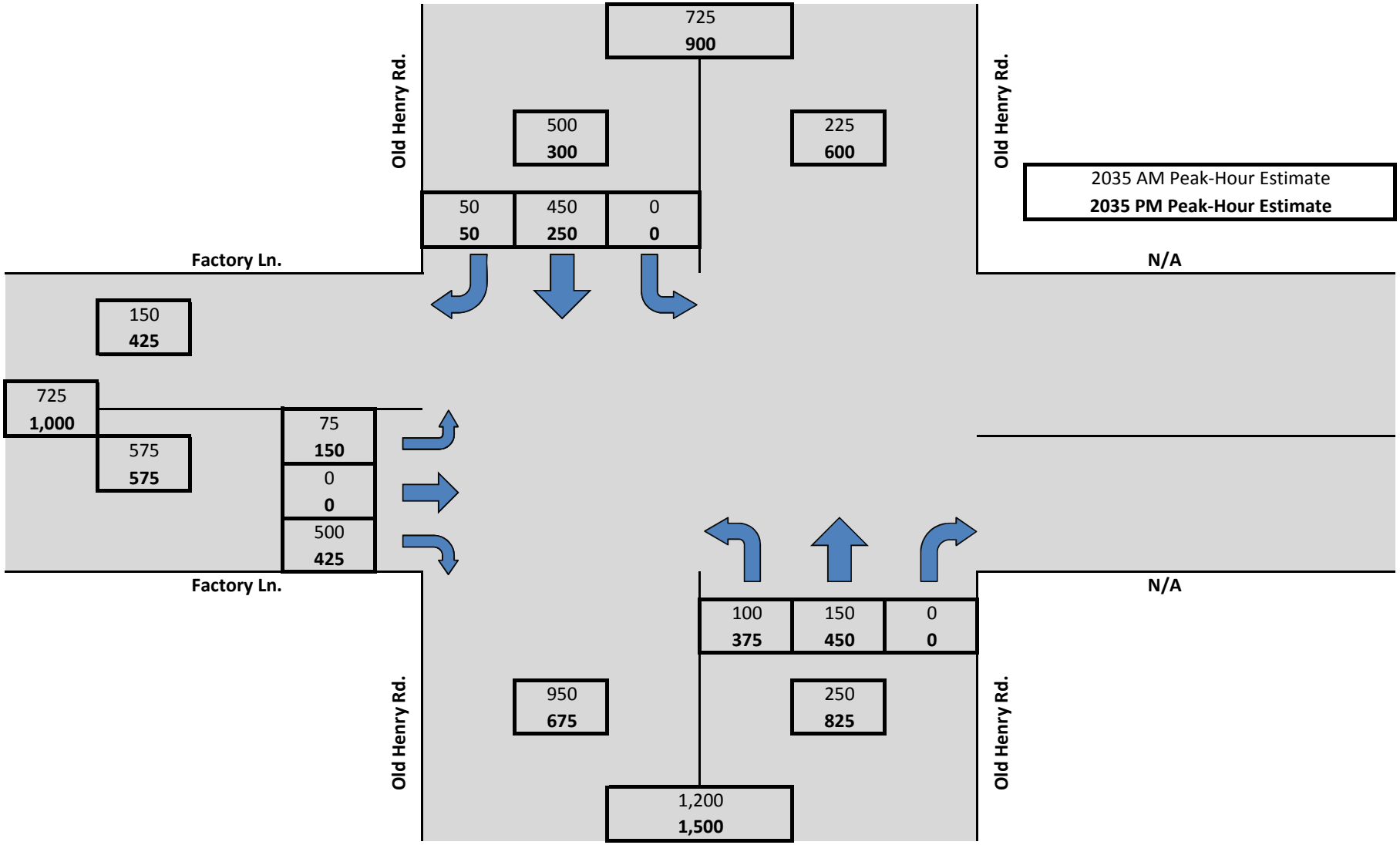
2035 Build Peak-Hour Turning Movement Estimates



Note: Intersection will be re-aligned so that Old Henry Road is a N/S through movement.

Old Henry Road @ Factory Lane Intersection

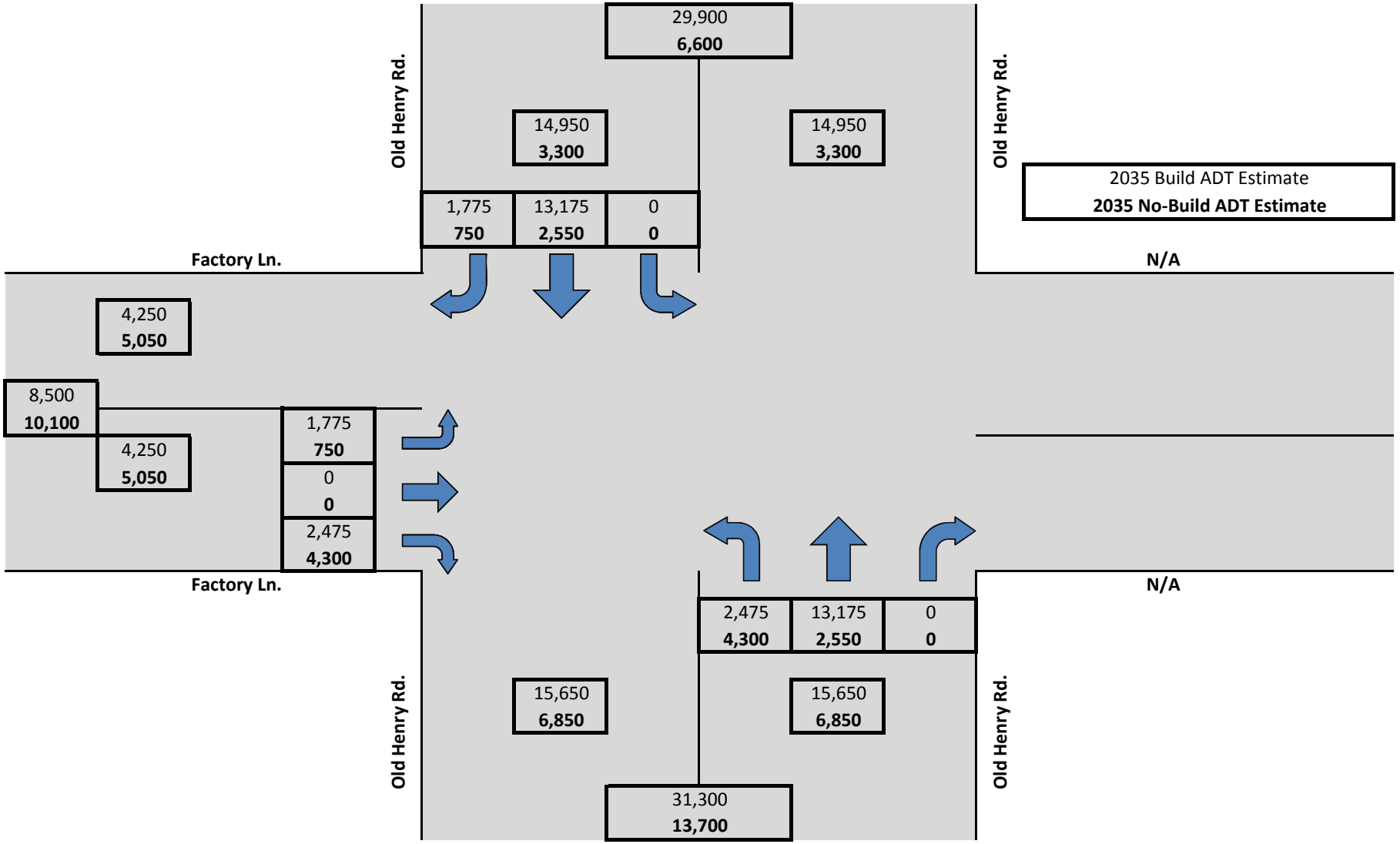
2035 No-Build Peak-Hour Turning Movement Estimates



Note: Intersection will be re-aligned so that Old Henry Road is a N/S through movement.

Old Henry Road @ Factory Lane Intersection

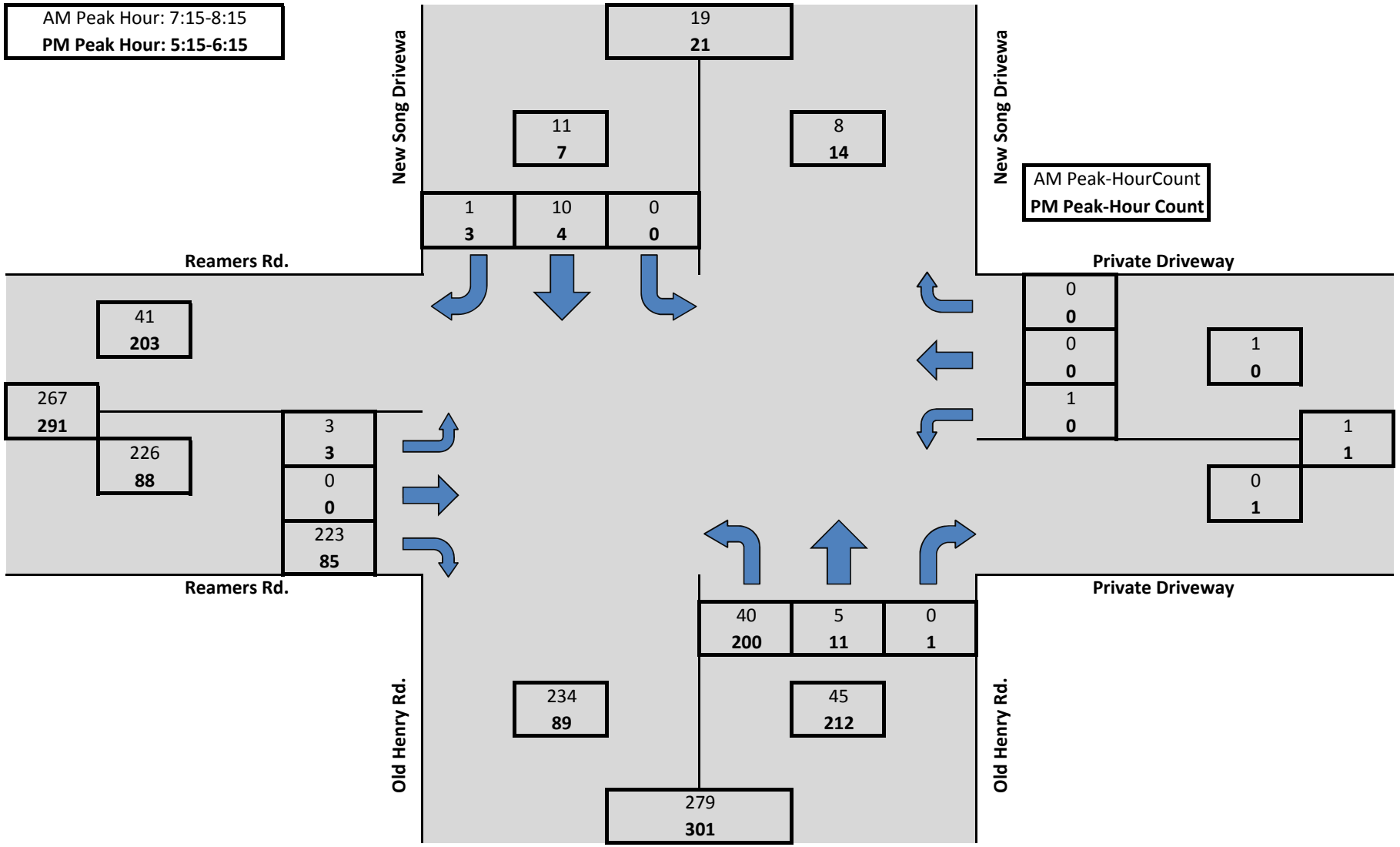
2035 Turning Movement Estimates



Note: Intersection will be re-aligned so that Old Henry Road is a N/S through movement.

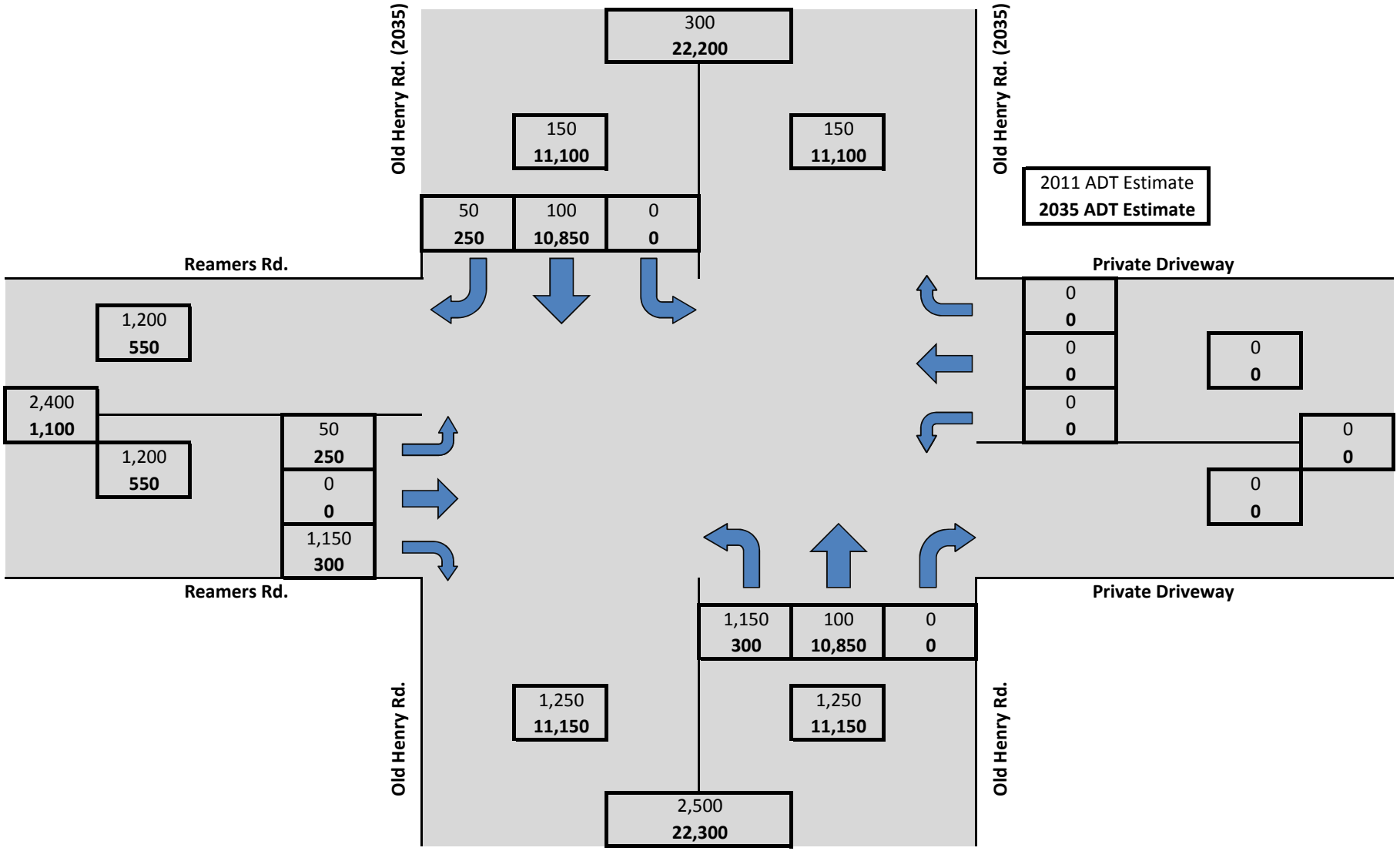
Old Henry Road @ Reamers Road Intersection

2011 Peak-Hour Turning Movements



Old Henry Road @ Reamers Road Intersection

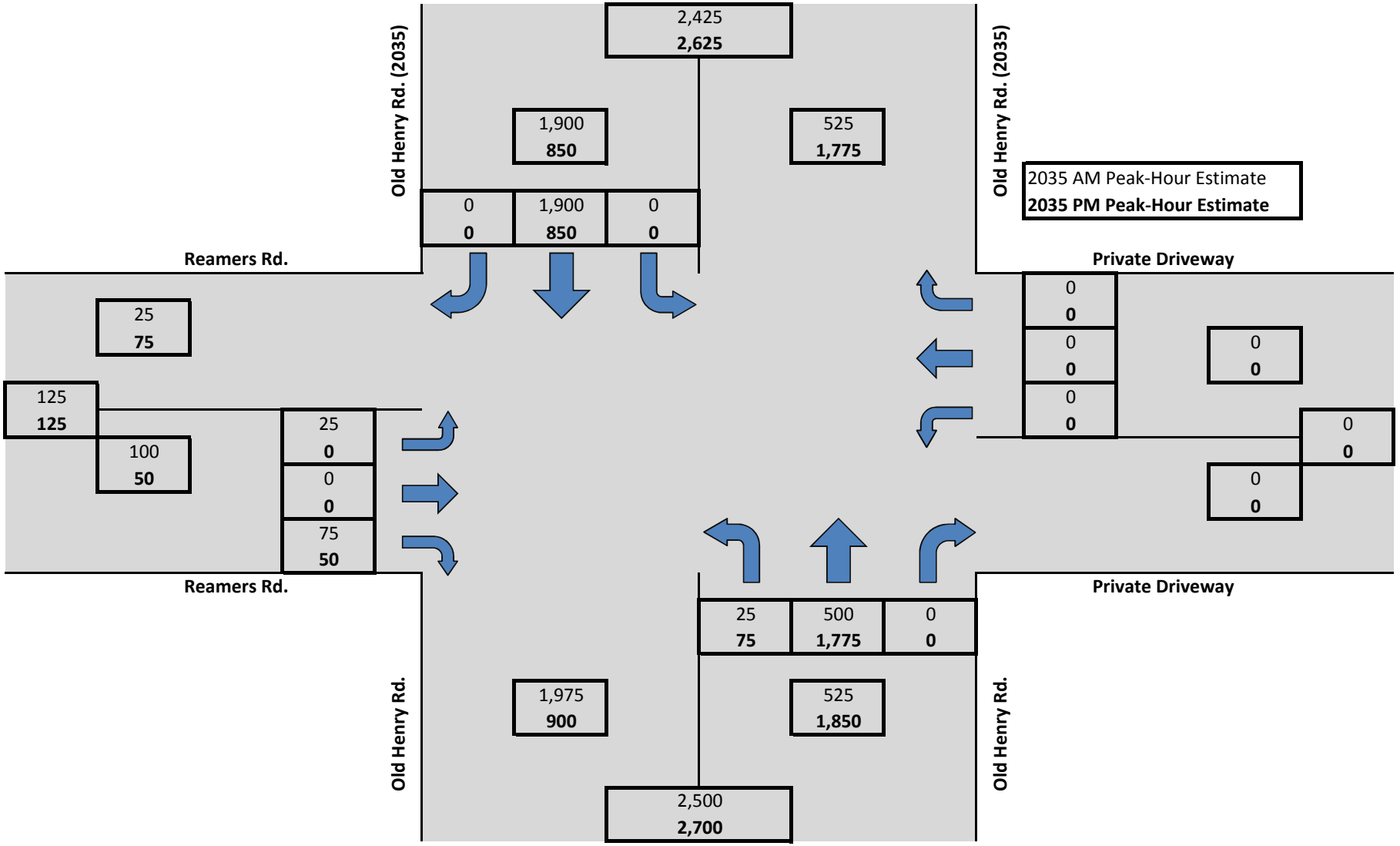
2011/2035 Build Turning Movement Estimates



Note: 2035 ADT Estimate adjusted to reflect location of subdivisions on Old Henry Road

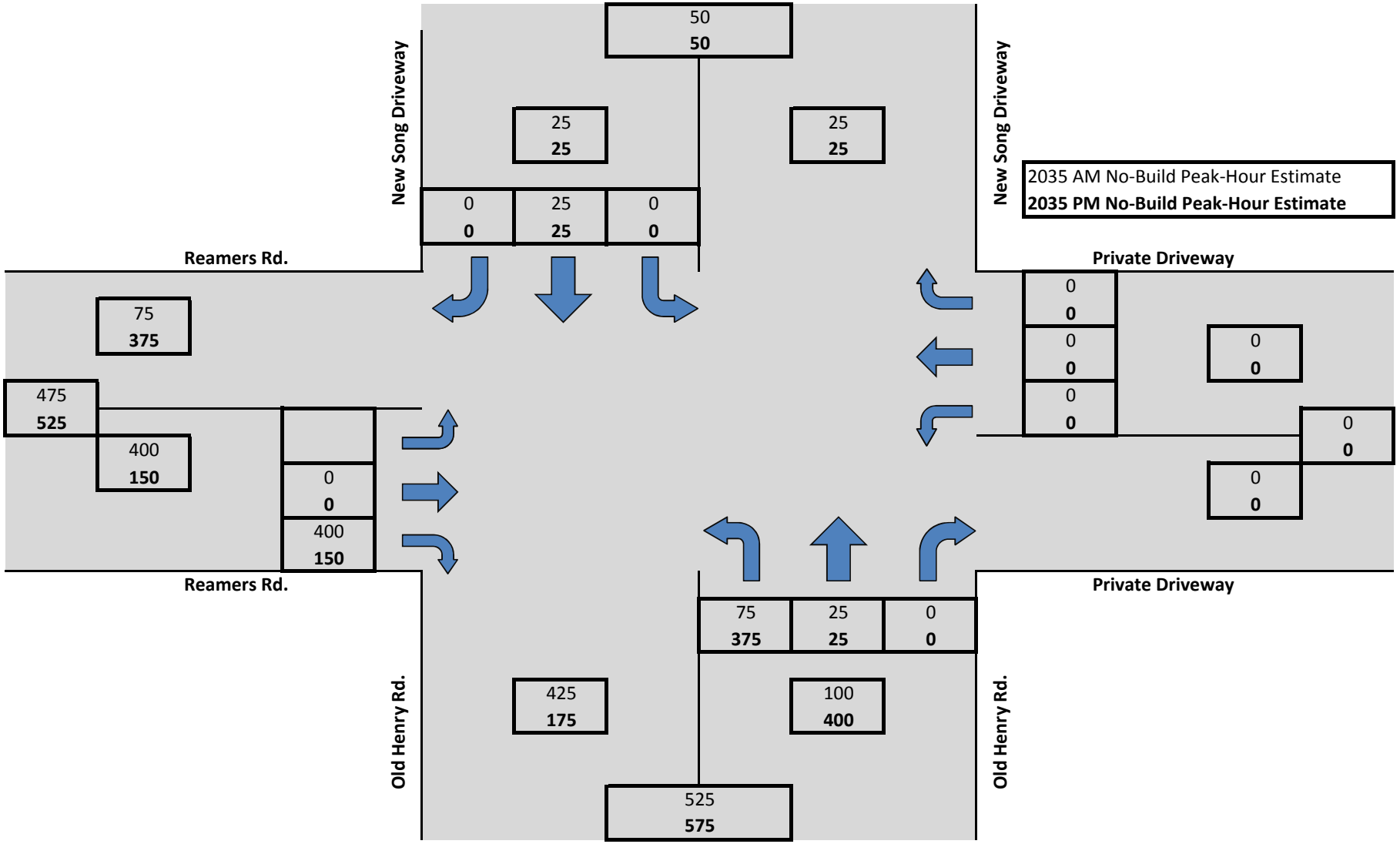
Old Henry Road @ Reamers Road Intersection

2035 Build Peak-Hour Turning Movement Estimates



Old Henry Road @ Reamers Road Intersection

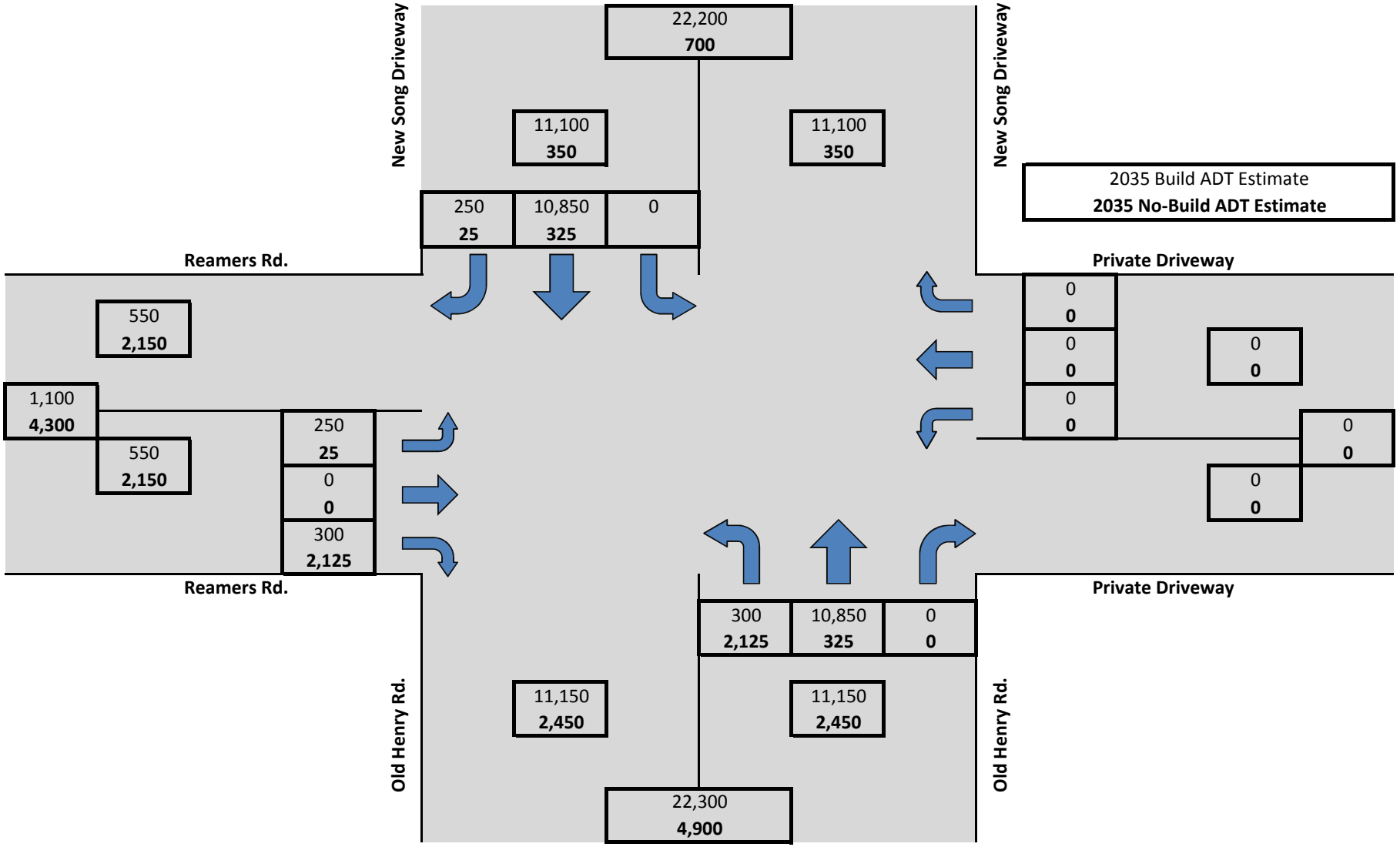
2035 No-Build Peak-Hour Turning Movement Estimates



Note: 2035 ADT Estimate adjusted to reflect location of subdivisions on Old Henry Road

Old Henry Road @ Reamers Road Intersection

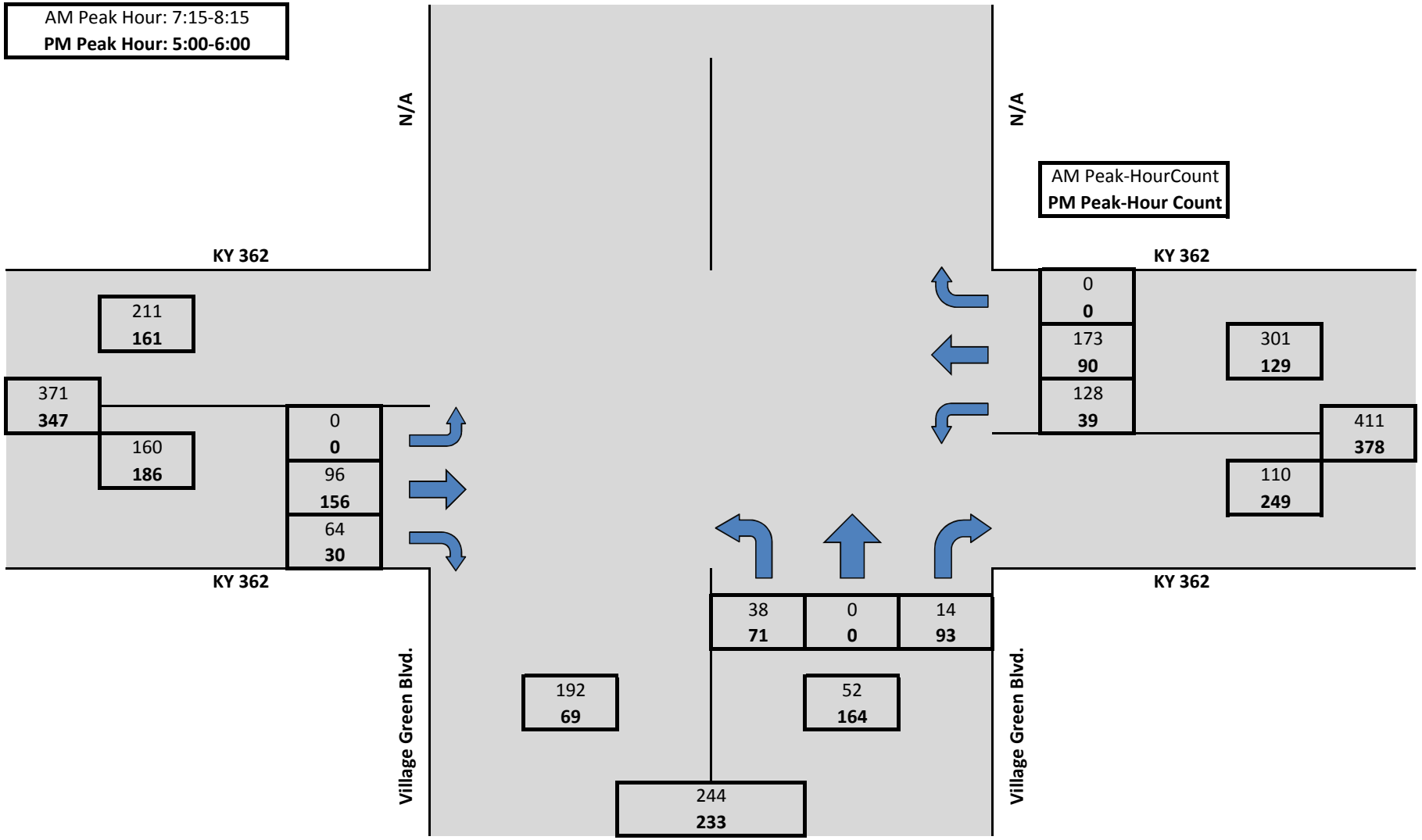
2035 Turning Movement Estimates



Note: 2035 ADT Estimate adjusted to reflect location of subdivisions on Old Henry Road

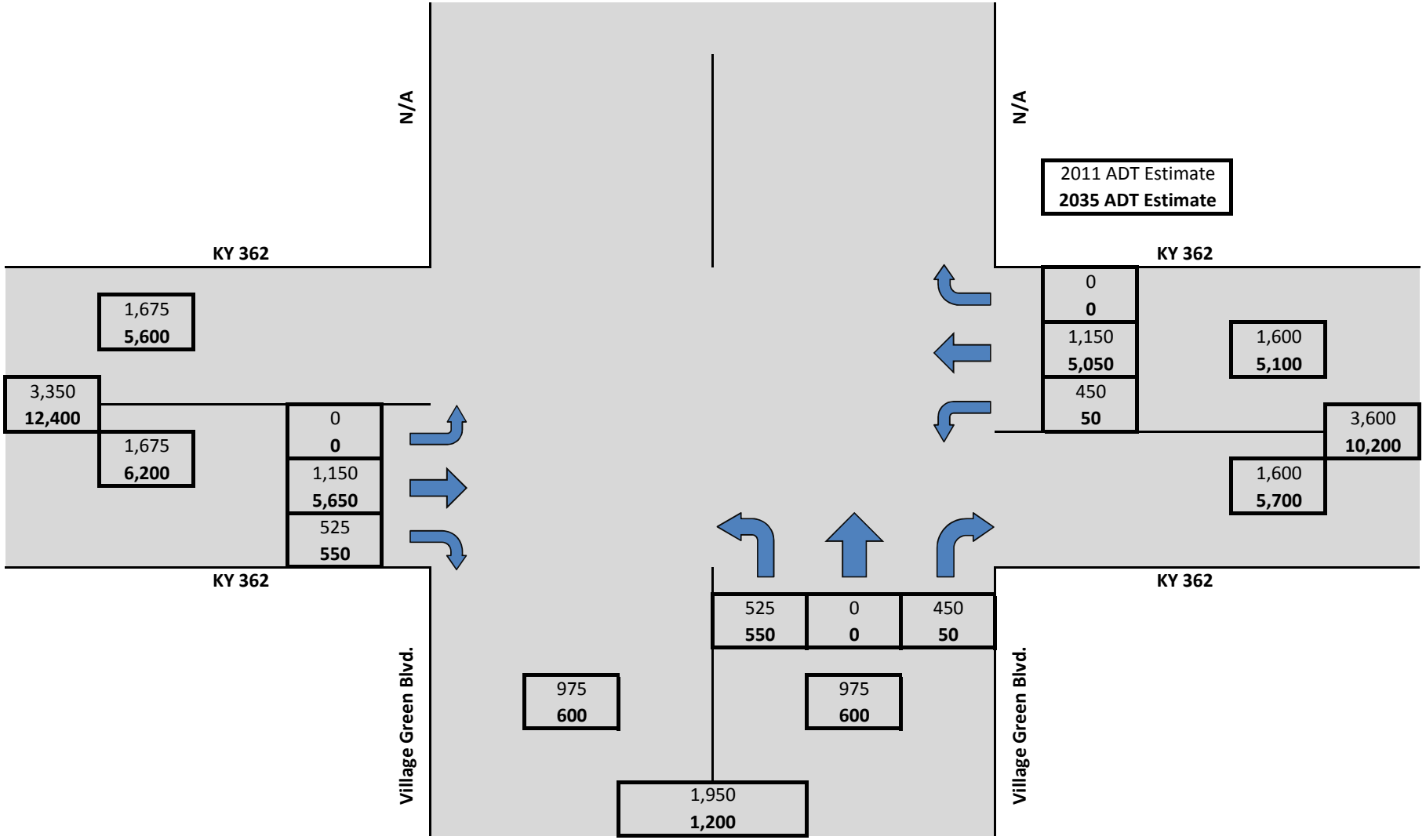
KY 362 @ Village Green Blvd. Intersection

2011 Peak-Hour Turning Movements



KY 362 @ Village Green Blvd. Intersection

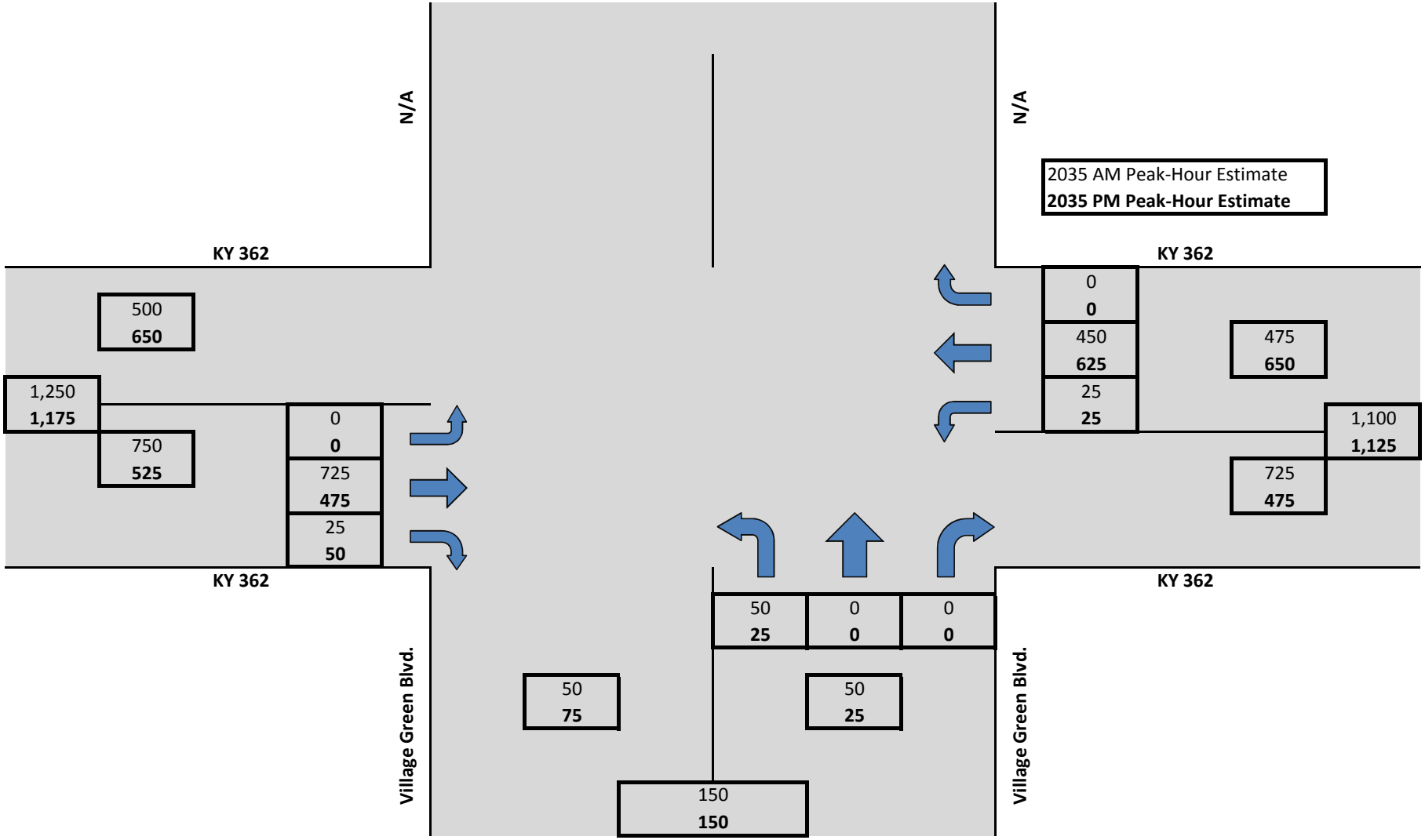
2011/2035 Build Turning Movement Estimates



Note: Location of Willow Run Lane (centroid connector) in model contributes to imbalance

KY 362 @ Village Green Blvd. Intersection

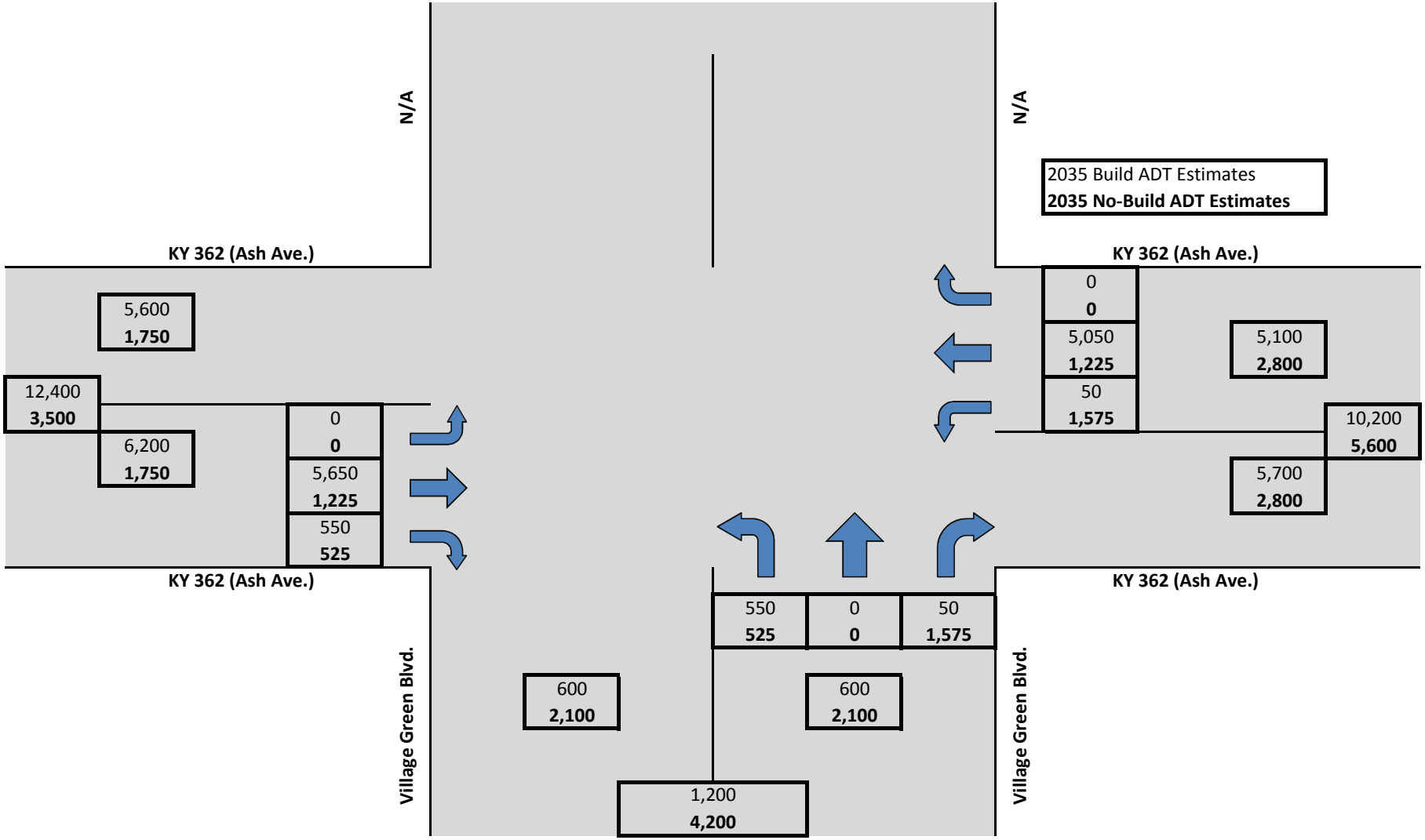
2035 Build Peak-Hour Turning Movement Estimates



Note: Location of Willow Run Lane (centroid connector) in model contributes to imbalance

KY 362 @ Village Green Blvd. Intersection

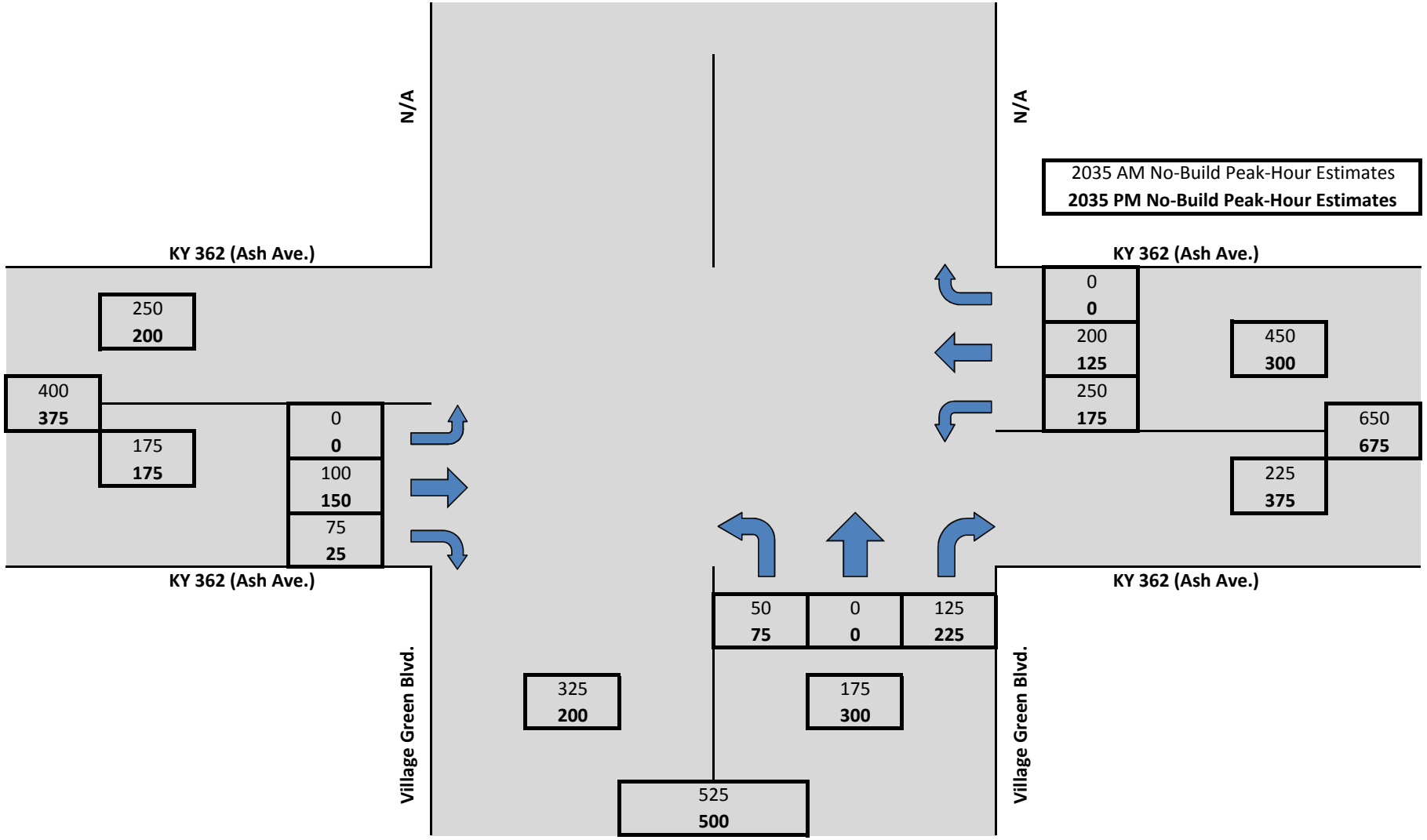
2035 Turning Movement Estimates



Note: Location of Willow Run Lane (centroid connector) in model contributes to imbalance

KY 362 @ Village Green Blvd. Intersection

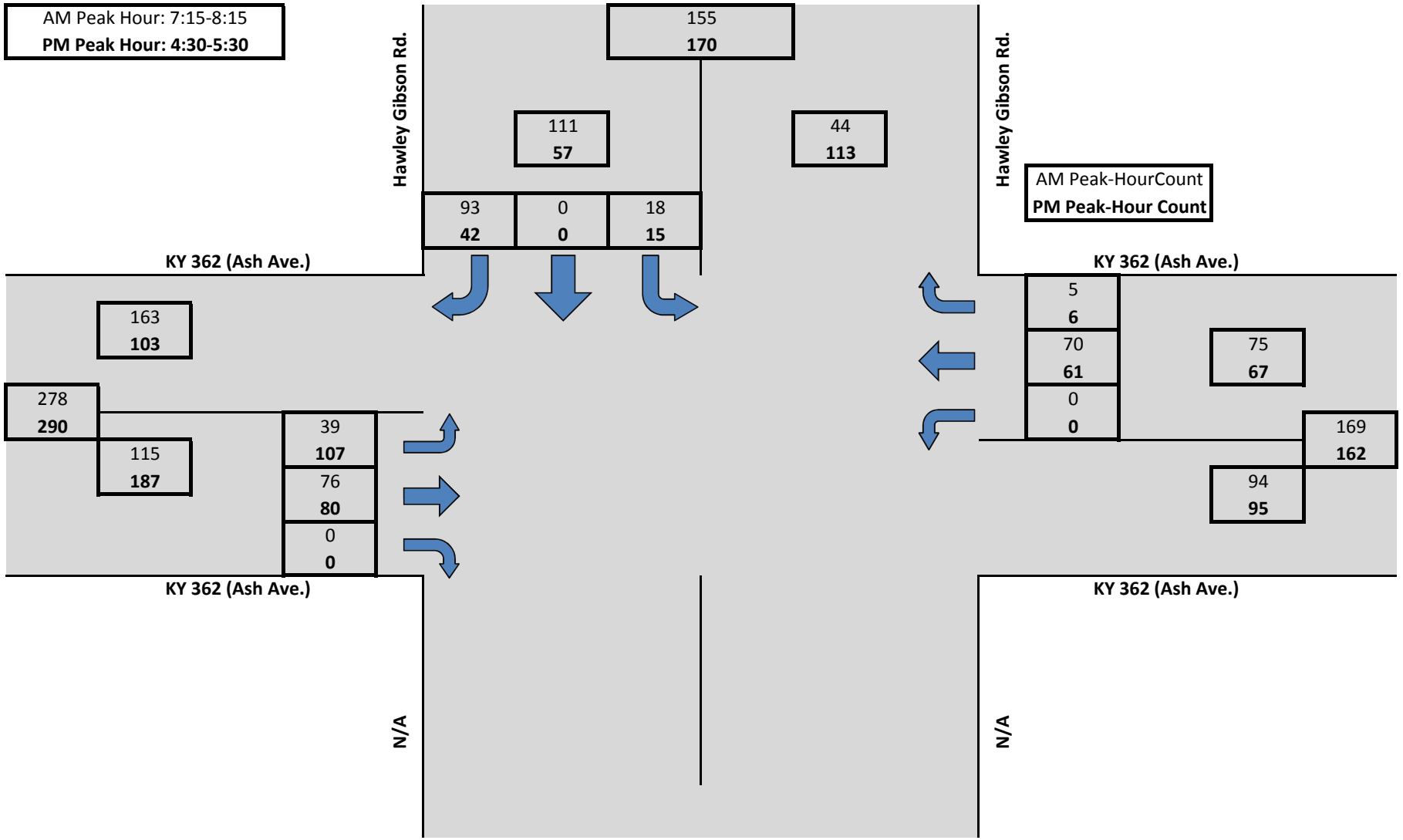
2035 NoBuild Peak-HourTurning Movement Estimates



Note: Location of Willow Run Lane (centroid connector) in model contributes to imbalance

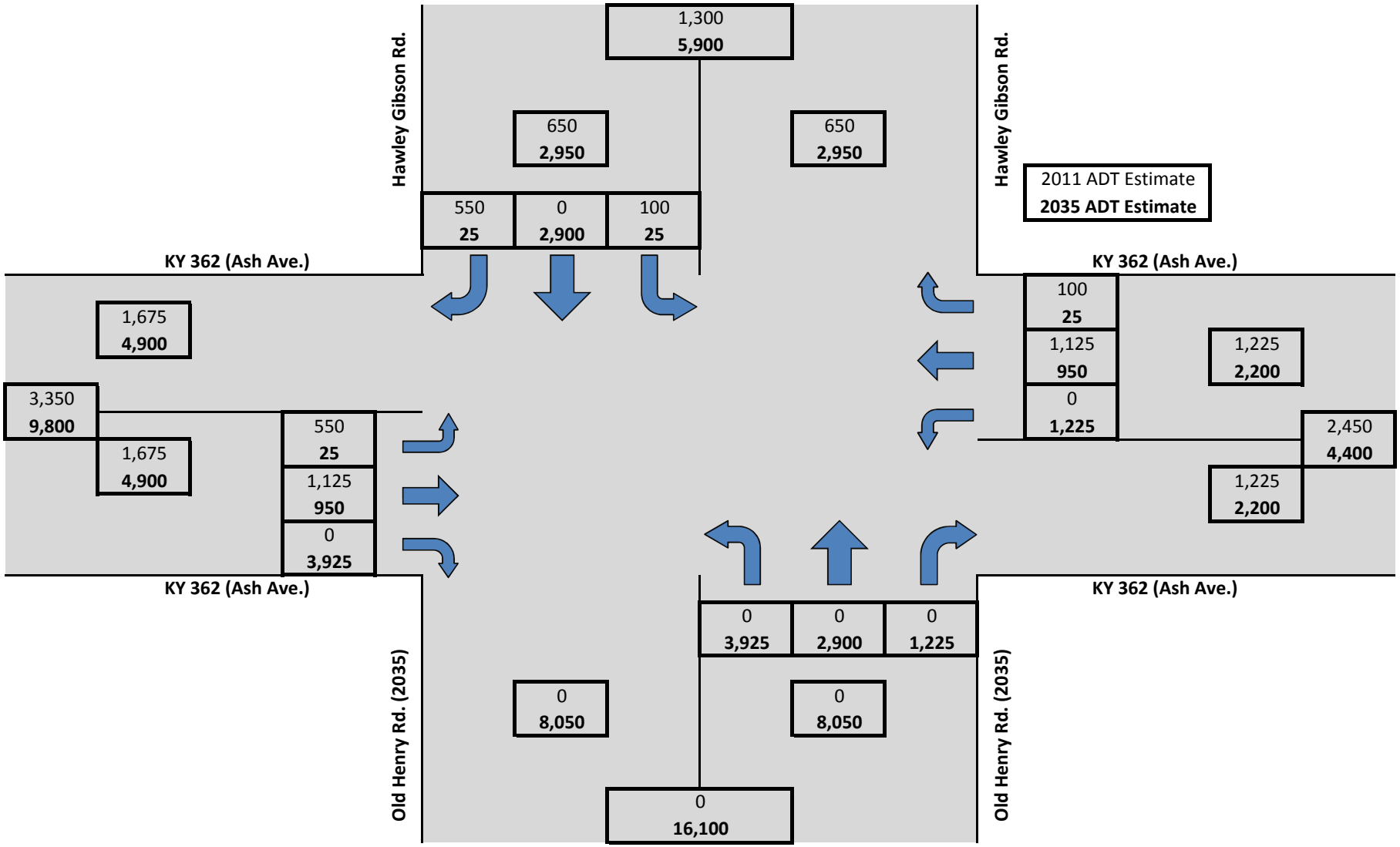
KY 362 @ Hawley Gibson Rd. Intersection

2011 Peak-Hour Turning Movements



KY 362 @ Hawley Gibson Rd. Intersection

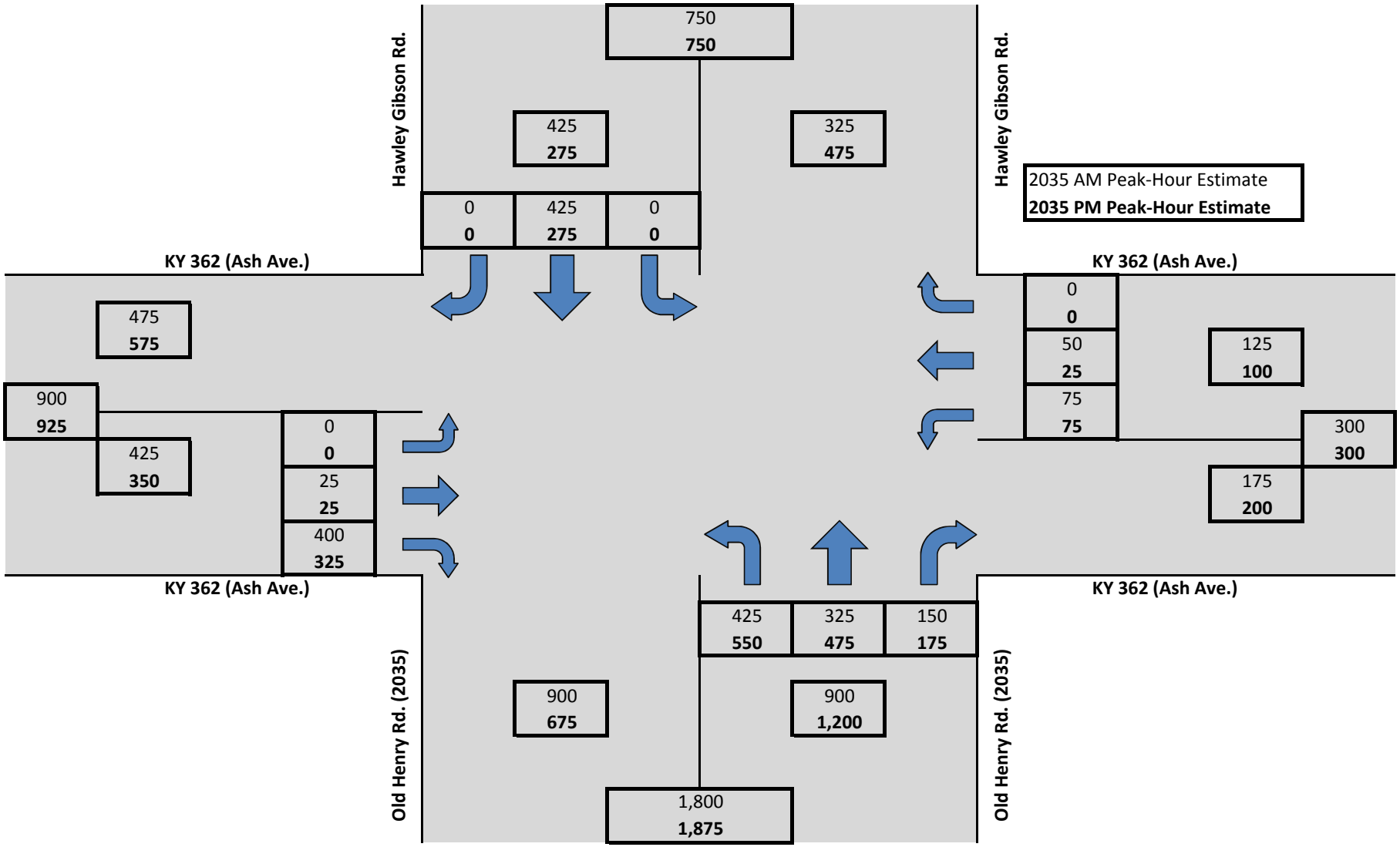
2011/2035 Build Turning Movement Estimates



Note: 2035 ADT Estimates adjusted to reflect locations of subdivisions on KY 362 & Old Henry Road

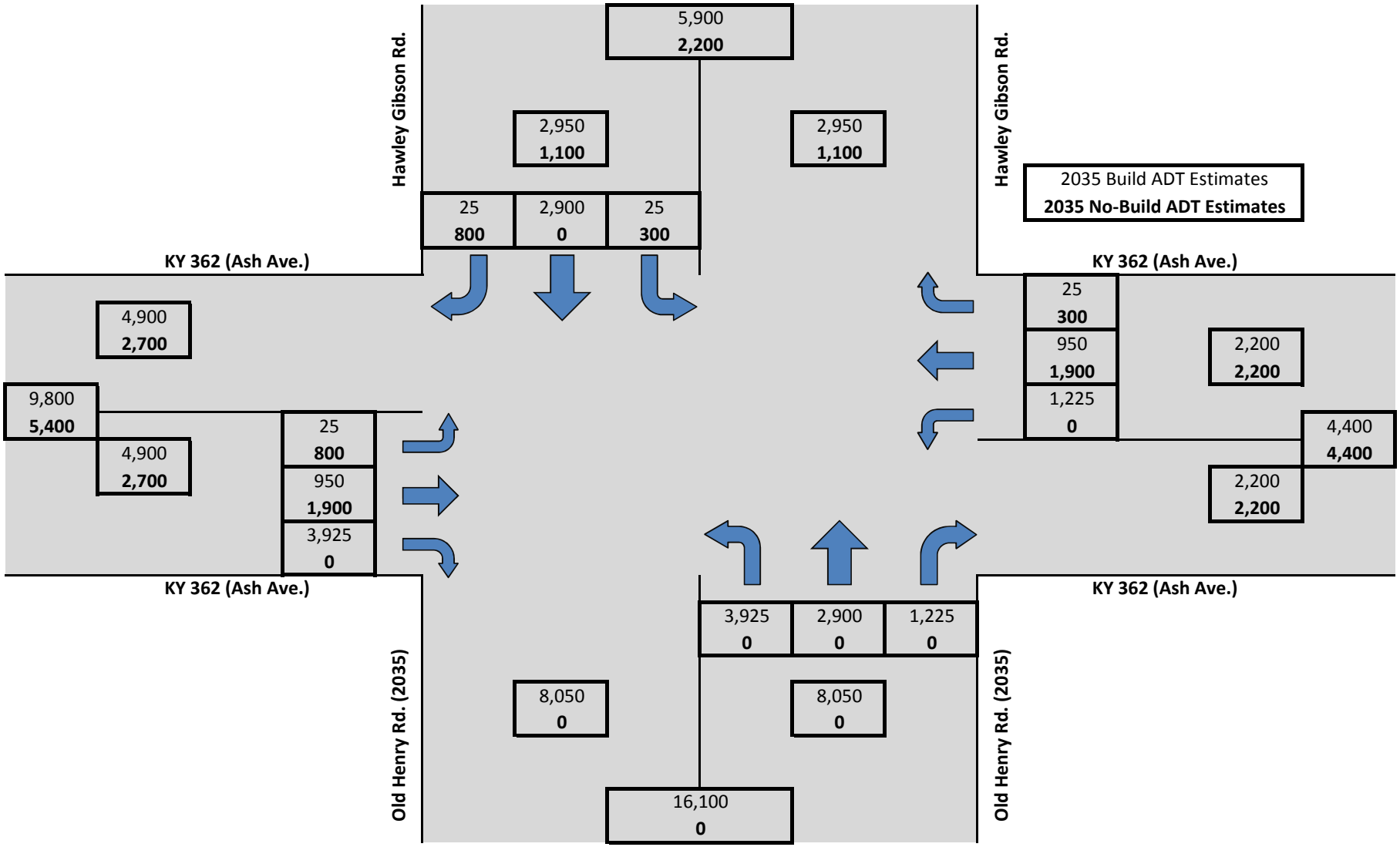
KY 362 @ Hawley Gibson Rd. Intersection

2035 Build Peak-Hour Turning Movement Estimates



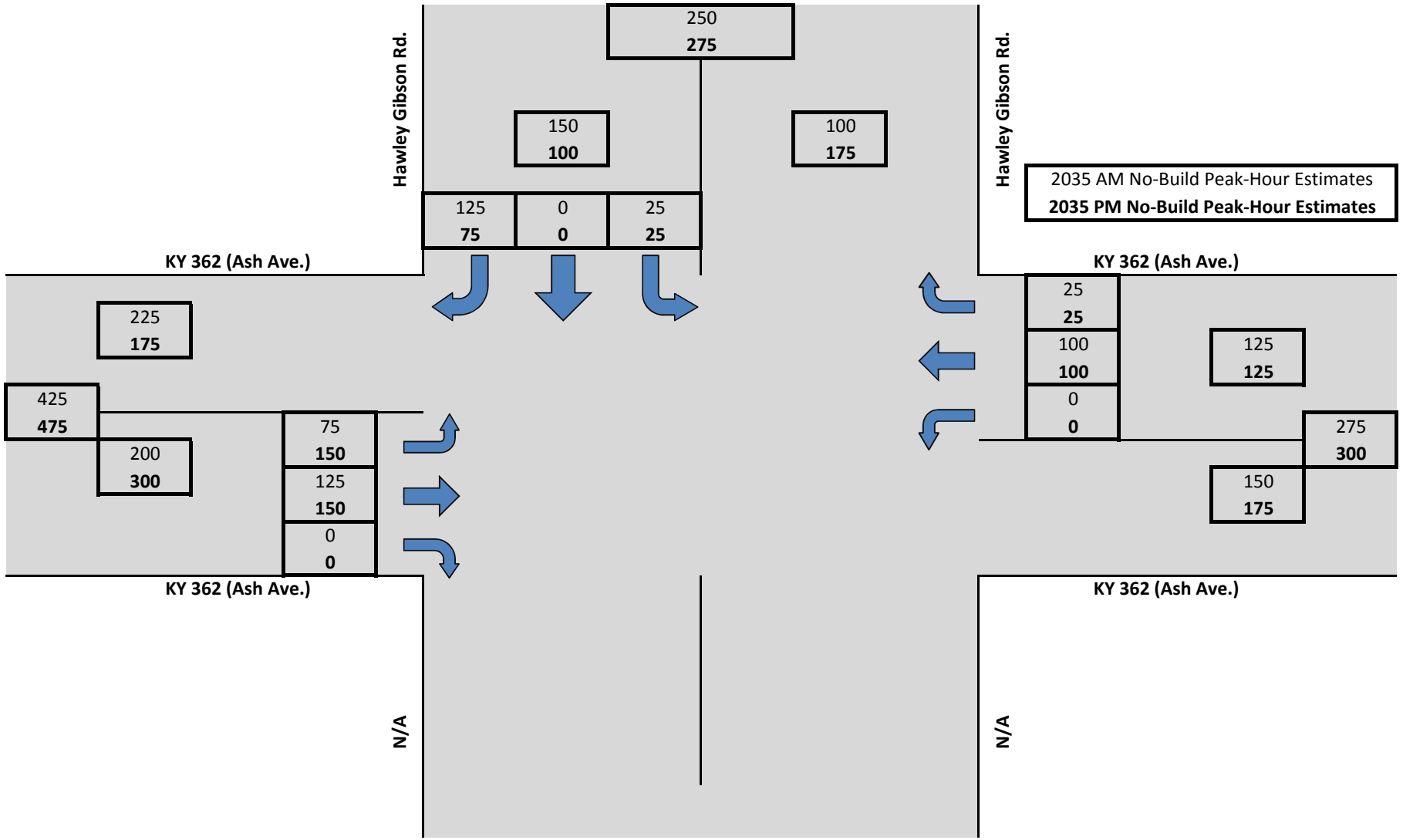
KY 362 @ Hawley Gibson Rd. Intersection

2035 Turning Movement Estimates



KY 362 @ Hawley Gibson Rd. Intersection

2035 No-Build Peak-Hour Turning Movement Estimates



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Kentucky Member Counties

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Henry

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Oldham

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Trimble

Indiana Member Counties

Clark

Floyd

To: Paul Davis, KYTC District 5
Brian Meade, KYTC District 5

From: Andy Rush

Date: June 16, 2011

Subject: Old Henry Road (KY 3084) Extension Forecasts

I have included additional traffic forecasts per your request, in the vicinity of the Old Henry Road (KY 3084) Extension Project. These forecasts can be found in the table and in the maps that follow. Data is provided for the Years 2030 and 2035.

There were two additional model run scenarios performed after the PL&G meeting on June 8th. These runs assumed that the modified portion of Old Henry Road will be functionally classified as an urban collector. The first run assumed it will be widened to a 3-lane collector, and the second run assumed a 5-lane collector from Bush Farm Road in Jefferson County to Ash Avenue (KY 362) in Oldham County.

Changing the way the Old Henry Road Extension is modeled from an assumed 3-lane divided arterial to a 3-lane collector has the effect of reducing the modeled capacity of the roadway by approximately 30%. Similarly, the 5-lane collector has a modeled capacity that is approximately 65% greater than the modeled capacity of a 3-lane divided arterial.

All other assumptions were kept constant from the previous model runs and from the report that I submitted earlier this month to KYTC.

Please let me know if you have any questions or if you need any additional information.

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Louisville, KY 40299
502-266-6084
Fax: 502-266-5047
KY TDD 1-800-648-6056
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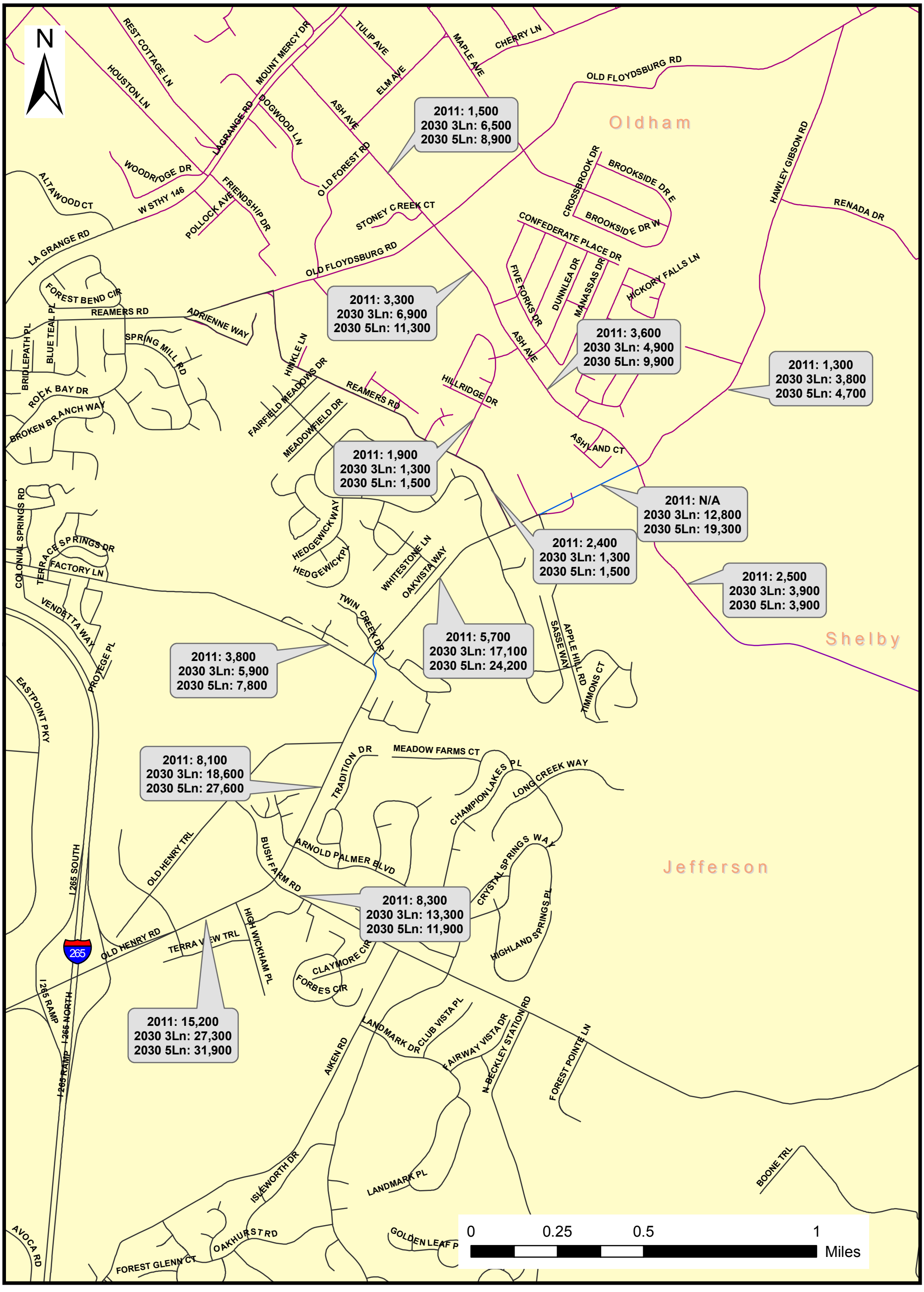
Old Henry Road (KY 3084) Extension Traffic Forecasts

	Station	Recent Count	2030 Build	2030 NoBuild	2035 Build	2035 NoBuild	2030 3-Lane Collector	2035 3-Lane Collector	2030 5-Lane Collector	2035 5-Lane Collector
Old Henry Road (KY 3084)										
south of Bush Farm		15,161	29,500	21,000	35,100	22,900	27,300	31,900	31,900	38,800
Bush Farm to Factory		8,099	23,600	12,300	31,300	13,700	18,600	23,100	27,600	38,100
Factory to Reamers		5,736	21,200	6,400	29,900	6,600	17,100	22,800	24,200	35,300
Reamers to KY 362		N/A	17,000	N/A	22,200	N/A	12,800	16,000	19,300	26,000
Bush Farm Road										
east of Old Henry		8,317	12,500	13,600	13,900	15,500	13,300	15,000	11,900	13,100
Factory Lane										
west of Old Henry		3,758	7,200	8,200	8,500	10,100	5,900	6,600	7,800	9,500
Reamers Road										
west of Old Henry		2,420	1,300	3,800	1,100	4,300	1,300	1,100	1,500	1,300
Ash Avenue (KY 362)										
KY 146 to Old Floydsburg		1,465	8,000	2,900	12,500	3,500	6,500	9,600	8,900	14,300
Old Floydsburg to Village Green		3,318	9,400	3,500	12,400	3,500	6,900	8,400	11,300	15,600
Village Green to Hawley Gibson		3,552	8,200	5,100	10,200	5,600	4,900	5,300	9,900	13,000
east of Hawley Gibson		2,465	3,900	3,900	4,400	4,400	3,900	4,400	3,900	4,400
Hawley Gibson Road										
east of KY 362		1,289	4,300	2,000	5,900	2,200	3,800	5,100	4,700	6,600
Village Green Blvd.										
north of Reamers		1,937	1,300	3,600	1,200	4,200	1,300	1,200	1,500	1,400
KY 146										
east of Chamberlain	112	18,100	37,500	39,700	45,400	48,800	38,600	47,100	36,300	43,600
near Jefferson/Oldham Co. line	B01	12,800	13,200	15,400	13,300	16,200	13,900	14,200	12,700	12,700
at Pewee Valley/Crestwood line	B08	12,700	15,200	13,700	15,900	14,000	14,800	15,400	15,300	16,100
KY 22										
east of I-265	V28	20,700	36,700	38,300	42,700	45,000	37,100	43,300	36,300	42,100
east of Jefferson/Oldham Co. line	500	7,000	29,100	34,000	42,300	51,500	30,200	44,400	28,700	41,600
near Clore Ln.	B23	8,970	37,900	38,600	55,400	56,700	38,200	55,900	38,000	55,600
I-71										
south of I-265	A07	69,000	70,100	70,500	70,400	70,900	70,200	70,500	70,000	70,300
north of I-265	A05	56,600	64,500	67,000	66,800	70,000	65,100	67,500	63,900	66,000
north of KY 329	311	50,700	56,400	57,900	58,000	60,000	56,800	58,500	56,100	57,600
I-265										
south of Old Henry	B14	56,600	99,700	99,100	115,700	114,800	99,900	116,000	99,600	115,600
north of Old Henry	B39	52,700	91,800	98,200	106,200	115,700	95,600	111,800	89,600	103,000
south of KY 1447	A76	50,800	95,100	99,600	112,200	118,900	96,900	114,800	93,700	110,100
south of KY 22	A13	53,500	95,800	100,500	111,700	118,600	97,400	114,000	94,600	109,900
south of I-71	A11	74,800	125,200	128,200	143,400	147,700	126,200	144,800	124,600	142,500



OLD HENRY ROAD EXTENSION TRAFFIC FORECASTS
MODELED AS A COLLECTOR
YEAR 2030 FORECASTS

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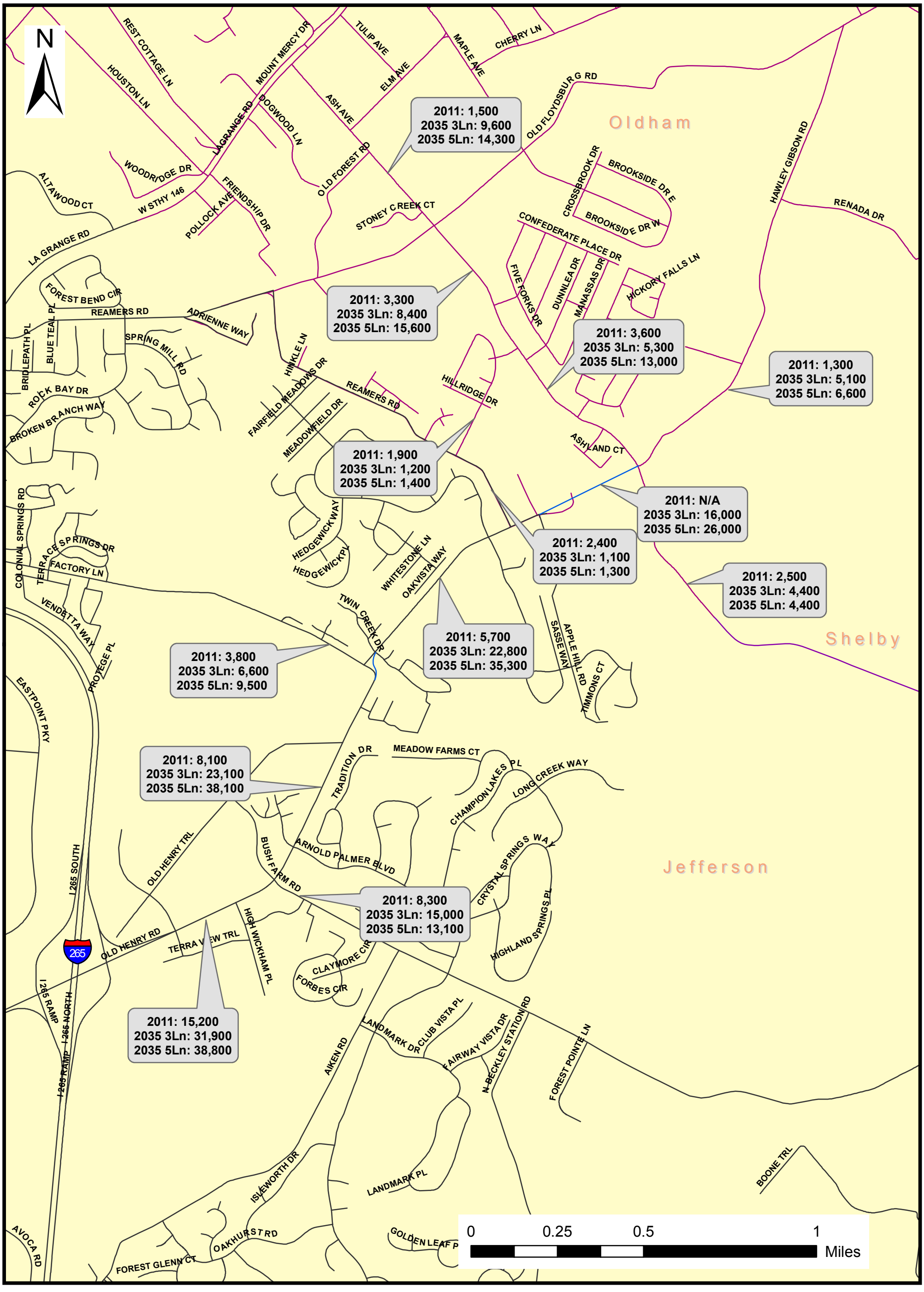

OLD HENRY ROAD EXTENSION TRAFFIC FORECASTS
MODELED AS A COLLECTOR
YEAR 2035 FORECASTS

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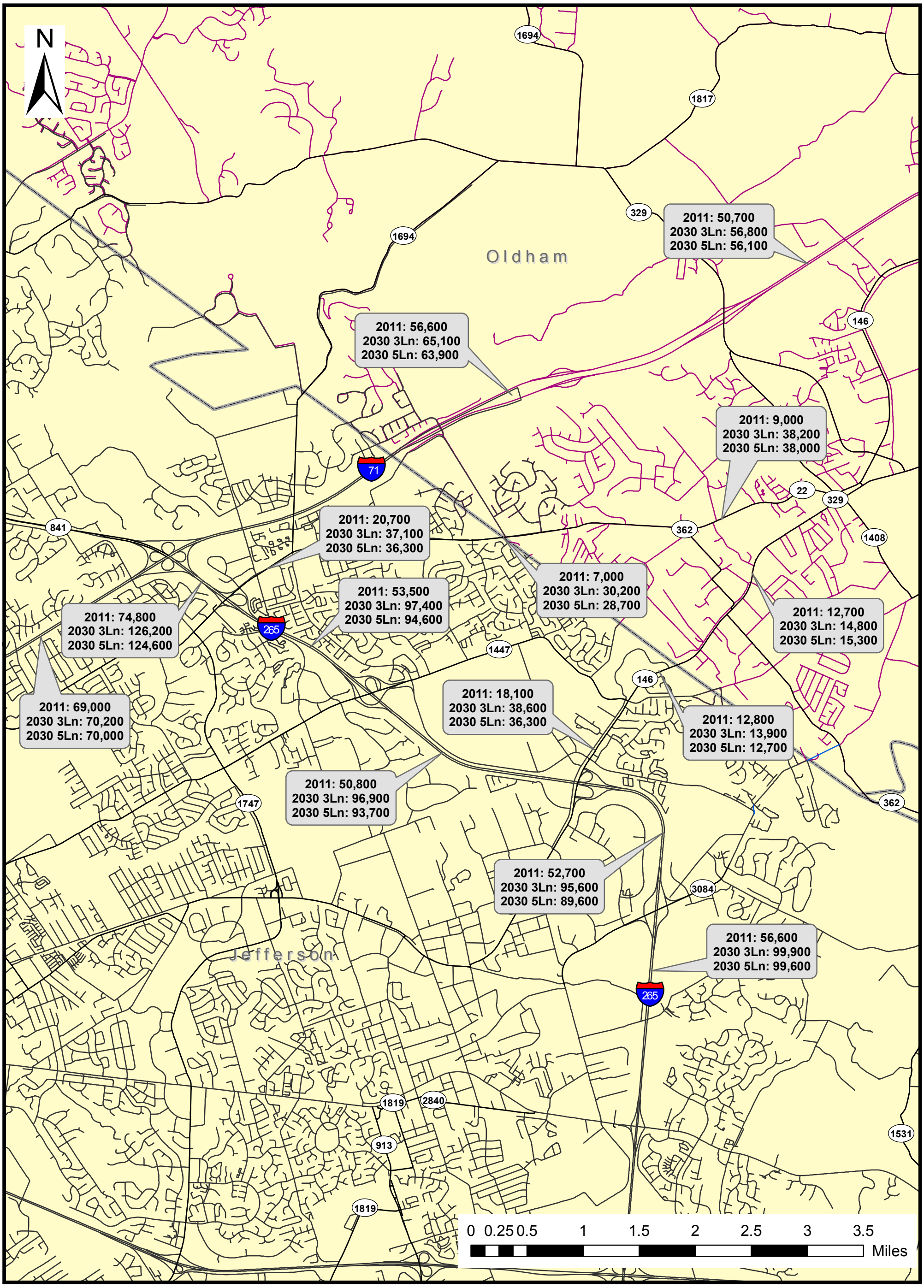

OLD HENRY ROAD EXTENSION TRAFFIC FORECASTS
MODELED AS A COLLECTOR
YEAR 2030 FORECASTS

Created by KIPDA June 2011 (AHR)

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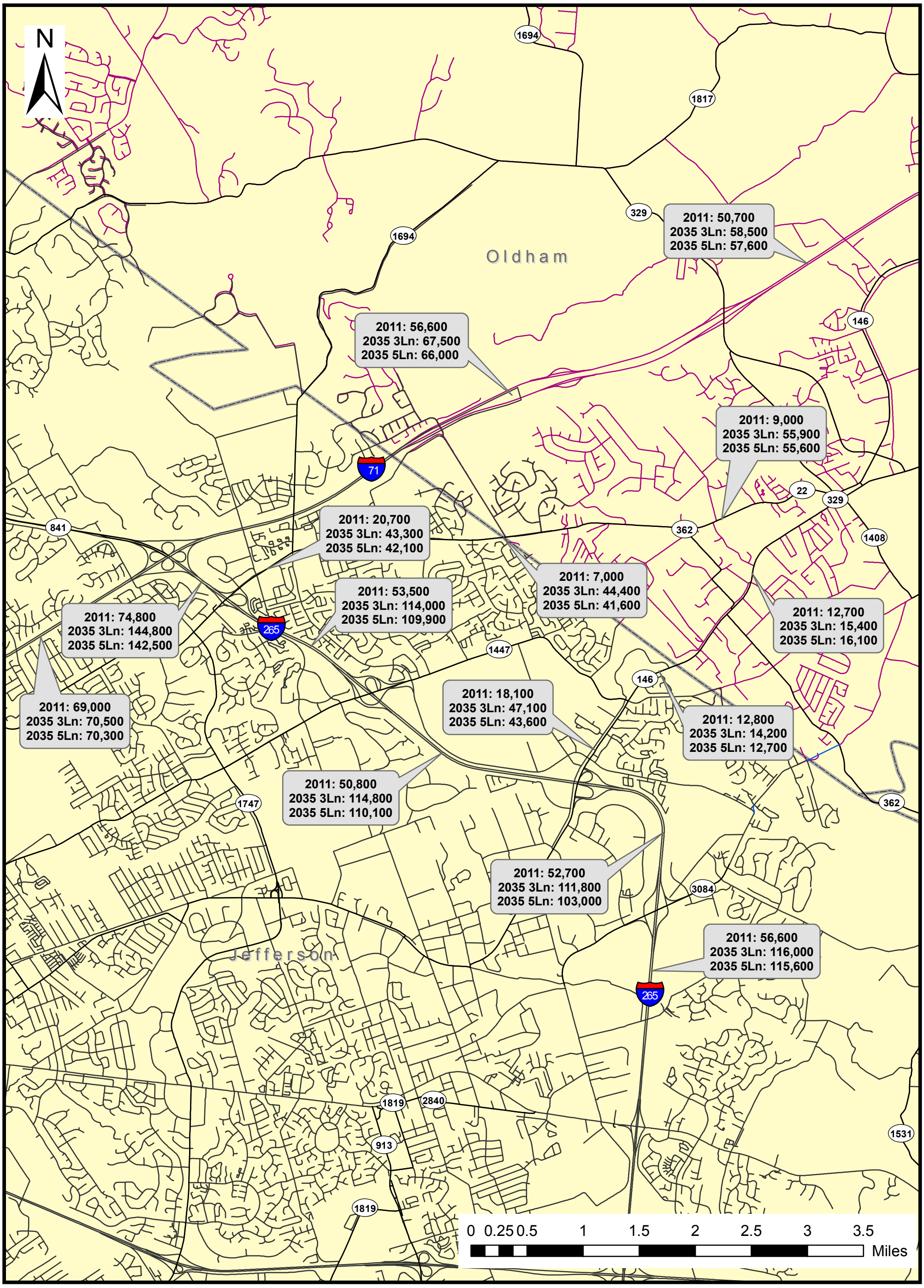

OLD HENRY ROAD EXTENSION TRAFFIC FORECASTS
MODELED AS A COLLECTOR
YEAR 2035 FORECASTS

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Appendix G – Collision Data

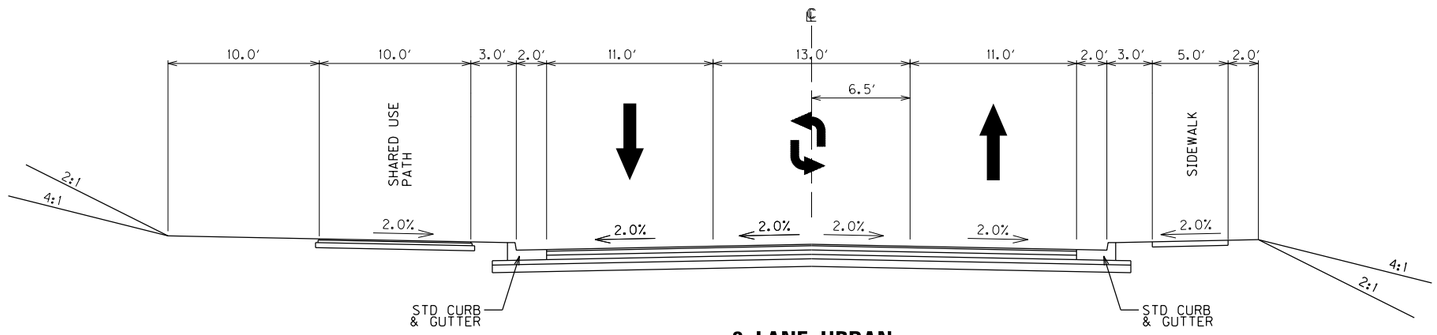
Old Henry Road/KY 3084 Collision Data											
MILEPOINT DERIVED	COLLISION DATE	COLLISION TIME	MOTOR VEHICLES INVOLVED	UNITS INVOLVED	KILLED	INJURED	WEATHER	ROADWAY CONDITION	MANNER OF COLLISION	ROADWAY CHARACTER	LIGHT CONDITION
1.661	8/13/2010	1543	2	2	0	0	CLEAR	DRY	BACKING	STRAIGHT & LEVEL	DAYLIGHT
1.874	10/14/2008	1605	2	2	0	0	CLEAR	DRY	SIDESWIPE	CURVE & LEVEL	DAYLIGHT
1.242	1/14/2009	1559	2	2	0	0	CLOUDY	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
1.8	3/3/2009	1853	2	2	0	0	CLEAR	DRY	HEAD ON	CURVE & GRADE	DUSK
1.245	5/7/2009	1745	2	2	0	1	CLEAR	DRY	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
0.836	5/15/2009	1505	2	2	0	0	CLEAR	DRY	REAR TO REAR	STRAIGHT & GRADE	DAYLIGHT
1.062	5/20/2009	820	3	3	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
0.361	6/15/2009	1211	2	2	0	0	CLEAR	DRY	ANGLE	CURVE & LEVEL	DAYLIGHT
0.026	8/25/2009	1955	2	2	0	0	CLEAR	DRY	REAR END	STRAIGHT & GRADE	DAYLIGHT
1.796	9/3/2009	1710	2	2	0	0	CLOUDY	DRY	REAR END	CURVE & LEVEL	DAYLIGHT
0.505	9/15/2009	1453	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
1.04	4/17/2009	1648	2	2	0	0	CLEAR	DRY	ANGLE	STRAIGHT & GRADE	DAYLIGHT
1.037	10/14/2009	650	2	2	0	0	RAINING	WET	ANGLE	STRAIGHT & HILLCREST	DARK-HWY LIGHTED/OFF
1.221	1/30/2010	658	1	1	0	0	SNOWING	SNOW/SLUSH	SINGLE VEHICLE	CURVE & GRADE	DAWN
1.5	3/8/2010	835	3	3	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
1.741	3/28/2010	1623	2	2	0	0	CLOUDY	WET	REAR END	CURVE & LEVEL	DAYLIGHT
0.723	3/29/2010	1527	2	2	0	0	CLOUDY	DRY	SIDESWIPE	CURVE & LEVEL	DAYLIGHT
0.981	5/10/2010	805	3	3	0	0	CLEAR	DRY	REAR END	STRAIGHT & GRADE	DAYLIGHT
0.837	6/8/2010	1759	2	2	0	1	CLOUDY	DRY	REAR END	STRAIGHT & HILLCREST	DAYLIGHT
1.758	6/10/2010	2129	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY LIGHTED/OFF
0.176	6/16/2010	733	2	2	0	0	CLEAR	DRY	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
0.871	7/28/2010	1048	2	2	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
1.818	8/8/2010	850	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
1.251	8/10/2010	1731	2	2	0	0	CLEAR	DRY	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
0.022	8/14/2010	1924	1	1	0	0	CLOUDY	WET	SINGLE VEHICLE	STRAIGHT & GRADE	DAYLIGHT
0.847	8/19/2010	1620	2	2	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
0.133	9/12/2010	1655	1	1	0	1	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
1.577	10/12/2010	845	2	2	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
1.475	10/12/2010	739	2	2	0	0	CLOUDY	DRY	REAR END	STRAIGHT & GRADE	DARK-HWY LIGHTED/ON
1.245	11/11/2010	748	2	2	0	0	CLEAR	DRY	ANGLE	STRAIGHT & GRADE	DAYLIGHT
1.251	11/29/2010	1722	2	2	0	0	CLOUDY	DRY	ANGLE	STRAIGHT & LEVEL	DARK-HWY LIGHTED/ON
1.159	12/13/2010	1314	2	2	0	0	SAND/SOIL/DI	WET	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
0.837	12/30/2010	1202	2	2	0	0	CLOUDY	DRY	REAR END	STRAIGHT & GRADE	DAYLIGHT
1.577	2/15/2011	2024	2	2	0	0	CLOUDY	DRY	REAR END	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
0.548	2/23/2011	1559	2	2	0	3	CLEAR	DRY	ANGLE	STRAIGHT & GRADE	DAYLIGHT
0.548	3/15/2011	1248	2	2	0	0	RAINING	WET	REAR END	STRAIGHT & LEVEL	DAYLIGHT
0.993	3/17/2011	906	2	2	0	0	CLEAR	DRY	SIDESWIPE	STRAIGHT & LEVEL	DAYLIGHT
1.254	4/19/2011	832	2	2	0	1	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
1.798	4/27/2011	725	2	2	0	1	RAINING	WET	HEAD ON	STRAIGHT & LEVEL	DAYLIGHT
1.456	5/12/2011	848	2	2	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
0.176	5/31/2011	615	2	2	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
	2/8/2010	715	1	1	0	0	CLOUDY	ICE	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
	5/6/2010	400	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DARK-HWY NOT LIGHTED
	11/17/2008	800	2	2	0	0	CLOUDY	DRY	REAR END	CURVE & GRADE	DAWN
	10/1/2008	620	2	2	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAWN
0.513	9/5/2008	1602	1	1	0	0	RAINING	WET	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
0.356	11/10/2008	420	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	CURVE & LEVEL	DARK-HWY LIGHTED/ON
0.536	12/12/2008	822	2	2	0	0	CLOUDY	DRY	OPPOSING LEFT TURN	STRAIGHT & LEVEL	DAYLIGHT
0.9	2/5/2009	840	2	2	0	0	CLEAR	DRY	SIDESWIPE	STRAIGHT & LEVEL	DAYLIGHT
0.51	3/25/2009	1218	2	2	0	0	RAINING	WET	SIDESWIPE-	CURVE & GRADE	DAYLIGHT
0.25	5/28/2009	1553	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
0.061	6/7/2009	400	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY LIGHTED/ON
0.889	6/27/2009	908	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	STRAIGHT & GRADE	DAYLIGHT
1.036	7/1/2009	1230	2	2	0	0	CLEAR	DRY	BACKING	STRAIGHT & LEVEL	DAYLIGHT
0.508	7/22/2009	1647	2	2	0	0	RAINING	WET	SIDESWIPE	CURVE & HILLCREST	DAYLIGHT
0.479	9/18/2009	1055	2	2	0	4	CLOUDY	WET	ANGLE	CURVE & GRADE	DAYLIGHT
0.149	11/7/2009	1619	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	CURVE & HILLCREST	DAYLIGHT
0.024	11/17/2009	1704	2	2	0	0	RAINING	WET	REAR END	STRAIGHT & GRADE	DUSK

0.007	1/22/2010	1713	2	2	0	0	G/SMOG/SMO	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
1.148	5/6/2010	843	2	2	0	2	CLEAR	DRY	OPPOSING LEFT TURN	STRAIGHT & LEVEL	DAYLIGHT
0.018	6/9/2010	1330	2	2	0	0	CLOUDY	WET	REAR END	STRAIGHT & LEVEL	DAYLIGHT
0.262	6/10/2010	1640	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
0.7	7/20/2010	1317	2	2	0	0	CLOUDY	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
1.109	8/2/2010	830	2	2	0	0	CLEAR	DRY	ANGLE	STRAIGHT & GRADE	DAYLIGHT
0.707	8/11/2010	1213	2	2	0	1	CLEAR	DRY	OPPOSING LEFT TURN	STRAIGHT & GRADE	DAYLIGHT
0.796	10/15/2010	1646	1	1	0	0	SAND/SOIL/DI	DRY	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
0.773	11/15/2010	1850	1	1	0	0	CLOUDY	DRY	SINGLE VEHICLE	STRAIGHT & GRADE	DUSK
0.511	11/16/2010	2005	2	2	0	0	RAINING	WET	SIDESWIPE	CURVE & GRADE	DARK-HWY NOT LIGHTED
0.136	11/19/2010	1155	1	1	0	0	CLOUDY	DRY	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
0.488	11/18/2010	730	1	1	0	0	RAINING	WET	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
0.24	12/16/2010	2008	1	1	0	0	SNOWING	SNOW/SLUSH	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
0.523	1/10/2011	1730	2	2	0	1	CLOUDY	DRY	ANGLE	CURVE & GRADE	DUSK
0.098	2/20/2011	110	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY LIGHTED/ON
1.105	4/10/2011	1530	2	2	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
0.328	4/13/2011	1739	2	2	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
0.529	6/13/2011	1052	2	2	0	0	CLEAR	DRY	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
0.613	7/7/2011	742	2	2	0	0	CLEAR	DRY	REAR END	STRAIGHT & LEVEL	DAYLIGHT
1.108	7/8/2011	1716	1	1	0	1	CLOUDY	DRY	SINGLE VEHICLE	STRAIGHT & HILLCREST	DAYLIGHT

Appendix H – Typical Section

COUNTY OF	ITEM NO.	SHEET NO.
JEFFERSON-OLDHAM	5-367.00	

OLD HENRY ROAD



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Appendix I – KY 362 Drainage Study

KY 362 DRAINAGE STUDY

OLDHAM COUNTY, KENTUCKY



HWY 362 near intersection of KY 362 and Ashbrooke Dr.



Tributary of Floyds Fork, near instersection of KY 362 and Village Green Blvd.

Prepared For:
Oldham County Fiscal Court

Prepared By:
DLZ Kentucky, Inc.

February 2011

KY 362 DRAINAGE STUDY – OLDHAM COUNTY

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SECTION 1 – INTRODUCTION AND BACKGROUND

1.0 PROJECT PURPOSE AND NEED

The purpose of the KY 362 Drainage Study is to investigate the causes of and recommend solutions to flooding issues along KY 362 and within the Ashbrooke Subdivision located near Pewee Valley in Oldham County, Kentucky. The Ashbrooke Subdivision has experienced frequent standing water in several locations along with access problems due to overtopping flow from the tributary to Floyd's Fork along KY 362 creating hazards to the residents of this community and to the traveling public using KY 362 during storm events.

This project is being funded through a Kentucky Infrastructure Authority Grant obtained by Oldham County Fiscal Court.

1.1 PROJECT AREA

The project is located in Oldham County south of Pewee Valley, KY along KY 362. The overall watershed being studied contains approximately 2.7 square miles and is located between KY 146 on the north and Floyd's Fork (Oldham County/Shelby County Line) to the south. A USGS map of the project location is shown in Figure 1.

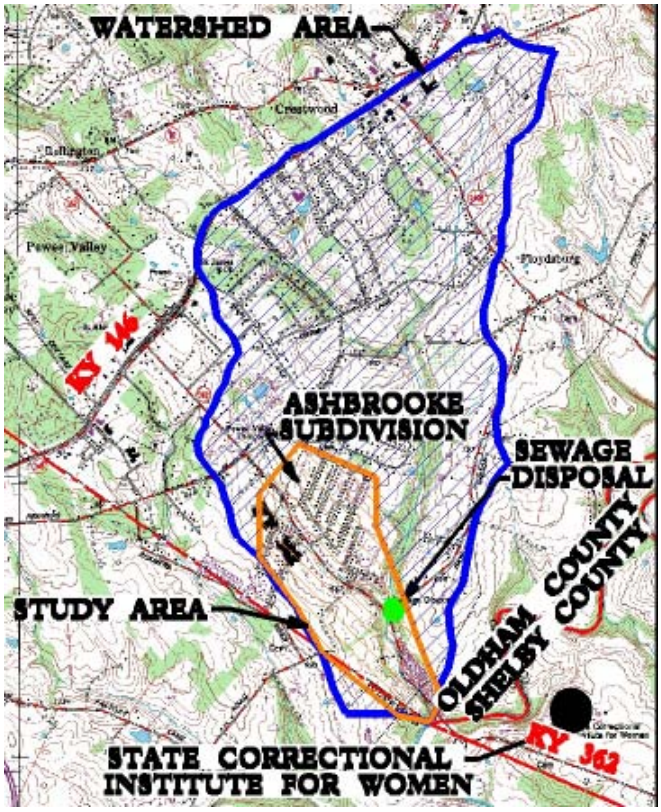


FIGURE 1 – PROJECT LOCATION

1.2 PROJECT SCOPE

The scope of work for this project was separated into two phases. Phase I consisted of data collection and existing system analysis. Upon completion of Phase I, DLZ was able to gain a better understanding of the existing problems and proceed to Phase II which consisted of analyzing potential solutions and providing recommendations.

The data collection for this project included field survey, rainfall event research, and questionnaire dissemination. The field survey included obtaining information on major streams, drainage structures, paved ditches, and other miscellaneous drainage features on known drainage issues providing more detail to the existing topography. Oldham County also provided topographic mapping from LOJIC in order to delineate the overall watershed along with incremental watersheds. The field survey and LOJIC mapping were combined to provide a more accurate overall model of the existing terrain and characteristics which was used for analysis. DLZ also performed rainfall event research to obtain historic events in the

area which may have produced flooding problems. This research is described in more detail below.

In order to obtain a better understanding of specific problems, questionnaires were disseminated to all residents within the project area. The questionnaire consisted of several general questions along with an area to describe specific situations. A sample questionnaire is located in Appendix A and a summary of the results can be found in Section 1.4.

Once the data collection and existing analysis were completed, proposed solutions analysis was performed. Several coordination meetings were held throughout project development to obtain clarification on existing problems and subsequently, proposed solutions.

1.3 HISTORY OF PROJECT DEVELOPMENT

As indicated previously, the Ashbrooke Subdivision and KY 362 have experienced frequent flooding problems. In addition to video evidence and questionnaire responses, DLZ contacted Oldham County Emergency Management to obtain a list of road closures reported along KY 362 in recent years. As indicated by Oldham County Emergency Management, this list contains only those road closures that were reported or required emergency response. Additional closures may have occurred but are not contained in the list below.

TABLE 1 - ASH AVENUE ROAD CLOSURES

DATE	TIME REPORTED
06/14/2003	2230 HRS
06/02/2006	0952 HRS
09/23/2006	0011 HRS
04/04/2008	0020 HRS
05/08/2009	1830 HRS
07/25/2009	2300 HRS
08/10/2009	1900 HRS

On July 30, 2009, the Oldham Era reported on a recent flood event that trapped two people on the roof of their vehicle on KY 362. A swift water rescue team responded to the scene and moved these people to safety. No one was injured in this event.

The county has also received numerous complaints about standing water and erosion problems within Ashbrooke Subdivision. These issues were cited in the questionnaires and have been tabulated along with other information obtained from the questionnaire in the following section.

1.4 RESIDENT QUESTIONNAIRE

As part of the contract with Oldham County, DLZ Kentucky was tasked with disseminating, collecting, and compiling resident questionnaires. These questionnaires were distributed to all residents located within the project area with a survey notification letter and self-

addressed, stamped return envelope. Addresses were obtained from PVA maps and GIS information provided by Oldham County. As a result, some properties were either owned by an adjacent property or were undeveloped and therefore had no resident. Approximately 480 questionnaires were sent, of which, 49 were undeliverable and 108 were completed and returned (approximately 25% of those delivered). The questionnaire included a brief description of how the information will be used along with questions ranging from personal property damages to accessibility issues due to flooding in the area. The results of the questionnaires that were received have been tabulated and shown below with the number of those responding "yes" as well as a percentage of those returned.

TABLE 2 - SUMMARY OF QUESTIONNAIRE RESULTS

QUESTION	RESPONDED YES	PERCENTAGE
Have you experienced flooding problems on your property?	45	42%
If yes, Do you have "high water" marks on your property?	16	15%
Have you experienced standing water on your property?	48	44%
Have you experienced erosion problems on your property?	41	38%
Has access to your property been affected by flooding on Ash Avenue (KY 362)?	66	61%

In addition to these responses, several property owners provided comments in various locations on the questionnaire and in some instances, provided photos of problem areas. A scanned copy of all questionnaires received has been provided to Oldham County for their future use.

1.5 HISTORIC RAIN DATA

Rainfall records were obtained from Hite Creek Wastewater Treatment Plant Rainfall Gauge owned and maintained by the Louisville Metropolitan Sewer District. This rain gauge is located 4.85 miles northwest of the project area. The information from this rain gauge can be obtained online at the address provided in the References Section. The rain gauge information was obtained from September 2003 to May 2010. The rainfall frequency was determined by using the information from the rain gauge and analyzing it for every 5 minute increments that rain was recorded. This allowed for the total accumulation within a specific time frame to be recorded. The storm events were analyzed for 30 minutes, 1, 2, 3, 6, 12, and 24 hour storms. The total accumulation which occurred during each storm event was evaluated with chart _____ located in the ___BOOK. This determined the frequency of each storm. Table 3 is a summary of the analysis. The summary indicates that seven 100 year storm events have taken place within the past six years (shown red in the table).

On August 4, 2009, a 100 year storm event occurred. A representative from DLZ Kentucky visited the site during this rain event and obtained video and photographic evidence of the flooding problems along KY 362 and within Ashbrooke Subdivision. The pictures are located in Appendix B and depict major failures located within the study area. A digital copy of all video and pictures has been provided to Oldham County for their records.

TABLE 3 – STORM EVENTS SUMMARY						
DATE	**FREQUENCY**	**INCHES**		**DATE**	**FREQUENCY**	**INCHES**
9/27/2003	10 Yr, 1 Hr	2.17		8/27/2006	10 Yr, 3 Hr	2.94
9/28/2003	10 Yr, 3 Hr	2.68		8/28/2006	25 Yr, 6 Hr	3.63
10/26/2003	10 Yr, 30 min	1.75		8/29/2006	5 Yr, 12 Hr	3.75
10/28/2003	50 Yr, 3 Hr	3.64		9/22/2006	2 Yr, 30 Min	1.23
11/1/2003	5 Yr, 12 Hr	3.64		9/23/2006	100 Yr, 12 Hr	5.40
11/6/2003	2 Yr, 24 Hr	3.64		9/27/2006	100 Yr, 12 Hr	5.51
11/12/2003	10 Yr, 6 Hr	2.47		9/28/2006	100 Yr, 24 Hr	6.65
11/14/2003	1 Yr, 12 Hr	2.56		7/5/2007	5 Yr, 3 Hr	2.46
5/25/2004	2 Yr, 3 Hr	2.02		8/16/2007	5 Yr, 2 Hr	2.32
5/27/2004	10 Yr, 6 Hr	3.29		9/27/2007	1 Yr, 1 Hr	1.28
5/28/2004	50 Yr, 12 Hr	4.92		10/23/2007	100 Yr, 24 Hr	6.41
5/30/2004	50 Yr, 12 Hr	5.14		12/15/2007	1 Yr, 12 Hr	2.64
5/31/2004	100 Yr, 24 Hr	6.77		3/4/2008	2 Yr, 12 Hr	2.82
7/9/2004	1 Yr, 30 Min	1.08		3/19/2008	1 Yr, 12 Hr	2.63
10/18/2004	2 Yr, 6 Hr	2.54		3/20/2008	2 Yr, 24 Hr	3.59
10/19/2004	2 Yr, 12 Hr	2.78		3/28/2008	2 Yr, 12 Hr	2.58
1/6/2005	2 Yr, 24 Hr	3.69		4/4/2008	2 Yr, 6 Hr	2.25
5/19/2005	2 Yr, 2 Hr	1.99		6/16/2009	2 Yr, 30 Min	1.18
5/20/2005	5 Yr, 3 Hr	2.49		7/25/2009	5 Yr, 3 Hr	2.44
5/28/2005	1 Yr, 24 Hr	2.71		7/26/2009	5 Yr, 24 hr	4.04
8/28/2005	2 Yr, 30 Hr	1.21		7/29/2009	2 Yr, 3 Hr	2.05
8/29/2005	1 Yr, 3 Hr	1.66		7/30/2009	100 Yr, 12 Hr	7.01
8/30/2005	10 Yr, 12 Hr	4.00		8/4/2009	100 Yr, 12 Hr	7.38
8/31/2005	10 Yr, 24 Hr	4.98		8/10/2009	2 Yr, 1 Hr	1.34
11/15/2005	10 Yr, 3 Hr	2.27		8/11/2009	2 Yr, 3 Hr	2.11
3/12/2006	2 Yr, 12 Hr	2.82		8/28/2009	5 Yr, 1 Hr	1.94
3/13/2006	1 Yr, 12 Hr	2.55		8/29/2009	5 Yr, 6 Hr	2.95
7/14/2006	10 Yr, 3 Hr	2.39		5/2/2010	2 Yr, 12 Hr	3.02

SECTION 2 – EXISTING ANALYSIS

2.0 INTRODUCTION

The project area is located within a 1,734 acre watershed. DLZ analyzed existing conditions for the project area within this watershed using StormCADV8i. StormCAD is a comprehensive modeling system which provides calculations for storm drainage analysis using existing ground and topography conditions and existing storm sewer hydraulics. During this analysis, DLZ determined that several drainage components in the existing system are not adequately designed for current conditions. The project area has been divided into eight smaller areas of emphasis. These areas are labeled Area A through Area H throughout the study.

2.1 DRAINAGE ANALYSIS

The eight project areas were subsequently divided into 157 sub-basins, each draining into points along the existing storm sewer system, ditches, natural streams, creeks, or tributaries of Floyd's Fork. The sub-basins were delineated and modeled using StormCAD in MicroStation. The maximum size of any sub-basin is 55.5 acres with an average size of 11.0 acres.

A soil investigation was performed for the drainage basin using information from the National Cooperative Soil Survey available online through the United States Department of Agriculture. The majority of the soils in the area were found to be various silt loams classified in Hydraulic Soil Group (HSG) B.

Each sub-basin's weighted C-Factor was determined based on the runoff coefficients applicable to each area based on land use, ground coverage, and slope. Using the Louisville and Jefferson County Metropolitan Sewer District Design Manual, the suburban housing in the area was determined to be R-3 Residential with a C-Factor of 0.48 based on the HSG B and slopes between 2% and 7%. For the same HSG and land slopes, the following five basic groups defined the various land uses throughout the drainage basin. The average weighted C-Factor for the overall watershed was 0.326.

TABLE 4 - RUNOFF COEFFICIENTS

LAND USE	C-FACTOR
Impervious Areas (roofs, drives, streets)	0.95
R-3 Residential	0.48
Pasture and Farmland	0.23
Open Spaces, Lawns, and Parks (cemetery)	0.19
Woodlands	0.18

The Time of Concentration (T_c) for each sub-basin was determined using the TR-55 Method for Sheet Flow and Channel Flow based on the topography within each area. The TR-55

Sheet Flow Method requires input of the hydraulic length (limited to 100 feet), the Manning's Roughness Coefficient (n), slope, and 2-Year 24-Hour Depth ($P_{2,24}$) for each area. According to the Kentucky Transportation Cabinet Design Manual the $P_{2,24}$ for Oldham County is 3.2 inches. Manning's n for sheet flow was determined from TR-55, Table 3-1. The TR-55 Channel Flow Method requires input of the hydraulic length, Manning's n, and slope as well as the flow area and wetted perimeter of the channel. The channel dimensions were approximated by contour mapping and field measurement for the ditches, natural streams, and creeks. Manning's n for channel flow was determined from Exhibit DR-05.901 of the KYTC Drainage Manual.

The existing model was analyzed for the 2, 5, 10, 25, 50, and 100 year storm events in order to determine the points at which failure was occurring in the system. The Intensity Duration Frequency (IDF) curves for the model were developed in StormCAD as a User Defined IDF Curve and the input was based on the equation for rainfall intensity given on page DR-04-16 of the KYTC Drainage Manual. The coefficients for the Louisville Zone of Influence were used in the equation for each return interval and the intensities were calculated using durations at 1 minute intervals from 5 minutes to 15 minutes and then at 5 minute intervals from 15 minutes to 280 minutes. This wide range of time intervals was used to encompass all time of concentrations throughout the drainage basin.

2.2 EXISTING NETWORK EVALUATION

There are several drainage components within the existing system that fail to handle the rain events as required by design. Several areas in the existing system fail before the 25 year design storm event and even more fail before the 100 year storm event. Other portions of the system that had prior complaints from drivers and residents were shown to fail as early as the 2 year or 5 year storm events. Portions of the system that are not performing to standard are causing hazardous driving conditions, access restriction, and property damage. The failure locations have been broken down into eight areas of emphasis and are discussed in the following sections along with the significance of the problems in each area.

The figures in the following sections show the analyzed portions of the storm drainage system for each of the areas of emphasis. In these figures, the drainage path is delineated by a thick black like. If a section of the system failed at any point during analysis, it was color coded to represent the least storm event from which it failed. A solid red line represents a failure at the 2 year storm event, orange at the 5 year storm event, magenta at the 10 year storm event, cyan at the 25 year storm event, blue at the 50 year storm event, and a dashed red line for failures at the 100 year storm event. Appendix B shows photographs taken during the August 4, 2009 100 year storm event in which flooding overtopped the roadway at the entrance to Ashbrooke Subdivision and flooded yards and driveways of residences in the subdivision as well as along KY 362. Appendix C contains an overall map which depicts the 8 area locations within the project, a figure indicating failures for the entire area, and figures for each area showing labels associated with the StormCad analysis used to differentiate each part of the existing storm system followed by the existing analysis report for each area.

2.2.1 AREA A – KY 362 North

Excessive flooding along KY 362 from north of Missionary Ridge Drive to the point just before the stream crosses under KY 362 approximately 750 feet south of Dunnlea Drive (Figure 2) is caused by undersized pipes, clogged pipes or shallow swales. Several residents have incorporated the natural stream into their landscaping creating narrow channels. Many of the pipes and swales in this area are failing at a 2 year storm event due to capacity limitations. Two locations exist where concrete channels perpendicular to KY 362 terminate at KY 362 Terminate perpendicular to KY 362 emptying into a shallow roadside swale. Currently there are no headwalls in place to prevent the flow from these channels from overtopping KY 362. Two pipes are also located between Missionary Ridge Drive and Dunnlea Drive that are intended to direct the water under the highway and into the major stream. Erosion in this area has created an undefined channel creating sedimentation blockage of the inlets and preventing the two pipes from performing at design capacity. The water levels in this area have been high enough to prevent access to the subdivision and excessive flooding is causing erosion and property damage.



FIGURE 2 – AREA A

2.2.2 AREA B – KY 362 Culvert

Area B, Figure 3, is located from the point just before the stream crosses under KY 362, approximately 750 feet south of Dunnlea Drive to where the stream crosses back under KY 362, north of Hawley Gibson Road. Undersized and inverted pipes cause flooding in this area. Much of this area has pipes failing at the 2 year storm event. The storm water from Area A is flowing to Area B from both sides of KY 362. Two existing 36" pipes carry the flow from the southwest side of KY 362 while one existing 15" pipe carries the flow from the northeast side of KY 362. All Flow from these three pipes flow into one 36" pipe. The limited pipe capacity causes water to flow across the road and into neighboring areas. An earthen berm is located at 9007 Ash Avenue before the stream crossing under Ashbrooke Drive. The berm traps water on the road, preventing the flow from entering the pipe.



FIGURE 3 – AREA B

2.2.3 AREA C – KY 362 South

KY 362 floods during major storm events starting from the stream crossing north of Hawley Gibson Road and ending at Floyds Fork. Two types of flooding occur in this area: flash flooding and backwater flooding. The backwater flooding is due to the road elevations being below the FEMA flood limits. This stretch of KY 362 is shown inside the blue area listed as the FEMA flood limits in Figure 4. According to FEMA, the flood limit elevation for the project area is 628 feet. The road elevations with in this area are typically two feet below this elevation. In general, backwater from Floyd's Fork will not occur until after an equivalent storm event takes place within the project area. This is a result of the differing times of concentration for each watershed. The Floyd's Fork watershed is significantly larger which increases the time of concentration and therefore increasing the duration of a flood event. Flash flooding is due to undersized entrance pipes and roadside ditches which run parallel to KY 362 and undersized pipes which cross underneath KY 362 as indicated in figure 4. The majority of the entrance pipes located in this area act as a low flow entrance. During storm events, water overtops these entrances blocking access to personal property, however water does not overtop the roadway. One of the entrance pipe located in this area restricts the amount of water that should be passing through the properties location and diverts the water onto the roadway.

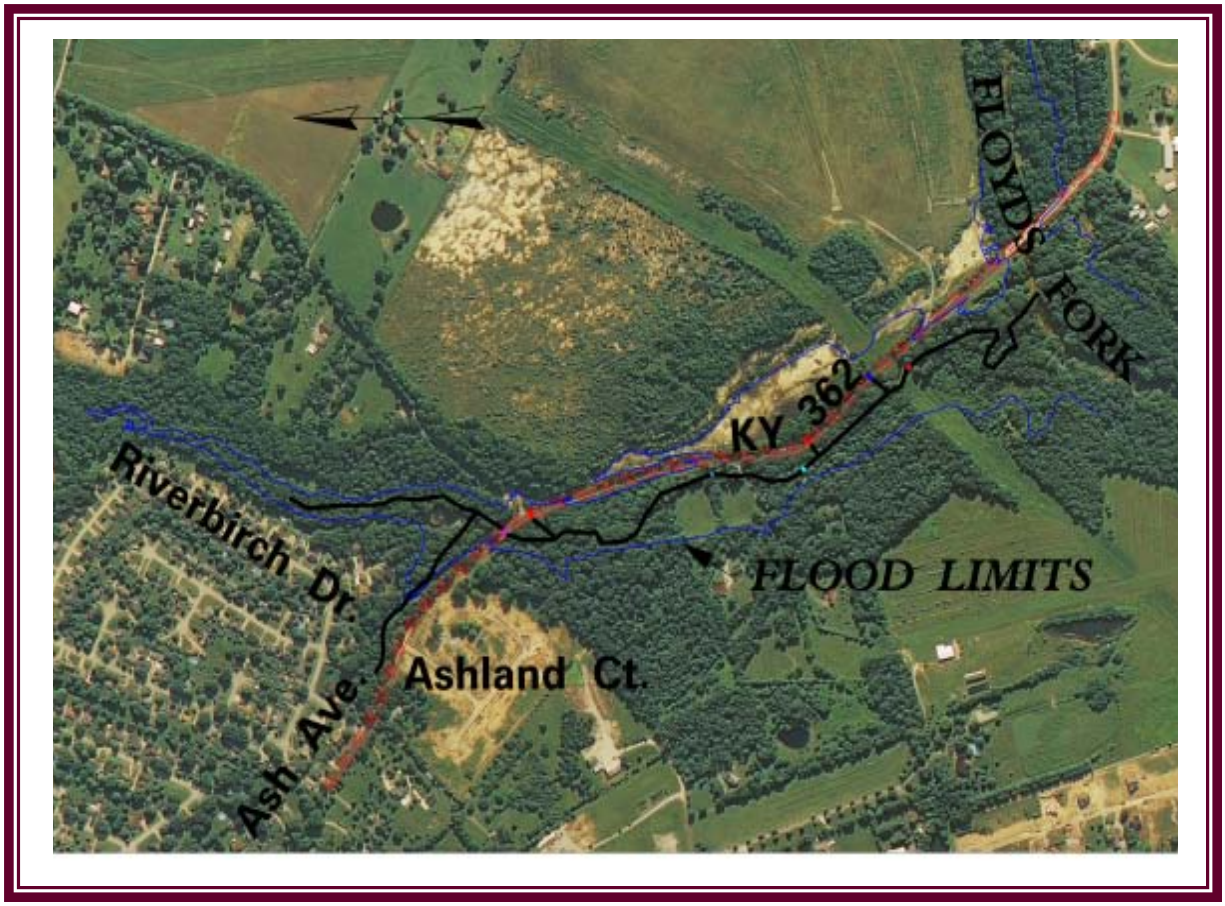


FIGURE 4 – AREA C

2.2.4 AREA D – Ashbrooke Subdivision at Confederate Place Dr.

Storm water from the subdivision and cemetery, located northeast of the project area, flows in the direction of the residences located along Confederate Place Drive and neighboring streets. As figure 5 indicates, the majority of pipes and swales in this area fail before a two year storm. Local residents within this area indicate experiencing standing water, erosion, and flood damage on their property. Several swales in the area were designed to turn ninety degrees without the use of headwalls. Residents, located downstream between Hickory Falls Lane and Shenadoah Drive, have incorporated the natural stream into their living environment. One particular residence incorporate a set of stairs located approximately 2 to 5 feet away from the existing stream.



FIGURE 5 – AREA D

2.2.5 AREA E – Ashbrooke Subdivision at Riverbirch Dr.

Within this area several drainage pipes have zero slopes. The rainfall from Willowrun Lane leads to the back yard located at 6613 Riverbirch Drive (located in Figure 6). A concrete pipe is located in the back of the property. All storm water from the neighboring subdivision is designed to flow to this location through a concrete pipe. The flow makes two ninety degree turns in the back yard of 6613 Riverbirch Drive. The flow then run into a concrete pipe which carries the flow into a catch basin located in the same said property owners front yard. The flow then crosses the street and down into the stream located outside of area E.

The concrete pipe located in the back yard of the property referenced above has broken approximately 3 feet from the outlet. As a result of this break, the pipe has fallen slightly forcing the flow downward and forming a hole. Sedimentation from erosion in this area has collected in the existing channel raising the channel elevation above the surrounding ground elevation. As a result, storm water is currently flowing in the opposite direction than the original design. The residents living at this property previously asked to fix the problem but were instructed not to do so. Subsequently, the residents placed large stones at the outlet of the pipe in order to prevent the hole from eroding further. However the existing designed channel elevation remains higher than the existing ground elevation.

Figure 6 shows the existing storm drainage for this area. The red pipes, located in the cul-de-sacs of Raintree Circle and Willowrun Lane, are inverted pipes. The majority of the remaining system fails at a 2 year storm event. The red catch basin is undersized and after a site visit to this location, the lid to the catch basin does not fit securely to the basin.

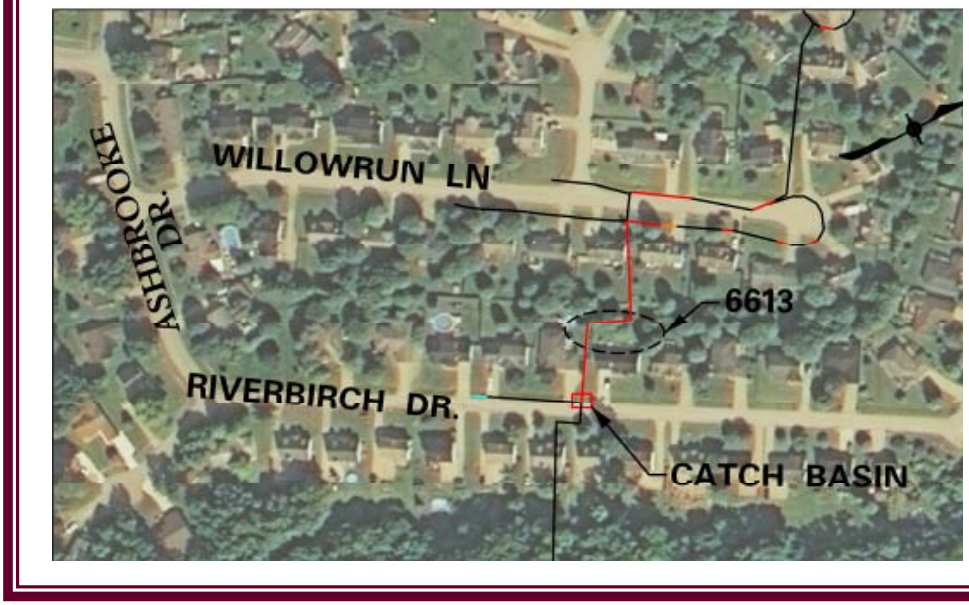


FIGURE 6 – AREA E

2.2.6 AREA F – Ashbrooke Subdivision along Ashbrooke Dr.

Figure 7 shows the location of residences along Ashbrooke Drive that experience flooding, erosion, and standing water on their property. The property located at 6615 Ashbrooke Drive experiences severe flooding within the garage and living room. Runoff from the street, neighboring driveways, and sidewalk flows down the sidewalk until it reaches the driveway to this property which is below the elevation of the sidewalk. The slope of the entrance then directs the storm water to flow towards the garage. The resident installed a catch basin which is located in the middle of the driveway. A pipe runs underground from the catch basin to the stream located behind the house. The driveway catch basin helps but flooding still occurs.

The residences located at 6642 and 6646 Ashbrooke Drive indicated problems with standing water and erosion. Runoff, from Raintree Court and the east side of Ashbrooke drive, flows freely into these two properties. There are no pipes or swales to direct the flow across the street. The road elevation is higher than the yard elevation therefore standing water and erosion is experienced on these properties. The pipe crossing the intersection at Ashbrooke Drive and Willowrun Lane is inverted causing ponding at the inlet.

6604 Ashbrooke Drive also experiences flooding and standing water. The area located at the corner of Ashbrooke Drive and Raintree Circle has an undefined channel causing water to pond in this location.

The property located at 6620 Ashbrooke Drive experiences standing water and erosion. The driveway slopes were nearly flat and water ponds on driveway after storm events. The drain spouts drains onto the driveway adding additional runoff to the standing water in the driveway.

The residents located at 6623 and 6625 Ashbrooke Drive experience standing water, minor flooding, and high water marks on their properties. No pipes or swales exist along Ashbrooke Drive in front of these two properties.



FIGURE 7 – AREA F

2.2.7 AREA G – Ashbrooke Subdivision along Shenadoah Dr.

A couple properties along Shenadoah Drive experience flooding inside their garage. Within this area several driveways are relatively flat or the driveway slopes away from the road. The existing pipes located in the area shown in figure 8 are 15 inch corrugated metal pipe. The design analysis for this location indicates that a 15 inch concrete pipe would have had sufficient capacity for a 10 year storm event however due to the change in Manning's n, the 15 inch corrugated metal pipe (CMP) fails at a 2 year storm event.

The pipe leading out of the catch basin located at the intersection of Shenadoah Drive and Riverbirch Drive is inverted. This pipe fails at a two year storm event.

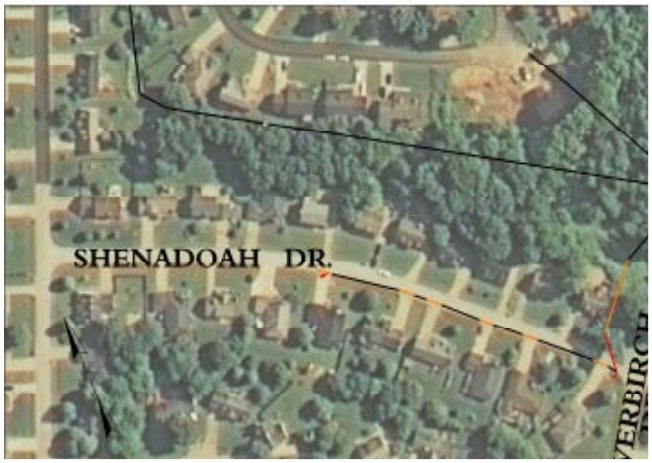


FIGURE 8 – AREA G

2.2.8 AREA H – Ashbrooke Subdivision at Five Forks Dr.

The residence located at 6517 Five Forks Drive experiences flooding, high water, and standing water in the back yard of their property. These problems are due to a 15" CMP located on an adjacent property which outlets into a swale located on the back side of the property. An outlet channel filled with large DGA leads from the pipe and runs toward a gate located at the edge of the property. Approximately 8' before the fence the channel becomes grass covered and not well defined. The DGA lined channel has been placed above existing grade causing water from the pipe to become divided flow. A portion of the flow is contained in the channel while the other part flows into the back yard of the property and becomes trapped by an earthen berm located at 6517 Five Forks Drive. In addition, Silt deposits have built up at the inlet of the pipe located at 6516 Five Forks Drive. The existing pipe located at this location is a 15 inch corrugated metal pipe. The design analysis for this location indicates that a 15 inch concrete pipe would have had sufficient capacity for a 10 year storm event however corrugated metal pipe (CMP) fails before a 10 year storm event.



FIGURE 9 – AREA H

SECTION 3 – PROPOSED SOLUTIONS ANALYSIS

3.0 INTRODUCTION

The proposed analysis was divided into the same eight smaller areas of emphasis as previously mentioned in the existing analysis. Each area was analyzed in StormCad using several alternates based on topography, land availability, environmental impacts, and location within the project area. Downstream impacts were taken into consideration with each area. According to the KYTC Drainage Manual, all solutions and drainage network components should be designed for the 25 year storm event along KY 362 for the major stream and roadway crossings. Roadside ditches and subdivision components should be designed for the 10 year storm event. Each structure was then analyzed at the 100 year storm event to check the hydraulic grade elevation to ensure that during those flood events, water would not overtop roadways. Each proposed alternate solution is represented in Appendix D with a labeled exhibit map followed by a summary table of the analysis. Each segment used within the StormCad program is represented on each individual area's exhibit map.

Preliminary cost estimates are shown with each alternate solution discussed. The detailed preliminary estimates for each solution can be found in Appendix E. Material cost was determined using RS Means. The quantities used for the estimate are based on survey data and FSA mapping. Actual quantities will need to be determined during design. Reinforced concrete pipe (RCP) cost more than other equivalent pipes yet has a better life cycle cost therefore the preliminary estimates utilize this higher cost for budgetary and life expectancy considerations.

3.1 PROPOSED SOLUTIONS – AREA A

Proposed Area A begins its location between the intersection of KY 362 and Missionary Drive, and terminates at 8930 Ash Avenue. Area A's flash flooding is caused primarily by undersized channels and entrance pipes. In order to reduce flooding occurrences, two solutions have been considered for the west side of KY 362 and two solutions have been considered for the east side of KY 362. These solutions include the use of inline detention and increased pipe sizes on both sides of KY 362. Upgrading inadequately sized entrance pipes and culverts in this area alone will not eliminate flooding on residential property therefore upsizing channels should also be considered. The west side of KY 362 is a tributary to Floyd's Fork. This natural "blue line" stream may require US Army Corp of Engineers permitting for any construction taking place. If incorporated, this solution would have a direct impact on Area B. Upsizing the channels and pipes will allow storm water to release downstream faster within the area, increasing the flow into Area B causing water to overtop the roadway more frequently.

Pipes, culverts, and swales located on the West side of KY 362 are designed for the 25 year storm event while the storm system located on the East side of the highway is designed using a 10 year storm.

3.1.1 PROPOSED WEST SOLUTION A-1

An inline detention basin is one possible solution that will be located on the West side of KY 362 before the intersection of KY 362 and Village Green Boulevard. Ideally, the basin would be designed with an outflow rate equal to a 10 year storm event; however there is not enough property available to obtain the proper amount of volume associated with a 10 year storm. The detention basin was subsequently designed to store runoff and reduce the flow rate for a storm greater than the 10-year event. However, culverts and pipes downstream will have to be upgraded in order to meet capacity requirements. In addition, several channel sections that have been incorporated into landscape will need to be modified to increase capacity. The inlets from the two pipes located between Missionary Ridge Drive and Dunnlea Drive will need to be cleaned out and reopened. The estimated preliminary cost for this solution is $299,964. This cost does not include land acquisition for the detention basin. Land acquisition will significantly increase the actual cost of this solution.

3.1.2 PROPOSED WEST SOLUTION A-2

The second alternate solution is to upgrade the existing pipes, culverts, and swales within Area A that are located on the West side of KY 362 without the use of inline detention. Eliminating the detention basin will reduce property acquisition, cost associated with excavation, and materials used to construct the basin. The inlets from the two pipes located between Missionary Ridge Drive and Dunnlea Drive will need to be cleaned out and reopened. By eliminating the detention basin and focusing solely on improving the existing drainage system by increasing pipe sizes and channel capacity, the preliminary cost estimate is $117,894.

3.1.3 PROPOSED EAST SOLUTION A-3

Another solution for this area analyzes the East side of KY 362. This solution utilizes ell headwalls to capture the flow coming from the concrete channels. Swales and entrance pipes will be used to keep the flow along the East side. This will reduce the amount of flow entering into the natural stream located on the West side of KY 362 and allowing the use of smaller pipes and channels to be placed within this area. This new system will tie into the drainage system located downstream from Area A. Solution A-3 alone will have minimal effect on the downstream flow and will not correct the flooding located on the West side of Area A. This solution should be used in conjunction with Proposed Solution A-1 or A-2.The estimated preliminary cost for this solution is $122,808.

3.1.4 PROPOSED EAST SOLUTION A-4

The final solution for this area looks at modifying the existing structures currently present along the East side of KY 362. This solution should be used with solution one or two within area A to eliminate most flooding within this area. The Ell headwalls will still be placed at the concrete channel locations in order to increase capture of storm runoff and to prevent water from over topping the roadway; however a new system will not be designed. The Ell headwalls will redirect the flow to its proper channel. The channels and pipes that direct the flow across KY 362 should be cleaned in order to allow the drainage system to properly function. The system, starting at 8909 Ash Avenue and ending at 8929 Ash Avenue, will be

upgraded in order to allow proper drainage. The estimated cost for this preliminary design is $122,568. Solution A-4 alone will have minimal effect on the downstream flow and will not correct the flooding located on the Southwest side of Area A.

3.2 PROPOSED SOLUTIONS – AREA B

Proposed Area B begins where the two 36 inch concrete pipes cross KY 362 near 8929 Ash Avenue and ends immediately upstream of the KY 362 bridge north of Hawley Gibson Road. This tributary to Floyd's Fork is a natural "blue line" stream which may require US Army Corp of Engineers permitting for any construction taking place. With this in mind, several solutions were considered which consist of upgrading the structures located within Area B without changing the grade, creating a new system allowing the storm water to travel down the opposite side of the street, or upsizing the existing pipes and channels which will require grade changes. Solutions B-1 and B-2 require that the two existing 36" pipe culverts under KY 362 be replaced. These pipes are currently inverted with half the inlet submerged in standing water. In order to control the erosion around these pipes, headwalls will need to be placed on both sides of the pipes. A one lane road closure will be required when replacing them. This proposed solution will have an impact on structures located in Area C by increasing the flow released downstream causing a potential increase in the frequency of roadway overtopping at Hawley Gibson. However, this will decrease the amount of flooding in front of Ashbrooke Drive.

3.2.1 PROPOSED SOLUTION B-1

This solution considers upsizing the existing pipes without changing the grade along the existing stream in order to disturb the stream as little as possible. The proposed driveway entrances would consist of a double box culvert in place of the existing 36 inch pipes with one barrel's flow line being lower than the other in order to provide a low flow channel and a more natural habitat. No other changes will be made to the existing system with this solution. The estimated preliminary cost for this solution is $306,217.

3.2.2 PROPOSED SOLUTION B-2

Another solution requires a complete grade change starting from the inlet of the double 36" culvert pipes that cross KY 362 at approximately 8929 Ash Avenue to the pipe outflow located under Ashbrooke Drive. Currently, all entrance pipes within this location consist of one 36 inch pipe. According to the hydraulic analysis used in StormCad, two 36 inch pipes (or equivalently sized structure) will have to be placed at each entrance in order to allow for the system to pass a 25 year storm event. The estimated preliminary cost for this solution is $249,477.

3.2.3 PROPOSED SOLUTION B-3

The final solution associated with area B utilizes a parallel system that will run along the opposite side of KY 362 starting from the inlet of the double 36" pipe culverts located near 8929 Ash Avenue and ending on the downstream side of the KY 362 bridge, diverting the flow from Area A into the new system. This solution will eliminate the KYTC Encroachment permit and road closure. This solution will have no impact on the capacity of

the bridge since the flow is separated from the existing system and released downstream of the bridge. The estimated preliminary cost, not including the necessary right of way acquisition, is $202,296.

3.3 PROPOSED SOLUTIONS – AREA C

Proposed Area C begins at the KY 362 Bridge, north of Hawley Gibson Road, and terminates at Floyd's Fork. Analysis was performed for both backwater flooding and flash flooding situations. Due to the differing times of concentration within each watershed, flood events occurring within the project area do not necessarily occur along Floyd's Fork and vice versa, therefore, both situations were analyzed separately. Solutions presented for this area are intended to alleviate flooding along the existing roadway as a result of backwater from Floyd's Fork or to accommodate storm flow from the tributaries along KY 362. One entrance within this area contributes to the flash flooding along KY 362. The other entrance pipes are low flow entrances were flash flooding will occur across the entrances but the water at these locations usually does not overtop the road. These low flow entrances has a negative impact within this area due to low flows will cause erosion and change the characteristics of the stream therefore the proposed solutions for Area C will consider upgrading these entrances.

3.3.1 PROPOSED SOLUTION C-1

Proposed solution C-1 raises the road by an average of four feet, alleviating potential flooding along the road by restricting the backwater from Floyds Fork to its proper channel. The elevation increase will be carried from the bridge near Hawley Gibson Road to the existing bridge over Floyd's Fork and is designed to avoid overtopping at a 100 year flood. This will allow vehicles to travel safely along KY 362 during storm events. This solution does not affect any other areas and is the only solution to prevent backwater flooding. The preliminary construction cost estimate for raising the highway is $1,435,044. This cost estimate does not account for permits that may need to be obtained before construction. Such permits include Encroachment, Corp of Engineers, and KYTC.

3.3.2 PROPOSED SOLUTION C-2

This solution considers upgrading drainage pipes running parallel and perpendicular to KY 362 within the tributary. Analysis was performed without consideration of backwater to ensure that proposed pipe sizes would function adequately under independent conditions for the storm flow from the tributaries to Floyd's Fork. Various pipe sizes and the amount of pipes needed at each entrance varies due to the terrain (Appendix D, Area C- Alternate 2). Any driveways where entrance pipes are replaced will need to be re-graded due to the current elevations being below the roadway. The driveways considered for improvement are located at or near 9200, 9300, and 9320. The storm water flowing through the drainage pipes located at 9200 and 9300 does not overtop roadway elevations during major storm events however the entrance pipe and driveway configuration located on 9320 Ash Avenue creates a barrier and directs water onto of the roadway. This solution will not prohibit flooding due to backwater, but will eliminate flash flooding within this area. The preliminary cost estimate for this alternate is $460,061.

3.3.3 PROPOSED SOLUTION C-3

Alternate C-3 considers upgrading the same drainage pipes as C-2 however this solution utilizes box culverts under the driveways instead of the multiple pipe configurations. See Appendix D, Area C-Alternate 3. Again, the three driveway entrances will have to be re-graded. The preliminary cost estimate for this alternate is $ 433,932.

3.4 PROPOSED SOLUTIONS – AREA D

The flow from the subdivision located northeast of the Ashbrooke Subdivision and the cemetery located adjacent to this area was not taken into consideration for the initial design of the existing storm sewer. The natural stream located behind 8529 Confederate Place Drive may be jurisdictional water and proper permitting from the Corp of Engineers may be required before improvements can be made. Several residents between Hickory Falls Lane and Shenandoah Drive have incorporated this stream into their natural living area. One residence within this same location is located approximately 2 to 5 feet from the stream. The solutions for area D will have an impact on these downstream properties.

3.4.1 PROPOSED SOLUTION D-1

This solution considers installing one catch basin on the north east property corner of 8517 Confederate Place Drive and a second catch basin located on the north east property corner of 8529 Confederate Place drive. The catch basins will capture storm water from the cemetery and adjacent subdivision. A new pipe system will be placed in order to connect the proposed catch basins to the remaining storm water facilities located within Ashbrooke Subdivision.

The remaining system, consisting of multiple pipes and ditches, will be upgraded to carry a 10 year storm event. This solution will allow for more storm water to pass through the properties located between Hickory Falls Lane and Shenandoah Drive at a faster rate and could contribute to flooding and property damage at those locations. Estimated preliminary cost is $402,737.

3.4.2 PROPOSED SOLUTION D-2

Another solution is to install a new underground pipe system located along the back property lines of the residences located along Confederate Place drive. The new storm system is designed to carry the flow for a 10 year storm event. Multiple drop box inlets will be added to contain the storm water runoff from the adjacent subdivision and connected through a series of storm sewer pipes with an outlet to the tributary to Floyd's Fork located on the south side of the Ashbrooke subdivision. This system will decrease the amount of flow through the remaining portion of Area D and eliminate the amount of existing pipes that would have to be upgraded throughout the remaining system. The residence along Hickory Falls Lane and Shenandoah Drive will not be affected as a result of this improvement. The preliminary estimated cost is $304,624.

3.5 PROPOSED SOLUTIONS – AREA E

The survey data for this area indicated that several pipes along Willowrun Lane have either inverted or zero percent slopes. According to topographic mapping, all contours above this area, including Willowrun Lane, direct flow to the back yard of 6613 Riverbirch Drive. This one property collects runoff from all properties located on Raintree Court, Willowrun Lane, and surrounding areas. With the problems mentioned previously under Area E and the amount of runoff being received by this one property a couple of solutions have been considered.

3.5.1 PROPOSED SOLUTION E-1

The direct problem solution consists of the statement "fix what's broken". This solution consists of fixing everything on property 6613 which includes installing a new pipe in place of the broken concrete pipe and installing two-ell headwalls where the channel makes 90 degree turns. Ell headwalls will be used to help prevent erosion and help direct flow to remain in the channel. This solution will also include upsizing and redefining the existing pipe, channel, and catch basin located on property 6613 Riverbirch Drive to redirect flow to follow the original design and eliminate flooding on adjacent properties. This proposed solution is designed for a 10 year storm event with a preliminary cost estimate of $3,960.

3.5.2 PROPOSED SOLUTION E-2

The whole area solution consists of fixing all problems within this area. This includes everything stated in Area E-1 and the undersized or inverted pipes located along Raintree Court and Willowrun Lane. The proposed pipes are designed to handle a 10 year storm event and the road elevations have been checked for a 25 year storm event. This solution has no adverse effect on downstream structures. The estimated preliminary cost for this solution is $77,266.

3.6 PROPOSED SOLUTIONS – AREA F

There are three distinctive issues taking place in area F. these include sidewalk settlement, water being trapped in property owner's back yards, and standing water due to the lack of a defined channel. The proposed solution for these areas is designed to convey a 10 year storm event.

3.6.1 PROPOSED SOLUTION F-1

The first solution looks into the area that has sidewalk and driveway runoff issues. Due to the excessive settlement from the sidewalk, approximately 80 linear feet of sidewalk will need to be replaced. In addition, approximately 34 linear feet of driveway will have to be replaced in order to properly contain the drainage. The new sidewalk will be sloping towards the proposed ditch located in the opposite side from the house and will continue to run along Ashbrooke drive until it reaches the existing ditch. This solution has minimal effect on the downstream. These improvements have an estimated preliminary cost of $7,450.

3.6.2 PROPOSED SOLUTION F-2

The second solution will utilize a new storm sewer system in order to capture storm water from the area to eliminate the flooding. The installation of 4 catch basins will be required along with connecting storm sewer pipes in order to direct the flow across Ashbrooke Drive and into the existing system. The improvements to this location will have minimal impact on the downstream area. The estimated preliminary cost of this solution is $33,275.

3.6.3 PROPOSED SOLUTION F-3

The third solution consists of swale re-grading and pipe replacement at the intersection of Ashbrooke drive and Willowrun Lane in order to allow proper drainage flow and eliminate standing water issues within the existing pipe. This solution does not have a negative impact on the downstream locations and has an estimated preliminary cost is $8,430.

3.7 PROPOSED SOLUTIONS – AREA G

The solutions for this area are designed for a 10 year storm event and checked with the 25 year flood event. Due to the manning's n factor for corrugated metal pipes that are currently being used, as mentioned under Area G, the majority of the drainage pipes in this area fail at a 2 year storm event. The manning's n factor for concrete pipes with the same diameter as the existing pipes would pass a 10 year storm. The solution for this area is to re-grade entrance pipes and swales, upsize the existing undersized catch basin and pipe that crosses Shenandoah Drive, and increase the driveway elevations for the properties located at 8608 and 8616 Shenadoah Drive, and increase the crest elevation along the back side ditch. The preliminary cost estimate for this solution is $74,761.

3.8 PROPOSED SOLUTIONS – AREA H

An earthen berm located on a resident's property prevents water from draining out of the back yard. Solutions for this area pertain to ways of getting water past this berm. The solutions for this area were designed for a 10 year storm event and checked for a 25 year storm event for a residential neighborhood. The downstream structures are not affected by removing the berm.

3.8.1 PROPOSED SOLUTION H-1

The first solution would be to remove the berm. This would allow water flowing towards the berm to continue to flow out of the yard reducing the amount of standing water trapped on the property. The estimated preliminary cost for berm removal is $3,352.

3.8.2 PROPOSED SOLUTION H-2

Solution two is to installing a pipe under the berm that would allow water to flow under it. A channel would then be used to redirect the flow coming from under the berm to its proper drainage path. This solution has an estimated preliminary cost of $7,362.

3.8.3 PROPOSED SOLUTION H-3

Solution three consists of upgrading the pipe located on the property and realigning the channel extending it past the berm. This will allow the flow to stay within the designed drainage system and reduce the amount of water trapped on the property. Estimated preliminary cost is $10,429.

SECTION 4 – RECOMMENDATIONS

4.0 INTRODUCTION

Recommendations for each area are based on the following criteria: severity of the problem, benefit vs. cost, and the amount of people affected by the flood event. A rating scale was developed with these criteria in mind to score each recommendation in order of potential benefit. Table 5 below shows the evaluation criteria with an associated ranking. Solutions with a higher total ranking provide the higher potential benefit.

TABLE 5 - RECOMMENDATION RANKING CRITERIA

RANKING	1	2	3	4	5
Cost Estimate	> $350,000	$350,000 - $200,000	$200,000 - $100,000	$100,000 - $30,000	<$30,000
Impacted Residences	< 2	2 - 5	5 - 20	20 - 50	>50
Severity	Nuisance	-	Property Damage	-	Safety Issue

Under the "Cost Estimate" criteria, the higher costs were given a lower ranking. The "number of impacted residents" criterion is provided a higher ranking when the flooding event impacted more residents. And finally, the "Severity" criterion ranks the type of flooding that is occurring. If the flooding is mostly standing water around the property, it is given a ranking associated with "Nuisance," whereas potential safety issues such as flooded roadways are given a ranking of "Safety Issues." Table 6 below shows the solution ranking based on the evaluation criteria. Cost estimates for each alternate are also shown for a side by side comparison. Recommendations are shown in the following section.

TABLE 6 - SOLUTION SCORING

SOLUTION	COST ESTIMATE		RESIDENCE	SEVERITY	CUMULATIVE SCORE
	COST	SCORE			
A-1	$ 229,964.00	2	3	3	8
A-2	$ 117,894.00	3	3	2	8
A-3	$ 122,808.00	3	3	3	9
A-4	$ 122,568.00	3	3	3	9
B-1	$ 306,217.00	2	5	5	12
B-2	$ 249,477.00	2	5	5	12
B-3	$ 202,296.00	2	5	5	12
C-1	$ 1,435,044.00	1	5	5	11
C-2	$ 460,061.00	1	5	5	11
C-3	$ 433,932.00	1	5	5	11
D-1	$ 402,737.00	1	4	3	8
D-2	$ 304,624.00	2	4	3	9
E-1	$ 3,960.00	5	1	3	9
E-2	$ 77,266.00	4	2	3	9
F-1	$ 7,450.00	5	1	3	9
F-2	$ 33,275.00	4	2	2	8
F-3	$ 8,430.00	5	1	1	7
G	$ 74,761.00	4	2	2	8
H-1	$ 3,352.00	5	1	2	8
H-2	$ 7,362.00	5	1	2	8
H-3	$ 10,429.00	5	1	1	7

4.1 RECOMMENDATIONS

All solutions recommended will require additional analysis and final design prior to construction. With any drainage improvement, consideration must be given to downstream structures to ensure avoidance of impact. As stated in the previous discussions pertaining to individual solutions, there may be adverse impacts downstream of each. Careful consideration should be given to each downstream recommendation prior to moving forward with construction improvements upstream. Table 7 shows a solution summary based on the scoring criteria discussed in section 4.0 and provides ranking of our recommendations. Each recommendation is then discussed below.

TABLE 7 - SOLUTION SUMMARY

ALTERNATE	ALTERNATE COST	CUMULATIVE SCORE
B-2	$ 249,477.00	12
C-3	$ 433,932.00	11
C-1	$ 1,435,044.00	11
D-2	$ 304,624.00	9

The flash flooding across KY 362 located in Area B poses a significant hazard to vehicles traveling along the highway. The residents within the Ashbrooke Subdivision cannot obtain access to their residency through Ashbrooke Drive. This area will benefit more residents and travelers located within the drainage study at a reasonable cost. Solution B-2 is recommended due to the lower cost and all construction impacts property owners directly affected by flood events.

Improvements to Area C (KY 362 South) would be the second recommendation. The backwater of Floyds Fork and the inadequacy of entrance pipes along this stretch pose the most hazardous conditions to the traveling public. The cost and time of raising Highway 362 is cumbersome, however the area involves protecting the public. At a minimum, DLZ recommends that Solution C-3 be incorporated to prevent flash flooding. If additional funding is obtained through FEMA Grant Applications, then Solution C-1 should be constructed to prevent flooding as a result of backwater from Floyds Fork.

The final recommendation would be to construct improvements within Area D. The runoff from the adjacent subdivision and Confederate Cemetery are overburdening the existing storm sewer system within Ashbrooke Subdivision. As a result, we would recommend incorporating Solution D-2 to separate and contain the storm runoff from the adjacent area into an independent storm system.

In addition to the above mentioned recommendations, all other solutions presented may be incorporated at any time as funding becomes available at the discretion of Oldham County. None of the other Areas present an immediate safety concern and have a direct impact on fewer residents.

4.2 FUNDING SOURCES

Oldham County has already taken steps to obtain funding for improvements along KY 362. With assistance from DLZ, FEMA Hazard Mitigation Grant Applications were submitted to assist in construction improvements for Areas A, B and C. In addition to FEMA assistance, Oldham County may coordinate with the KYTC to incorporate solutions into future planned roadway improvements or maintenance activities for Areas A, B, and C.

The Oldham County Clean Water Program may be able to assist in funding with some or all of these Capital Projects if structural BMPs can be utilized to improve water quality in the immediate streams. The Oldham County Road Department may also be able to perform the work or fund the projects that are within County Right of Way.

SECTION 5 – REFERENCES

American Association of State Highway and Transportation Officials, "A Policy of Geometric Design of Highways and Streets," Washington D.C., 2004.

Hite Creek Rain Gauge Data - http://www.msdlouky.org/aboutmsd/rainfall.cfm

Kentucky Transportation Cabinet (KYTC), Drainage Manual, 1994, DR-04.939.1

Kentucky Transportation Cabinet (KYTC), Division of Planning, "Traffic Station Counts; Oldham County," May 2009

Louisville and Jefferson County Metropolitan Sewer District, Design Manual, 2009, Exhibit 10-5

United States Department of Agriculture, Urban Hydrology for Small Watersheds, Technical Release 55 (TR-55), 1986, page A-1

U.S. Department of Homeland Security, FEMA. Mapping Information Platform. June 25, 2010.

APPENDIX A

MISCELLANEOUS INFORMATION

DLZ
ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

August 5, 2009

Re: Oldham County
Ash Avenue (KY 362) Drainage Study

To Whom It May Concern:

The Oldham County Fiscal Court will be completing a Drainage Study along Ash Avenue (KY 362) in southern Oldham County. The engineering firm of DLZ Kentucky, Inc. has been contracted to perform the field surveys and to analyze the project area. If you have any questions, please contact one of the following project team members:

Engineer: Michael S. Draper
Company: DLZ Kentucky, Inc.
Address: 201 Brighton Park Blvd.
Frankfort, KY 40601
Phone: 502-695-2300
E-mail: mdraper@dlz.com

Surveyor: Ray Shepherd
Company: DLZ Kentucky, Inc.
Address: 201 Brighton Park Blvd.
Frankfort, Kentucky 40601
Phone: 502-695-2300
E-mail: wshepherd@dlz.com

Manager: Beth Stuber, County Engineer
Company: Oldham County Fiscal Court
Address: 100 West Jefferson Street
LaGrange, KY 40031
Phone: 502-222-1476
E-mail: bstuber@oldhamcounty.net

This letter is to inform you that our engineers and surveyors will be working on or near your property collecting data necessary for the analysis of the tributaries to Floyd's Fork along Ash Avenue (KY 362) and adjacent subdivisions. Every effort will be made to personally contact all property owners prior to entry of their property. A variety of information will be collected and alternative solutions will be studied. The specific area in which these persons will be working does not necessarily indicate the final location or extent of proposed improvements.

In addition, a questionnaire has been included with this letter. This questionnaire will help DLZ and Oldham County better understand your specific concerns and impacts associated with flooding around your property. By completing this questionnaire and returning it to our office in the self-addressed, stamped envelope, we hope to provide solutions to benefit all property owners.

Our work is scheduled to begin on or after **August 10, 2009**. We appreciate your cooperation and are pleased to have the opportunity to study and provide recommendations for the drainage system in your area.

Sincerely,

DLZ Kentucky, Inc.

Michael S. Draper, P.E.
Project Engineer

Questionnaire

Ash Avenue (KY 362) Drainage Study
Oldham County, Kentucky

Name: _____

Address: _____

The responses provided on this form will assist DLZ and Oldham County in citing specific problems within the study area and provide a better understanding of the problems that occur. A location map has been provided on the reverse side to indicate locations of problems and additional space is provided for comments. Please take a moment to respond to the questions listed below to the best of your knowledge:

Have you experienced flooding problems on your property? O Yes O No

If Yes, How frequently do these problems occur? _____

Month and year of most recent events? _____

Do you have "high water" marks on your property? O Yes O No

Have you experience standing water on your property? O Yes O No

Have you experienced erosion problems on your property? O Yes O No

Please describe any damage that has occurred on your property as a result of flooding:

_____

_____

_____

Has access to your property been affected by flooding on Ash Ave. (KY 362)? O Yes O No

If Yes, How frequently do these problems occur? _____

Month and year of most recent events? _____

Please provide a brief description of the location that problems occur: _____

_____

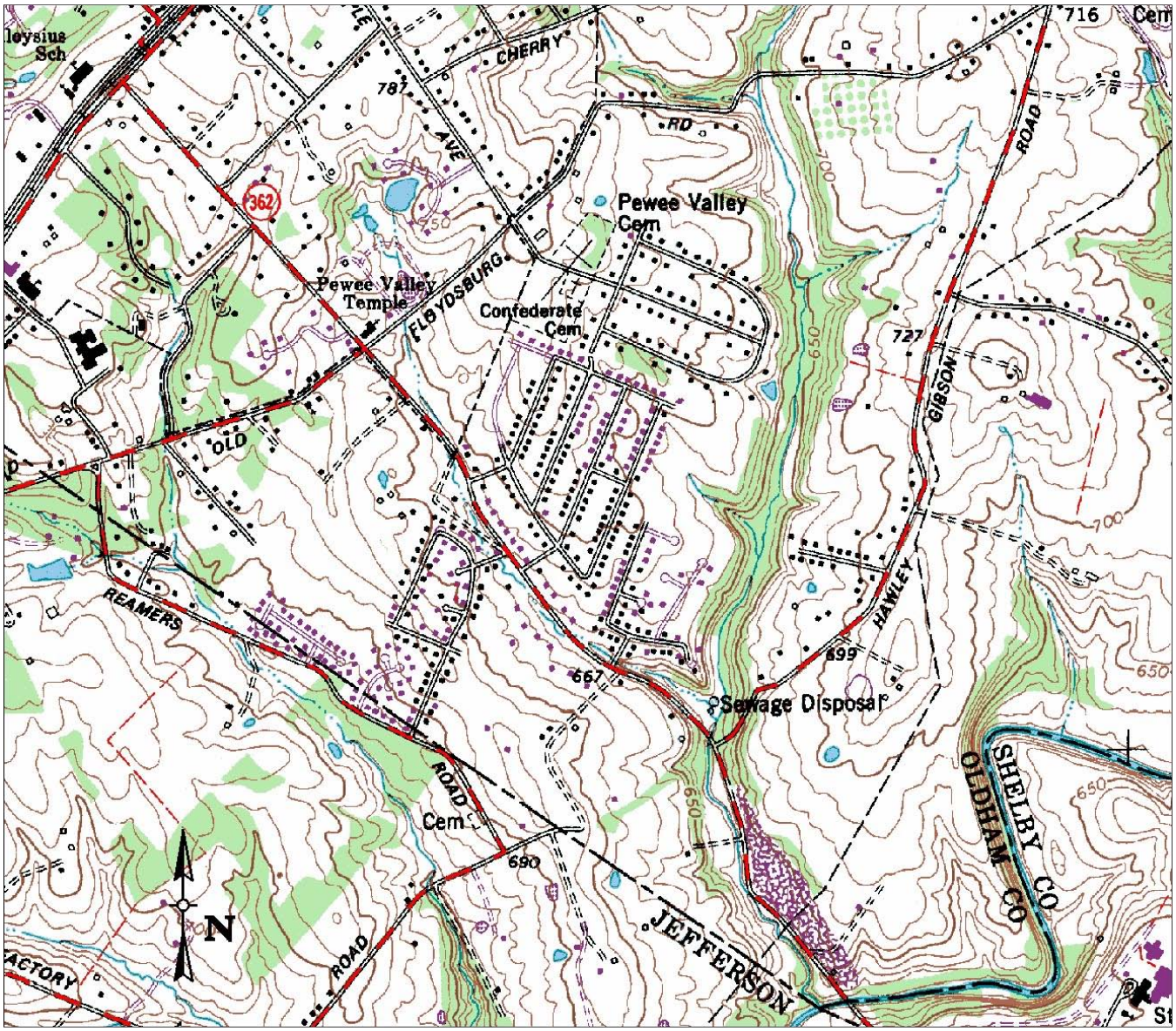
_____

_____

May we contact you at your home for additional information? O Yes O No

Phone: _____ Best time to contact: _____

Thank you very much for your participation. Please return this questionnaire in the self-addressed stamped envelope provided. Any further inquiries can be made by contacting the personnel listed within the cover letter.



Please provide any additional comments or experiences you may have regarding flooding problems along Ash Avenue (KY 362).

Michael S. Draper

From: Nuss, Kevin [knuss@oldhamcounty.net]
Sent: Monday, August 17, 2009 2:46 PM
To: Michael Hesse
Subject: Ash Ave Closures
Attachments: ASH Closures.doc

Michael: Attached are the closures we have had reported. I am confident there are more, but we don't always get notified.

Kevin Nuss
Director, Oldham County
Emergency Management &
Oldham County Dispatch
1020 Dispatchers Way
LaGrange, KY 40031
(O) 502-222-0799
(C) 502-379-1452
(F) 502-222-0380
knuss@oldhamcounty.net

NOTE: This message is intended only for the addressee and may contain information that is privileged, confidential and/or work product material. If you are not the intended recipient, do not read, copy, retain or disseminate this message or any attachment. If you have received this message in error, please call the sender immediately at 502-222-0799 and delete all copies of the message and any attachment. Neither the transmission of this message or any attachment, nor any error in transmission or misdelivery shall constitute waiver of any applicable legal privilege.

Reported Ash Avenue Road Closures

Date	Time Reported
06-14-2003	2230 HRS
06-02-2006	0952 HRS
09-23-2006	0011 HRS
04-04-2008	0020 HRS
05-08-2009	1830 HRS
07-25-2009	2300 HRS
08-10-2009	1900 HRS

MSD
Louisville and Jefferson County
Metropolitan Sewer District
700 W. Liberty Street
Louisville, Kentucky
40203-1913
502-587-0603 – WWW.MSDLOUKY.ORG

EXHIBIT 10-3
RAINFALL FOR JEFFERSON COUNTY * (INCHES)

EFFECTIVE DATE: JUNE 30, 2009

FREQUENCY (YEARS)

DURATION	1	2	5	10	25	50	100	PMP
30 min.	1.0	1.1	1.4	1.6	1.9	2.0	2.3	
1 hour	1.2	1.4	1.8	2.0	2.3	2.6	2.8	
2 hour	1.5	1.7	2.2	2.5	2.8	3.2	3.5	
3 hour	1.6	1.9	2.4	2.7	3.2	3.4	3.8	
6 hour	2.0	2.3	2.8	3.3	3.7	4.2	4.5	28.0
12 hour	2.4	2.8	3.4	3.9	4.4	4.9	5.4	33.0
24 hour	2.7	3.2	4.0	4.5	5.2	5.7	6.2 **	35.0
2 day	0.0	3.6	4.4	5.1	6.1	6.4	7.3	38.5
4 day		4.3	5.3	6.0	6.9	7.6	8.4	
7 day		5.0	6.1	6.8	8.0	8.8	9.6	

* SOURCE:
DIVISION OF WATER RESOURCES
DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION
ENGINEERING MEMORANDUM NO. 2 (4-30-71), REVISED (6-1-79)

** NOTE:
RAINFALL RANGED FROM 7.5 TO 12.5 INCHES DURING THE FEBRUARY 28/ MARCH 1, 1997 EVENT.

APPENDIX B

PROJECT PHOTOGRAPHS

Area A Photos



Property at corner of Village Green Boulevard and Ash Avenue looking Southeast (downstream).



Entrance to 8924 Ash Avenue.



8924 Ash Avenue looking downstream towards 8928 Ash Avenue.



Entrance to 8930 Ash Avenue.



Ash Avenue looking northwest (uphill) at 8917 Ash Avenue.

Area B Photos



8931 Ash Avenue looking Southeast (downhill). Ashbrooke Subdivision is located to the left.



9001 Ash Avenue looking Southeast at the approximate location of the double 36" cross drains. Ashbrooke Dr. is located at the top of this picture on the left.



9003 Ash Avenue looking downstream.



Between 9003 and 9005 Ash Avenue (north side of road)



Intersection of Ashbrooke Drive and Ash Avenue (KY 362).

Area C Photos



Ash Avenue (KY 362) south of Hawley Gibson Road. Looking Downstream.



Ash Avenue (KY 362) south of Hawley Gibson Road. Looking Downstream.



Ash Avenue (KY 362) Bridge north of Hawley Gibson Road looking upstream.



Ash Avenue (KY 362) Bridge north of Hawley Gibson Road looking downstream.

Area D Photos



Property located at 8529 Confederate Place Dr.



Property located at 8529 Confederate Place Dr.



Property at 8529 Confederate Place Dr. (Back yard).



Entrance to 8929 Confederate Place Drive.

Area E Photos



Overland ditch located behind 6613 Riverbirch Drive.



Outlet pipe and erosion problems behind 6613 Riverbirch Drive.



Separation of Outlet pipe behind 6613 Riverbirch Drive.



Sedimentation at outlet behind 6613 Riverbirch Drive.

Area F Photos



Driveway at 6615 Ashbrooke Drive slopes down and away from roadway.



Questionnaire comments indicate standing water problems at 6623 and 6625 Ashbrooke Drive.



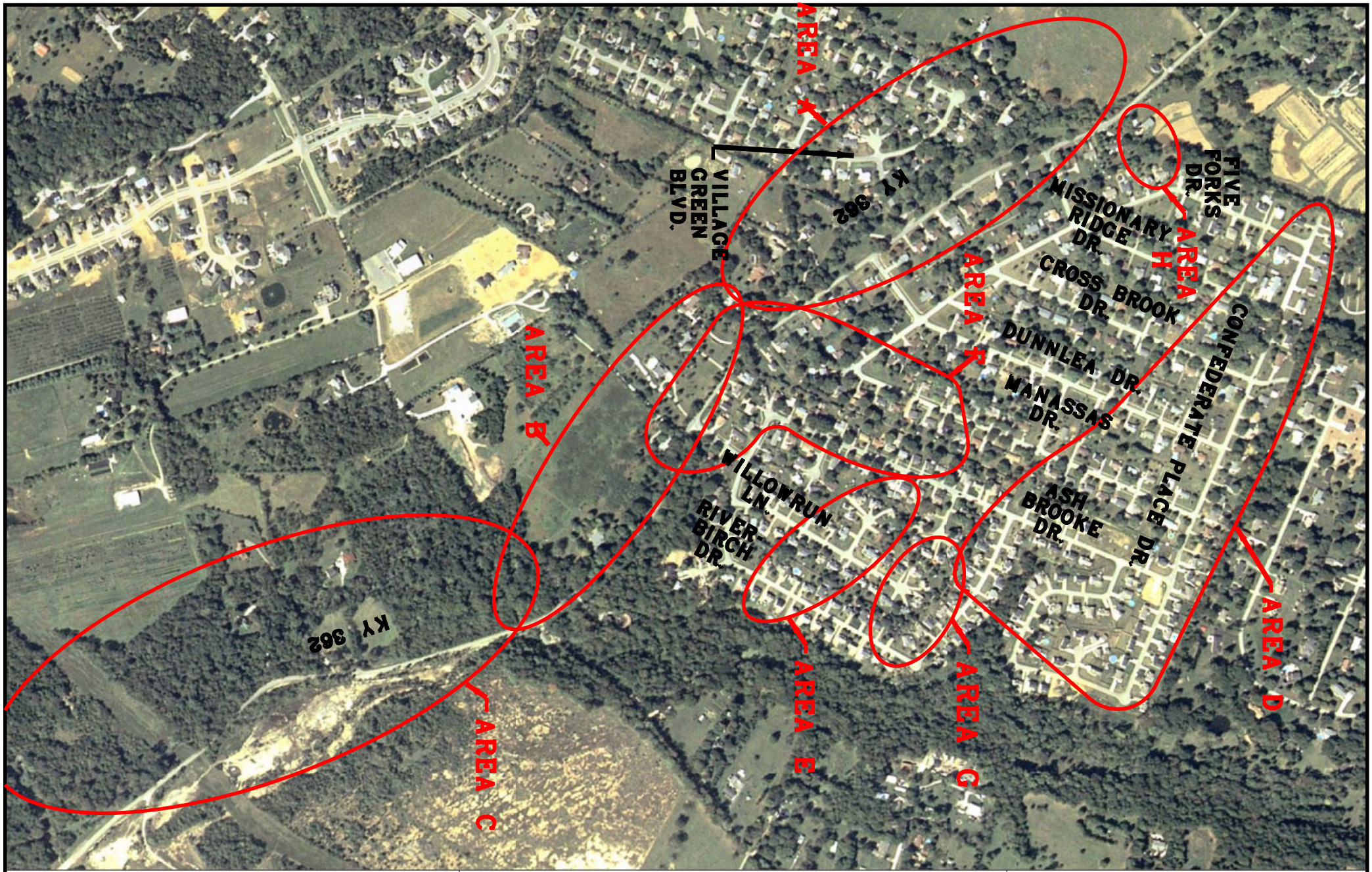
No pipes or swales to contain water at intersection of Ashbrooke Drive and Raintree Court.



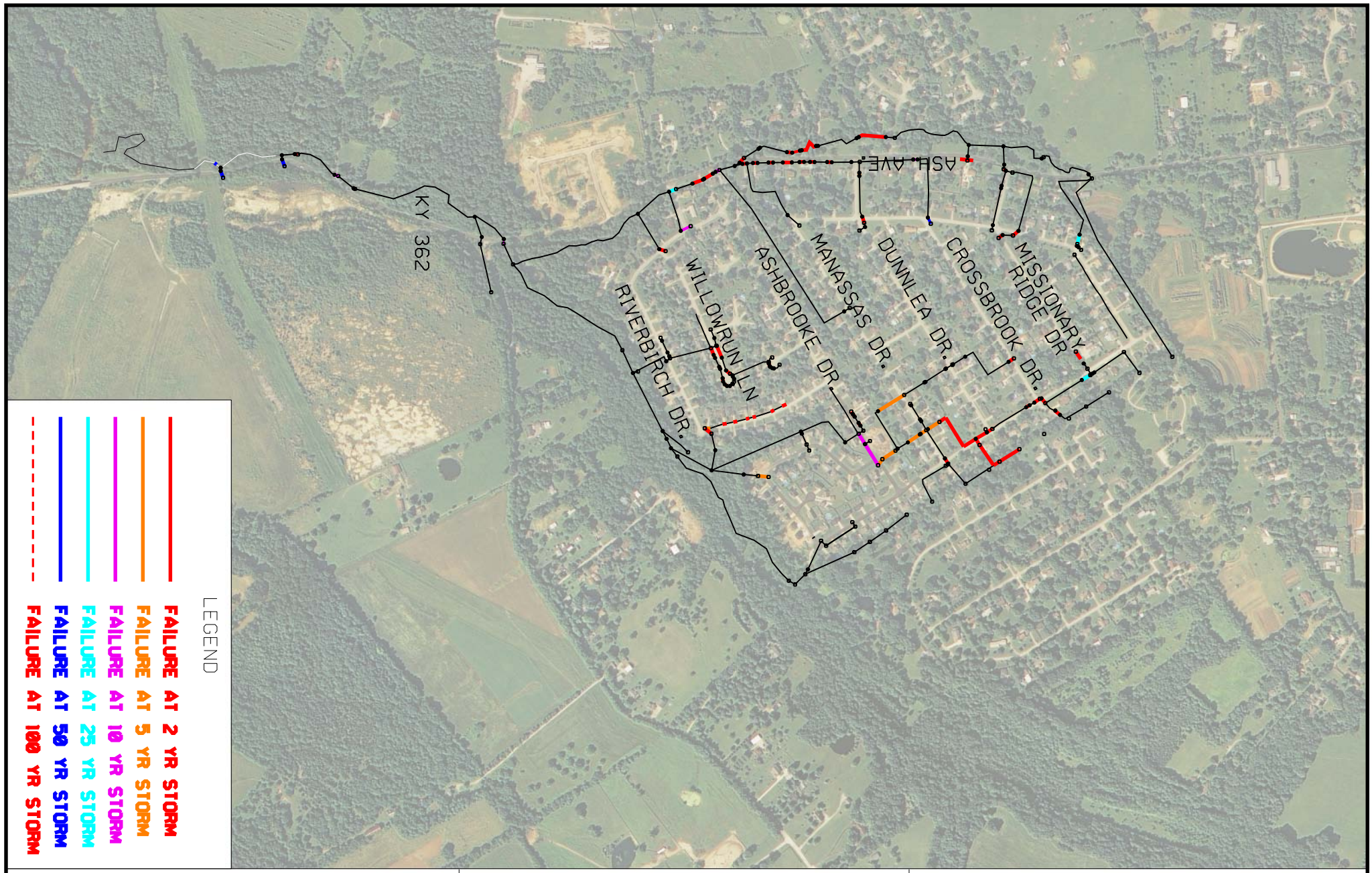
Standing water concerns at 6620 Ashbrooke Drive. Undersized swale.

APPENDIX C

EXISTING ANALYSIS



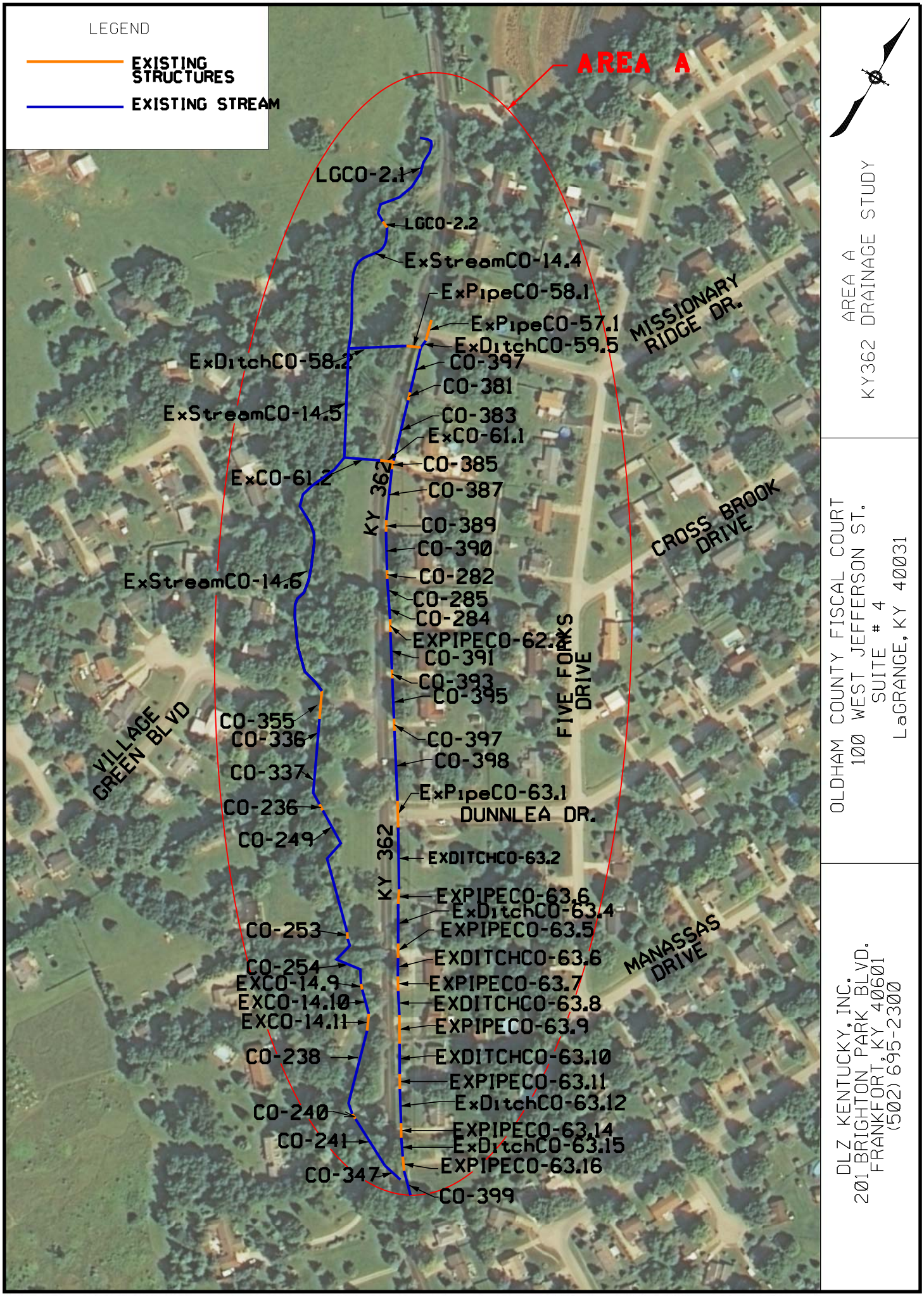
DLZ KENTUCKY, INC. 201 BRIGHTON PARK BLVD. FRANKFORT, KY 40601 (502) 695-2300	OLDHAM COUNTY FISCAL COURT 100 WEST JEFFERSON ST. SUITE # 4 LaGRANGE, KY 40031	KY 362 AREA'S A-H



DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

KY362
DRAINAGE STUDY
SCALE: 1" = 800'



AREA A
KY362 DRAINAGE STUDY

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

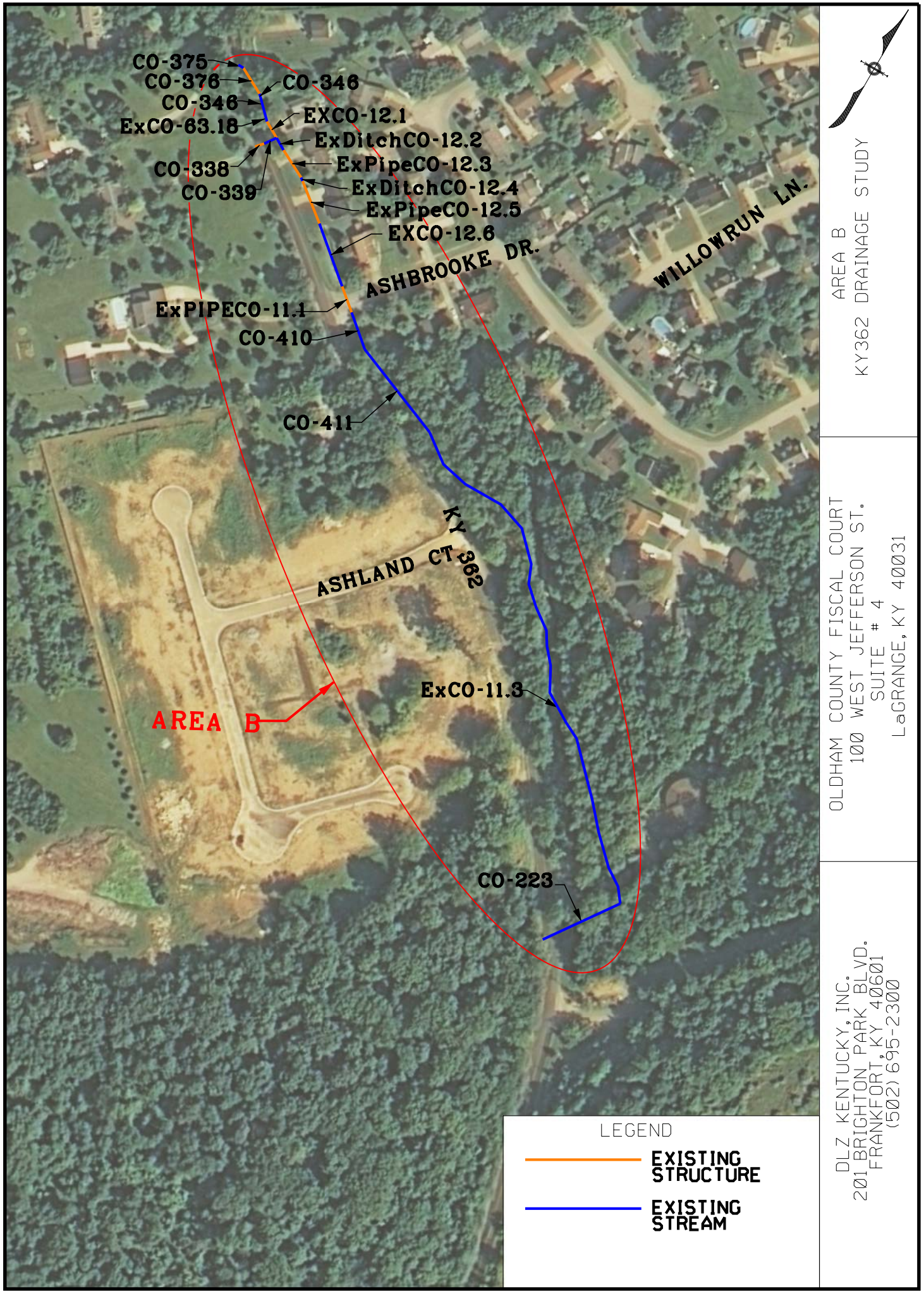
DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area A - Existing

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							2 Year	5 Year	10 Year	2 Year	5 Year	10 Year
LG CO-2.1	ExPipeMH-14.1	LG CB-2	Trapezoidal Channel	4' road Culvert	0.008	648.22	39.93	51.37	58.61	3.47	3.77	3.93
LG CO-2.2	LG CB-2	ExCulvertMH-14.3	Rectangular Channel	Natural Stream	0.093	616.22	55.06	71.76	82.42	7.00	7.70	8.09
ExStreamCO-14.4	ExCulvertMH-14.3	ExInStreamMH-14.4	Trapezoidal Channel	Natural Stream	0.009	2065.60	55.03	71.72	82.37	3.47	3.66	5.26
ExPipeCO-57.1	ExCB-57	ExPipeMH-59.4	Elliptical Pipe	24x38 inch	0.006	32.44	4.29	5.33	5.97	4.32	4.61	4.78
ExDitchCO-59.5	ExPipeMH-59.4	ExCB-58	Trapezoidal Channel	Natural Stream	0.007	52.86	5.00	6.26	7.05	1.95	2.06	2.13
ExPipeCO-58.1	ExCB-58	ExPipeMH-58.1	Circular Pipe	18 inch	0.051	23.82	5.52	6.90	7.76	10.97	11.67	12.05
ExDitchCO-58.2	ExPipeMH-58.1	ExInStreamMH-14.4	Trapezoidal Channel	Natural Stream	0.054	145.66	5.52	6.90	7.76	4.26	4.51	4.64
ExStreamCO-14.5	ExInStreamMH-14.4	ExinStreamMH-14.5	Trapezoidal Channel	Natural Stream	0.009	2113.12	57.43	74.91	86.04	3.57	3.76	5.44
ExCO-61.1	ExCB-61	ExMH-61.1	Circular Pipe	18 inch	0.053	24.11	6.53	8.45	9.71	11.60	12.44	12.91
ExCO-61.2	ExMH-61.1	ExinStreamMH-14.5	Trapezoidal Channel	Natural Stream	0.095	206.40	6.52	8.44	9.70	5.44	5.82	6.03
ExStreamCO-14.6	ExinStreamMH-14.5	LG CB-3	Trapezoidal Channel	Natural Stream	0.006	1740.69	59.98	78.47	90.29	3.08	5.06	5.65
CO-355	LG CB-3	ExMH-14.7	Elliptical Pipe	83x53 inch	0.009	311.04	68.77	90.79	105.09	10.64	11.39	11.81
CO-336	ExMH-14.7	MH-105	Trapezoidal Channel	Natural Stream	0.011	4.30	68.68	90.68	104.97	10.73	12.13	12.91
CO-337	MH-105	MH-44	Trapezoidal Channel	Natural Stream	0.011	179.34	68.61	90.61	104.90	2.32	1.67	1.75
CO-236	MH-44	MH-45	Rectangular Channel	4'x4' Driveway Crossing	0.026	360.16	68.23	90.16	104.41	8.33	16.26	16.94
CO-249	MH-45	MH-50	Trapezoidal Channel	Natural Stream	0.008	82.18	68.21	90.14	104.38	4.89	5.97	6.53
CO-253	MH-50	MH-53	Box Pipe	24x24 inch	-0.067	-148.73	67.23	89.07	103.33	8.40	11.13	12.92
CO-254	MH-53	ExMH-14.8	Trapezoidal Channel	Natural Stream	0.011	34.29	67.21	89.04	103.30	6.74	7.99	8.71
ExCO-14.9	ExMH-14.8	ExMH-14.9	Circular Pipe	24 inch	0.025	36.09	66.85	88.70	102.97	21.28	28.24	32.78
ExCO-14.10	ExMH-14.9	ExMH-14.10	Rectangular Channel	Natural Stream	0.002	4.49	66.84	88.69	102.96	11.72	13.86	15.09
ExCO-14.11	ExMH-14.10	ExMH-14.11	Circular Pipe	26 inch	0.010	27.58	66.78	88.63	102.90	18.12	24.04	27.91
CO-238	ExMH-14.11	MH-46	Trapezoidal Channel	Natural Stream	0.005	560.63	66.75	88.60	102.87	3.16	3.40	3.53
CO-240	MH-46	MH-47	Circular Pipe	48 inch	0.048	315.78	65.86	87.43	101.58	19.85	21.49	22.39
CO-241	MH-47	ExCB-13	Trapezoidal Channel	Natural Stream	0.020	435.24	65.85	87.42	101.57	5.35	5.77	6.00

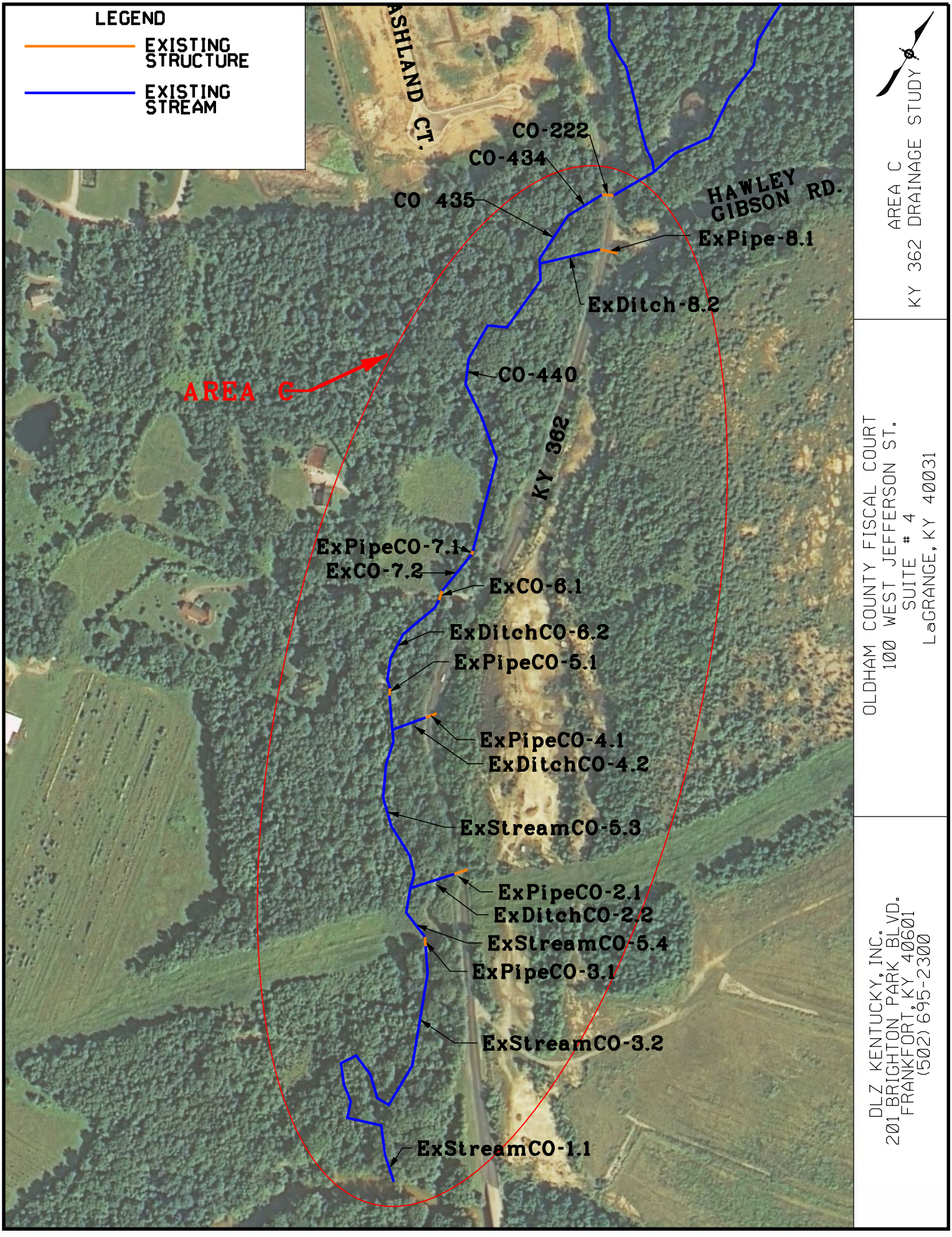
Area A - Existing

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							2 Year	5 Year	10 Year	2 Year	5 Year	10 Year
ExPipeCO-62.3	ExPipeMH-62.2	ExPipeMH-62.3	Circular Pipe	12 inch	0.011	2.04	1.38	1.73	1.96	2.79	2.91	2.96
CO-391	ExPipeMH-62.3	MH-128	Trapezoidal Channel	Natural Stream	0.023	34.79	1.37	1.73	1.95	2.19	2.32	2.39
CO-393	MH-128	MH-129	Trapezoidal Channel	Natural Stream	0.023	6.47	1.35	1.70	1.92	2.94	3.36	3.65
CO-395	MH-129	MH-130	Trapezoidal Channel	Natural Stream	0.023	34.82	1.34	1.69	1.91	2.17	2.31	2.38
CO-397	MH-130	MH-131	Trapezoidal Channel	Natural Stream	0.023	6.44	1.32	1.67	1.89	2.14	2.28	2.35
CO-398	MH-131	ExCB-63	Trapezoidal Channel	Natural Stream	0.023	34.81	1.32	1.66	1.88	2.16	2.30	2.37
ExPipeCO-63.1	ExCB-63	ExPipeMH-63.1	Elliptical Pipe	24x38 inch	0.028	68.27	13.18	17.28	19.96	10.20	11.10	11.62
ExDitchCO-63.2	ExPipeMH-63.1	ExPipeMH-63.2	Trapezoidal Channel	Natural Stream	0.002	17.98	13.16	17.24	19.92	1.56	1.67	2.60
ExPipeCO-63.3	ExPipeMH-63.2	ExPipeMH-63.3	Circular Pipe	15 inch	0.012	3.84	12.72	16.74	19.40	10.39	13.64	15.81
ExDitchCO-63.4	ExPipeMH-63.3	ExPipeMH-63.4	Trapezoidal Channel	Natural Stream	0.013	46.08	12.71	16.72	19.39	3.14	3.36	3.49
ExPipeCO-63.5	ExPipeMH-63.4	ExPipeMH-63.5	Circular Pipe	15 inch	0.015	4.29	12.57	16.56	19.21	10.26	13.50	15.66
ExDitchCO-63.6	ExPipeMH-63.5	ExPipeMH-63.6	Trapezoidal Channel	Natural Stream	0.011	40.77	12.55	16.55	19.20	2.86	3.06	3.18
ExPipeCO-63.7	ExPipeMH-63.6	ExPipeMH-63.7	Circular Pipe	15 inch	0.004	2.15	12.48	16.46	19.11	10.19	13.42	15.57
ExDitchCO-63.8	ExPipeMH-63.7	ExPipeMH-63.8	Trapezoidal Channel	Natural Stream	0.008	35.24	12.47	16.45	19.09	2.56	2.74	2.84
ExPipeCO-63.9	ExPipeMH-63.8	ExPipeMH-63.9	Circular Pipe	15 inch	0.015	4.32	12.36	16.33	18.96	10.10	13.31	15.45
ExDitchCO-63.10	ExPipeMH-63.9	ExPipeMH-63.10	Trapezoidal Channel	Natural Stream	0.019	64.14	12.33	16.30	18.93	3.55	3.81	3.96
ExPipeCO-63.11	ExPipeMH-63.10	ExPipeMH-63.11	Circular Pipe	15 inch	0.002	1.72	12.24	16.19	18.81	10.00	13.20	15.33
ExDitchCO-63.12	ExPipeMH-63.11	ExPipeMH-63.12	Trapezoidal Channel	Natural Stream	0.012	43.88	12.22	16.17	18.80	3.00	3.21	3.34
ExPipeCO-63.14	ExPipeMH-63.12	ExPipeMH-63.14	Circular Pipe	15 inch	0.021	5.12	12.10	16.02	18.64	9.89	13.06	15.19
ExDitchCO-63.15	ExPipeMH-63.14	ExPipeMH-63.15	Trapezoidal Channel	Natural Stream	0.012	43.80	12.09	16.01	18.62	2.98	3.20	3.33
ExPipeCO-63.16	ExPipeMH-63.15	ExPipeMH-63.16	Circular Pipe	15 inch	0.025	5.53	13.15	17.25	19.98	10.73	14.06	16.28
CO-399	ExPipeMH-63.16	MH-120	Trapezoidal Channel	Rough Channel	0.081	1063.31	13.14	17.24	19.96	6.20	6.64	6.89


CO-375
CO-376
CO-346
CO-346
ExCO-63.18
EXCO-12.1
ExDitchCO-12.2
ExPipeCO-12.3
ExDitchCO-12.4
ExPipeCO-12.5
EXCO-12.6
CO-338
CO-339
ASHBROOKE DR.
WILLOWRUN LN.
ExPIPECO-11.1
CO-410
CO-411
KY 362
ASHLAND CT
ExCO-11.3
AREA B
CO-223
LEGEND
EXISTING STRUCTURE
EXISTING STREAM
AREA B
KY362 DRAINAGE STUDY
OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031
DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area B - Existing

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							2 Year	5 Year	10 Year	2 Year	5 Year	10 Year
CO-375	ExCB-13	CB-187	Trapezoidal Channel	Natural Stream	0.011	333.2	77.66	104.61	122	4.59	4.96	0.02
CO-376	CB-187	MH-120	Circular Pipe	36 inch	-0.013	-153.01	77.63	104.58	121.96	6.12	7.86	0.01
CO-373	MH-120	MH-110	Trapezoidal Channel	Natural Stream	0.076	1028.99	86.12	116.14	135.47	9.70	10.46	0.01
CO-346	MH-110	ExMH-63.17	Trapezoidal Channel	Natural Stream	0.024	576.90	86.11	116.12	135.45	6.29	6.78	0.04
ExCO-63.18	ExMH-63.17	ExCulvertCB-12	Trapezoidal Channel	Natural Stream	0.010	201.83	86.05	116.05	135.36	3.39	3.65	0.43
ExCO-12.1	ExCulvertCB-12	CxPipeMH-12.1	Circular Pipe	36 inch	0.008	32.61	90.85	122.74	143.25	12.94	17.39	0.02
CO-338	CB-173	MH-106	Circular Pipe	18 inch	0.029	9.67	1.99	2.60	3.00	4.31	7.08	0.06
CO-339	MH-106	CxPipeMH-12.1	Trapezoidal Channel	Natural Stream	0.158	33.57	1.99	2.60	2.99	6.53	4.64	0.05
ExDitchCO-12.2	CxPipeMH-12.1	ExPipeMH-12.2	Trapezoidal Channel	Natural Stream	0.053	471.53	92.00	124.34	145.14	6.13	6.62	0.05
ExPipeCO-12.3	ExPipeMH-12.2	ExPipeMH-12.3	Circular Pipe	36 inch	-0.003	-19.16	91.92	124.24	145.03	13.08	17.60	0.05
ExDitchCO-12.4	ExPipeMH-12.3	ExPipeMH-12.4	Trapezoidal Channel	Natural Stream	0.079	695.40	91.81	124.14	144.93	11.49	12.43	0.01
ExPipeCO-12.5	ExPipeMH-12.4	ExPipeMH-12.5	Circular Pipe	36 inch	0.008	33.17	91.79	124.12	144.91	13.07	17.58	0.06
ExCO-12.6	ExPipeMH-12.5	ExCB-11	Trapezoidal Channel	Natural Stream	0.043	873.59	91.67	124.01	144.80	5.64	6.09	0.28
ExPipeCO-11.1	ExCB-11	ExPipeMH-11.1	Elliptical Pipe	48x60 inch	0.008	169.50	100.33	135.98	158.92	11.31	12.20	0.07
CO-410	ExPipeMH-11.1	MH-143	Trapezoidal Channel	Rough Channel	10.697	62003.41	101.04	136.86	159.89	55.79	62.44	0.02
CO-411	MH-143	ExMH-11.2	Irregular Channel	Rough Channel	-3.696	-118410.93	101.02	159.86	159.88	0.62	0.82	7.41
Ex CO-11.3	ExMH-11.2	Stream CB-1	Irregular Channel	Natural Stream	0.025	128800.27	88.76	124.28	147.37	2.79	3.09	4.50
CO-223	Stream CB-1	LG CB-12	Trapezoidal Channel	Natural Stream	0.018	2307.79	409.56	558.83	653.27	8.80	9.63	0.23



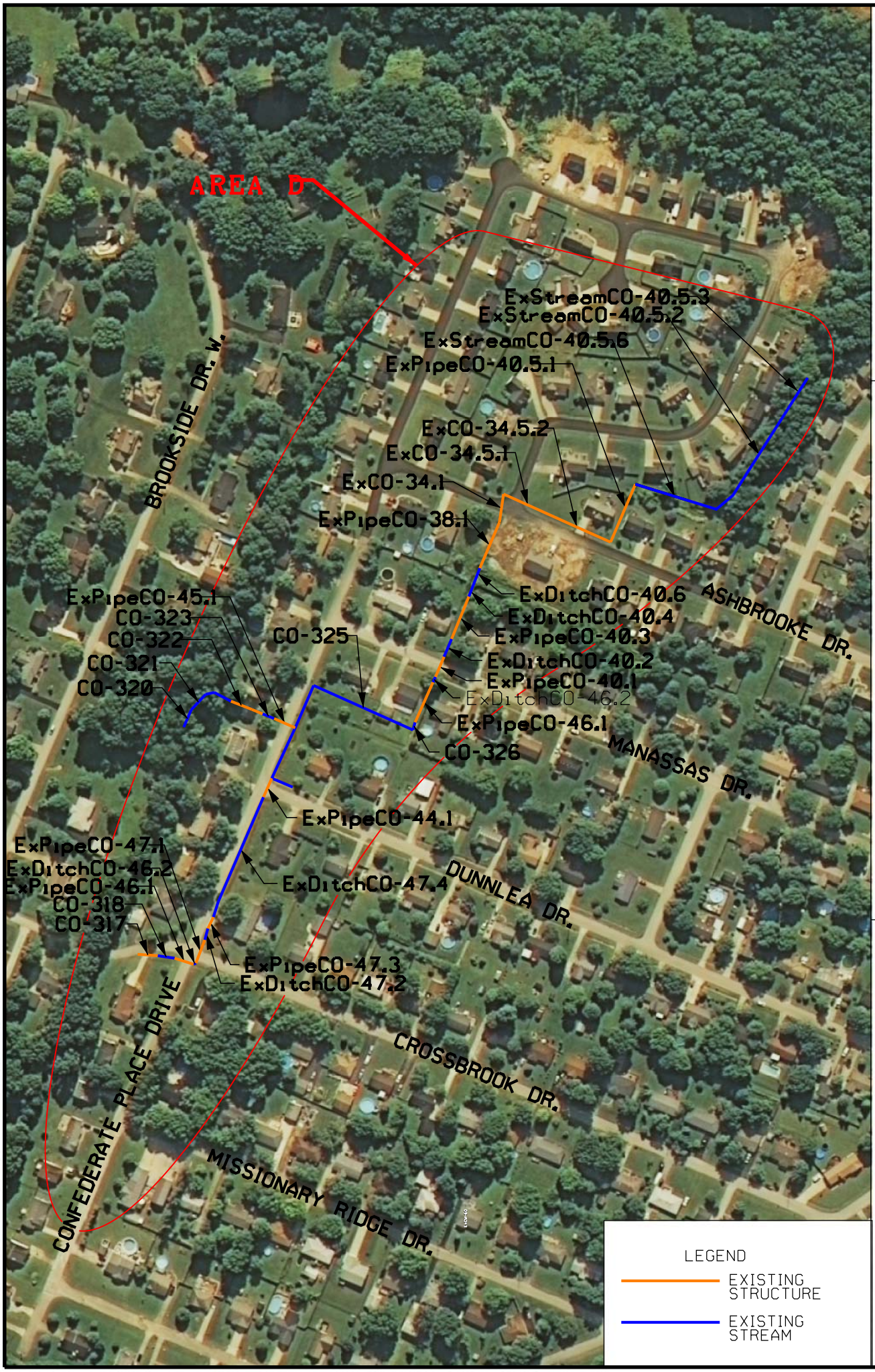
AREA C
KY 362 DRAINAGE STUDY

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area C - Existing

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							2 Year	5 Year	10 Year	2 Year	5 Year	10 Year
CO-222	LG CB-12	ExPipeMH-9.1	Rectangular Channel	Natural Stream	0.003	443.18	411.10	560.98	655.86	3.60	6.02	6.77
CO-434	ExPipeMH-9.1	MH-159	Irregular Channel	Natural Stream	0.019	1902.06	410.66	560.48	655.37	6.99	7.83	8.28
CO-435	MH-159	ExStreamMH-9.2	Irregular Channel	Natural Stream	-0.001	-27854.37	410.33	560.05	654.90	0.23	0.31	0.36
ExPipeCO-8.1	ExCB-8	ExSomethingMH-8.1	Circular Pipe	30 inch	0.042	84.50	28.94	37.57	43.24	15.60	16.71	17.32
ExDitchCO-8.2	ExSomethingMH-8.1	ExStreamMH-9.2	Trapezoidal Channel	Natural Stream	0.032	1747.30	28.89	37.52	43.19	3.29	3.64	3.84
CO-440	ExStreamMH-9.2	ExCB-7	Irregular Channel	Natural Stream	0.002	53643.21	331.23	477.45	570.52	1.67	1.81	1.88
ExPipesCO-7.1	ExCB-7	ExPipeMH-7.1	Circular Pipe	24 inch	0.010	135.73	326.29	470.23	561.84	17.32	24.95	29.81
ExCO-7.2	ExPipeMH-7.1	ExCB-6	Trapezoidal Channel	Natural Stream	0.005	553.24	326.27	470.21	561.82	3.59	3.97	5.63
ExCO-6.1	ExCB-6	ExPipeMH-6.1	Circular Pipe	48 inch	0.011	608.04	327.68	472.30	564.38	12.32	13.37	13.74
ExDitchCO-6.2	ExPipeMH-6.1	ExCB-5	Trapezoidal Channel	Natural Stream	0.005	506.57	327.61	472.20	564.27	3.68	4.07	5.95
ExPipeCO-5.1	ExCB-5	ExPipeMH-5.1	Circular Pipe	36 inch	0.023	219.90	327.03	471.43	563.76	11.70	16.70	19.95
ExDitchCO-5.2	ExPipeMH-5.1	ExPipeMH-5.2	Trapezoidal Channel	Natural Stream	0.059	2633.96	326.97	471.37	563.70	8.60	9.59	10.11
ExPipeCO-4.1	ExCB-4	ExPipeMH-4.1	Circular Pipe	24 inch	-0.003	-7.07	97.92	126.75	145.72	31.17	40.34	46.39
ExDitchCO-4.2	ExPipeMH-4.1	ExPipeMH-5.2	Trapezoidal Channel	Natural Stream	0.156	517.17	97.83	126.67	145.64	13.11	13.99	14.48
ExStreamCO-5.3	ExPipeMH-5.2	ExStreamMH-5.3	Irregular Channel	Natural Stream	0.005	2722.21	347.99	501.74	600.08	2.48	2.57	2.65
ExPipeCO-2.1	ExCB-2	ExPipeMH-2.1	Circular Pipe	18 inch	0.072	28.12	16.83	21.10	23.95	16.62	17.46	17.87
ExDitchCO-2.2	ExPipeMH-2.1	ExStreamMH-5.3	Trapezoidal Channel	Natural Stream	0.063	329.46	16.83	21.10	23.95	6.00	6.36	6.57
ExStreamCO-5.4	ExStreamMH-5.3	ExCB-3	Trapezoidal Channel	Natural Stream	0.017	1831.62	343.95	495.22	592.26	7.78	8.52	8.91
ExPipeCO-3.1	ExCB-3	ExMH-3.1	Circular Pipe	60 inch	-0.013	-591.96	344.73	496.37	593.61	9.45	12.95	15.28
ExStreamCO-3.2	ExMH-3.1	ExStreamOutletCB-1	Irregular Channel	Natural Stream	0.002	4481.10	344.63	496.28	593.51	2.52	2.82	2.96
ExStreamCO-1.1	ExStreamOutletCB-1	ExOF-1	Trapezoidal Channel	Natural Stream	0.004	710.23	333.56	481.54	576.46	0.09	0.13	0.16



AREA D
KY 362 DRAINAGE STUDY

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area D - Existing

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							2 Year	5 Year	10 Year	2 Year	5 Year	10 Year
CO-317	MH-93	MH-94	Circular Pipe	8 inch	0.012	0.71	3.53	4.57	5.26	10.11	13.10	15.07
CO-318	MH-94	ExCB-46.1	Trapezoidal Channel	Grass Channel	0.016	4.46	3.52	4.57	5.26	5.43	6.32	6.83
ExPipeCO-46.1	ExCB-46.1	ExPipeMH-46.1	Circular Pipe	15 inch	0.018	4.72	5.52	7.21	8.33	4.82	6.06	6.91
ExDitchCO-46.2	ExPipeMH-46.1	ExCB-47	Rectangular Channel	Natural Stream	0.046	0.80	5.49	7.18	8.31	10.68	12.17	13.03
ExPipeCO-47.1	ExCB-47	ExPipeMH-47.1	Circular Pipe	12 inch	0.023	5.46	5.81	7.58	8.74	7.45	9.66	11.14
ExDitchCO-47.2	ExPipeMH-47.1	ExPipeMH-47.2	Trapezoidal Channel	Natural Stream	0.023	62.09	5.79	7.56	8.73	3.12	3.34	3.46
ExPipeCO-47.3	ExPipeMH-47.2	ExPipeMH-47.3	Circular Pipe	15 inch	0.024	5.47	5.76	7.52	8.69	5.00	6.30	7.18
ExDitchCO-47.4	ExPipeMH-47.3	ExCB-44	Trapezoidal Channel	Natural Stream	0.034	41.72	5.75	7.51	8.67	3.61	3.87	4.01
ExPipeCO-44.1	ExCB-44	ExPipeMH-44.1	Circular Pipe	12 inch	0.008	3.24	6.61	8.54	9.81	8.45	10.88	12.49
ExDitchCO-44.2	ExPipeMH-44.1	ExPipeMH-44.2	Trapezoidal Channel	Grass Channel	0.027	5.75	7.16	9.27	10.66	8.06	9.20	9.85
CO-320	Ex-for Proposed Area CB-7	Ex-for Proposed Area CB-8	Trapezoidal Channel	Grass Channel	0.041	7.09	0.52	0.68	0.78	2.05	2.22	2.32
CO-321	Ex-for Proposed Area CB-8	MH-95	Trapezoidal Channel	Grass Channel	0.009	45.05	20.21	26.46	30.53	2.28	2.44	2.53
CO-322	MH-95	MH-96	Circular Pipe	15 inch	0.004	3.96	20.20	26.49	30.58	16.46	21.58	24.92
CO-323	MH-96	ExCB-45	Trapezoidal Channel	Natural Stream	0.018	11.44	20.17	26.45	30.55	12.03	13.62	14.51
ExPipeCO-45.1	ExCB-45	ExPipeMH-44.2	Circular Pipe	15 inch	0.023	9.72	22.37	29.35	33.89	18.23	23.91	27.62
CO-325	ExPipeMH-44.2	MH-97	Trapezoidal Channel	Grass Channel	0.009	6.98	28.47	37.18	42.83	5.66	6.54	7.04
CO-326	MH-97	ExCB-46	Trapezoidal Channel	Concrete 3' FB	0.004	19.54	28.11	36.82	42.47	8.75	10.08	10.84
ExPipeCO-46.1	ExCB-46	ExPipeMH-46.1	Circular Pipe	28 inch	0.014	39.86	31.93	41.87	48.32	10.36	9.93	11.38
ExDitchCO-46.2	ExPipeMH-46.1	ExCB-40	Trapezoidal Channel	Natural Stream	0.019	118.78	31.83	41.75	48.20	4.47	4.80	4.98
ExPipeCO-40.1	ExCB-40	EXMH-40.1	Elliptical Pipe	19x30 inch	0.013	24.44	34.80	45.65	52.71	11.22	14.69	16.96
ExDitchCO-40.2	EXMH-40.1	ExPipeMH-40.2	Trapezoidal Channel	Natural Stream	0.050	493.87	34.75	45.60	52.66	6.55	7.02	7.28
ExPipeCO-40.3	ExPipeMH-40.2	ExPipeMH-40.3	Circular Pipe	28 inch	0.013	39.12	34.74	45.59	52.64	10.34	10.76	12.36
ExDitchCO-40.4	ExPipeMH-40.3	DetentionMH-40.5	Trapezoidal Channel	Natural Stream	0.060	427.46	34.63	45.46	52.51	7.92	8.74	9.19
ExDitchCO-40.6	DetentionMH-40.5	ExCB-38	Trapezoidal Channel	Natural Stream	-0.014	-303.08	45.00	59.00	68.10	1.92	2.34	2.60
ExPipeCO-38.1	ExCB-38	ExCB-34	Circular Pipe	30 inch	0.016	52.18	44.88	58.93	68.05	9.14	12.01	13.86
ExCO-34.1	ExCB-34	ExCB-34.5	Circular Pipe	30 inch	0.007	34.21	45.02	59.16	68.33	9.17	12.05	13.92
ExCO-34.5.1	ExCB-34.5	ExPipeMH-34.5.1	Circular Pipe	30 inch	0.010	41.46	45.20	59.40	68.62	9.41	12.17	14.01
ExCO-34.5.2	ExPipeMH-34.5.1	ExCB-40.5	Circular Pipe	30 inch	0.010	41.46	45.55	59.97	69.32	9.28	12.22	14.12
ExPipeCO-40.5.1	ExCB-40.5	ExMH-40.5.1	Circular Pipe	36 inch	0.019	91.69	47.32	62.16	71.76	13.08	13.94	14.35
ExStreamCO-40.5.2	ExMH-40.5.1	ExStreamMH-40.5.2	Trapezoidal Channel	Natural Stream	0.029	237.25	47.19	62.00	71.59	6.19	6.67	6.93
ExStreamCO-40.5.3	ExStreamMH-40.5.2	ExMH-28.2	Trapezoidal Channel	Natural Stream	0.063	348.38	47.31	62.22	71.86	8.17	8.82	9.18


LEGEND
EXISTING STRUCTURE
EXISTING STREAM
AREA E
ExDitch CO-27.6
ExPipe CO-26.1
ExPipe CO-27.1
ExDitch CO-27.2
ExPipe CO-27.3
ExDitch CO-27.4
ExPipe CO-27.5
ExPipeCO-25.1
CO-309
CO-305
ExPipeCO25.3
CO-306
ExCO25.4
ExPipeCO23.1
ExPipeCO25.6
ExDitchCO-23.2
ExPipe CO-24.1
ExPipeCO-21.1
WILLOWRUN LN
ExDitchCO-22.1
ExPipeCO-21.1
CO-308
ExCO-18.1
ExPipeCO-24.3
ExDitchCO-24.4
ExPipeCO-24.5
ExPipe CO-15.1
ExCO-24.6
ExPipeCO-24.7
ExDitchCO-24.8
ExDitch CO-15.2
ExPipeCO-24.9
ExCO-15.4
ExCO-24.10
ExPipe CO-16.1
RIVERBIRCH DR.
ExPipe CO-15.3
ToExistingStreamCO-16.2
AREA E
KY 362 DRAINAGE STUDY
OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031
DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
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Area E - Existing

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							2 Year	5 Year	10 Year	2 Year	5 Year	10 Year
ExPipeCO-27.1	ExCB-27	ExPipeMH-27.1	Circular Pipe	15 inch	0.006	2.76	0.71	0.89	1.00	1.88	2.00	2.07
ExDitchCO-27.2	ExPipeMH-27.1	ExPipeMH-27.2	Trapezoidal Channel	Natural Stream	0.007	7.07	0.71	0.89	1.00	1.60	1.70	1.76
ExPipeCO-27.3	ExPipeMH-27.2	ExMH-27.3	Circular Pipe	15 inch	0.016	4.46	0.71	0.89	1.00	2.66	2.83	2.93
ExDitchCO-27.4	ExMH-27.3	ExPipeMH-27.4	Trapezoidal Channel	Natural Stream	0.012	9.25	0.71	0.89	1.00	1.94	2.07	2.15
ExPipeCO-27.5	ExPipeMH-27.4	ExPipeMH-27.5	Circular Pipe	15 inch	0.003	1.79	0.71	0.89	1.00	1.37	1.46	1.50
ExDitchCO-27.6	ExPipeMH-27.5	ExCB-25	Trapezoidal Channel	Natural Stream	0.171	34.94	0.71	0.89	1.00	0.65	0.72	0.76
ExPipeCO-26.1	ExCB-26	ExCB-25	Circular Pipe	15 inch	0.056	8.26	0.62	0.72	0.79	0.62	0.65	0.68
ExPipeCO-25.1	ExCB-25	ExPipeMH-25.1	Circular Pipe	12 inch	0.038	6.95	1.53	1.86	2.07	7.10	7.49	7.72
CO-305	ExPipeMH-25.1	CB-169	Trapezoidal Channel	Natural Stream	0.021	6.24	1.53	1.86	2.07	2.97	3.57	3.84
ExPipeCO-25.6	ExPipeMH-25.4	CB-168	Circular Pipe	10 inch	0.022	1.77	0.05	0.06	0.07	0.16	0.19	0.22
ExCO-25.4	ExPipeMH-25.3	ExPipeMH-25.4	Trapezoidal Channel	Natural Stream	0.030	14.63	0.05	0.06	0.07	0.13	0.16	0.18
ExPipeCO-25.3	ExPipeMH-25.2	ExPipeMH-25.3	Circular Pipe	10 inch	0.013	2.51	0.04	0.05	0.06	0.13	0.17	0.20
CO-309	ExPipeMH-25.2	CB-169	Trapezoidal Channel	Natural Stream	0.002	2.13	0.03	0.05	0.06	0.42	0.47	0.50
CO-306	CB-169	MH-86	Circular Pipe	15 inch	0.008	3.11	1.91	2.68	3.08	2.66	2.85	2.89
CO-307	MH-86	ExCB-23	Trapezoidal Channel	Natural Stream	0.003	12.50	1.90	2.67	3.06	1.11	1.21	1.25
ExPipeCO-23.1	ExCB-23	ExPipeMH-23.1	Circular Pipe	15 inch	0.015	4.35	3.60	4.63	5.30	3.96	4.17	4.66
ExDitchCO-23.2	ExPipeMH-23.1	ExCB-22	Trapezoidal Channel	Natural Stream	0.087	24.86	3.57	4.59	5.26	6.21	6.61	5.93
ExPipeCO-21.1	ExCB-21	ExPipeMH-21.1	Circular Pipe	12 inch	0.024	5.54	1.13	1.42	1.61	5.55	5.91	6.12
ExDitchCO-21.2	ExPipeMH-21.1	ExCB-22	Trapezoidal Channel	Natural Stream	0.034	15.50	1.13	1.42	1.61	3.21	3.43	3.55
ExPipeCO-22.1	ExCB-22	ExCB-18	Circular Pipe	18 inch	0.036	19.91	5.18	6.68	7.66	2.93	3.78	4.33
ExPipeCO-24.1	ExCB-24	ExPipeMH-24.1	Circular Pipe	8 inch	0.002	0.29	0.13	0.17	0.19	0.82	0.86	0.89
CO-308	ExPipeMH-24.1	ExPipeMH-24.2	Trapezoidal Channel	Natural Stream	0.019	5.95	0.13	0.17	0.19	1.31	1.43	1.49
ExPipeCO-24.3	ExPipeMH-24.2	ExPipeMH-24.3	Circular Pipe	8 inch	0.002	0.31	0.13	0.17	0.19	0.85	0.90	0.93
ExDitchCO-24.4	ExPipeMH-24.3	ExPipeMH-24.4	Trapezoidal Channel	Natural Stream	0.022	12.67	0.13	0.17	0.19	1.38	1.50	1.56
ExPipeCO-24.5	ExPipeMH-24.4	ExPipeMH-24.5	Circular Pipe	8 inch	0.004	0.43	0.13	0.17	0.19	1.08	1.15	1.19
ExCO-24.6	ExPipeMH-24.5	ExPipeMH-24.6	Trapezoidal Channel	Natural Stream	0.004	5.45	0.13	0.17	0.19	0.62	0.66	0.68
ExPipeCO-24.7	ExPipeMH-24.6	ExMH-24.7	Circular Pipe	12 inch	0.001	0.70	0.13	0.17	0.19	0.69	0.73	0.76
ExDitchCO-24.8	ExMH-24.7	CB-170	Trapezoidal Channel	Natural Stream	0.005	6.17	0.13	0.17	0.19	0.87	0.93	0.97
ExPipeCO-24.9	CB-170	ExPipeMH-24.9	Circular Pipe	10 inch	0.014	1.42	0.50	0.64	0.73	2.38	2.54	2.62
ExCO-24.10	ExPipeMH-24.9	ExCB-18	Trapezoidal Channel	Natural Stream	0.055	19.81	0.50	0.64	0.73	0.19	0.23	0.27
ExCO-18.1	ExCB-18	ExCB-16	Circular Pipe	18 inch	0.060	25.83	5.78	7.44	8.53	11.78	12.63	13.11

Area E - Existing

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							2 Year	5 Year	10 Year	2 Year	5 Year	10 Year
ExPipeCO-15.1	ExCB-15	ExPipeMH-15.1	Circular Pipe	15 inch	0.005	2.35	1.03	1.21	1.31	1.85	1.93	1.97
ExDitchCO-15.2	ExPipeMH-15.1	ExPipeMH-15.2	Trapezoidal Channel	Natural Stream	0.008	7.57	1.03	1.20	1.30	1.86	1.94	1.98
ExPipeCO-15.3	ExPipeMH-15.2	ExPipeMH-15.3	Circular Pipe	15 inch	0.005	2.42	1.00	1.17	1.28	1.88	1.96	2.00
ExCO-15.4	ExPipeMH-15.3	ExCB-16	Trapezoidal Channel	Natural Stream	0.333	24.60	0.99	1.17	1.27	6.73	7.10	7.31
ExPipeCO-16.1	ExCB-16	ExMH-16.1	Circular Pipe	24 inch	0.011	24.08	10.47	13.41	15.34	6.60	6.82	7.00
ToExistingStreamCO-16.2	ExMH-16.1	ExDraintoStreamMH-29.3	Trapezoidal Channel	Natural Stream	0.131	2481.68	10.45	13.39	15.31	7.53	8.24	8.65



AREA F
KY 362 DRAINAGE STUDY

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area F - Existing

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							2 Year	5 Year	10 Year	2 Year	5 Year	10 Year
ExPipeCO-67.1	ExCB-67	ExPipeMH-67.1	Circular Pipe	12 inch	0.035	6.64	2.26	2.93	3.38	7.65	8.20	8.49
ExDitchCO-67.2	ExPipeMH-67.1	ExCulvertCB-12	Trapezoidal Channel	Natural Stream	0.027	37.49	2.25	2.93	3.37	2.63	2.81	2.91
ExCO-20.1	ExCB-20	ExMH-20.1	Circular Pipe	12 inch	0.004	2.29	1.73	2.01	2.18	3.20	3.28	3.31
ExCO-20.2	ExMH-20.1	ExPipeMH-11.1	Trapezoidal Channel	Natural Stream	0.056	98.05	1.71	1.99	2.15	3.18	3.31	3.38
CO-410	ExPipeMH-11.1	MH-143	Trapezoidal Channel	Rough Channel	10.697	62003.41	104.49	139.70	162.86	56.50	62.94	66.61
CO-411	MH-143	ExMH-11.2	Irregular Channel	Rough Channel	-3.696	-118410.93	104.47	139.67	162.82	0.64	0.83	0.96
ExPipeCO-19.1	ExCB-19	ExPipeMH-19.1	Circular Pipe	24 inch	-0.002	-10.60	3.83	4.97	5.72	1.71	2.13	2.39
ExDitch to Stream CO-19.2	ExPipeMH-19.1	ExMH-11.2	Trapezoidal Channel	Natural Stream	0.079	406.29	3.76	4.91	5.66	4.33	4.65	4.84



AREA G
KY362 DRAINAGE STUDY

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area G - Existing

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							2 Year	5 Year	10 Year	2 Year	5 Year	10 Year
CO-444	CB-194	MH-163	Circular Pipe	15 inch	0.016	4.46	5.41	6.78	7.69	4.74	5.75	6.43
CO-445	MH-163	MH-164	Trapezoidal Channel	Natural Stream	0.018	64.54	5.37	6.75	7.66	3.04	3.23	3.33
CO-446	MH-164	MH-165	Circular Pipe	15 inch	0.020	4.89	5.18	6.54	7.45	4.58	5.57	6.24
CO-447	MH-165	MH-166	Trapezoidal Channel	Natural Stream	0.018	64.62	5.15	6.51	7.42	3.01	3.20	3.31
CO-448	MH-166	MH-167	Circular Pipe	15 inch	0.020	4.89	5.12	6.47	7.38	7.57	5.52	6.19
CO-449	MH-167	MH-168	Trapezoidal Channel	Natural Stream	0.037	87.70	5.10	6.45	7.35	3.92	4.17	4.31
CO-450	MH-168	MH-169	Circular Pipe	15 inch	0.011	3.66	5.02	6.35	7.25	6.08	5.43	6.10
CO-451	MH-169	MH-170	Trapezoidal Channel	Natural Stream	0.016	62.00	5.00	6.33	7.23	2.89	3.08	3.19
CO-452	MH-170	MH-171	Circular Pipe	15 inch	0.017	4.56	4.92	6.25	7.14	7.10	5.35	6.01
CO-453	MH-171	MH-172	Trapezoidal Channel	Natural Stream	0.028	66.68	4.91	6.22	7.11	3.25	3.45	3.58
CO-454	MH-172	MH-173	Circular Pipe	15 inch	0.025	5.56	4.78	6.08	6.97	8.15	5.23	5.88
CO-455	MH-173	ExCB-17	Trapezoidal Channel	Natural Stream	0.348	234.24	4.76	6.05	6.94	0.38	0.04	0.37
ExPipeCO-17.1	ExCB-17	ExCB-17.5	Circular Pipe	15 inch	-0.006	-5.05	2.72	3.10	3.33	2.70	3.01	3.19
ExPipeCO-17.5.1	ExCB-17.5	ExPipeMH-17.5.1	Circular Pipe	15 inch	0.151	25.07	3.55	4.12	4.47	14.45	15.09	15.43
ExDitchtoStreamCO-17.5.2	ExPipeMH-17.5.1	ExMH-28.2	Trapezoidal Channel	Natural Stream	0.119	2363.13	3.53	4.09	4.44	4.84	5.13	5.29



AREA H DRAINAGE STUDY
KY362

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

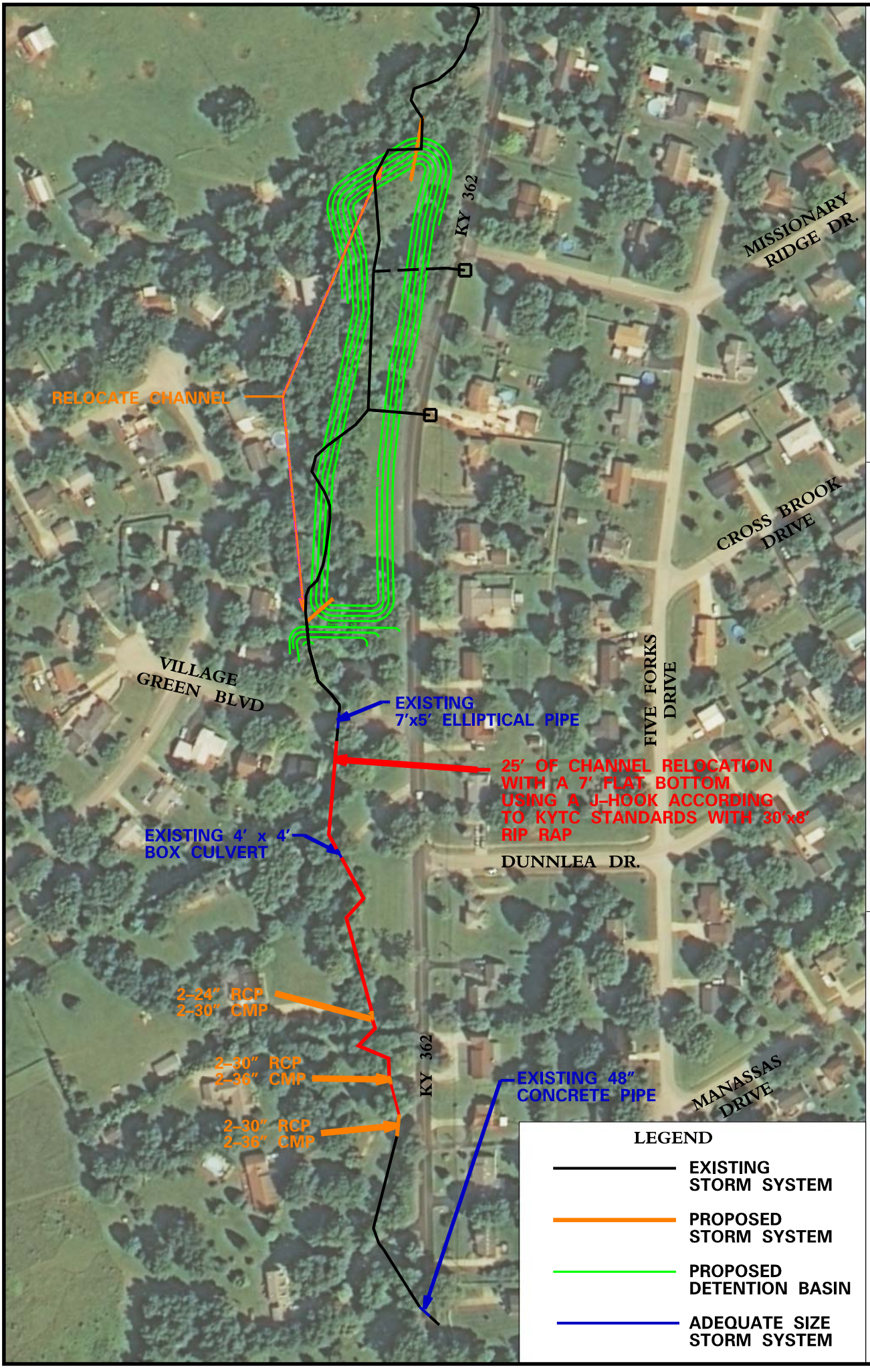
DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area H - Existing

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							2 Year	5 Year	10 Year	2 Year	5 Year	10 Year
ExCO-53.1	ExCB-53	ExMH-53.1	Circular Pipe	15 inch	0.041	7.12	1.27	1.63	1.87	4.38	4.71	4.89
ExCO-53.2	ExMH-53.1	ExCB-55	Trapezoidal Channel	Natural Stream	0.092	12.93	1.26	1.63	1.87	4.72	5.10	5.30
ExPipeCO-54.1	ExStructureCB-54	ExPipeMH-54.1	Circular Pipe	12 inch	0.025	5.62	1.54	1.77	1.90	6.10	6.33	6.46
ExDitchCO-54.2	ExPipeMH-54.1	ExCB-55	Trapezoidal Channel	Grass Channel	-0.002	-13.21	1.53	1.76	1.89	0.36	0.40	0.43
ExCO-55.1	ExCB-55	ExMH-55.1	Circular Pipe	15 inch	0.018	4.76	3.42	4.17	4.63	4.22	4.37	4.42
ExCO-55.2	ExMH-55.1	ExCB-14	Trapezoidal Channel	Rough Channel	0.039	297.24	3.40	4.13	4.59	3.69	3.88	3.99

APPENDIX D

PROPOSED ANALYSIS



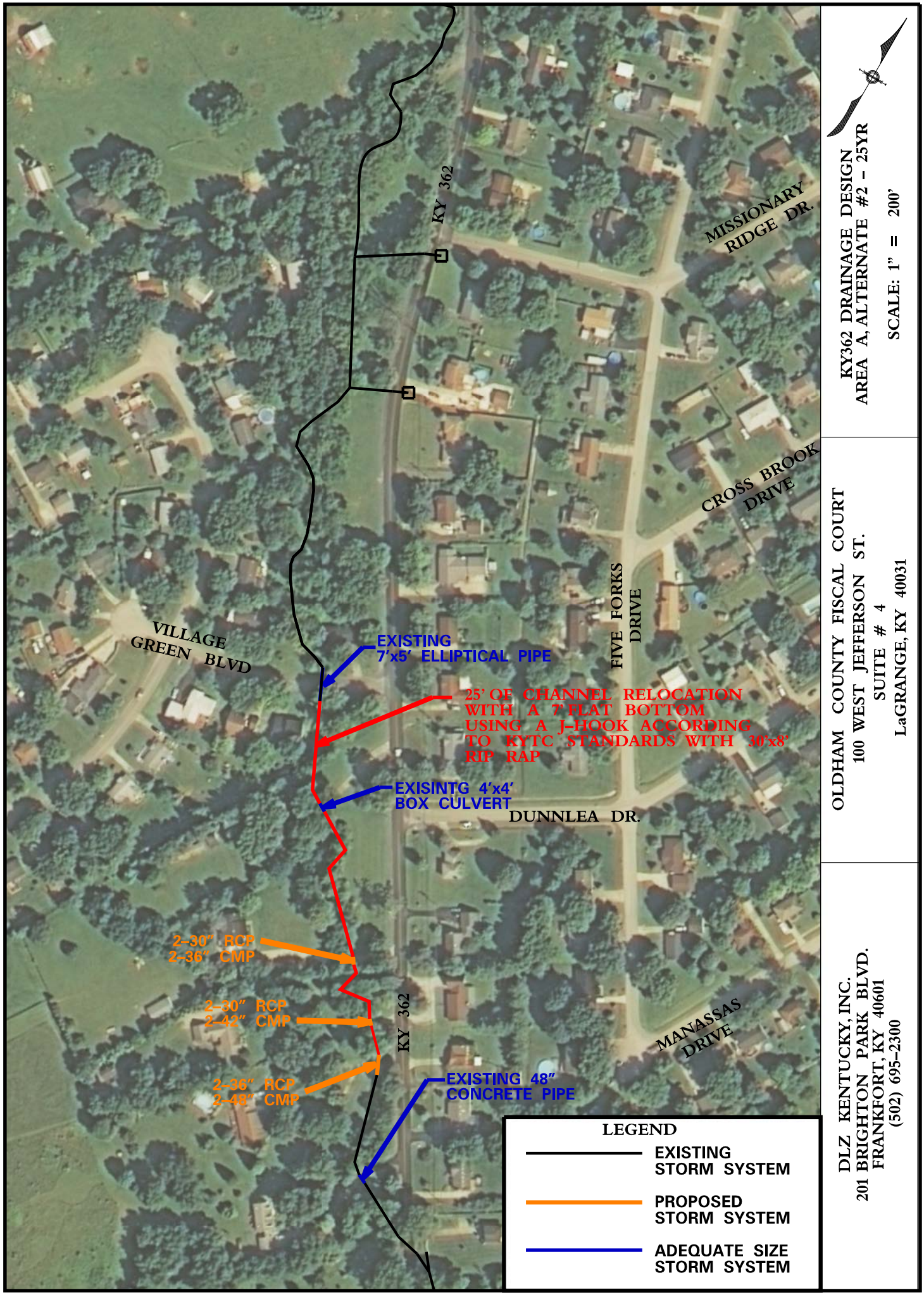
KY362 DRAINAGE STUDY
AREA A, ALTERNATE #1 – 10YR
DETENTION BASIN &
PIPE UPSIZING
SCALE: 1" = 200'

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area A - Alternative 1

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	100 Year	10 Year	100 Year
LG CO-2.1	ExPipeMH-14.1	LG CB-2	Trapezoidal Channel	4' road Culvert	0.008	648.22	58.61	78.37	3.93	4.30
LG CO-2.2	LG CB-2	ExCulvertMH-14.3	Rectangular Channel	Natural Stream	0.093	616.22	82.42	112.85	8.09	9.04
ExStreamCO-14.4	ExCulvertMH-14.3	ExInStreamMH-14.4	Trapezoidal Channel	Natural Stream	0.009	2065.60	82.37	112.80	5.26	6.68
ExPipeCO-57.1	ExCB-57	ExPipeMH-59.4	Elliptical Pipe	24x38 inch	0.006	32.44	5.97	7.85	4.78	5.20
ExDitchCO-59.5	ExPipeMH-59.4	ExCB-58	Trapezoidal Channel	Natural Stream	0.007	52.86	7.05	9.39	2.13	2.28
ExPipeCO-58.1	ExCB-58	ExPipeMH-58.1	Circular Pipe	18 inch	0.051	23.82	7.76	10.31	12.05	12.99
ExDitchCO-58.2	ExPipeMH-58.1	ExInStreamMH-14.4	Trapezoidal Channel	Natural Stream	0.054	145.66	7.76	10.30	4.64	4.99
ExStreamCO-14.5	ExInStreamMH-14.4	ExinStreamMH-14.5	Trapezoidal Channel	Natural Stream	0.009	2113.12	86.04	118.47	5.44	6.93
ExCO-61.1	ExCB-61	ExMH-61.1	Circular Pipe	18 inch	0.053	24.11	9.71	13.66	12.91	14.07
ExCO-61.2	ExMH-61.1	ExinStreamMH-14.5	Trapezoidal Channel	Natural Stream	0.095	206.40	9.70	13.64	6.03	6.59
CO-353	ExinStreamMH-14.5	OF-6	Trapezoidal Channel	Area 1 detention	5.525	147439.10	90.29	125.29	18.20	20.74
CO-355	LG CB-3	ExMH-14.7	Elliptical Pipe	83x53 inch	0.009	311.04	96.13	127.00	11.55	12.36
CO-336	ExMH-14.7	MH-105	Trapezoidal Channel	Natural Stream	0.011	58.23	96.13	127.00	6.21	4.46
CO-337	MH-105	MH-44	Trapezoidal Channel	Natural Stream	0.011	179.34	96.13	127.00	2.13	2.12
CO-236	MH-44	MH-45	Rectangular Channel	4'x4' Driveway Crossing	0.026	360.16	96.13	127.00	9.90	12.96
CO-249	MH-45	MH-50	Trapezoidal Channel	Natural Stream	0.008	130.44	96.13	127.00	5.35	4.04
CO-253	MH-50	MH-53	Circular Pipe	24 inch (2)	0.052	103.66	92.70	127.00	10.73	16.36
CO-254	MH-53	ExMH-14.8	Trapezoidal Channel	Natural Stream	0.011	137.85	96.13	127.00	3.59	3.63
ExCO-14.9	ExMH-14.8	ExMH-14.9	Circular Pipe	30 inch (2)	0.025	130.87	96.13	127.00	14.57	15.19
ExCO-14.10	ExMH-14.9	ExMH-14.10	Trapezoidal Channel	Natural Stream	0.002	100.68	96.13	127.00	1.45	2.50
ExCO-14.11	ExMH-14.10	ExMH-14.11	Circular Pipe	30 inch (2)	0.029	140.64	96.13	127.00	15.42	16.22
CO-238	ExMH-14.11	MH-46	Trapezoidal Channel	Natural Stream	0.001	236.01	96.13	127.00	1.81	1.94
CO-240	MH-46	MH-47	Circular Pipe	48 inch	0.048	315.78	96.13	127.00	22.05	23.76
CO-241	MH-47	ExCB-13	Trapezoidal Channel	Natural Stream	0.011	323.91	96.13	127.00	4.75	5.10



KY362 DRAINAGE DESIGN
AREA A, ALTERNATE #2 – 25YR

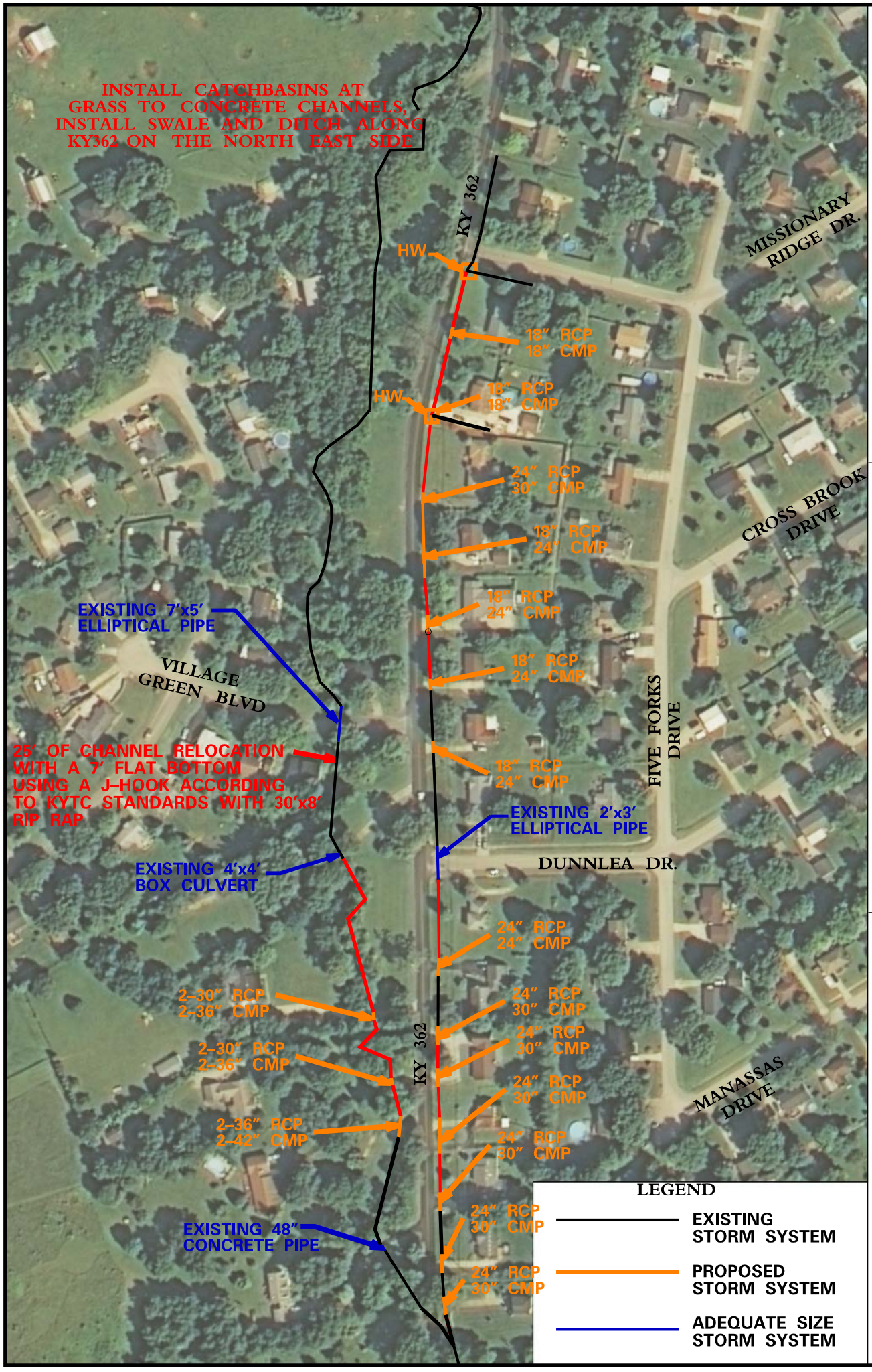
SCALE: 1" = 200'

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area A - Alternative 2

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							10 Year	25 Year	100 Year	10 Year	25 Year	100 Year
LG CO-2.1	ExPipeMH-14.1	LG CB-2	Trapezoidal Channel	4' road Culvert	0.008	648.22	58.61	67.13	78.37	3.93	4.10	4.30
LG CO-2.2	LG CB-2	ExCulvertMH-14.3	Rectangular Channel	Natural Stream	0.093	616.22	82.42	95.43	112.85	8.09	8.52	9.04
ExStreamCO-14.4	ExCulvertMH-14.3	ExInStreamMH-14.4	Trapezoidal Channel	Natural Stream	0.009	2065.60	82.37	95.38	112.80	5.26	5.89	6.68
ExPipeCO-57.1	ExCB-57	ExPipeMH-59.4	Elliptical Pipe	24x38 inch	0.006	32.440	5.970	6.780	7.850	4.780	4.970	5.200
ExDitchCO-59.5	ExPipeMH-59.4	ExCB-58	Trapezoidal Channel	Natural Stream	0.007	52.86	7.05	8.05	9.39	2.13	2.20	2.28
ExPipeCO-58.1	ExCB-58	ExPipeMH-58.1	Circular Pipe	18 inch	0.051	23.820	7.760	8.850	10.310	12.050	12.490	12.990
ExDitchCO-58.2	ExPipeMH-58.1	ExInStreamMH-14.4	Trapezoidal Channel	Natural Stream	0.054	145.66	7.76	8.84	10.30	4.64	4.80	4.99
ExStreamCO-14.5	ExInStreamMH-14.4	ExinStreamMH-14.5	Trapezoidal Channel	Natural Stream	0.009	2113.12	86.04	99.93	118.47	5.44	6.10	6.93
ExCO-61.1	ExCB-61	ExMH-61.1	Circular Pipe	18 inch	0.053	24.110	9.710	11.340	13.660	12.910	13.440	14.070
ExCO-61.2	ExMH-61.1	ExinStreamMH-14.5	Trapezoidal Channel	Natural Stream	0.095	206.40	9.70	11.33	13.64	6.03	6.28	6.59
ExStreamCO-14.6	ExinStreamMH-14.5	LG CB-3	Trapezoidal Channel	Natural Stream	0.006	1740.69	90.29	105.27	125.29	5.65	6.35	7.22
CO-355	LG CB-3	ExMH-14.7	Elliptical Pipe	83x53 inch	0.009	311.040	105.090	123.430	148.340	11.810	12.270	12.820
CO-336	ExMH-14.7	MH-105	Trapezoidal Channel	Natural Stream	0.011	4.30	104.97	123.30	148.15	3.71	13.80	4.05
CO-337	MH-105	MH-44	Trapezoidal Channel	Natural Stream	0.011	179.340	104.230	123.230	147.060	1.870	2.050	2.450
CO-236	MH-44	MH-45	Rectangular Channel	4'x4' Driveway Crossing	0.026	360.16	103.73	122.68	146.32	12.46	6.88	15.33
CO-249	MH-45	MH-50	Trapezoidal Channel	Natural Stream	0.004	97.640	103.710	122.630	146.290	3.390	4.980	3.700
CO-253	MH-50	MH-53	Circular Pipe	30 inch (2)	0.038	160.61	101.68	120.81	143.72	17.31	17.97	18.50
CO-254	MH-53	ExMH-14.8	Trapezoidal Channel	Natural Stream	0.009	139.260	101.660	120.790	143.700	3.450	3.580	3.760
ExCO-14.9	ExMH-14.8	ExMH-14.9	Circular Pipe	30 inch (2)	0.025	130.87	100.66	119.68	142.45	14.84	15.12	16.13
ExCO-14.10	ExMH-14.9	ExMH-14.10	Trapezoidal Channel	Natural Stream	0.002	121.640	100.640	119.660	142.430	1.500	1.680	1.640
ExCO-14.11	ExMH-14.10	ExMH-14.11	Circular Pipe	36 inch (2)	0.010	131.35	99.77	118.76	141.34	10.31	10.52	11.19
CO-238	ExMH-14.11	MH-46	Trapezoidal Channel	Natural Stream	0.005	388.790	99.690	118.670	141.230	3.500	4.010	3.820
CO-240	MH-46	MH-47	Circular Pipe	48 inch	0.048	315.78	98.43	117.36	139.61	22.24	23.27	23.61
CO-241	MH-47	ExCB-13	Trapezoidal Channel	Natural Stream	0.010	308.550	98.420	117.350	139.590	2.690	4.820	2.940



KY362 DRAINAGE DESIGN
AREA A, ALTERNATE #3 – 25YR
DIRECT EAST FLOW
ALONG KY 362 (EAST) &
PIPE UPSIZE (WEST)
SCALE: 1" = 200'

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

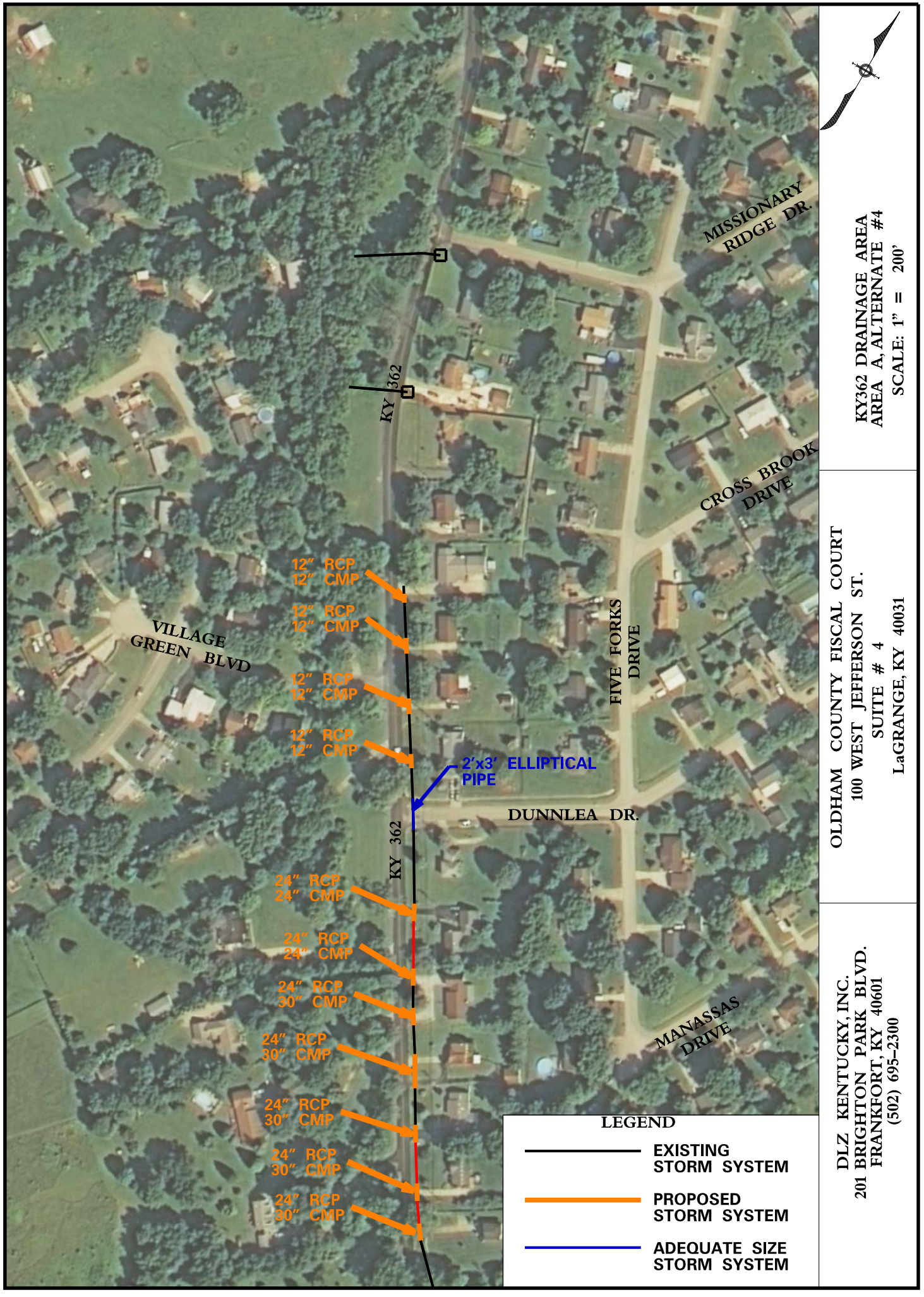
DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area A - Alternative 3

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							10 Year	25 Year	100 Year	10 Year	25 Year	100 Year
LG CO-2.1	ExPipeMH-14.1	LG CB-2	Trapezoidal Channel	4' road Culvert	0.008	648.22	58.61	67.13	78.37	3.93	4.10	4.30
LG CO-2.2	LG CB-2	ExCulvertMH-14.3	Rectangular Channel	Natural Stream	0.093	616.22	82.42	95.43	112.85	8.09	8.52	9.04
ExStreamCO-14.4	ExCulvertMH-14.3	ExInStreamMH-14.4	Trapezoidal Channel	Natural Stream	0.009	2065.60	82.37	95.38	112.80	5.26	5.89	6.68
ExStreamCO-14.5	ExInStreamMH-14.4	ExinStreamMH-14.5	Trapezoidal Channel	Natural Stream	0.009	2113.12	80.58	93.63	111.06	3.81	5.81	6.61
ExStreamCO-14.6	ExinStreamMH-14.5	LG CB-3	Trapezoidal Channel	Natural Stream	0.006	1740.69	79.29	92.32	109.76	5.11	5.74	6.55
CO-355	LG CB-3	ExMH-14.7	Elliptical Pipe	83x53 inch	0.009	311.04	94.05	110.46	132.69	11.49	11.95	12.49
CO-336	ExMH-14.7	MH-105	Trapezoidal Channel	Natural Stream	0.011	136.23	93.94	110.33	132.52	4.13	13.18	4.51
CO-337	MH-105	MH-44	Trapezoidal Channel	Natural Stream	0.011	179.34	93.34	110.27	131.64	1.56	2.04	2.20
CO-236	MH-44	MH-45	Rectangular Channel	4'x4' Driveway Crossing	0.026	360.16	92.88	109.76	131.01	5.21	11.20	13.20
CO-249	MH-45	MH-50	Trapezoidal Channel	Natural Stream	0.005	88.68	92.83	109.74	130.99	4.62	3.49	4.07
CO-253	MH-50	MH-53	Circular Pipe	30 inch (2)	0.030	142.08	91.22	107.69	128.91	15.36	20.15	16.39
CO-254	MH-53	ExMH-14.8	Trapezoidal Channel	Natural Stream	0.009	115.82	91.21	107.67	128.89	3.35	3.50	3.64
ExCO-14.9	ExMH-14.8	ExMH-14.9	Circular Pipe	30 inch (2)	0.025	130.87	90.28	106.65	127.73	14.38	14.86	15.19
ExCO-14.10	ExMH-14.9	ExMH-14.10	Trapezoidal Channel	Natural Stream	0.002	107.37	90.26	106.63	127.70	1.56	1.63	1.60
ExCO-14.11	ExMH-14.10	ExMH-14.11	Circular Pipe	36 inch (2)	0.010	131.35	87.65	105.80	126.70	9.15	10.34	10.58
CO-238	ExMH-14.11	MH-46	Trapezoidal Channel	Natural Stream	0.005	560.63	89.43	103.60	125.43	3.40	10.30	10.58
CO-240	MH-46	MH-47	Circular Pipe	48 inch	0.048	315.78	88.30	104.39	125.11	21.55	22.55	23.67
CO-241	MH-47	ExCB-13	Trapezoidal Channel	Natural Stream	0.010	308.55	88.29	104.37	125.09	4.48	4.85	4.90
ExPipeCO-57.1	ExCB-57	ExPipeMH-59.4	Elliptical Pipe	24x38 inch	0.006	32.44	5.97	6.78	7.85	4.78	4.97	5.20
ExDitchCO-59.5	ExPipeMH-59.4	ExCB-58	Trapezoidal Channel	Natural Stream	0.002	11.87	7.05	8.05	9.39	1.39	2.20	1.49
CO-379	ExCB-58	MH-121	Trapezoidal Channel	Rough Channel	0.001	12.69	8.60	8.85	11.59	1.10	0.94	1.04
CO-381	MH-121	MH-122	Circular Pipe	18 inch	0.034	10.45	8.38	8.59	11.28	6.57	5.79	11.34
CO-383	MH-122	MH-123	Trapezoidal Channel	Rough Channel	0.001	15.45	8.37	8.58	11.27	1.26	0.83	1.24
CO-385	MH-123	MH-124	Circular Pipe	18 inch	0.044	22.01	8.06	8.11	10.86	11.49	12.07	12.42
CO-386	MH-124	ExCB-61	Trapezoidal Channel	Rough Channel	0.002	18.88	8.06	8.10	10.86	1.45	1.02	1.43
CO-387	ExCB-61	MH-125	Trapezoidal Channel	Rough Channel	0.000	22.63	15.55	16.68	21.46	0.92	1.15	1.35
CO-389	MH-125	MH-127	Circular Pipe	24 inch	0.014	26.68	14.78	16.08	20.71	8.71	8.32	8.75
CO-390	MH-127	Res-CB-3	Trapezoidal Channel	Rough Channel	0.001	23.89	14.77	16.07	20.69	1.51	1.41	1.50
CO-282	Res-CB-3	Res-MH-3	Circular Pipe	18 inch	0.037	20.22	15.46	16.88	21.71	12.61	8.16	12.30
CO-285	Res-MH-3	MH-71	Trapezoidal Channel	Natural Stream	0.002	23.08	15.46	16.86	21.70	1.91	1.67	2.08
CO-284	MH-71	ExPipeMH-62.2	Trapezoidal Channel	Rough Channel	0.009	63.28	16.06	17.52	22.47	3.20	2.97	3.18
ExPipeCO-62.3	ExPipeMH-62.2	ExPipeMH-62.3	Circular Pipe	18 inch	0.040	20.91	15.96	17.40	22.33	13.03	8.40	12.65
CO-391	ExPipeMH-62.3	MH-128	Trapezoidal Channel	Rough Channel	0.013	74.40	15.95	17.38	22.31	3.61	2.40	3.58
CO-393	MH-128	MH-129	Circular Pipe	18 inch	0.042	21.59	15.84	17.19	22.16	13.35	10.92	12.55
CO-395	MH-129	MH-130	Trapezoidal Channel	Rough Channel	0.014	76.57	15.83	17.18	22.14	3.68	4.17	3.65
CO-397	MH-130	MH-131	Circular Pipe	18 inch	0.036	19.88	15.71	17.07	21.99	12.47	10.87	12.46
CO-398	MH-131	ExCB-63	Trapezoidal Channel	Rough Channel	0.019	31.62	15.70	17.06	21.97	3.79	4.16	4.12
ExPipeCO-63.1	ExCB-63	ExPipeMH-63.1	Elliptical Pipe	24x38 inch	0.028	68.27	30.85	34.61	43.84	13.36	13.85	14.89
ExDitchCO-63.2	ExPipeMH-63.1	ExPipeMH-63.2	Trapezoidal Channel	Natural Stream	0.001	32.91	30.80	34.57	43.79	1.80	1.99	1.96
ExPipeCO-63.3	ExPipeMH-63.2	ExPipeMH-63.3	Circular Pipe	24 inch	0.067	58.36	30.05	33.86	42.84	18.72	10.08	20.30
ExDitchCO-63.4	ExPipeMH-63.3	ExPipeMH-63.4	Trapezoidal Channel	Natural Stream	0.001	43.82	30.03	33.83	42.81	1.77	4.01	1.94
ExPipeCO-63.5	ExPipeMH-63.4	ExPipeMH-63.5	Circular Pipe	24 inch	0.049	50.22	29.61	33.64	42.20	16.64	10.97	17.91

Area A - Alternative 3

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)			Velocity (Out) (ft/s)		
							10 Year	25 Year	100 Year	10 Year	25 Year	100 Year
ExDitchCO-63.6	ExPipeMH-63.5	ExPipeMH-63.6	Trapezoidal Channel	Natural Stream	0.001	29.88	29.59	33.61	42.17	1.66	2.79	1.81
ExPipeCO-63.7	ExPipeMH-63.6	ExPipeMH-63.7	Circular Pipe	24 inch	0.030	38.96	29.39	33.48	41.87	13.62	9.57	13.35
ExDitchCO-63.8	ExPipeMH-63.7	ExPipeMH-63.8	Trapezoidal Channel	Rough Channel	0.002	69.98	29.37	33.45	41.84	2.05	3.26	2.23
ExPipeCO-63.9	ExPipeMH-63.8	ExPipeMH-63.9	Circular Pipe	24 inch	0.024	34.81	29.17	33.30	41.58	12.41	11.02	13.26
ExDitchCO-63.10	ExPipeMH-63.9	ExPipeMH-63.10	Trapezoidal Channel	Natural Stream	0.002	68.48	29.13	33.25	41.53	2.01	3.87	2.20
ExPipeCO-63.11	ExPipeMH-63.10	ExPipeMH-63.11	Circular Pipe	24 inch	0.039	44.65	28.86	33.09	41.19	15.11	11.44	16.13
ExDitchCO-63.12	ExPipeMH-63.11	ExPipeMH-63.12	Trapezoidal Channel	Natural Stream	0.001	46.93	28.85	33.07	41.17	1.85	3.85	2.02
ExPipeCO-63.14	ExPipeMH-63.12	ExPipeMH-63.14	Circular Pipe	24 inch	0.042	46.59	28.52	32.89	40.76	15.57	12.50	16.72
ExDitchCO-63.15	ExPipeMH-63.14	ExPipeMH-63.15	Trapezoidal Channel	Rough Channel	0.003	83.14	28.50	32.87	40.74	2.31	3.84	2.52
ExPipeCO-63.16	ExPipeMH-63.15	ExPipeMH-63.16	Circular Pipe	24 inch	0.029	38.71	29.57	34.11	42.05	13.57	13.38	13.41
CO-399	ExPipeMH-63.16	MH-120	Trapezoidal Channel	Rough Channel	0.014	188.18	29.55	34.09	42.02	4.30	7.88	4.70



KY362 DRAINAGE AREA
AREA A, ALTERNATE #4
SCALE: 1" = 200'

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

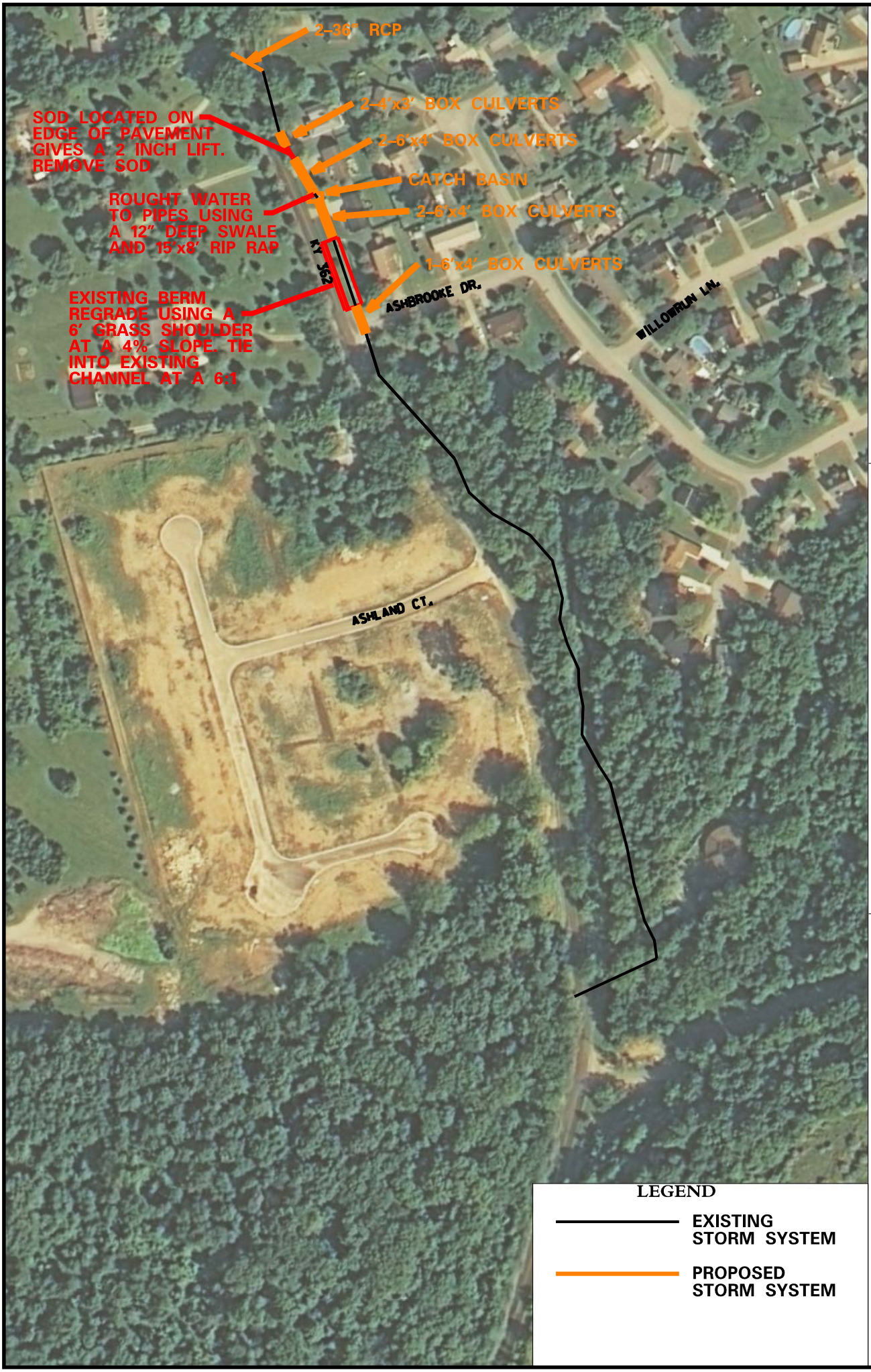
DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area A - Alternative 4

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	100 Year	10 Year	100 Year
LG CO-2.1	ExPipeMH-14.1	LG CB-2	Trapezoidal Channel	4' road Culvert	0.008	648.22	58.61	78.37	3.93	4.30
LG CO-2.2	LG CB-2	ExCulvertMH-14.3	Rectangular Channel	Natural Stream	0.093	616.22	82.42	112.85	8.09	9.04
ExStreamCO-14.4	ExCulvertMH-14.3	ExInStreamMH-14.4	Trapezoidal Channel	Natural Stream	0.009	2065.60	82.37	112.80	5.26	6.68
ExPipeCO-57.1	ExCB-57	ExPipeMH-59.4	Elliptical Pipe	24x38 inch	0.006	32.44	5.97	7.85	4.78	5.20
ExDitchCO-59.5	ExPipeMH-59.4	ExCB-58	Trapezoidal Channel	Natural Stream	0.007	52.86	7.05	9.39	2.13	2.28
ExPipeCO-58.1	ExCB-58	ExPipeMH-58.1	Circular Pipe	18 inch	0.051	23.82	7.76	10.31	12.05	12.99
ExDitchCO-58.2	ExPipeMH-58.1	ExInStreamMH-14.4	Trapezoidal Channel	Natural Stream	0.054	145.66	7.76	10.30	4.64	4.99
ExStreamCO-14.5	ExInStreamMH-14.4	ExinStreamMH-14.5	Trapezoidal Channel	Natural Stream	0.009	2113.12	86.04	118.47	5.44	6.93
ExCO-61.1	ExCB-61	ExMH-61.1	Circular Pipe	18 inch	0.053	24.11	9.71	13.66	12.91	14.07
ExCO-61.2	ExMH-61.1	ExinStreamMH-14.5	Trapezoidal Channel	Natural Stream	0.095	206.40	9.70	13.64	6.03	6.59
ExStreamCO-14.6	ExinStreamMH-14.5	LG CB-3	Trapezoidal Channel	Natural Stream	0.006	1740.69	90.29	125.29	5.65	7.22
CO-355	LG CB-3	ExMH-14.7	Elliptical Pipe	83x53 inch	0.009	311.04	105.09	148.34	11.81	12.82
CO-336	ExMH-14.7	MH-105	Trapezoidal Channel	Natural Stream	0.011	4.30	104.97	148.15	12.91	14.88
CO-337	MH-105	MH-44	Trapezoidal Channel	Natural Stream	0.011	179.34	104.90	148.08	1.75	2.47
CO-236	MH-44	MH-45	Rectangular Channel	4'x4' Driveway Crossing	0.026	360.16	104.41	147.34	16.94	8.27
CO-249	MH-45	MH-50	Trapezoidal Channel	Natural Stream	0.003	111.32	92.00	130.50	6.46	4.70
CO-253	MH-50	MH-53	Box Pipe	24x24 inch (2)	0.055	135.09	75.00	105.80	18.58	17.86
CO-254	MH-53	ExMH-14.8	Trapezoidal Channel	Natural Stream	0.009	181.25	55.90	78.80	8.61	3.41
ExCO-14.9	ExMH-14.8	ExMH-14.9	Circular Pipe	30 inch (2)	0.025	130.87	77.20	108.10	32.15	14.44
ExCO-14.10	ExMH-14.9	ExMH-14.10	Rectangular Channel	Natural Stream	0.002	4.49	102.96	145.71	15.09	18.24
ExCO-14.11	ExMH-14.10	ExMH-14.11	Circular Pipe	36 inch (2)	0.010	131.35	75.30	145.65	26.84	39.50
CO-238	ExMH-14.11	MH-46	Trapezoidal Channel	Natural Stream	0.005	560.63	102.87	107.60	3.53	10.22
CO-240	MH-46	MH-47	Circular Pipe	48 inch	0.048	315.78	101.58	144.01	22.39	24.55
CO-241	MH-47	ExCB-13	Trapezoidal Channel	Natural Stream	0.020	435.24	101.57	143.99	6.00	6.56
ExPipeCO-62.3	ExPipeMH-62.2	ExPipeMH-62.3	Circular Pipe	12 inch	0.020	4.99	1.94	2.63	5.77	6.43
CO-391	ExPipeMH-62.3	MH-128	Trapezoidal Channel	Natural Stream	0.021	33.14	1.94	2.63	2.31	2.49
CO-393	MH-128	MH-129	Circular Pipe	12 inch	0.023	5.40	1.91	2.58	6.08	6.81
CO-395	MH-129	MH-130	Trapezoidal Channel	Natural Stream	0.024	104.11	1.90	2.59	2.37	2.57
CO-397	MH-130	MH-131	Circular Pipe	12 inch	0.023	5.38	1.88	2.54	6.23	6.76
CO-398	MH-131	ExCB-63	Trapezoidal Channel	Natural Stream	0.023	101.84	1.87	2.54	2.32	2.57
ExPipeCO-63.1	ExCB-63	ExPipeMH-63.1	Elliptical Pipe	24x38 inch	0.028	68.27	19.90	28.40	11.61	13.01
ExDitchCO-63.2	ExPipeMH-63.1	ExPipeMH-63.2	Trapezoidal Channel	Natural Stream	0.001	88.42	19.86	28.36	1.43	1.57

Area A - Alternative 4

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	100 Year	10 Year	100 Year
ExPipeCO-63.3	ExPipeMH-63.2	ExPipeMH-63.3	Circular Pipe	30 inch	0.067	106.08	19.19	27.51	16.40	11.36
ExDitchCO-63.4	ExPipeMH-63.3	ExPipeMH-63.4	Trapezoidal Channel	Natural Stream	0.001	80.76	19.17	27.48	1.32	1.45
ExPipeCO-63.5	ExPipeMH-63.4	ExPipeMH-63.5	Circular Pipe	24 inch	0.050	50.58	18.71	26.90	14.89	10.32
ExDitchCO-63.6	ExPipeMH-63.5	ExPipeMH-63.6	Trapezoidal Channel	Natural Stream	0.002	60.93	18.69	26.87	1.74	1.91
ExPipeCO-63.7	ExPipeMH-63.6	ExPipeMH-63.7	Circular Pipe	24 inch	0.028	38.04	18.52	26.66	12.03	8.27
ExDitchCO-63.8	ExPipeMH-63.7	ExPipeMH-63.8	Trapezoidal Channel	Natural Stream	0.001	29.64	18.50	26.62	1.46	1.60
ExPipeCO-63.9	ExPipeMH-63.8	ExPipeMH-63.9	Circular Pipe	24 inch	0.024	35.33	18.25	26.30	11.34	7.77
ExDitchCO-63.10	ExPipeMH-63.9	ExPipeMH-63.10	Trapezoidal Channel	Natural Stream	0.005	64.26	18.21	26.22	2.60	2.85
ExPipeCO-63.11	ExPipeMH-63.10	ExPipeMH-63.11	Circular Pipe	24 inch	0.032	22.06	18.07	25.99	7.83	8.67
ExDitchCO-63.12	ExPipeMH-63.11	ExPipeMH-63.12	Trapezoidal Channel	Natural Stream	0.001	20.85	18.05	25.95	1.44	1.57
ExPipeCO-63.14	ExPipeMH-63.12	ExPipeMH-63.14	Circular Pipe	24 inch	0.044	47.34	17.76	25.53	13.99	9.69
ExDitchCO-63.15	ExPipeMH-63.14	ExPipeMH-63.15	Trapezoidal Channel	Natural Stream	0.001	29.88	17.74	25.51	1.46	1.60
ExPipeCO-63.16	ExPipeMH-63.15	ExPipeMH-63.16	Circular Pipe	24 inch	0.031	39.87	18.96	26.99	12.53	8.60
CO-399	ExPipeMH-63.16	MH-120	Trapezoidal Channel	Rough Channel	0.014	154.19	18.95	26.97	3.51	3.83



KY362 DRAINAGE STUDY
AREA B, ALTERNATE #1
SCALE: 1" = 200'

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area B - Alternate 1

							Flow (ft^3/s) Without Grade Change		Velocity (Out) (ft/s) Without Grade Change	
Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	25 Year	100 Year	25 Year	100 Year
CO-344	ExCB-13	CB-183	Trapezoidal Channel	Natural stream	0.003	213	144.08	174.6	3.06	3.22
CO-347	CB-183	MH-110	Circular Pipe	36 inch (2)	0.026	215.41	143.59	174.05	16.31	16.96
CO-346	MH-110	ExMH-63.17	Trapezoidal Channel	Natural Stream	0.024	576.90	163.63	197.88	7.38	7.74
ExCO-63.18	ExMH-63.17	ExCulvertCB-12	Trapezoidal Channel	Natural Stream	0.010	201.83	163.52	197.77	3.99	4.18
ExCO-12.1	ExCulvertCB-12	CxPipeMH-12.1	Box Pipe	4 x 3 ft (2)	0.008	223.44	173.18	209.74	10.44	10.93
CO-338	CB-173	MH-106	Circular Pipe	18 inch	0.029	9.67	3.52	4.24	5.04	5.29
CO-339	MH-106	CxPipeMH-12.1	Trapezoidal Channel	Natural Stream	0.158	33.57	3.51	4.24	7.70	8.11
ExDitchCO-12.2	CxPipeMH-12.1	ExPipeMH-12.2	Trapezoidal Channel	Natural Stream	0.053	471.53	175.42	212.51	7.22	7.57
ExPipeCO-12.3	ExPipeMH-12.2	ExPipeMH-12.3	Box Pipe	6 x 4 ft (2)	0.001	204.90	175.29	212.36	4.93	5.77
ExDitchCO-12.4	ExPipeMH-12.3	ExPipeMH-12.4	Trapezoidal Channel	Natural Stream	0.047	540.08	174.71	211.59	11.26	11.83
ExPipeCO-12.5	ExPipeMH-12.4	ExPipeMH-12.5	Box Pipe	6 x 4 ft (2)	0.008	568.80	174.68	211.56	10.24	10.86
ExCO-12.6	ExPipeMH-12.5	ExCB-11	Trapezoidal Channel	Natural Stream	0.043	873.59	174.38	211.22	6.63	6.96
ExPipeCO-11.1	ExCB-11	ExPipeMH-11.1	Box Pipe	6 x 4 ft (1)	0.008	272.46	191.56	232.42	12.47	13.11
CO-410	ExPipeMH-11.1	MH-143	Trapezoidal Channel	Rough Channel	10.697	62003.41	192.64	233.63	70.82	75.99
CO-411	MH-143	ExMH-11.2	Irregular Channel	Rough Channel	0.019	8395.84	2.20	2.70	4.88	5.19
Ex CO-11.3	ExMH-11.2	Stream CB-1	Irregular Channel	Natural Stream	0.025	128800.27	179.97	221.39	3.44	3.65
CO-223	Stream CB-1	LG CB-12	Trapezoidal Channel	Natural Stream	0.018	2307.79	781.37	952.11	10.58	11.18
CO-222	LG CB-12	ExPipeMH-9.1	Rectangular Channel	Natural Stream	0.003	443.18	784.47	955.98	7.72	8.90



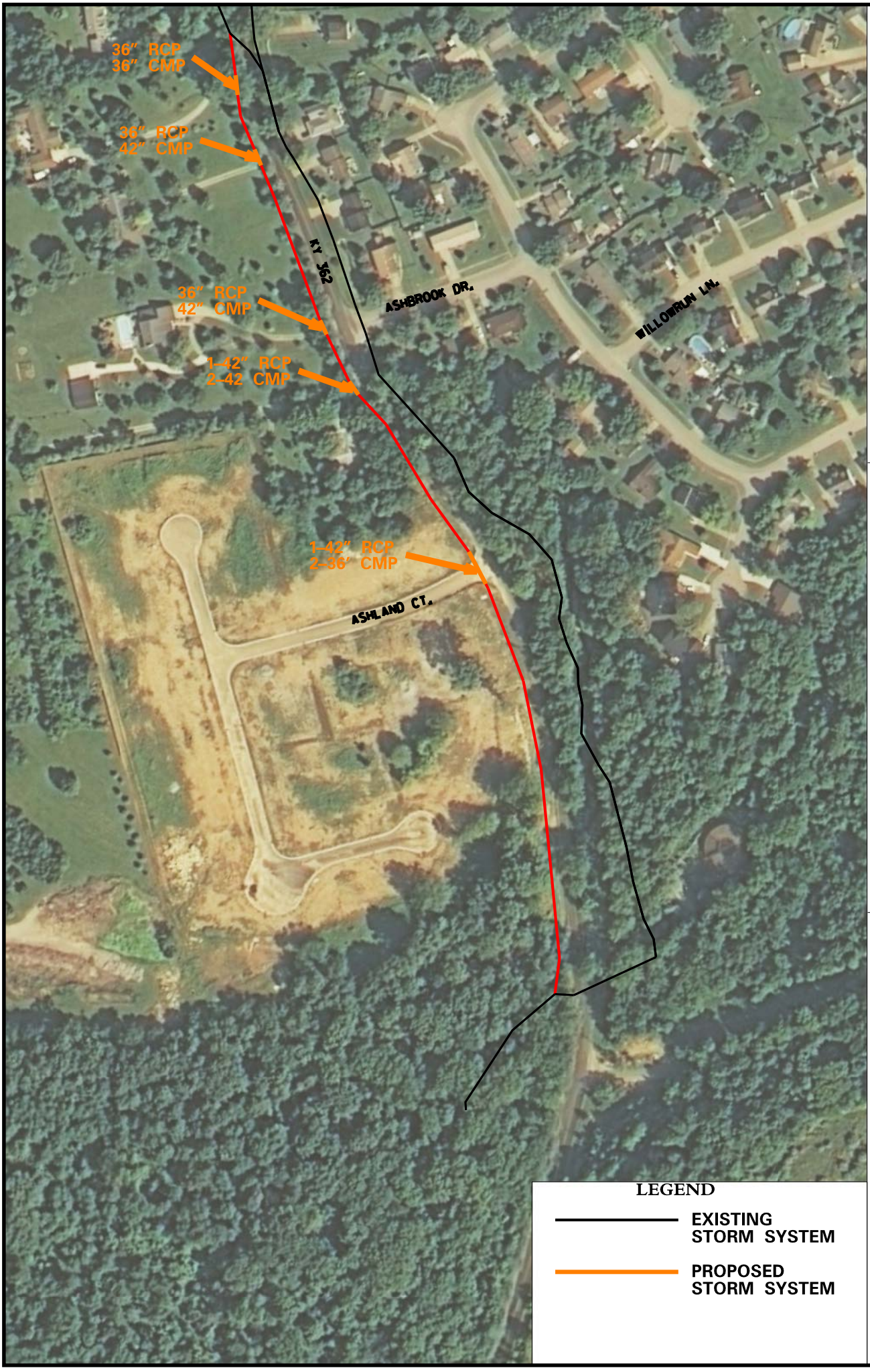
KY362 DRAINAGE STUDY
AREA B, ALTERNATE #2 – 25YR
PIPE UPSIZING
COMPLETE GRADE CHANGE
SCALE: 1" = 200'

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area B - Alternate 2

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s) 25 Year	Velocity (Out) (ft/s) 25 Year
CO-344	ExCB-13	CB-183	Trapezoidal Channel	Natural stream	0.003	145.83	141.66	4.14
CO-347	CB-183	MH-110	Circular Pipe	36 inch (2)	0.026	215.41	141.19	19.99
CO-346	MH-110	ExMH-63.17	Trapezoidal Channel	Natural Stream	0.002	184.82	157.13	2.69
ExCO-63.18	ExMH-63.17	ExCulvertCB-12	Trapezoidal Channel	Natural Stream	0.005	167.02	156.89	2.88
ExCO-12.1	ExCulvertCB-12	CxPipeMH-12.1	Circular Pipe	36 inch (2)	0.033	243.53	165.92	16.81
CO-338	CB-173	MH-106	Circular Pipe	18 inch	0.029	9.67	3.52	5.04
CO-339	MH-106	CxPipeMH-12.1	Trapezoidal Channel	Natural Stream	0.147	32.38	3.51	7.51
ExDitchCO-12.2	CxPipeMH-12.1	ExPipeMH-12.2	Trapezoidal Channel	Natural Stream	0.005	219.89	168.12	2.85
ExPipeCO-12.3	ExPipeMH-12.2	ExPipeMH-12.3	Circular Pipe	36 inch (2)	0.028	223.7	167.84	15.82
ExDitchCO-12.4	ExPipeMH-12.3	ExPipeMH-12.4	Trapezoidal Channel	Natural Stream	0.025	665.25	167.68	7.79
ExPipeCO-12.5	ExPipeMH-12.4	ExPipeMH-12.5	Circular Pipe	36 inch	0.026	213.9	167.64	15.3
ExCO-12.6	ExPipeMH-12.5	ExCB-11	Trapezoidal Channel	Natural Stream	0.029	398.79	167.47	5.62
ExPipeCO-11.1	ExCB-11	ExPipeMH-11.1	Circular Pipe	36 inch (3)	0.018	267.88	183.94	13.61
CO-410	ExPipeMH-11.1	MH-143	Trapezoidal Channel	Rough Channel	0.023	6403.38	178.59	8.83
CO-411	MH-143	ExMH-11.2	Trapezoidal Channel	Rough Channel	0.024	6530.8	185.73	9.06
Ex CO-11.3	ExMH-11.2	Stream CB-1	Irregular Channel	Natural Stream	0.025	128800.27	188.64	3.49
CO-223	Stream CB-1	LG CB-12	Trapezoidal Channel	Natural Stream	0.018	2307.79	781.37	10.58
CO-222	LG CB-12	ExPipeMH-9.1	Rectangular Channel	Natural Stream	0.003	443.18	784.47	7.72



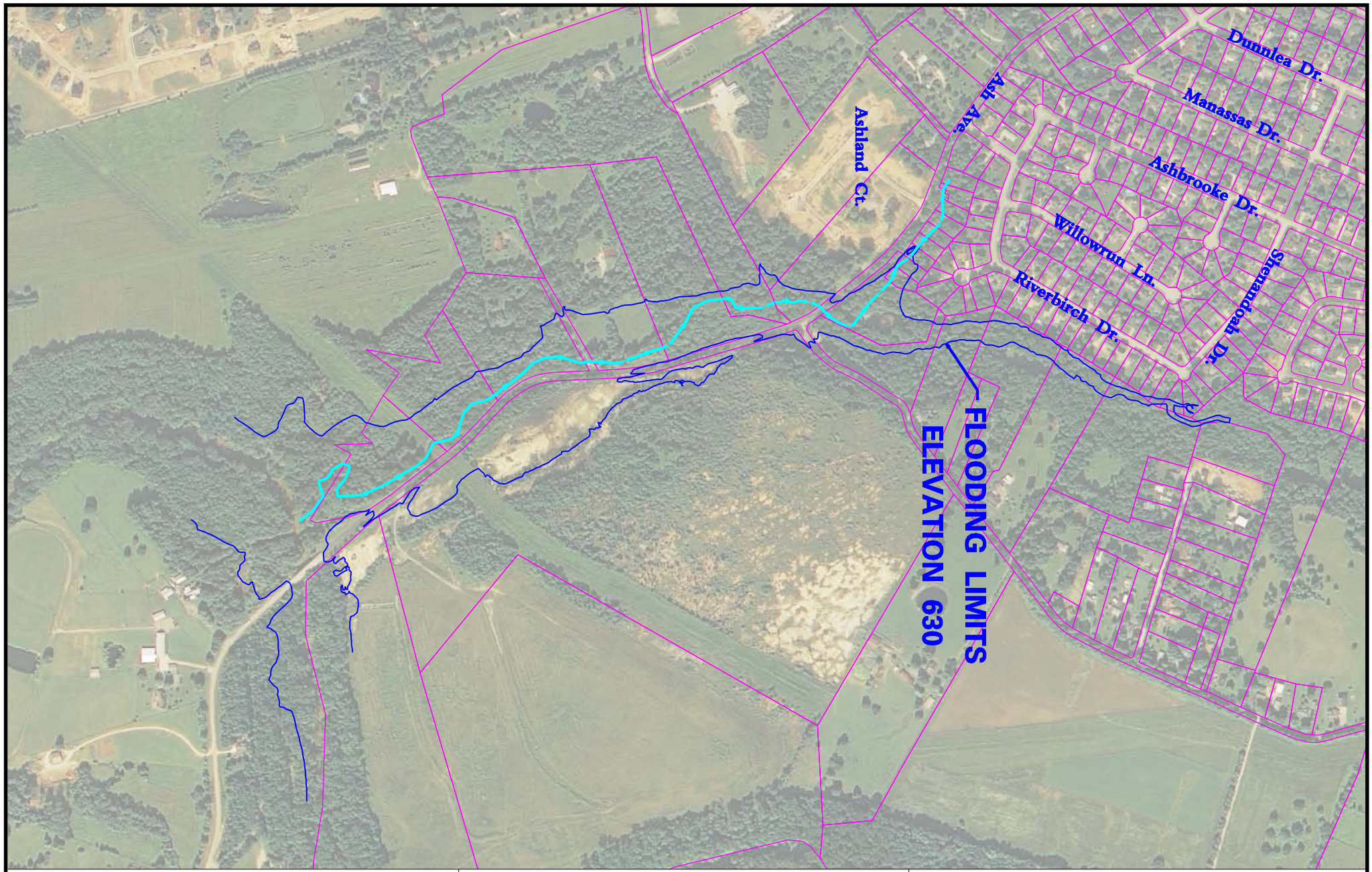
KY362 DRAINAGE STUDY
AREA B ALTERNATE
SCALE: 1" = 200'

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area B - Alternate 3

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							25 Year	100 Year	25 Year	100 Year
CO-373	MH-120	MH-110	Trapezoidal Channel	Natural Stream	0.076	1028.99	39.84	97.21	8.00	10.00
CO-346	MH-110	ExMH-63.17	Trapezoidal Channel	Natural Stream	0.024	576.90	39.83	97.20	5.18	6.48
ExCO-63.18	ExMH-63.17	ExCulvertCB-12	Trapezoidal Channel	Natural Stream	0.010	201.83	39.77	97.13	2.77	3.49
ExCO-12.1	ExCulvertCB-12	CxPipeMH-12.1	Circular Pipe	36 inch	0.008	32.61	53.92	109.21	8.06	8.15
ExDitchCO-12.2	CxPipeMH-12.1	ExPipeMH-12.2	Trapezoidal Channel	Natural Stream	0.053	471.53	53.85	109.11	5.36	6.40
ExPipeCO-12.3	ExPipeMH-12.2	ExPipeMH-12.3	Circular Pipe	36 inch	-0.003	-57.48	53.78	109.02	3.26	4.60
ExDitchCO-12.4	ExPipeMH-12.3	ExPipeMH-12.4	Trapezoidal Channel	Natural Stream	0.079	695.40	53.33	108.55	9.94	12.00
ExPipeCO-12.5	ExPipeMH-12.4	ExPipeMH-12.5	Circular Pipe	36 inch	0.008	66.33	53.32	108.53	5.22	8.11
ExCO-12.6	ExPipeMH-12.5	ExCB-11	Trapezoidal Channel	Natural Stream	0.043	873.59	53.08	108.28	4.91	5.88
ExPipeCO-11.1	ExCB-11	ExPipeMH-11.1	Elliptical Pipe	48x60 inch	0.008	169.50	77.03	129.14	10.47	12.07
CO-410	ExPipeMH-11.1	MH-143	Trapezoidal Channel	Rough Channel	0.025	3012.12	78.64	130.40	7.12	8.31
CO-411	MH-143	ExMH-11.2	Trapezoidal Channel	Rough Channel	0.074	5166.89	78.41	130.15	10.25	12.07
Ex CO-11.3	ExMH-11.2	Stream CB-1	Irregular Channel	Natural Stream	0.015	100330.50	83.19	134.28	2.30	2.65
CO-223	Stream CB-1	LG CB-12	Trapezoidal Channel	Natural Stream	0.018	2307.79	700.55	892.94	10.27	10.99
CO-222	LG CB-12	ExPipeMH-9.1	Rectangular Channel	Natural Stream	0.003	443.18	703.76	896.89	7.13	8.51
CO-344	ExCB-13	CB-183	Trapezoidal Channel	Natural Stream	0.004	148.93	131.83	96.03	3.73	3.44
CO-429	CB-183	MH-156	Circular Pipe	36 inch	0.138	134.43	131.47	95.75	21.68	20.65
CO-430	MH-156	CB-173	Trapezoidal Channel	Natural Stream	0.001	147.22	131.44	95.73	2.51	2.22
CO-431	CB-173	MH-157	Circular Pipe	36 inch	0.078	186.58	131.82	96.96	28.62	16.28
CO-432	MH-157	MH-144	Trapezoidal Channel	Natural Stream	0.001	193.84	131.79	96.93	2.34	2.16
CO-417	MH-144	MH-145	Circular Pipe	36 inch	0.081	189.76	128.50	94.15	28.84	16.49
CO-418	MH-145	MH-146	Trapezoidal Channel	Natural Stream	0.003	217.73	128.48	94.13	3.34	3.09
CO-419	MH-146	MH-147	Circular Pipe	42 inch Concrete	0.020	142.28	127.73	93.53	16.73	9.83
CO-420	MH-147	MH-148	Trapezoidal Channel	Natural Stream	0.003	157.70	127.69	93.48	3.32	3.07
CO-421	MH-148	MH-149	Trapezoidal Channel	Natural Stream	0.012	337.78	126.80	92.79	5.86	5.41
CO-422	MH-149	MH-150	Trapezoidal Channel	Natural Stream	0.032	552.70	126.39	92.46	8.45	7.80
CO-423	MH-150	MH-151	Circular Pipe	36 inch Concrete	0.035	251.03	126.06	92.20	17.77	18.17
CO-424	MH-151	MH-152	Trapezoidal Channel	Natural Stream	0.001	152.92	125.90	92.09	2.31	2.14
CO-425	MH-152	MH-153	Trapezoidal Channel	Natural Stream	0.035	835.26	124.38	90.89	8.67	8.00
CO-426	MH-153	MH-154	Trapezoidal Channel	Natural Stream	0.014	519.53	124.14	90.70	6.08	5.62
CO-427	MH-154	MH-155	Trapezoidal Channel	Natural Stream	0.066	793.41	123.42	90.14	10.99	10.13
CO-428	MH-155	ExPipeMH-9.1	Trapezoidal Channel	Natural Stream	0.065	784.08	122.97	89.77	10.88	10.03

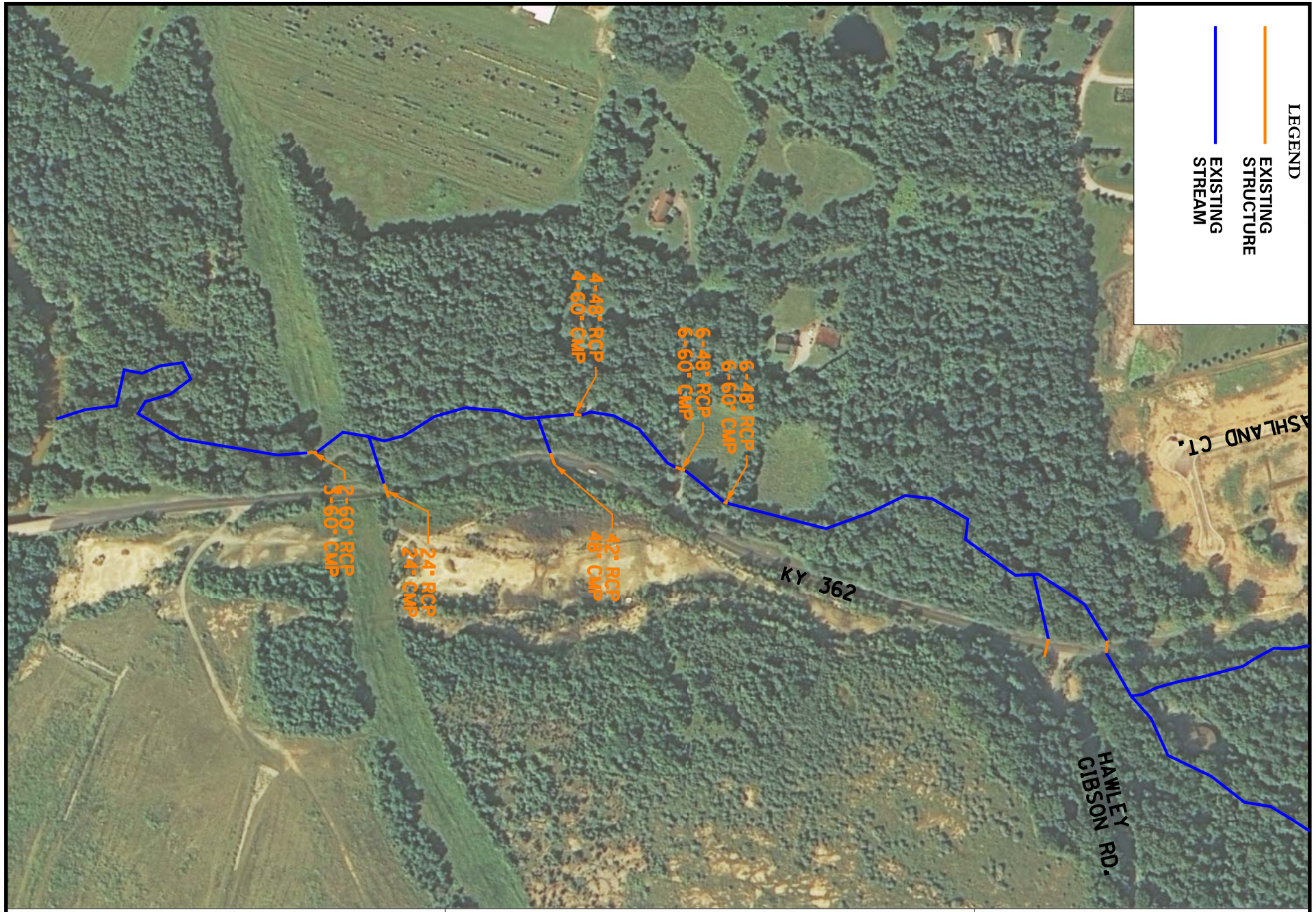


DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695–2300

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

KY 362 DRAINAGE STUDY
PROPOSED SOULUTION C–1
FLOODING LIMITS

SCALE: 1" = 600'



DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

AREA C, ALTERNATE 2
KY 362 DRAINAGE STUDY

Area C - Alternative 2

							Flow (ft^3/s)		Velocity (Out) (ft/s)	
Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	25 Year	100 Year	25 Year	100 Year
CO-222	LG CB-12	ExPipeMH-9.1	Rectangular Channel	Natural Stream	0.003	969.47	784.47	955.98	3.81	4.10
CO-434	ExPipeMH-9.1	MH-159	Irregular Channel	Natural Stream	0.019	54811.07	783.63	954.94	7.73	6.79
CO-435	MH-159	ExStreamMH-9.2	Irregular Channel	Natural Stream	0.004	48307.00	783.04	954.05	2.65	0.51
ExPipeCO-8.1	ExCB-8	ExSomethingMH-8.1	Circular Pipe	30 inch	0.042	84.50	50.61	60.98	17.99	18.75
ExDitchCO-8.2	ExSomethingMH-8.1	ExStreamMH-9.2	Trapezoidal Channel	Natural Stream	0.032	1747.30	50.55	60.91	4.33	4.36
CO-440	ExStreamMH-9.2	ExCB-7	Irregular Channel	Natural Stream	0.001	8975.53	792.92	869.24	1.69	2.09
ExPipesCO-7.1	ExCB-7	ExPipeMH-7.1	Circular Pipe	48 inch (6)	0.010	861.81	769.12	858.03	40.80	45.52
ExCO-7.2	ExPipeMH-7.1	ExCB-6	Trapezoidal Channel	Natural Stream	0.005	872.52	769.10	858.01	6.96	7.47
ExCO-6.1	ExCB-6	ExPipeMH-6.1	Circular Pipe	48 inch (6)	0.011	912.06	773.01	862.78	15.46	17.21
ExDitchCO-6.2	ExPipeMH-6.1	ExCB-5	Trapezoidal Channel	Natural Stream	0.005	787.19	772.85	862.63	7.33	7.87
ExPipeCO-5.1	ExCB-5	ExPipeMH-5.1	Circular Pipe	48 inch (4)	0.023	874.32	772.99	863.64	27.34	30.55
ExDitchCO-5.2	ExPipeMH-5.1	ExPipeMH-5.2	Trapezoidal Channel	Natural Stream	0.059	2633.96	772.92	863.57	11.07	11.43
ExPipeCO-4.1	ExCB-4	ExPipeMH-4.1	Circular Pipe	42 inch	0.064	255.39	170.28	205.04	28.42	29.01
ExDitchCO-4.2	ExPipeMH-4.1	ExPipeMH-5.2	Trapezoidal Channel	Natural Stream	0.038	861.60	170.16	204.87	8.87	9.34
ExStreamCO-5.3	ExPipeMH-5.2	ExStreamMH-5.3	Irregular Channel	Natural Stream	0.005	2722.21	822.88	919.63	2.84	2.96
ExPipeCO-2.1	ExCB-2	ExPipeMH-2.1	Circular Pipe	24 inch	0.072	60.56	27.58	32.85	18.14	18.59
ExDitchCO-2.2	ExPipeMH-2.1	ExStreamMH-5.3	Trapezoidal Channel	Natural Stream	0.063	329.46	27.53	32.85	6.80	7.11
ExStreamCO-5.4	ExStreamMH-5.3	ExCB-3	Trapezoidal Channel	Natural Stream	0.017	1831.62	811.03	908.62	9.64	9.92
ExPipeCO-3.1	ExCB-3	ExMH-3.1	Circular Pipe	60 inch (2)	0.040	1041.71	812.77	973.70	29.34	24.81
ExStreamCO-3.2	ExMH-3.1	ExStreamOutletCB-1	Irregular Channel	Natural Stream	0.001	2381.68	812.69	973.57	1.95	3.33
ExStreamCO-1.1	ExStreamOutletCB-1	ExOF-1	Trapezoidal Channel	Natural Stream	0.004	710.23	769.47	885.09	0.02	0.25

AREA C, ALTERNATE 3
KY 362 DRAINAGE STUDY

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area C - Alternate 3

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							25 Year	100 Year	25 Year	100 Year
Area B-Diverges										
CO-223	Stream CB-1	LG CB-12	Trapezoidal Channel	Natural stream	0.018	2,307.79	781.37		10.58	
Area C										
CO-222 (Diverge)	LG CB-12	ExPipeMH-9.1	Rectangular Channel	Natural Stream	0.003	621.22	518.77	599.13	3.09	4.09
CO-434	ExPipeMH-9.1	MH-159	Irregular Channel	Natural Stream	0.019	1902.06	518.22	598.49	7.61	8.01
CO-439 (Diverge)	LG CB-12	MH-160	Trapezoidal Channel	Natural Stream	-0.048	-790.38	265.70	356.84	7.91	7.91
CO-438	MH-160	MH-158	Box Pipe	5 x 5 ft	0.003	360.99	265.70	356.84	7.91	8.41
CO-436	MH-158	MH-159	Trapezoidal Channel	Natural Stream	0.023	1806.78	265.58	356.67	8.88	9.58
CO-435	MH-159	ExStreamMH-9.2	Irregular Channel	Natural Stream	0.004	48307.71	783.04	954.18	0.42	0.51
ExPipeCO-8.1	ExCB-8	ExSomethingMH-8.1	Circular Pipe	30 inch	0.042	84.50	50.61	60.98	17.99	18.75
ExDitchCO-8.2	ExSomethingMH-8.1	ExStreamMH-9.2	Trapezoidal Channel	Natural Stream	0.032	1747.30	50.55	60.91	4.07	4.36
CO-440	ExStreamMH-9.2	ExCB-7	Irregular Channel	Natural Stream	0.002	53643.21	698.79	869.36	1.97	2.09
ExPipesCO-7.1	ExCB-7	ExPipeMH-7.1	Box Pipe	8 x 4 ft (2)	0.010	886.18	688.95	858.14	15.78	16.77
ExCO-7.2	ExPipeMH-7.1	ExCB-6	Trapezoidal Channel	Natural Stream	0.005	690.15	688.90	858.08	6.47	7.47
ExCO-6.1	ExCB-6	ExPipeMH-6.1	Box Pipe	8 x 4 ft (2)	0.011	937.85	692.41	862.85	16.46	17.50
ExDitchCO-6.2	ExPipeMH-6.1	ExCB-5	Trapezoidal Channel	Natural Stream	0.005	506.57	692.29	862.70	6.82	7.87
ExPipeCO-5.1	ExCB-5	ExPipeMH-5.1	Box Pipe	8 x 4 ft (2)	0.023	1348.57	692.42	863.71	21.24	22.70
ExDitchCO-5.2	ExPipeMH-5.1	ExPipeMH-5.2	Trapezoidal Channel	Natural Stream	0.059	2633.96	692.35	863.63	10.73	11.43
ExPipeCO-4.1	ExCB-4	ExPipeMH-4.1	Circular Pipe	42 inch (2)	0.064	255.39	170.28	205.04	28.42	29.01
ExDitchCO-4.2	ExPipeMH-4.1	ExPipeMH-5.2	Trapezoidal Channel	Natural Stream	0.038	861.60	170.16	204.87	8.87	9.34
ExStreamCO-5.3	ExPipeMH-5.2	ExStreamMH-5.3	Irregular Channel	Natural Stream	0.005	2722.21	737.16	919.69	2.74	2.96
ExPipeCO-2.1	ExCB-2	ExPipeMH-2.1	Circular Pipe	21 inch	0.072	42.42	27.58	32.85	18.77	19.47
ExDitchCO-2.2	ExPipeMH-2.1	ExStreamMH-5.3	Trapezoidal Channel	Natural Stream	0.063	329.46	27.53	32.85	6.80	7.11
ExStreamCO-5.4	ExStreamMH-5.3	ExCB-3	Trapezoidal Channel	Natural Stream	0.008	1270.53	727.70	908.68	7.13	7.54
ExPipeCO-3.1	ExCB-3	ExMH-3.1	Circular Pipe	60 inch (2)	0.039	1025.31	728.97	910.33	28.34	29.50
ExStreamCO-3.2	ExMH-3.1	ExStreamOutletCB-1	Trapezoidal Channel	Natural Stream	0.002	935.48	728.90	910.24	2.79	2.95

Area C - Alternate 3

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							25 Year	100 Year	25 Year	100 Year
ExStreamCO-1.1	ExStreamOutletCB-1	ExOF-1	Trapezoidal Channel	Natural Stream	0.004	710.23	705.15	881.24	0.02	0.24



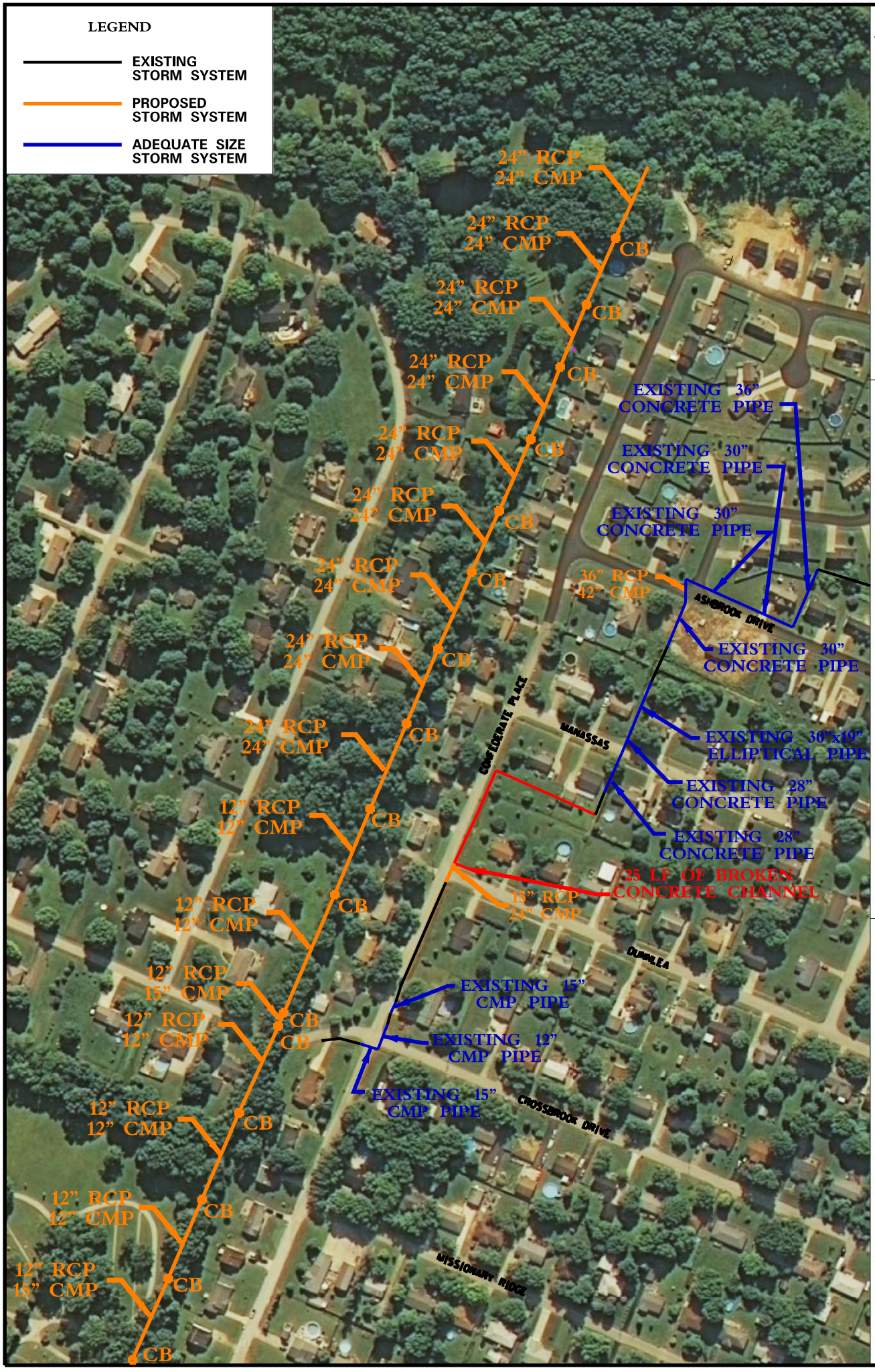
KY 362 DRAINAGE STUDY
AREA D, ALTERNATE 1
SCALE: 1" = 250'

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area D - Alternative 1

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	25 Year	10 Year	25 Year
CO-317	MH-93	MH-94	Circular Pipe	18 inch	0.012	6.15	5.05	5.91	3.88	3.96
CO-318	MH-94	ExCB-46.1	Trapezoidal Channel	Grass Channel	0.016	4.46	5.04	5.90	6.67	7.27
ExPipeCO-46.1	ExCB-46.1	ExPipeMH-46.1	Circular Pipe	21 inch	0.018	11.58	8.33	9.78	5.24	5.40
ExDitchCO-46.2	ExPipeMH-46.1	ExCB-47	Trapezoidal Channel	Natural Stream	0.046	11.25	8.30	9.75	4.17	4.34
ExPipeCO-47.1	ExCB-47	ExPipeMH-47.1	Circular Pipe	15 inch	0.023	9.90	8.73	10.23	9.10	8.39
ExDitchCO-47.2	ExPipeMH-47.1	ExPipeMH-47.2	Trapezoidal Channel	Natural Stream	0.023	62.09	8.71	10.21	3.46	3.60
ExPipeCO-47.3	ExPipeMH-47.2	ExPipeMH-47.3	Circular Pipe	18 inch	0.024	8.89	8.67	10.16	5.73	6.02
ExDitchCO-47.4	ExPipeMH-47.3	ExCB-44	Trapezoidal Channel	Natural Stream	0.034	41.72	8.65	10.14	4.01	4.17
ExPipeCO-44.1	ExCB-44	ExPipeMH-44.1	Circular Pipe	21 inch	0.008	14.39	9.78	11.39	6.43	6.63
ExDitchCO-44.2	ExPipeMH-44.1	ExPipeMH-44.2	Trapezoidal Channel	Grass Channel	0.027	29.66	10.61	12.37	2.85	2.97
CO-320	Ex-for Proposed Area CB-7	Ex-for Proposed Area CB-8	Trapezoidal Channel	Grass Channel	0.041	7.09	0.78	0.91	2.32	2.43
CO-321	Ex-for Proposed Area CB-8	MH-95	Trapezoidal Channel	Grass Channel	0.007	38.30	30.53	35.86	2.24	2.34
CO-322	MH-95	MH-96	Circular Pipe	30 inch	0.006	32.99	30.53	35.89	7.63	7.67
CO-323	MH-96	ExCB-45	Trapezoidal Channel	Natural Stream	0.018	11.44	30.42	35.75	14.49	15.54
ExPipeCO-45.1	ExCB-45	ExPipeMH-44.2	Circular Pipe	30 inch	0.023	61.75	33.75	39.67	12.86	13.35
CO-325	ExPipeMH-44.2	MH-97	Trapezoidal Channel	Natural Stream	0.009	50.66	42.62	49.96	4.04	4.21
CO-326	MH-97	ExCB-46	Trapezoidal Channel	Natural Stream	0.004	46.57	41.63	48.86	2.74	3.65
ExPipeCO-46.1	ExCB-46	ExPipeMH-46.1	Circular Pipe	36 inch	0.014	77.91	46.97	55.19	11.53	11.96
ExDitchCO-46.2	ExPipeMH-46.1	ExCB-40	Trapezoidal Channel	Natural Stream	0.019	118.78	46.85	55.06	4.94	5.15
ExPipeCO-40.1	ExCB-40	EXMH-40.1	Circular Pipe	36 inch	0.013	74.74	51.23	60.21	11.39	11.76
ExDitchCO-40.2	EXMH-40.1	ExPipeMH-40.2	Trapezoidal Channel	Natural Stream	0.050	493.87	51.16	60.13	7.23	7.53
ExPipeCO-40.3	ExPipeMH-40.2	ExPipeMH-40.3	Circular Pipe	36 inch	0.013	76.47	51.14	60.12	11.59	11.98
ExDitchCO-40.4	ExPipeMH-40.3	DetentionMH-40.5	Trapezoidal Channel	Natural Stream	0.056	246.41	51.01	59.96	8.26	8.61
ExDitchCO-40.6	DetentionMH-40.5	ExCB-38	Trapezoidal Channel	Natural Stream	0.002	118.88	66.12	77.64	2.41	2.51
ExPipeCO-38.1	ExCB-38	ExCB-34	Circular Pipe	36 inch	0.016	84.85	66.16	77.69	9.36	10.99
ExCO-34.1	ExCB-34	ExCB-34.5	Circular Pipe	42 inch	0.007	83.91	66.35	77.94	6.90	8.10
ExCO-34.5.1	ExCB-34.5	ExPipeMH-34.5.1	Circular Pipe	42 inch	0.010	101.69	66.54	78.19	11.27	11.66
ExCO-34.5.2	ExPipeMH-34.5.1	ExCB-40.5	Circular Pipe	42 inch	0.010	101.69	67.15	78.93	6.98	8.20
ExPipeCO-40.5.1	ExCB-40.5	ExMH-40.5.1	Circular Pipe	36 inch	0.019	91.69	69.37	81.45	14.26	14.65
ExStreamCO-40.5.2	ExMH-40.5.1	ExStreamMH-40.5.2	Trapezoidal Channel	Natural Stream	0.029	237.25	69.19	81.25	6.87	7.17
ExStreamCO-40.5.3	ExStreamMH-40.5.2	ExMH-28.2	Trapezoidal Channel	Natural Stream	0.063	348.38	69.40	81.53	9.09	9.50



KY 362 DRAINAGE STUDY
AREA D, ALTERNATE 2
SCALE: 1" = 250'

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

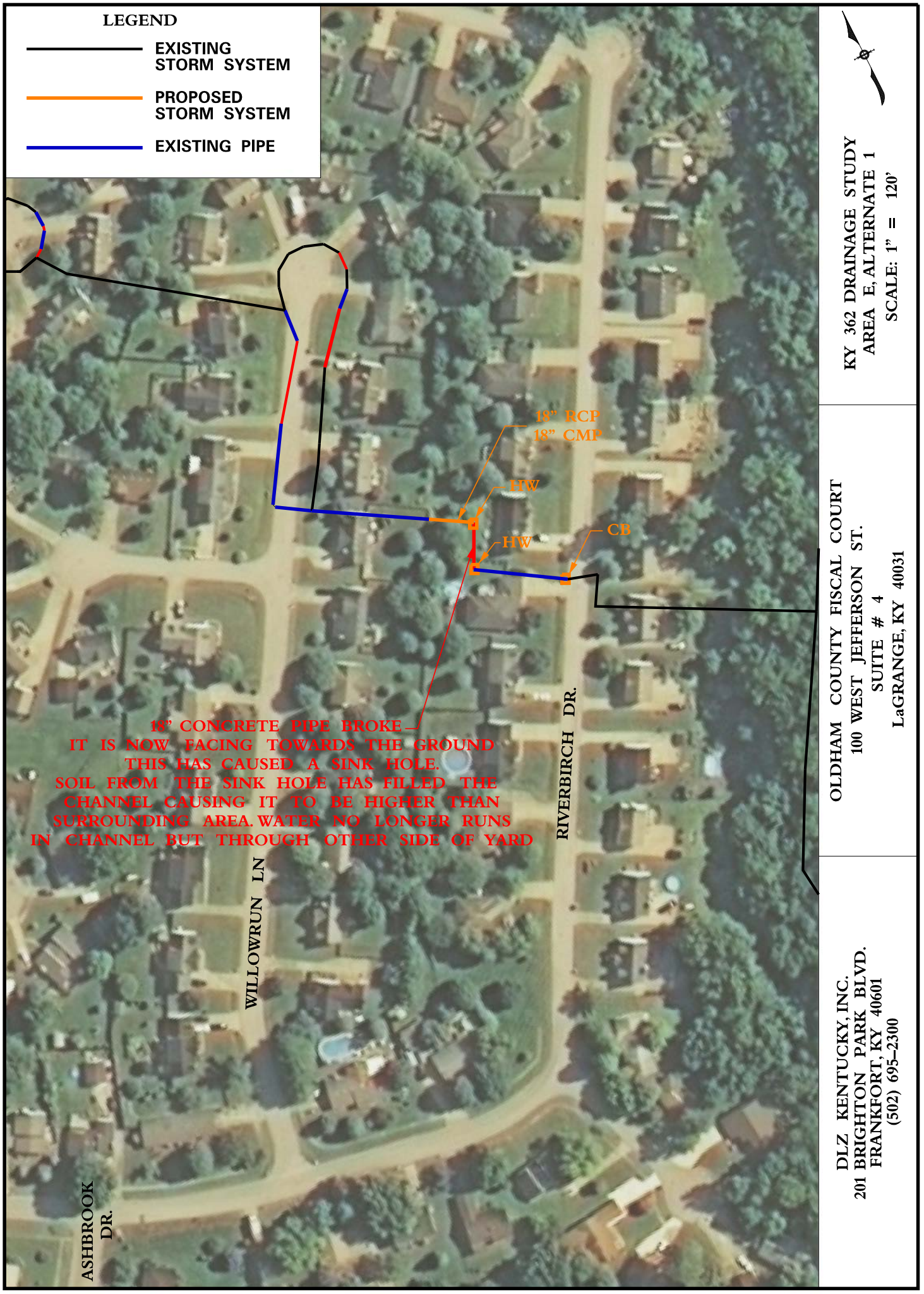
DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area D - Alternative 2

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	25 Year	10 Year	25 Year
ExPipeCO-46.1	ExCB-46.1	ExPipeMH-46.1	Circular Pipe	15 inch	0.018	4.72	3.57	4.18	4.23	4.34
ExDitchCO-46.2	ExPipeMH-46.1	ExCB-47	Trapezoidal Channel	Natural Stream	0.046	11.18	3.55	4.17	3.87	4.08
ExPipeCO-47.1	ExCB-47	ExPipeMH-47.1	Circular Pipe	12 inch	0.023	5.46	3.98	4.65	7.58	7.80
ExDitchCO-47.2	ExPipeMH-47.1	ExPipeMH-47.2	Trapezoidal Channel	Natural Stream	0.023	62.09	3.97	4.64	2.83	2.94
ExPipeCO-47.3	ExPipeMH-47.2	ExPipeMH-47.3	Circular Pipe	15 inch	0.024	5.47	3.95	4.61	4.85	4.99
ExDitchCO-47.4	ExPipeMH-47.3	ExCB-44	Trapezoidal Channel	Natural Stream	0.034	41.72	3.94	4.60	3.28	3.42
ExPipeCO-44.1	ExCB-44	ExPipeMH-44.1	Circular Pipe	15 inch	0.008	5.87	5.16	5.95	5.39	5.14
ExDitchCO-44.2	ExPipeMH-44.1	ExPipeMH-44.2	Trapezoidal Channel	Grass Channel	0.027	11.58	5.99	6.93	2.32	2.41
CO-322	MH-95	MH-96	Circular Pipe	15 inch	0.004	3.96	0.00	0.00	0.00	0.00
CO-323	MH-96	ExCB-45	Trapezoidal Channel	Natural Stream	0.018	11.44	0.00	0.00	0.00	0.00
ExPipeCO-45.1	ExCB-45	ExPipeMH-44.2	Circular Pipe	15 inch	0.023	9.72	5.27	6.13	8.08	8.38
CO-325	ExPipeMH-44.2	MH-97	Trapezoidal Channel	Grass Channel	0.009	16.19	9.70	11.35	2.02	2.11
CO-326	MH-97	ExCB-46	Trapezoidal Channel	Concrete 3' FB	0.004	16.43	9.19	10.76	3.71	3.87
ExPipeCO-46.1	ExCB-46	ExPipeMH-46.1	Circular Pipe	28 inch	0.014	39.86	15.52	18.28	8.74	9.12
ExDitchCO-46.2	ExPipeMH-46.1	ExCB-40	Trapezoidal Channel	Natural Stream	0.019	118.78	15.46	18.21	3.71	3.88
ExPipeCO-40.1	ExCB-40	EXMH-40.1	Elliptical Pipe	19x30 inch	0.013	24.44	20.20	23.83	9.05	9.26
ExDitchCO-40.2	EXMH-40.1	ExPipeMH-40.2	Trapezoidal Channel	Natural Stream	0.050	493.87	20.16	23.79	5.68	5.93
ExPipeCO-40.3	ExPipeMH-40.2	ExPipeMH-40.3	Circular Pipe	28 inch	0.013	39.12	20.15	23.78	9.22	9.59
ExDitchCO-40.4	ExPipeMH-40.3	DetentionMH-40.5	Trapezoidal Channel	Natural Stream	0.033	189.80	10.60	12.50	1.80	5.59
ExDitchCO-40.6	DetentionMH-40.5	ExCB-38	Trapezoidal Channel	Natural Stream	0.097	784.04	4.70	5.50	8.53	8.89
ExPipeCO-38.1	ExCB-38	ExCB-34	Circular Pipe	30 inch	0.016	52.18	31.66	38.24	6.45	7.79
ExCO-34.1	ExCB-34	ExCB-34.5	Circular Pipe	30 inch	0.007	34.21	31.99	38.55	6.52	7.85
ExCO-34.5.1	ExCB-34.5	ExPipeMH-34.5.1	Circular Pipe	30 inch	0.010	41.46	32.26	38.86	9.34	9.60
ExCO-34.5.2	ExPipeMH-34.5.1	ExCB-40.5	Circular Pipe	30 inch	0.010	41.46	32.98	39.71	6.72	8.09
ExPipeCO-40.5.1	ExCB-40.5	ExMH-40.5.1	Circular Pipe	36 inch	0.019	91.69	35.23	42.29	12.12	12.71
ExStreamCO-40.5.2	ExMH-40.5.1	ExStreamMH-40.5.2	Trapezoidal Channel	Natural Stream	0.029	237.25	35.14	42.17	5.71	6.00
ExStreamCO-40.5.3	ExStreamMH-40.5.2	ExMH-28.2	Trapezoidal Channel	Natural Stream	0.063	348.38	35.90	43.05	7.56	7.96
Proposed CO-1	Proposed CB-1	Proposed CB-2	Circular Pipe	12 inch	0.002	2.07	1.29	1.44	2.15	2.24
Proposed CO-2	Proposed CB-2	Proposed CB-3	Circular Pipe	12 inch	0.024	7.13	1.51	1.70	1.92	2.16
Proposed CO-3	Proposed CB-3	Proposed CB-4	Circular Pipe	12 inch	0.059	11.26	1.86	2.09	2.49	2.69
Proposed CO-4	Proposed CB-4	Proposed CB-5	Circular Pipe	12 inch	0.027	7.61	2.16	2.43	2.78	3.10
Proposed CO-5	Proposed CB-5	Proposed CB-6	Circular Pipe	12 inch	0.005	3.29	2.13	2.41	2.83	3.08
Proposed CO-6	Proposed CB-6	Proposed CB-7	Circular Pipe	12 inch	0.020	6.51	2.60	2.93	3.31	3.73
Proposed CO-7	Proposed CB-7	Proposed CB-8	Circular Pipe	12 inch	0.040	9.24	2.72	3.08	3.46	3.92
Proposed CO-8	Proposed CB-8	Proposed CB-9	Circular Pipe	18 inch	0.005	9.68	8.34	9.11	4.72	5.15
Proposed CO-9	Proposed CB-9	Proposed CB-10	Circular Pipe	18 inch	0.005	9.69	8.56	9.38	4.85	5.31
Proposed CO-10	Proposed CB-10	Proposed CB-11	Circular Pipe	18 inch	0.005	9.69	8.56	9.40	4.84	5.32
Proposed CO-11	Proposed CB-11	Proposed CB-12	Circular Pipe	18 inch	0.005	9.66	8.48	9.33	4.80	5.28
Proposed CO-12	Proposed CB-12	Proposed CB-13	Circular Pipe	18 inch	0.005	9.64	8.59	9.46	4.86	5.35
Proposed CO-13	Proposed CB-13	Proposed CB-14	Circular Pipe	18 inch	0.024	21.24	8.65	9.55	4.90	5.40
Proposed CO-14	Proposed CB-14	Proposed CB-15	Circular Pipe	18 inch	0.040	27.26	8.84	9.77	5.00	5.53
Proposed CO-15	Proposed CB-15	Proposed CB-16	Circular Pipe	18 inch	0.053	31.38	9.03	9.99	5.11	5.65

Area D - Alternative 2

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	25 Year	10 Year	25 Year
Proposed CO-16	Proposed CB-16	Ex-for Proposed Area CB-16	Circular Pipe	18 inch	0.152	53.30	9.36	10.37	22.71	23.37
Existing for Proposed area CO-16	Ex-for Proposed Area CB-16	LG CB-18	Trapezoidal Channel	Natural Stream	0.056	149.13	12.85	14.35	5.37	5.52


LEGEND
EXISTING STORM SYSTEM
PROPOSED STORM SYSTEM
EXISTING PIPE
18" RCP
18" CMP
HW
HW
CB
18" CONCRETE PIPE BROKE — IT IS NOW FACING TOWARDS THE GROUND THIS HAS CAUSED A SINK HOLE. SOIL FROM THE SINK HOLE HAS FILLED THE CHANNEL CAUSING IT TO BE HIGHER THAN SURROUNDING AREA. WATER NO LONGER RUNS IN CHANNEL BUT THROUGH OTHER SIDE OF YARD
RIVERBIRCH DR.
WILLOWRUN LN
ASHBROOK DR.
KY 362 DRAINAGE STUDY
AREA E, ALTERNATE 1
SCALE: 1" = 120'
OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031
DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695-2300

Area E - Alternative 1

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	100 Year	10 Year	100 Year
ExPipeCO-27.1	ExCB-27	ExPipeMH-27.1	Circular Pipe	15 inch	0.006	2.76	1.00	1.38	2.07	2.25
ExDitchCO-27.2	ExPipeMH-27.1	ExPipeMH-27.2	Trapezoidal Channel	Natural Stream	0.007	7.07	1.00	1.38	1.76	1.90
ExPipeCO-27.3	ExPipeMH-27.2	ExMH-27.3	Circular Pipe	15 inch	0.016	4.46	1.00	1.38	2.93	3.20
ExDitchCO-27.4	ExMH-27.3	ExPipeMH-27.4	Trapezoidal Channel	Natural Stream	0.012	9.25	1.00	1.38	2.15	2.33
ExPipeCO-27.5	ExPipeMH-27.4	ExPipeMH-27.5	Circular Pipe	15 inch	0.003	1.79	1.00	1.38	1.50	1.61
ExDitchCO-27.6	ExPipeMH-27.5	ExCB-25	Trapezoidal Channel	Natural Stream	0.171	34.94	1.00	1.38	0.76	0.88
ExPipeCO-26.1	ExCB-26	ExCB-25	Circular Pipe	15 inch	0.056	8.26	0.79	0.97	0.68	0.79
ExPipeCO-25.1	ExCB-25	ExPipeMH-25.1	Circular Pipe	12 inch	0.038	6.95	2.07	2.71	7.72	8.30
CO-305	ExPipeMH-25.1	CB-169	Trapezoidal Channel	Natural Stream	0.021	6.24	2.07	2.71	3.84	4.55
ExPipeCO-25.6	ExPipeMH-25.4	CB-168	Circular Pipe	10 inch	0.022	1.77	0.07	0.09	0.22	0.29
ExCO-25.4	ExPipeMH-25.3	ExPipeMH-25.4	Trapezoidal Channel	Natural Stream	0.030	14.63	0.07	0.09	0.18	0.24
ExPipeCO-25.3	ExPipeMH-25.2	ExPipeMH-25.3	Circular Pipe	10 inch	0.013	2.51	0.06	0.09	0.20	0.29
CO-309	ExPipeMH-25.2	CB-169	Trapezoidal Channel	Natural Stream	0.002	2.13	0.06	0.09	0.50	0.59
CO-306	CB-169	MH-86	Circular Pipe	15 inch	0.008	3.11	3.08	4.19	2.89	3.20
CO-307	MH-86	ExCB-23	Trapezoidal Channel	Natural Stream	0.003	12.50	3.06	4.18	1.25	1.36
ExPipeCO-23.1	ExCB-23	ExPipeMH-23.1	Circular Pipe	15 inch	0.015	4.35	5.30	7.38	4.66	6.19
ExDitchCO-23.2	ExPipeMH-23.1	ExCB-22	Trapezoidal Channel	Natural Stream	0.087	24.86	5.26	7.33	5.93	7.18
ExPipeCO-21.1	ExCB-21	ExPipeMH-21.1	Circular Pipe	12 inch	0.024	5.54	1.61	2.21	6.12	6.66
ExDitchCO-21.2	ExPipeMH-21.1	ExCB-22	Trapezoidal Channel	Natural Stream	0.034	15.50	1.61	2.21	3.55	3.86
ExPipeCO-22.1	ExCB-22	ExCB-18	Circular Pipe	18 inch	0.036	19.91	7.66	10.73	4.33	6.07
ExPipeCO-24.1	ExCB-24	ExPipeMH-24.1	Circular Pipe	8 inch	0.002	0.29	0.19	0.26	0.89	0.95
CO-308	ExPipeMH-24.1	ExPipeMH-24.2	Trapezoidal Channel	Natural Stream	0.019	5.95	0.19	0.26	1.49	1.66
ExPipeCO-24.3	ExPipeMH-24.2	ExPipeMH-24.3	Circular Pipe	8 inch	0.002	0.31	0.19	0.26	0.93	0.99
ExDitchCO-24.4	ExPipeMH-24.3	ExPipeMH-24.4	Trapezoidal Channel	Natural Stream	0.022	12.67	0.19	0.26	1.56	1.75
ExPipeCO-24.5	ExPipeMH-24.4	ExPipeMH-24.5	Circular Pipe	8 inch	0.004	0.43	0.19	0.26	1.19	1.28
ExCO-24.6	ExPipeMH-24.5	ExPipeMH-24.6	Trapezoidal Channel	Natural Stream	0.004	5.45	0.19	0.26	0.68	0.74
ExPipeCO-24.7	ExPipeMH-24.6	ExMH-24.7	Circular Pipe	12 inch	0.001	0.70	0.19	0.26	0.76	0.83
ExDitchCO-24.8	ExMH-24.7	CB-170	Trapezoidal Channel	Natural Stream	0.005	6.17	0.19	0.26	0.97	1.08
ExPipeCO-24.9	CB-170	ExPipeMH-24.9	Circular Pipe	10 inch	0.014	1.42	0.73	1.01	2.62	2.82
ExCO-24.10	ExPipeMH-24.9	ExCB-18	Trapezoidal Channel	Natural Stream	0.055	19.81	0.73	1.01	0.27	0.37

Area E - Alternative 1

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	100 Year	10 Year	100 Year
ExCO-18.1	ExCB-18	ExCB-16	Circular Pipe	18 inch	0.060	25.83	8.53	11.91	13.11	14.32
ExPipeCO-15.1	ExCB-15	ExPipeMH-15.1	Circular Pipe	15 inch	0.005	2.35	1.31	1.60	1.97	2.06
ExDitchCO-15.2	ExPipeMH-15.1	ExPipeMH-15.2	Trapezoidal Channel	Natural Stream	0.008	7.57	1.30	1.59	1.98	2.69
ExPipeCO-15.3	ExPipeMH-15.2	ExPipeMH-15.3	Circular Pipe	15 inch	0.005	2.42	1.28	1.56	2.00	2.10
ExCO-15.4	ExPipeMH-15.3	ExCB-16	Trapezoidal Channel	Natural Stream	0.333	24.60	1.27	1.55	7.31	7.80
ExPipeCO-16.1	ExCB-16	ExMH-16.1	Circular Pipe	24 inch	0.011	24.08	15.34	21.32	7.00	7.68
ToExistingStreamCO-16.2	ExMH-16.1	ExDraintoStreamMH-29.3	Trapezoidal Channel	Natural Stream	0.131	2481.68	15.31	21.29	8.65	9.73



KY 362 DRAINAGE STUDY
PROPOSED SOLUTION
F–1 THROUGH F–3
SCALE: 1" = 150'

OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

DLZ KENTUCKY, INC.
201 BRIGHTON PARK BLVD.
FRANKFORT, KY 40601
(502) 695–2300

Area F - Alternate 1

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	25 Year	10 Year	25 Year
ExPipeCO-67.1	ExCB-67	ExPipeMH-67.1	Circular Pipe	12 inch	0.035	6.64	3.38	3.95	8.49	8.82
ExDitchCO-67.2	ExPipeMH-67.1	ExCulvertCB-12	Trapezoidal Channel	Natural Stream	0.027	37.49	3.37	3.94	2.91	3.03
CO-346	MH-110	ExMH-63.17	Trapezoidal Channel	Natural Stream	0.024	576.90	138.61	164.22	7.09	7.39
ExCO-63.18	ExMH-63.17	ExCulvertCB-12	Trapezoidal Channel	Natural Stream	0.010	201.83	138.52	164.12	3.82	3.99
Area B Intercept Flow										
ExCO-12.1	ExCulvertCB-12	CxPipeMH-12.1	Circular Pipe	36 inch	0.008	65.22	146.43	173.71	10.56	12.39
ExDitchCO-12.2	CxPipeMH-12.1	ExPipeMH-12.2	Trapezoidal Channel	Natural Stream	0.053	471.53	148.28	175.95	6.92	7.22
ExPipeCO-12.3	ExPipeMH-12.2	ExPipeMH-12.3	Circular Pipe	36 inch	-0.003	-19.16	148.17	175.82	20.97	24.88
ExDitchCO-12.4	ExPipeMH-12.3	ExPipeMH-12.4	Trapezoidal Channel	Natural Stream	0.079	695.40	148.05	175.71	13.02	13.61
ExPipeCO-12.5	ExPipeMH-12.4	ExPipeMH-12.5	Circular Pipe	36 inch	0.008	33.17	148.02	175.68	20.95	24.86
ExCO-12.6	ExPipeMH-12.5	ExCB-11	Trapezoidal Channel	Natural Stream	0.043	873.59	147.89	175.55	6.36	6.64
ExPipeCO-11.1	ExCB-11	ExPipeMH-11.1	Elliptical Pipe	48x60 inch	0.008	169.50	162.11	192.70	12.49	12.48
Area F										
CO-462	CB-199	CB-196	Trapezoidal Channel	Natural Stream	0.012	72.34	12.00	12.00	2.92	2.92
CO-459	CB-196	CB-197	Trapezoidal Channel	Natural Stream	0.026	108.72	12.00	12.00	1.16	1.16
CO-460	CB-198	CB-197	Trapezoidal Channel	Natural Stream	0.015	54.49	3.00	3.00	2.49	2.49
CO-461	CB-197	ExCB-20	Circular Pipe	18 inch	0.022	15.44	15.00	15.00	9.95	9.95
ExCO-20.1	ExCB-20	ExMH-20.1	Circular Pipe	15 inch	0.004	4.14	17.18	17.37	14.00	14.16
ExCO-20.2	ExMH-20.1	ExPipeMH-11.1	Trapezoidal Channel	Natural Stream	0.056	98.05	17.17	17.37	5.78	5.80
Area B Intercept Flow										
CO-410	ExPipeMH-11.1	MH-143	Trapezoidal Channel	Rough Channel	10.697	62003.41	178.07	208.75	68.83	72.93
CO-411	MH-143	ExMH-11.2	Irregular Channel	Rough Channel	-3.696	-118410.93	178.03	208.71	1.04	1.20
ExPipeCO-19.1	ExCB-19	ExPipeMH-19.1	Circular Pipe	24 inch	0.046	48.31	5.72	6.69	10.33	10.81
ExDitch to Stream CO-19.2	ExPipeMH-19.1	ExMH-11.2	Trapezoidal Channel	Natural Stream	0.079	406.29	5.71	6.68	4.85	5.06



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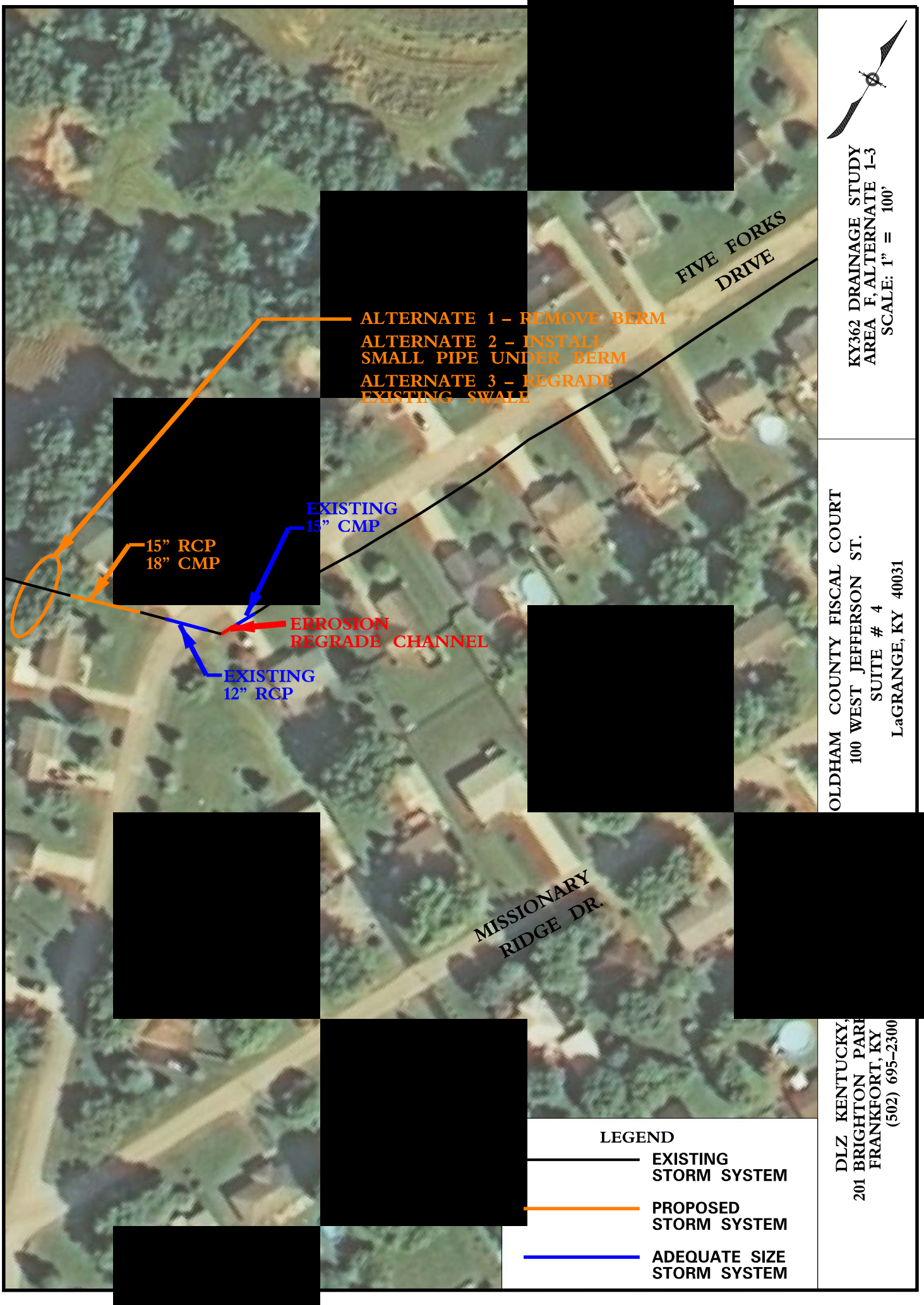
OLDHAM COUNTY FISCAL COURT
100 WEST JEFFERSON ST.
SUITE # 4
LaGRANGE, KY 40031

KY362 DRAINAGE STUDY
AREA G
SCALE: 1" = 100'

Area G - Alternate 1

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	25 Year	10 Year	25 Year
CO-444	CB-194	MH-163	Circular Pipe	18 inch	0.016	13.39	7.69	8.86	7.84	8.10
CO-445	MH-163	MH-164	Trapezoidal Channel	Natural Stream	0.018	64.54	7.69	8.86	3.34	3.46
CO-446	MH-164	MH-165	Circular Pipe	18 inch	0.020	14.69	7.69	8.86	8.41	8.70
CO-447	MH-165	MH-166	Trapezoidal Channel	Natural Stream	0.018	64.62	7.69	8.86	3.34	3.47
CO-448	MH-166	MH-167	Circular Pipe	18 inch	0.020	14.69	7.69	8.86	8.41	8.70
CO-449	MH-167	MH-168	Trapezoidal Channel	Natural Stream	0.037	92.80	7.69	8.86	4.37	4.53
CO-450	MH-168	MH-169	Circular Pipe	18 inch	0.011	10.99	7.69	8.86	6.73	6.92
CO-451	MH-169	MH-170	Trapezoidal Channel	Natural Stream	0.016	62.00	7.69	8.86	3.24	3.36
CO-452	MH-170	MH-171	Circular Pipe	18 inch	0.017	13.68	7.69	8.86	7.97	8.23
CO-453	MH-171	MH-172	Trapezoidal Channel	Natural Stream	0.028	66.68	7.69	8.86	3.65	3.78
CO-454	MH-172	MH-173	Circular Pipe	18 inch	0.025	16.68	7.69	8.86	9.25	9.58
CO-455	MH-173	ExCB-17	Trapezoidal Channel	Natural Stream	0.348	234.24	7.69	8.86	0.36	0.35
ExPipeCO-17.1	ExCB-17	ExCB-17.5	Circular Pipe	24 inch	0.011	24.24	17.31	19.94	8.38	8.61
ExPipeCO-17.5.1	ExCB-17.5	ExPipeMH-17.5.1	Circular Pipe	18 inch	0.142	39.53	17.33	19.97	21.64	22.43
ExDitchtoStreamCO-17.5.2	ExPipeMH-17.5.1	ExMH-28.2	Trapezoidal Channel	Natural Stream	0.119	2363.13	17.26	19.89	8.75	9.21


FIVE FORKS DRIVE
ALTERNATE 1 – REMOVE BERM
ALTERNATE 2 – INSTALL SMALL PIPE UNDER BERM
ALTERNATE 3 – REGRADE EXISTING SWALE
EXISTING 15" CMP
15" RCP 18" CMP
ERROSION REGRADE CHANNEL
EXISTING 12" RCP
MISSIONARY RIDGE DR.
LEGEND
EXISTING STORM SYSTEM
PROPOSED STORM SYSTEM
ADEQUATE SIZE STORM SYSTEM
KY362 DRAINAGE STUDY
AREA F, ALTERNATE 1–3
SCALE: 1" = 100'
OLDHAM COUNTY FISCAL COURT
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SUITE # 4
LaGRANGE, KY 40031
DLZ KENTUCKY,
201 BRIGHTON PARK
FRANKFORT, KY
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Area H - Alternate 1

Label	Start Node	Stop Node	Conduit Shape	Section Size	Slope (Calculated) (ft/ft)	Capacity (Full Flow) (ft^3/s)	Flow (ft^3/s)		Velocity (Out) (ft/s)	
							10 Year	25 Year	10 Year	25 Year
ExCO-53.1	ExCB-53	ExMH-53.1	Circular Pipe	15 inch	0.041	7.12	1.87	2.18	4.89	5.10
ExCO-53.2	ExMH-53.1	ExCB-55	Trapezoidal Channel	Natural Stream	0.098	13.35	14.00	16.30	5.30	5.67
ExPipeCO-54.1	ExStructureCB-54	ExPipeMH-54.1	Circular Pipe	12 inch	0.025	5.62	1.90	2.05	6.46	6.60
ExDitchCO-54.2	ExPipeMH-54.1	ExCB-55	Trapezoidal Channel	Grass Channel	0.008	24.12	7.80	8.50	0.43	1.18
ExCO-55.1	ExCB-55	ExMH-55.1	Circular Pipe	18 inch	0.016	13.40	34.50	40.10	7.21	7.16
ExCO-55.2	ExMH-55.1	ExCB-14	Trapezoidal Channel	Rouch Channel	0.039	297.24	4.60	5.17	3.99	4.11

APPENDIX E

COST ESTIMATES

Area A, Alternate 1, 10Yr

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
Detention Basin-Excavation	8,518	CY	$ 15.00	$ 127,770
Detention Basin -Control Structure	1	EA	$ 5,000.00	$ 5,000
Detention Basin - 8" Concrete Outlet Pipe	55	LF	$ 25.00	$ 1,375
24" RCP	25	LF	$ 90.00	$ 2,250
30" RCP	88	LF	$ 135.00	$ 11,880
Channel Lining Class II	27	Ton	$ 25.00	$ 675
Excavation for Channel Relocation	618	LF	$ 15.00	$ 9,270
Double 24" Headwall	2	Ea	$ 5,910.00	$ 11,820
Double 30" Headwall	4	Ea	$ 7,200.00	$ 28,800
Stone Work	5	Ea	$ 4,000.00	$ 20,000
Remove and Replace Driveway	3	Ea	$ 1,000.00	$ 30,000
Seeding and Protection Type II	1,130	SF	$ 1.00	$ 1,130
Alternate 1 Subtotal				$ 249,970
Contingency	20%			$ 49,994
Estimate of Construction Cost				**$ 299,964**

Area A, Alternate 2, 25Yr

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
30" RCP	50	LF	$ 135.00	$ 6,750
36" RCP	66	LF	$ 165.00	$ 10,890
Channel Lining Class II	27	Ton	$ 25.00	$ 675
Ditch Improvements	618	LF	$ 15.00	$ 9,270
Stone Work	5	Ea	$ 4,000.00	$ 20,000
Double 30" Headwall	4	Ea	$ 7,200.00	$ 28,800
Double 36" Headwall	2	Ea	$ 8,850.00	$ 17,700
Remove and Replace Driveway	3	Ea	$ 1,000.00	$ 3,000
Seeding and Protection Type II	1160	SF	$ 1.00	$ 1,160
Alternate 2 Subtotal				$ 98,245
Contingency	20%			$ 19,649
Construction Estimated Cost				**$ 117,894**

Area A, Alternate 3, 25YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
18" RCP	122	LF	$ 60.00	$ 7,320
24" RCP	251	LF	$ 90.00	$ 22,590
18" Headwall	12	Ea	$ 2,650.00	$ 31,800
24" Headwall	16	Ea	$ 3,000.00	$ 48,000
Remove and Replace Driveway	14	Ea	$ 1,000.00	$ 14,000
Ditch Improvements	690	LF	$ 7.00	$ 4,830
Seeding and Protection Type II	3710	SF	$ 1.00	$ 3,710
Alternate 3 Subtotal				$ 102,340
Contingency	20%			$ 20,468
Construction Estimated Cost				**$ 122,808**

Area A, Alternate 4, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
12" RCP	88	LF	$ 45	$ 3,960
24" RCP	229	LF	$ 90	$ 20,610
12" Headwall	8	Ea	$ 2,300	$ 18,400
24" Headwall	14	Ea	$ 3,000	$ 42,000
Remove and Replace Driveway	14	EA	$ 1,000	$ 14,000
Seeding and Protection Type II	3,170	SF	$ 1	$ 3,170
Alternate 4 Subtotal				$ 102,140
Contingency	20%			$ 20,428
Construction Estimated Cost				**$ 122,568**

Area B, Alternate 1, 25YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
36" RCP	120	LF	$ 165	$ 19,800
Double 36" Headwall	2	EA	$ 8,850	$ 17,700
4'x3' Box Culvert	76	LF	$ 348	$ 26,448
6' X4' Box Culvert	365	Ea	$ 415	$ 151,475
Double Catch Basin	1	EA	$ 3,110	$ 3,110
Remove and Replace Driveway	3	EA	$ 1,000	$ 3,000
Regrade Berm	171	CY	$ 6	$ 1,026
Ditch Improvements	35	LF	$ 15	$ 525
Channel Lining Class II	22.5	Tons	$ 25	$ 563
Saw Cut, Remove and Replace Asphalt	29	SY	$ 106	$ 3,074
Saw Cut, Remove and Replace Asphalt KYTC	40	SY	$ 142	$ 5,680
2' Temporary Road Widening	1	LS	$ 8,640	$ 8,640
Remove Existing Drainage Structure	1	LS	$ 3,000	$ 3,000
Traffic Control	1	LS	$ 10,000	$ 10,000
Seeding and Protection Type II	1,140	SF	$ 1	$ 1,140
Alternate 1 Subtotal				$ 255,181
Contingency	20%			$ 51,036
Construction Estimated Cost				**$ 306,217**

Area B, Alternate 2, 25YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
36" RCP	506	LF	$ 165	$ 83,490
42" RCP	110	LF	$ 215	$ 23,650
Double 36" Headwall	6	Ea	$ 8,850	$ 53,100
Double 42" Headwall	1	Ea	$ 9,135	$ 9,135
Remove and Replace Driveway	3	Ea	$ 1,000	$ 3,000
Saw Cut, Remove and Replace Asphalt	29	SY	$ 106	$ 3,074
Saw Cut, Remove and Replace Asphalt KYTC	40	SY	$ 142	$ 5,680
2' Temporary Road Widening	1	LS	$ 8,640	$ 8,640
Remove Existing Drainage Structure	1	LS	$ 3,000	$ 3,000
Traffic Control	1	LS	$ 10,000	$ 10,000
Regrade Berm	171	CY	$ 6	$ 1,026
Ditch Improvements	160	LF	$ 15	$ 2,400
Channel Lining Class II	22.5	Tons	$ 25	$ 563
Seeding and Protection Type II	1,140	SF	$ 1	$ 1,140
Alternate 2 Subtotal				$ 207,898
Contingency	20%			$ 41,580
Construction Estimated Cost				**$ 249,477**

Area B, Alternate 3, 25YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
36" RCP	58	LF	$ 165	$ 9,570
42" RCP	120	LF	$ 215	$ 25,800
36" Headwall	6	Ea	$ 8,850	$ 53,100
42" Headwall	4	Ea	$ 9,135	$ 36,540
Remove and Replace Driveway	4	Ea	$ 1,000	$ 4,000
Saw Cut, Remove and Replace Asphalt	15	SY	$ 106	$ 1,590
Excavation for Swales	1,448	LF	$ 15	$ 21,720
Seeding and Protection Type II	16,260	SY	$ 1	$ 16,260
Alternate 3 Subtotal				$ 168,580
Contingency	20%			$ 33,716
Construction Estimated Cost				**$ 202,296**

Area C, Alternate 1, 25YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
Asphalt Surface	11022	SY	$ 6	$ 65,472
3" Asphalt Binder	33067	SY	$ 10	$ 344,885
12" Crush Stone Base	11022	SY	$ 20	$ 220,444
Earthwork	27556	CY	$ 14	$ 385,784
Roadway Subtotal				$ 1,016,586
Contingency	10%			$ 101,659
Roadway Construction Total				$ 1,118,244

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
Bridge (estimated use of materials and Labor)	1280	SF	$ 225	$ 288,000
Structural Subtotal				$ 288,000
Contingency	10%			$ 28,800
Bridge Construction Total				$ 316,800

Estimated Area C Construction Cost				**$ 1,435,044**

Area C, Alternate 2, 25 YR

			Engineering Estimate	
Description	quantity	Unit	Total Unit Cost	Total Cost
24" CMP	37	LF	$ 80	$ 2,960
48" CMP	45	LF	$ 235	$ 10,575
48" RCP	289	LF	$ 225	$ 65,025
60" RCP	48	LF	$ 450	$ 21,780
24" Headwall	2	Ea	$ 3,000	$ 6,000
48" Headwall	2	Ea	$ 4,400	$ 8,800
25 LF Structural Headwall	4	Ea	$ 32,350	$ 129,400
17 LF Structural Headwall	2	Ea	$ 21,570	$ 43,140
Double 60" Headwall	2	Ea	$ 14,363	$ 28,726
Replace Driveway Entrance (Raise Entrance above Low Flow)	4	Ea	$ 3,000	$ 12,000
Bore and Jack Pipe	102	LF	$ 90	$ 9,180
Seeding and Protection Type II	3200	SF	$ 1	$ 3,200
				$ 340,786
Contingency	35%			$ 119,275
Construction Estimated Cost				**$ 460,061**

Area C, Alternate 3, 25 YR

			Engineering Estimate	
Description	quantity	Unit	Total Unit Cost	Total Cost
24" CMP	37	LF	$ 80	$ 2,960
48" CMP	45	LF	$ 235	$ 10,575
60" RCP	48	LF	$ 450	$ 21,780
8'x4' Box Culvert	130	LF	$ 683	$ 88,790
24" Headwall	2	Ea	$ 3,000	$ 6,000
48" Headwall	2	Ea	$ 4,400	$ 8,800
17 LF Structural Headwall	6	Ea	$ 21,570	$ 129,420
Double 60" Headwall	2	Ea	$ 14,363	$ 28,726
Replace Driveway Entrance (Raise Entrance above Low Flow)	4	Ea	$ 3,000	$ 12,000
Bore and Jack Pipe	102	LF	$ 90	$ 9,180
Seeding and Protection Type II	3200	SF	$ 1	$ 3,200
				$ 321,431
Contingency	35%			$ 112,501
Construction Estimated Cost				**$ 433,932**

Area D, Alternate 1, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
18" RCP	51	LF	$ 60	$ 3,060
24" RCP	80	LF	$ 90	$ 7,200
30" RCP	210	LF	$ 135	$ 28,350
36" RCP	415	LF	$ 170	$ 70,550
42" RCP	278	LF	$ 215	$ 59,770
18" Headwall	8	EA	$ 2,650	$ 21,200
24" Headwall	2	EA	$ 3,000	$ 6,000
36" Headwall	14	EA	$ 4,425	$ 61,950
42" Headwall	4	EA	$ 4,400	$ 17,600
Ditch Improvements	585	LF	$ 7	$ 4,095
Saw Cut, Remove and Replace Asphalt	87	SY	$ 106	$ 9,172
Replace Driveway Entrance	3	Ea	$ 1,000	$ 3,000
Remove and Replace Concrete Channel	70	CF	$ 8	$ 560
Seeding and Protection Type II	5817	SY	$ 1	$ 5,817
Alternate 1 Subtotal				$ 298,324
Contingency	35%			$ 104,413
Construction Estimated Cost				**$ 402,737**

Area D, Alternate 2, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
12" RCP	1164	LF	$ 45	$ 52,380
15" RCP	43	LF	$ 50	$ 2,150
24" RCP	1451	LF	$ 90	$ 130,590
36" RCP	47	LF	$ 170	$ 7,990
Remove and Replace Concrete Channel	70	CF	$ 8	$ 560
15" Headwall	2	Ea	$ 2,500	$ 5,000
36" Headwall	2	Ea	$ 4,425	$ 8,850
Catch Basin	16	Ea	$ 1,500	$ 24,000
Ditch Improvements	410	LF	$ 7	$ 2,870
Saw Cut, Remove and Replace Asphalt	29	SY	$ 106	$ 3,062
Seeding and Protection Type II	40,575	SF	$ 1	$ 40,575
Alternate 2 Subtotal				$ 225,647
Contingency	35%			$ 78,977
Construction Estimated Cost				**$ 304,624**

Area E, Alternate 1, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
18" RCP	10	LF	$ 120	$ 1,200
Catch Basin	1	EA	$ 1,500	$ 1,500
Ditch Improvements	50	LF	$ 12	$ 600
Alternate 1 Subtotal				$ 3,300
Contingency	20%			$ 660
Construction Estimated Cost				**$ 3,960**

Area E, Alternate 2, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
12" RCP	156	LF	$ 50	$ 7,800
18" RCP	262	LF	$ 60	$ 15,720
Catch Basin	1	Ea	$ 1,500	$ 1,500
12" Headwalls	6	Ea	$ 2,300	$ 13,800
18" Headwalls	6	Ea	$ 4,000	$ 24,000
Ditch Improvements	224	LF	$ 7	$ 1,568
Seeding and Protection Type II	6270	SF	$ 1	$ 6,270
Alternate 2 Subtotal				$ 64,388
Contingency	20%			$ 12,878
Construction Estimated Cost				**$ 77,266**

Area F, Alternate 1, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
Remove and Replace Concrete Drive	33	LF	$ 125	$ 4,168
Remove and Replace Sidewalk	79	LF	$ 26	$ 2,041
Ditch Improvements	80	LF	$ 7	$ 560
Seeding and Protection Type II	800	SF	$ 1	$ 800
Alternate 1 Subtotal				$ 6,209
Contingency	20%			$ 1,242
Alternate 1 Estimated Construction Total				**$ 7,450**

Area F, Alternate 2, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
18" RCP	364	LF	$ 60	$ 21,840
Catch Basins	4	Ea	$ 1,250	$ 5,000
Ditch Improvements	127	LF	$ 7	$ 889
Saw Cut, Remove and Replace Asphalt	28	SY	$ 106	$ 2,968
Seeding and Protection Type II	4,910	SF	$ 1	$ 4,910
Alternate 2 Subtotal				$ 27,729
Contingency	20%			$ 5,546
Alternate 2 Estimated Construction Total				**$ 33,275**

Area F, Alternate 3, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
24" RCP	62	LF	$ 90	$ 5,580
Ditch Improvements	206	LF	$ 7	$ 1,445
Saw Cut, Remove and Replace Asphalt	20	SY	$ 106	$ 2,120
Seeding and Protection	2060	SF	$ 1	$ 2,060
Alternate 3 Subtotal				$ 7,025
Contingency	20%			$ 1,405
Alternate 3 Estimated Construction Total				**$ 8,430**

Area G, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
15" RCP	70	LF	$ 50	$ 3,500
18" RCP	171	LF	$ 60	$ 10,260
24" RCP	54	LF	$ 90	$ 4,860
15" Headwall	6	Ea	$ 2,500	$ 15,000
18" Headwall	6	Ea	$ 2,650	$ 15,900
Catch Basin	2	Ea	$ 1,500	$ 3,000
Replace Driveway Entrance	6	Ea	$ 1,000	$ 6,000
Saw cut, Remove and Replace Asphalt	15	SY	$ 106	$ 1,590
Ditch Improvements	313	LF	$ 7	$ 2,191
Seeding and Protection Type II	2950	LS	$ 1	$ 2,950
Area G Subtotal				$ 62,301
Contingency	20%			$ 12,460
Estimated Construction Total				**$ 74,761**

Area H, Alternate 1, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
Remove Berm	114	CY	$ 25	$ 2,793
Seeding and Protection Type II	250	SF	$ 1	$ 250
Alternate 1 Subtotal				$ 2,793
Contingency	20%			$ 559
Alternate 1 Estimated Total				**$ 3,352**

Area H, Alternate 2, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
12" RCP	32	LF	$ 30	$ 960
12" Headwalls	2	Ea	$ 2,300	$ 4,600
Ditch Improvement	25	LF	$ 7	$ 175
Seeding and Protection	400	SF	$ 1	$ 400
Alternate 3 Subtotal				$ 6,135
Contingency	20%			$ 1,227
Alternate 3 Estimated Total				**$ 7,362**

Area H, Alternate 3, 10YR

			Engineering Estimate	
Description	Quantity	Unit	Total Unit Cost	Total Cost
15" RCP	60	SF	$ 60	$ 3,600
15" Headwalls	2	Ea	$ 2,500	$ 5,000
Ditch Improvements	13	LF	$ 7	$ 91
Channel Lining Class II	20	Ton	$ 25	$ 500
Seeding and Protection	730	SF	$ 1	$ 730
Alternate 2 Subtotal				$ 8,691
Contingency	20%			$ 1,738
Alternate 2 Estimated Total				**$ 10,429**

Appendix J – Flood Insurance Rate Maps (FIRM)

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of Special Flood Hazard formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no base flood elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

...ional Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0015C

FIRM

FLOOD INSURANCE RATE MAP

FRANKLIN COUNTY, KENTUCKY AND INCORPORATED AREAS

PANEL 15 OF 205

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN COUNTY	210280	0015	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 21073C0015C

EFFECTIVE DATE SEPTEMBER 28, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
97°07′30", 32°22′30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{42}76^{000m}$E	1000-meter Universal Transverse Mercator grid values, zone 16
600000 FT	5000-foot grid ticks: Kentucky State Plane coordinate system, Single zone (FIPSZONE 1600), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORIES

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 28, 2007

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

SEPTEMBER 28, 2007 – to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to change Special Flood Hazard Areas, to update map format, to update

...oral Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0015C

FIRM

FLOOD INSURANCE RATE MAP

FRANKLIN COUNTY,
KENTUCKY
AND INCORPORATED AREAS

PANEL 15 OF 205

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN COUNTY	210280	0015	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
21073C0015C

EFFECTIVE DATE
SEPTEMBER 28, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0211C

FIRM

FLOOD INSURANCE RATE MAP

OLDHAM COUNTY, KENTUCKY AND INCORPORATED AREAS

PANEL 211 OF 237

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CRESTWOOD, CITY OF	210027	0211	C
PEWEE VALLEY, CITY OF	210133	0211	C
OLDHAM COUNTY	210185	0211	C

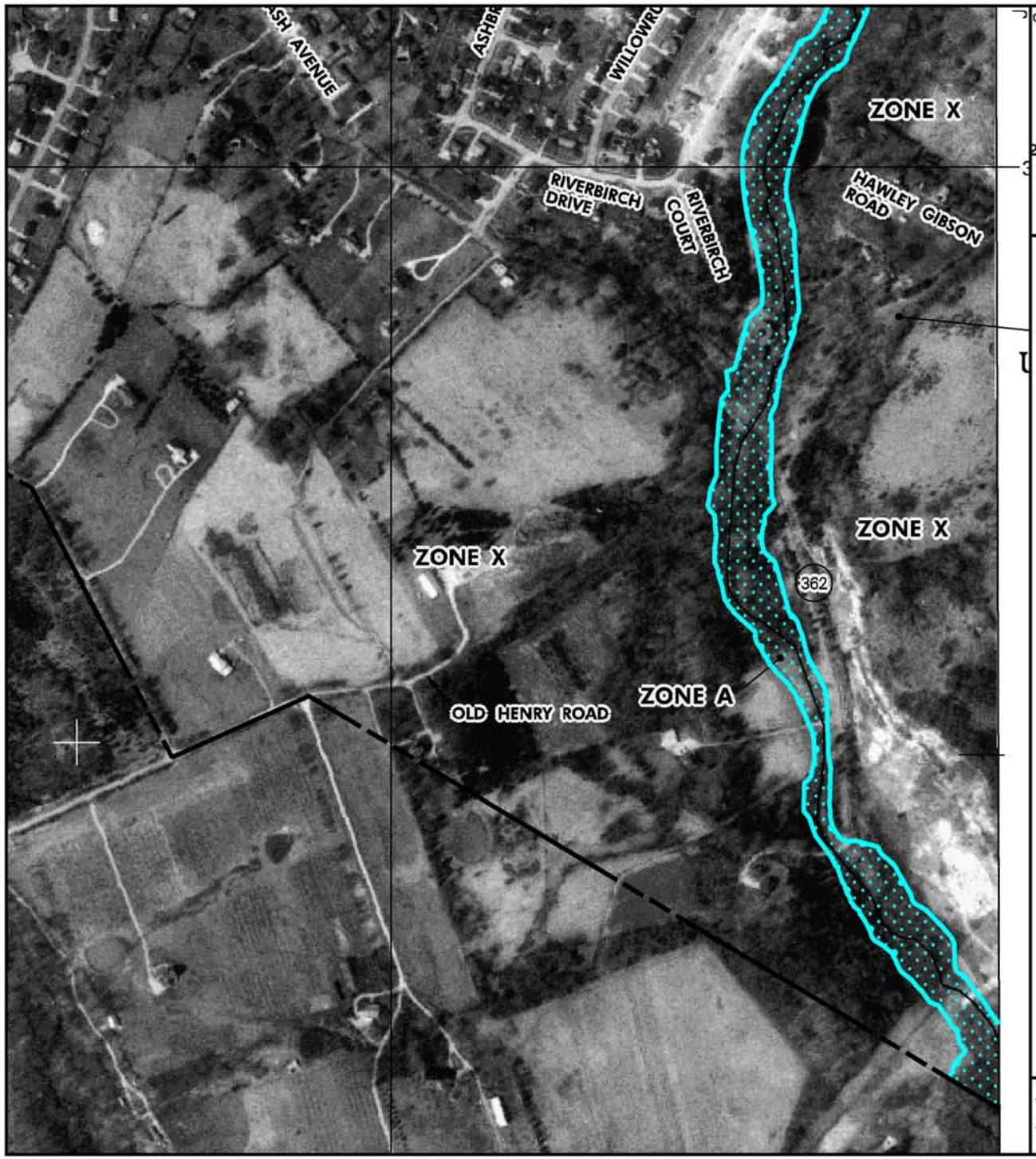
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 21185C0211C

EFFECTIVE DATE SEPTEMBER 20, 2006

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



onal Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0211C

FIRM

FLOOD INSURANCE RATE MAP

OLDHAM COUNTY, KENTUCKY AND INCORPORATED AREAS

PANEL 211 OF 237

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CRESTWOOD, CITY OF	210027	0211	C
PEWEE VALLEY, CITY OF	210103	0211	C
OLDHAM COUNTY	210185	0211	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 21185C0211C

EFFECTIVE DATE SEPTEMBER 20, 2006

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Appendix K – Threatened and Endagered Species Reports

Report of
Endangered, Threatened, and Special Concern Plants, Animals, and Natural Communities for Jefferson County, Kentucky

Kentucky State Nature Preserves Commission
801 Schenkel Lane
Frankfort, KY 40601
(502) 573-2886 (phone)
(502) 573-2355 (fax)

www.naturepreserves.ky.gov

Kentucky State Nature Preserves Commission
Key for County List Report

Within a county, elements are arranged first by taxonomic complexity (plants first, natural communities last), and second by scientific name. A key to status, ranks, and count data fields follows.

STATUS

KSNPC: Kentucky State Nature Preserves Commission status:

N or blank = none E = endangered T = threatened S = special concern H = historic X = extirpated

USESA: U.S. Fish and Wildlife Service status:

blank = none C = candidate LT = listed as threatened LE = listed as endangered
SOMC = Species of Management Concern

RANKS

GRANK: Estimate of element abundance on a global scale:

G1 = Critically imperiled
G2 = Imperiled
G3 = Vulnerable
G4 = Apparently secure
G5 = Secure
GH = Historic, possibly extinct
GX = Presumed extinct
GU = Unrankable
G#? = Inexact rank (e.g. G2?)
G#Q = Questionable taxonomy
G#T# = Infraspecific taxa (Subspecies and variety abundances are coded with a 'T' suffix; the 'G' portion of the rank then refers to the entire species)
GNR = Unranked
GNA = Not applicable

SRANK: Estimate of element abundance in Kentucky:

S1 = Critically imperiled
S2 = Imperiled
S3 = Vulnerable
S4 = Apparently secure
S5 = Secure
SH = Historic, possibly extirpated
SX = Presumed extirpated
SU = Unrankable
S#? = Inexact rank (e.g. G2?)
S#Q = Questionable taxonomy
S#T# = Infraspecific taxa
SNR = Unranked
SNA = Not applicable

Migratory species may have separate ranks for different population segments (e.g. S1B, S2N, S4M):
S#B = Rank of breeding population
S#N = Rank of non-breeding population
S#M = Rank of transient population

COUNT DATA FIELDS

OF OCCURRENCES: Number of occurrences of a particular element from a county. Column headings are as follows:

E - currently reported from the county
H - reported from the county but not seen for at least 20 years
F - reported from county & cannot be relocated but for which further inventory is needed
X - known to have extirpated from the county
U - reported from a county but cannot be mapped to a quadrangle or exact location.

The data from which the county report is generated is continually updated. The date on which the report was created is in the report footer. Contact KSNPC for a current copy of the report.

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed, and new species of plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

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email: naturepreserves@ky.gov
internet: www.naturepreserves.ky.gov

						# of Occurrences				
County	**Taxonomic Group**	**Scientific name**	**Common name**	**Statuses**	**Ranks**	**E**	**H**	**F**	**X**	**U**
Jefferson	Vascular Plants	*Aristida ramosissima*	Branched Three-awn Grass	H /	G5 / SH	0	1	0	0	0
Jefferson	Vascular Plants	*Cabomba caroliniana*	Carolina Fanwort	T /	G3G5 / S2	0	1	0	1	0
Jefferson	Vascular Plants	*Castanea pumila*	Allegheny Chinkapin	T /	G5 / S2	0	1	0	0	0
Jefferson	Vascular Plants	*Dryopteris carthusiana*	Spinulose Wood Fern	S /	G5 / S3	0	0	1	0	0
Jefferson	Vascular Plants	*Heteranthera dubia*	Grassleaf Mud-plantain	S /	G5 / S3	0	1	0	0	0
Jefferson	Vascular Plants	*Leavenworthia exigua var. laciniata*	Kentucky Gladecress	E / C	G4T1T2 / S1S2	10	0	2	0	0
Jefferson	Vascular Plants	*Podostemum ceratophyllum*	Threadfoot	S /	G5 / S3	0	1	0	0	0
Jefferson	Vascular Plants	*Pontederia cordata*	Pickerel-weed	T /	G5 / S1S2	0	1	0	0	0
Jefferson	Vascular Plants	*Potamogeton illinoensis*	Illinois Pondweed	S /	G5 / S2	0	1	0	0	0
Jefferson	Vascular Plants	*Sagittaria graminea*	Grassleaf Arrowhead	T /	G5 / S1S2	0	2	0	0	0
Jefferson	Vascular Plants	*Solidago shortii*	Short's Goldenrod	E / LE	G1 / S1	0	0	0	1	0
Jefferson	Vascular Plants	*Stellaria longifolia*	Longleaf Stitchwort	S /	G5 / S2S3	1	0	0	0	0
Jefferson	Vascular Plants	*Trichostema setaceum*	Narrowleaved Bluecurls	E /	G5 / S1	1	0	0	0	0
Jefferson	Vascular Plants	*Trifolium stoloniferum*	Running Buffalo Clover	T / LE	G3 / S2S3	2	0	0	1	0
Jefferson	Vascular Plants	*Vallisneria americana*	Eelgrass	S /	G5 / S2S3	2	1	0	0	0
Jefferson	Vascular Plants	*Veratrum woodii*	Wood's Bunchflower	T /	G5 / S2	0	1	0	0	0
Jefferson	Vascular Plants	*Viola septemloba var. egglestonii*	Eggleston's Violet	S /	G4 / S3	5	0	0	0	0
Jefferson	Vascular Plants	*Vitis labrusca*	Northern Fox Grape	T /	G5 / S2S3	0	1	0	0	0
Jefferson	Aquatic Snails	*Leptoxis praerosa*	Onyx Rocksnail	S / SOMC	G5 / S3S4	0	1	0	0	0
Jefferson	Aquatic Snails	*Lithasia verrucosa*	Varicose Rocksnail	S / SOMC	G4Q / S3S4	1	0	0	0	0
Jefferson	Terrestrial Snails	*Webbhelix multilineata*	Striped Whitelip	T /	G5 / S1S2	1	0	0	0	0
Jefferson	Freshwater Mussels	*Alasmidonta marginata*	Elktoe	T / SOMC	G4 / S2	0	0	0	1	0
Jefferson	Freshwater Mussels	*Cumberlandia monodonta*	Spectaclecase	E / PE	G3 / S1	0	0	0	1	0
Jefferson	Freshwater Mussels	*Cyprogenia stegaria*	Fanshell	E / LE	G1Q / S1	0	0	0	1	0
Jefferson	Freshwater Mussels	*Epioblasma triquetra*	Snuffbox	E / PE	G3 / S1	0	0	0	1	0
Jefferson	Freshwater Mussels	*Hemistena lata*	Cracking Pearlymussel	X / LE	G1 / SX	0	0	0	1	0
Jefferson	Freshwater Mussels	*Lampsilis abrupta*	Pink Mucket	E / LE	G2 / S1	0	1	0	0	0
Jefferson	Freshwater Mussels	*Obovaria retusa*	Ring Pink	E / LE	G1 / S1	0	0	0	1	0

County	Taxonomic Group	Scientific name	Common name	Statuses	Ranks	# of Occurrences E	H	F	X	U
Jefferson	Freshwater Mussels	*Plethobasus cooperianus*	Orangefoot Pimpleback	E / LE	G1 / S1	0	0	0	1	0
Jefferson	Freshwater Mussels	*Plethobasus cyphyus*	Sheepnose	E / PE	G3 / S1	1	1	0	0	0
Jefferson	Freshwater Mussels	*Pleurobema clava*	Clubshell	E / LE	G2 / S1	0	2	0	0	0
Jefferson	Freshwater Mussels	*Pleurobema rubrum*	Pyramid Pigtoe	E / SOMC	G2G3 / S1	0	0	0	1	0
Jefferson	Freshwater Mussels	*Potamilus capax*	Fat Pocketbook	E / LE	G1G2 / S1	0	1	0	0	0
Jefferson	Freshwater Mussels	*Quadrula cylindrica cylindrica*	Rabbitsfoot	T / C	G3G4T3 / S2	0	0	0	1	0
Jefferson	Freshwater Mussels	*Simpsonaias ambigua*	Salamander Mussel	T / SOMC	G3 / S2S3	1	1	0	0	0
Jefferson	Freshwater Mussels	*Villosa lienosa*	Little Spectaclecase	S /	G5 / S3S4	0	1	0	0	0
Jefferson	Crustaceans	*Gammarus bousfieldi*	Bousfield's Amphipod	E / SOMC	G1 / S1	0	1	0	0	0
Jefferson	Crustaceans	*Orconectes jeffersoni*	Louisville Crayfish	E / SOMC	G1 / S1	12	9	0	0	0
Jefferson	Insects	*Calephelis borealis*	Northern Metalmark	T /	G3G4 / S2	0	2	0	0	0
Jefferson	Insects	*Nicrophorus americanus*	American Burying Beetle	X / LE	G2G3 / SX	0	0	0	1	0
Jefferson	Insects	*Pseudanophthalmus troglodytes*	Louisville Cave Beetle	T / C	G1 / S1	1	1	0	0	0
Jefferson	Insects	*Satyrium favonius ontario*	Northern Oak Hairstreak	S /	G4T4 / S2	0	0	1	0	0
Jefferson	Insects	*Speyeria idalia*	Regal Fritillary	H / SOMC	G3 / SH	0	0	0	1	0
Jefferson	Fishes	*Acipenser fulvescens*	Lake Sturgeon	E / SOMC	G3G4 / S1	0	1	0	0	0
Jefferson	Fishes	*Alosa alabamae*	Alabama Shad	E / SOMC	G3 / S1	0	1	0	0	0
Jefferson	Fishes	*Atractosteus spatula*	Alligator Gar	E / SOMC	G3G4 / S1	0	1	0	0	0
Jefferson	Fishes	*Ictiobus niger*	Black Buffalo	S /	G5 / S3	0	1	0	0	0
Jefferson	Fishes	*Lota lota*	Burbot	S /	G5 / S2	1	1	0	0	0
Jefferson	Fishes	*Noturus stigmosus*	Northern Madtom	S / SOMC	G3 / S2S3	1	0	0	0	0
Jefferson	Fishes	*Percopsis omiscomaycus*	Trout-perch	S / SOMC	G5 / S3	0	5	0	0	0
Jefferson	Reptiles	*Apalone mutica mutica*	Midland Smooth Softshell	S /	G5T5 / S3	1	0	0	0	0
Jefferson	Reptiles	*Clonophis kirtlandii*	Kirtland's Snake	T / SOMC	G2 / S2	19	5	0	0	1
Jefferson	Reptiles	*Nerodia erythrogaster neglecta*	Copperbelly Water Snake	S / SOMC	G5T3 / S3	0	1	0	0	0
Jefferson	Reptiles	*Ophisaurus attenuatus longicaudus*	Eastern Slender Glass Lizard	T /	G5T5 / S2	0	1	0	0	0

						# of Occurrences				
County	**Taxonomic Group**	**Scientific name**	**Common name**	**Statuses**	**Ranks**	**E**	**H**	**F**	**X**	**U**
Jefferson	Breeding Birds	*Accipiter striatus*	Sharp-shinned Hawk	S /	G5 / S3B,S4N	1	0	0	0	0
Jefferson	Breeding Birds	*Actitis macularius*	Spotted Sandpiper	E /	G5 / S1B	1	0	0	0	0
Jefferson	Breeding Birds	*Aimophila aestivalis*	Bachman's Sparrow	E / SOMC	G3 / S1B	0	0	0	3	0
Jefferson	Breeding Birds	*Ammodramus henslowii*	Henslow's Sparrow	S / SOMC	G4 / S3B	2	0	0	0	0
Jefferson	Breeding Birds	*Anas discors*	Blue-winged Teal	T /	G5 / S1S2B	0	1	0	1	0
Jefferson	Breeding Birds	*Ardea alba*	Great Egret	T /	G5 / S2B	1	0	0	0	0
Jefferson	Breeding Birds	*Botaurus lentiginosus*	American Bittern	H /	G4 / SHB	0	0	0	1	0
Jefferson	Breeding Birds	*Bubulcus ibis*	Cattle Egret	S /	G5 / S1S2B	0	0	0	1	0
Jefferson	Breeding Birds	*Chondestes grammacus*	Lark Sparrow	T /	G5 / S2S3B	0	1	0	0	0
Jefferson	Breeding Birds	*Cistothorus platensis*	Sedge Wren	S /	G5 / S3B	1	0	0	0	0
Jefferson	Breeding Birds	*Egretta caerulea*	Little Blue Heron	E /	G5 / S1B	0	0	0	1	0
Jefferson	Breeding Birds	*Falco peregrinus*	Peregrine Falcon	E / SOMC	G4 / S1B	3	0	0	0	0
Jefferson	Breeding Birds	*Haliaeetus leucocephalus*	Bald Eagle	T / Delisted	G5 / S2B,S2S3N	1	0	0	0	0
Jefferson	Breeding Birds	*Ixobrychus exilis*	Least Bittern	T /	G5 / S1S2B	0	0	0	1	0
Jefferson	Breeding Birds	*Lophodytes cucullatus*	Hooded Merganser	T /	G5 / S1S2B,S3S4N	1	0	0	0	0
Jefferson	Breeding Birds	*Nyctanassa violacea*	Yellow-crowned Night-heron	T /	G5 / S2B	2	0	0	3	0
Jefferson	Breeding Birds	*Nycticorax nycticorax*	Black-crowned Night-heron	T /	G5 / S1S2B	1	0	0	4	0
Jefferson	Breeding Birds	*Pandion haliaetus*	Osprey	S /	G5 / S2S3B	1	0	0	0	0
Jefferson	Breeding Birds	*Passerculus sandwichensis*	Savannah Sparrow	S /	G5 / S2S3B,S2S3N	1	1	0	0	0
Jefferson	Breeding Birds	*Phalacrocorax auritus*	Double-crested Cormorant	T /	G5 / S2B	1	0	0	0	0
Jefferson	Breeding Birds	*Podilymbus podiceps*	Pied-billed Grebe	E /	G5 / S1B,S4N	0	0	0	1	0
Jefferson	Breeding Birds	*Rallus elegans*	King Rail	E /	G4 / S1B	0	1	0	1	0
Jefferson	Breeding Birds	*Riparia riparia*	Bank Swallow	S /	G5 / S3B	0	0	0	1	0
Jefferson	Breeding Birds	*Sternula antillarum athalassos*	Interior Least Tern	T / LE	G4T2Q / S2B	0	1	0	0	0
Jefferson	Breeding Birds	*Thryomanes bewickii*	Bewick's Wren	S / SOMC	G5 / S3B	0	2	0	0	0

County	Taxonomic Group	Scientific name	Common name	Statuses	Ranks	# of Occurrences E	H	F	X	U
Jefferson	Breeding Birds	*Tyto alba*	Barn Owl	S /	G5 / S3	2	1	0	0	0
Jefferson	Mammals	*Myotis grisescens*	Gray Myotis	T / LE	G3 / S2	2	0	0	0	0
Jefferson	Mammals	*Myotis sodalis*	Indiana Bat	E / LE	G2 / S1S2	3	0	0	0	0
Jefferson	Mammals	*Nycticeius humeralis*	Evening Bat	S /	G5 / S3	1	0	0	0	0
Jefferson	Communities	*Deep soil mesophytic forest*		N /	GNR / S3S4	1	0	0	0	0
Jefferson County Total:						**86**	**58**	**4**	**32**	**1**

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Species Information

Federal Threatened, Endangered, and Candidate Species observations for selected counties

Linked life history provided courtesy of NatureServe Explorer.
Records may include both recent and historical observations.
US Status Definitions Kentucky Status Definitions

List Federal Threatened, Endangered, and Candidate Species observations in 1 selected county.
Selected county is: Jefferson.

Scientific Name and Life History	Common Name and Pictures	Class	County	US Status	KY Status	WAP	Reference
Alosa alabamae	Alabama Shad	Actinopterygii	Jefferson	C	E	Yes	Reference
Cyprogenia stegaria	Fanshell	Bivalvia	Jefferson	LE	E	Yes	Reference
Falco peregrinus	Peregrine Falcon	Aves	Jefferson	PS:LE	E	Yes	Reference
Lampsilis abrupta	Pink Mucket	Bivalvia	Jefferson	LE	E	Yes	Reference
Myotis grisescens	Gray Myotis	Mammalia	Jefferson	LE	T	Yes	Reference
Myotis sodalis	Indiana Bat	Mammalia	Jefferson	LE	E	Yes	Reference
Nerodia erythrogaster neglecta	Copperbelly Water Snake	Reptilia	Jefferson	PS:LT	S	Yes	Reference
Obovaria retusa	Ring Pink	Bivalvia	Jefferson	LE	E	Yes	Reference
Oceanodroma castro	Band-rumped Storm-petrel	Aves	Jefferson	PS:C	N		Reference
Plethobasus cooperianus	Orangefoot Pimpleback	Bivalvia	Jefferson	LE	E	Yes	Reference
Pleurobema clava	Clubshell	Bivalvia	Jefferson	LE, XN	E	Yes	Reference
Potamilus capax	Fat Pocketbook	Bivalvia	Jefferson	LE	E	Yes	Reference
Pseudanophthalmus troglodytes	Louisville Cave Beetle	Insecta	Jefferson	C	T		Reference
Sternula antillarum athalassos	Interior Least Tern	Aves	Jefferson	LE	E	Yes	Reference

14 species are listed

Report of
Endangered, Threatened, and Special Concern
Plants, Animals, and Natural Communities
for Oldham County, Kentucky

Kentucky State Nature Preserves Commission
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(502) 573-2355 (fax)

www.naturepreserves.ky.gov

Kentucky State Nature Preserves Commission
Key for County List Report

Within a county, elements are arranged first by taxonomic complexity (plants first, natural communities last), and second by scientific name. A key to status, ranks, and count data fields follows.

STATUS

KSNPC: Kentucky State Nature Preserves Commission status:

N or blank = none E = endangered T = threatened S = special concern H = historic X = extirpated

USESA: U.S. Fish and Wildlife Service status:

blank = none C = candidate LT = listed as threatened LE = listed as endangered
SOMC = Species of Management Concern

RANKS

GRANK: Estimate of element abundance on a global scale:

G1 = Critically imperiled
G2 = Imperiled
G3 = Vulnerable
G4 = Apparently secure
G5 = Secure
GH = Historic, possibly extinct
GX = Presumed extinct
GU = Unrankable
G#? = Inexact rank (e.g. G2?)
G#Q = Questionable taxonomy
G#T# = Infraspecific taxa (Subspecies and variety abundances are coded with a 'T' suffix; the 'G' portion of the rank then refers to the entire species)
GNR = Unranked
GNA = Not applicable

SRANK: Estimate of element abundance in Kentucky:

S1 = Critically imperiled
S2 = Imperiled
S3 = Vulnerable
S4 = Apparently secure
S5 = Secure
SH = Historic, possibly extirpated
SX = Presumed extirpated
SU = Unrankable
S#? = Inexact rank (e.g. G2?)
S#Q = Questionable taxonomy
S#T# = Infraspecific taxa
SNR = Unranked
SNA = Not applicable

Migratory species may have separate ranks for different population segments (e.g. S1B, S2N, S4M):
S#B = Rank of breeding population
S#N = Rank of non-breeding population
S#M = Rank of transient population

COUNT DATA FIELDS

OF OCCURRENCES: Number of occurrences of a particular element from a county. Column headings are as follows:

E - currently reported from the county
H - reported from the county but not seen for at least 20 years
F - reported from county & cannot be relocated but for which further inventory is needed
X - known to have extirpated from the county
U - reported from a county but cannot be mapped to a quadrangle or exact location.

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County	Taxonomic Group	Scientific name	Common name	Statuses	Ranks	# of Occurrences E	H	F	X	U
Oldham	Vascular Plants	*Castanea pumila*	Allegheny Chinkapin	T /	G5 / S2	0	1	0	0	0
Oldham	Vascular Plants	*Dichanthelium boreale*	Northern Witchgrass	S /	G5 / S2S3	0	1	0	0	0
Oldham	Vascular Plants	*Dryopteris carthusiana*	Spinulose Wood Fern	S /	G5 / S3	0	0	1	0	0
Oldham	Vascular Plants	*Heteranthera dubia*	Grassleaf Mud-plantain	S /	G5 / S3	2	0	0	0	0
Oldham	Vascular Plants	*Ranunculus ambigens*	Waterplantain Spearwort	S /	G4 / S3	0	1	0	0	0
Oldham	Vascular Plants	*Vallisneria americana*	Eelgrass	S /	G5 / S2S3	1	0	0	0	0
Oldham	Vascular Plants	*Veratrum woodii*	Wood's Bunchflower	T /	G5 / S2	0	1	0	0	0
Oldham	Vascular Plants	*Vitis labrusca*	Northern Fox Grape	T /	G5 / S2S3	0	1	0	0	0
Oldham	Aquatic Snails	*Lithasia verrucosa*	Varicose Rocksnail	S / SOMC	G4Q / S3S4	0	0	0	1	0
Oldham	Freshwater Mussels	*Cyprogenia stegaria*	Fanshell	E / LE	G1Q / S1	0	0	0	1	0
Oldham	Freshwater Mussels	*Lampsilis abrupta*	Pink Mucket	E / LE	G2 / S1	0	0	0	1	0
Oldham	Freshwater Mussels	*Lampsilis ovata*	Pocketbook	E /	G5 / S1	0	0	0	1	0
Oldham	Freshwater Mussels	*Obovaria retusa*	Ring Pink	E / LE	G1 / S1	0	0	0	1	0
Oldham	Freshwater Mussels	*Plethobasus cyphyus*	Sheepnose	E / PE	G3 / S1	1	0	0	1	0
Oldham	Freshwater Mussels	*Pleurobema plenum*	Rough Pigtoe	E / LE	G1 / S1	0	0	0	1	0
Oldham	Freshwater Mussels	*Pleurobema rubrum*	Pyramid Pigtoe	E / SOMC	G2G3 / S1	0	0	0	1	0
Oldham	Freshwater Mussels	*Quadrula fragosa*	Winged Mapleleaf	X / LE	G1 / SX	0	0	0	1	0
Oldham	Freshwater Mussels	*Villosa lienosa*	Little Spectaclecase	S /	G5 / S3S4	0	1	0	0	0
Oldham	Crustaceans	*Orconectes jeffersoni*	Louisville Crayfish	E / SOMC	G1 / S1	0	1	0	0	0
Oldham	Insects	*Calephelis borealis*	Northern Metalmark	T /	G3G4 / S2	0	0	0	1	0
Oldham	Insects	*Nehalennia irene*	Sedge Sprite	E /	G5 / S1	1	0	0	0	0
Oldham	Insects	*Satyrium favonius ontario*	Northern Oak Hairstreak	S /	G4T4 / S2	0	1	0	0	0
Oldham	Fishes	*Percopsis omiscomaycus*	Trout-perch	S / SOMC	G5 / S3	1	2	0	0	0
Oldham	Breeding Birds	*Aimophila aestivalis*	Bachman's Sparrow	E / SOMC	G3 / S1B	0	0	0	1	0
Oldham	Breeding Birds	*Ammodramus henslowii*	Henslow's Sparrow	S / SOMC	G4 / S3B	2	1	0	0	0
Oldham	Breeding Birds	*Bartramia longicauda*	Upland Sandpiper	H /	G5 / SHB	0	1	0	0	0
Oldham	Breeding Birds	*Botaurus lentiginosus*	American Bittern	H /	G4 / SHB	0	0	0	1	0
Oldham	Breeding Birds	*Chondestes grammacus*	Lark Sparrow	T /	G5 / S2S3B	0	1	0	0	0
Oldham	Breeding Birds	*Cistothorus platensis*	Sedge Wren	S /	G5 / S3B	0	1	0	0	0

County	Taxonomic Group	Scientific name	Common name	Statuses	Ranks	# of Occurrences E	H	F	X	U
Oldham	Breeding Birds	*Dolichonyx oryzivorus*	Bobolink	S /	G5 / S2S3B	2	0	0	0	0
Oldham	Breeding Birds	*Passerculus sandwichensis*	Savannah Sparrow	S /	G5 / S2S3B,S2S3N	3	1	0	0	0
Oldham	Breeding Birds	*Riparia riparia*	Bank Swallow	S /	G5 / S3B	1	0	0	0	0
Oldham	Breeding Birds	*Thryomanes bewickii*	Bewick's Wren	S / SOMC	G5 / S3B	1	0	0	0	0
Oldham	Mammals	*Myotis grisescens*	Gray Myotis	T / LE	G3 / S2	1	0	0	0	0
Oldham County Total:						**16**	**15**	**1**	**12**	**0**

search kentucky.gov

Species Information

Federal Threatened, Endangered, and Candidate Species observations for selected counties

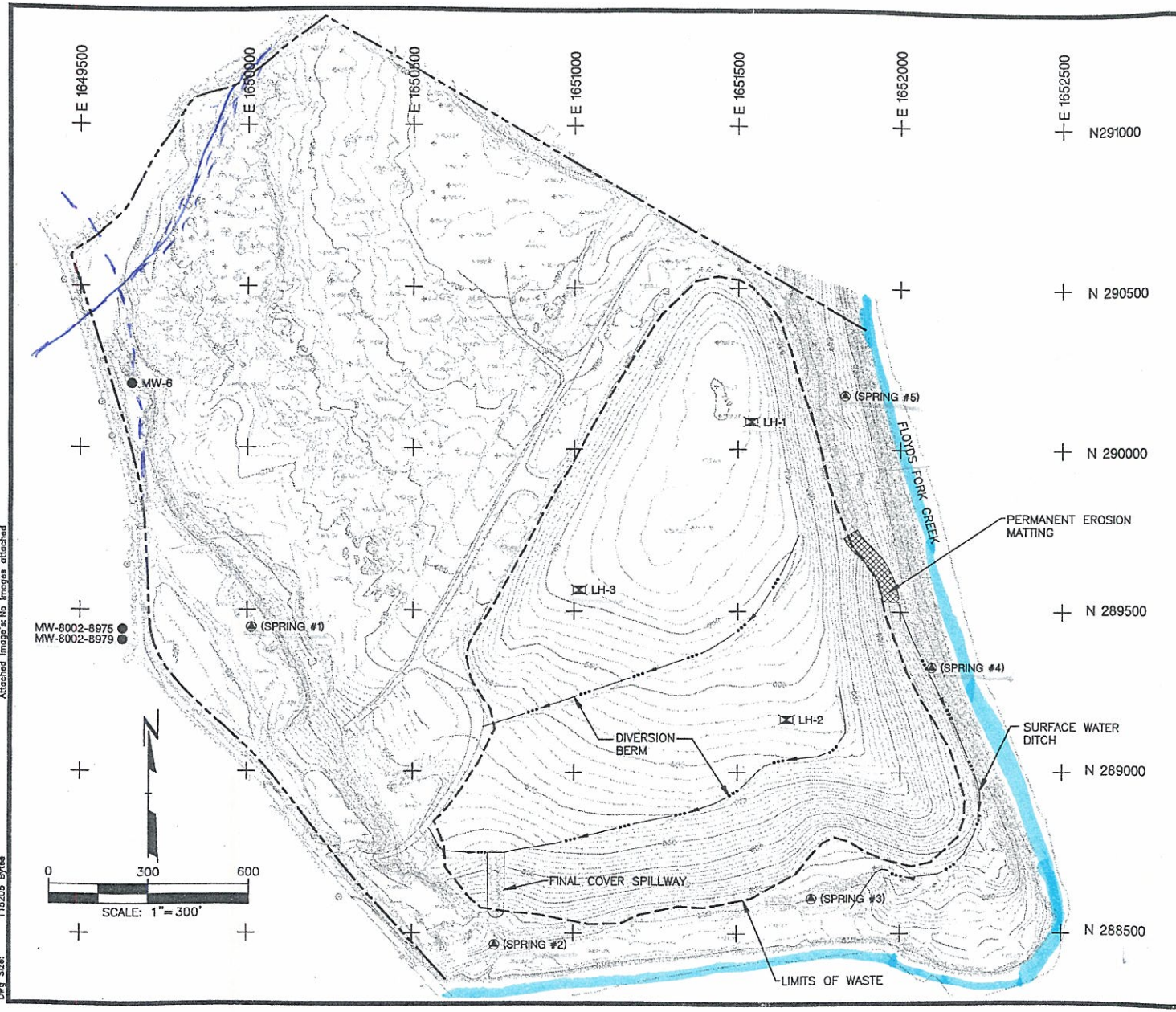
Linked life history provided courtesy of NatureServe Explorer.
Records may include both recent and historical observations.
US Status Definitions Kentucky Status Definitions

List Federal Threatened, Endangered, and Candidate Species observations in 1 selected county.
Selected county is: Oldham.

Scientific Name and Life History	Common Name and Pictures	Class	County	US Status	KY Status	WAP	Reference
Cyprogenia stegaria	Fanshell	Bivalvia	Oldham	LE	E	Yes	Reference
Falco peregrinus	Peregrine Falcon	Aves	Oldham	PS:LE	E	Yes	Reference
Lampsilis abrupta	Pink Mucket	Bivalvia	Oldham	LE	E	Yes	Reference
Myotis grisescens	Gray Myotis	Mammalia	Oldham	LE	T	Yes	Reference
Obovaria retusa	Ring Pink	Bivalvia	Oldham	LE	E	Yes	Reference
Pleurobema plenum	Rough Pigtoe	Bivalvia	Oldham	LE	E	Yes	Reference

6 species are listed

Appendix L – Red Penn Landfill Map



LEGEND

- APPROXIMATE PROPERTY LINE
- GRID TICK LOCATION
- EXISTING 10' CONTOUR INTERVAL
- EXISTING 2' CONTOUR INTERVAL
- EXISTING TREELINE
- EXISTING SPOT ELEVATION
- EXISTING BUILDING
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- SP-5 — APPROXIMATE GEOPROBE LOCATION AND NUMBER
- LH-1 — EXISTING LEACHATE HEAD WELL LOCATION AND NUMBER
- (SPRING #1) — APPROXIMATE SURFACE WATER SAMPLING LOCATION AND NUMBER
- MW-6 — APPROXIMATE MONITORING WELL LOCATION AND NUMBER

NOTES

1. BASE MAP WAS DEVELOPED FROM AN AERIAL SURVEY PERFORMED BY OAS INC., ON NOVEMBER 15, 2000.
2. CONTOUR INTERVAL IS TWO FEET.
3. VERTICAL DATUM IS REFERENCED TO USGS MEAN SEA LEVEL DATUM.
4. THE PROJECT GRID SYSTEM IS PARALLEL AND PERPENDICULAR TO THE KENTUCKY STATE PLANE COORDINATE GRID SYSTEM, NORTH AMERICAN DATUM OF 1927.
5. THE LOCATIONS OF THE LEACHATE HEAD WELLS WERE OBTAINED DURING A SURVEY PERFORMED BY WESTERMAN & ASSOCIATES, LOUISVILLE, KENTUCKY. DATE OF SURVEY: MAY 19, 1999.
6. THE LOCATIONS OF THE SPRINGS ARE APPROXIMATE AND ARE BASED ON FIELD OBSERVATIONS.
7. THE LOCATIONS OF MW-6, MW-8002-8975 AND MW-8002-8979 ARE APPROXIMATE AND ARE BASED ON A LOCATION MAP SUPPLIED BY THE KENTUCKY DIVISION OF WASTE MANAGEMENT.

PROJECT:
RED PENN LANDFILL
PEWEE VALLEY, KENTUCKY

SHEET TITLE:
ENVIRONMENTAL MONITORING LOCATIONS

DRAWN BY: HOOKSB	SCALE: 1"=300'	PROJ. NO. 04896.20
CHECKED BY: MJA		FILE NO. 48962003.DWG
APPROVED BY: MJA	DATE PRINTED:	FIGURE 1
DATE: MARCH 2003		

RMT INC.
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

Drawing Name: J:\04896\20\48962003.dwg
Operator Name: hooksb
Scale: 1"=40'
Dwg Size: 115205 Bytes
Plot Date: Monday, October 28, 2002
Plot Time: 08:09:59 AM
Attached Xref's: JNKLOW; BM12-2000;
Attached Image's: No Images attached

Appendix M – Red Penn Landfill Record of Decesion (ROD)

EPA/ROD/R04-00/081
2000

EPA Superfund
Record of Decision:

RED PENN SANITATION CO. LANDFILL
EPA ID: KYD981469794
OU 01
PEEWEE VALLEY, KY
09/19/2000

RED PENN LANDFILL
SUPERFUND SITE

RECORD OF DECISION
SEPTEMBER 19, 2000

RECORD OF DECISION
RED PENN LANDFILL SITE

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RECORD OF DECISION
RED PENN LANDFILL SITE

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RECORD OF DECISION
RED PENN LANDFILL SITE

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DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Red Penn Sanitation Company Landfill

Pewee Valley, Oldham County, Kentucky

STATEMENT OF BASIS AND PURPOSE

This document presents the remedial action decision made by the U. S. Environmental Protection Agency (EPA) regarding the Red Penn Landfill Site in Oldham County, Kentucky. The decision was made in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the National Oil and Hazardous substances Pollution Contingency Plan (NCP), based on the information contained in the Administrative Record for the site.

Kentucky Department of Waste Management (KDWM) is aware of EPA's decision not to conduct a CERCLA funded remedial action at this site as recorded in this document. In accordance with EPA's advice, KDWM has made appropriate arrangements with the responsible parties to close the landfill as necessary. KDWM has neither objected to nor concurred with EPA's final decision on the site.

DESCRIPTION OF THE REMEDY

Based on the results of the Remedial Investigation, including the risk assessment, conducted on the Red Penn Landfill, no CERCLA funded remedial action is necessary at the site to ensure that human health and the environment are protected. The landfill was permitted to process only domestic waste between 1959 and 1989, but unauthorized industrial waste was accepted as well.

Remedial Investigation indicated that the site contained hazardous materials but the levels of contamination and risk are below EPA's action levels. Because the landfill was abandoned without proper closure, EPA advised KDWM to prevent site conditions from deterioration by requiring the responsible parties to close the landfill properly. KDWM negotiated the landfill closure plan with the parties and approved their capping design in October 1999. The responsible parties began constructing the remedy under Kentucky's oversight in June 2000. The project is scheduled to be completed by the end of September 2000. This Record of Decision document completes EPA's action on the site and includes a recommendation to the Commonwealth to restrict the use of the site to activities that would not compromise the integrity of the landfill cap.

DECLARATION STATEMENT

EPA has determined that no Superfund action is necessary at this site to ensure the protection of human health and the environment. The current decision will not result in hazardous substances remaining on-site above health-based levels. Therefore, no five-year review will be conducted for the site.



Richard D. Green, Director
Waste Management Division

19 SEP '00

Date

1.0 SITE BACKGROUND

1.1 SITE LOCATION

The Red Penn Landfill Superfund Site is located approximately 1.5 miles southeast of Pewee Valley in Oldham County, Kentucky. As shown in Figure 1, Shelby County lies to the east and southeast of the site, and Jefferson County lies to the south and southwest. The property is bounded on the east and southeast by Floyds Fork Creek, and on the southwest by an un-named creek tributary which runs along Kentucky State Route 362. Hawley Gibson Road forms the northwest property line.

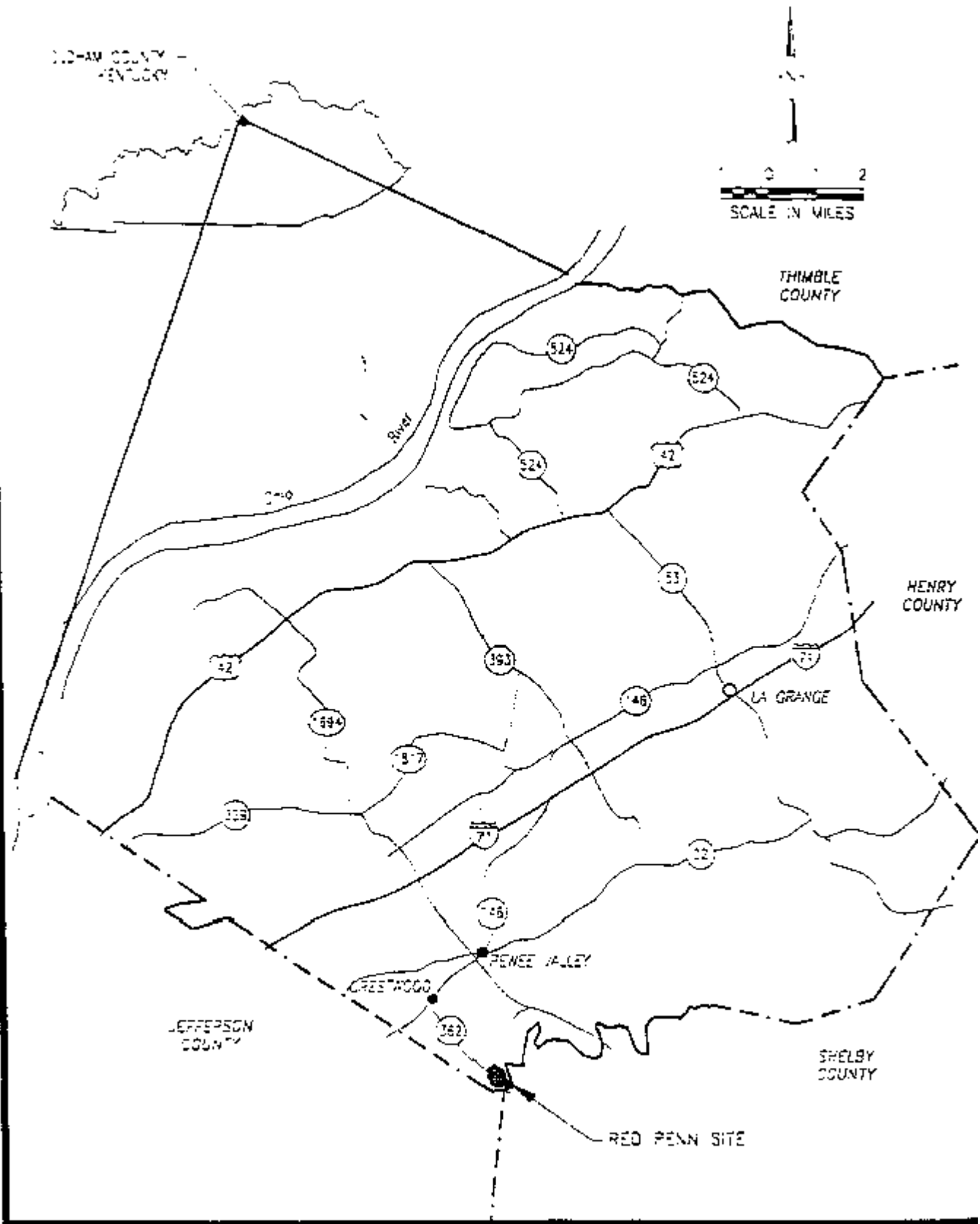
1.2 SITE DESCRIPTION

The landfill is contained in a rural parcel of land which is approximately 151 acres in size. The portion of the property permitted and actively used for waste disposal was 85 acres. The remaining 66 acres were used primarily as the borrow area from which cover soil was obtained during the landfill operations. The site is currently inactive and much of the property is overgrown with vines, shrubs and trees. The property is unfenced, but access roads have barricades which act as barriers to vehicular traffic. The physical structures remaining onsite include remnants of the old guard shack, and the maintenance building. A buried natural gas pipeline passes through the middle of the site, west of the landfill area, trending from northeast to southwest. Texas Gas Company owns the pipeline and maintains its corridor. See Figure 2 for site features.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 SITE HISTORY

The first documented waste disposal activity on this site occurred in 1954, when a 10-acre portion of the property was leased to Bert Logsdon and Chris P. Pennington for five years as a dump ground. In the lease, the parties agreed that the property would be used for the dumping of residential garbage only. The lease specifically excluded slop or carcasses of dead animals. The initial permit



ARCS IV

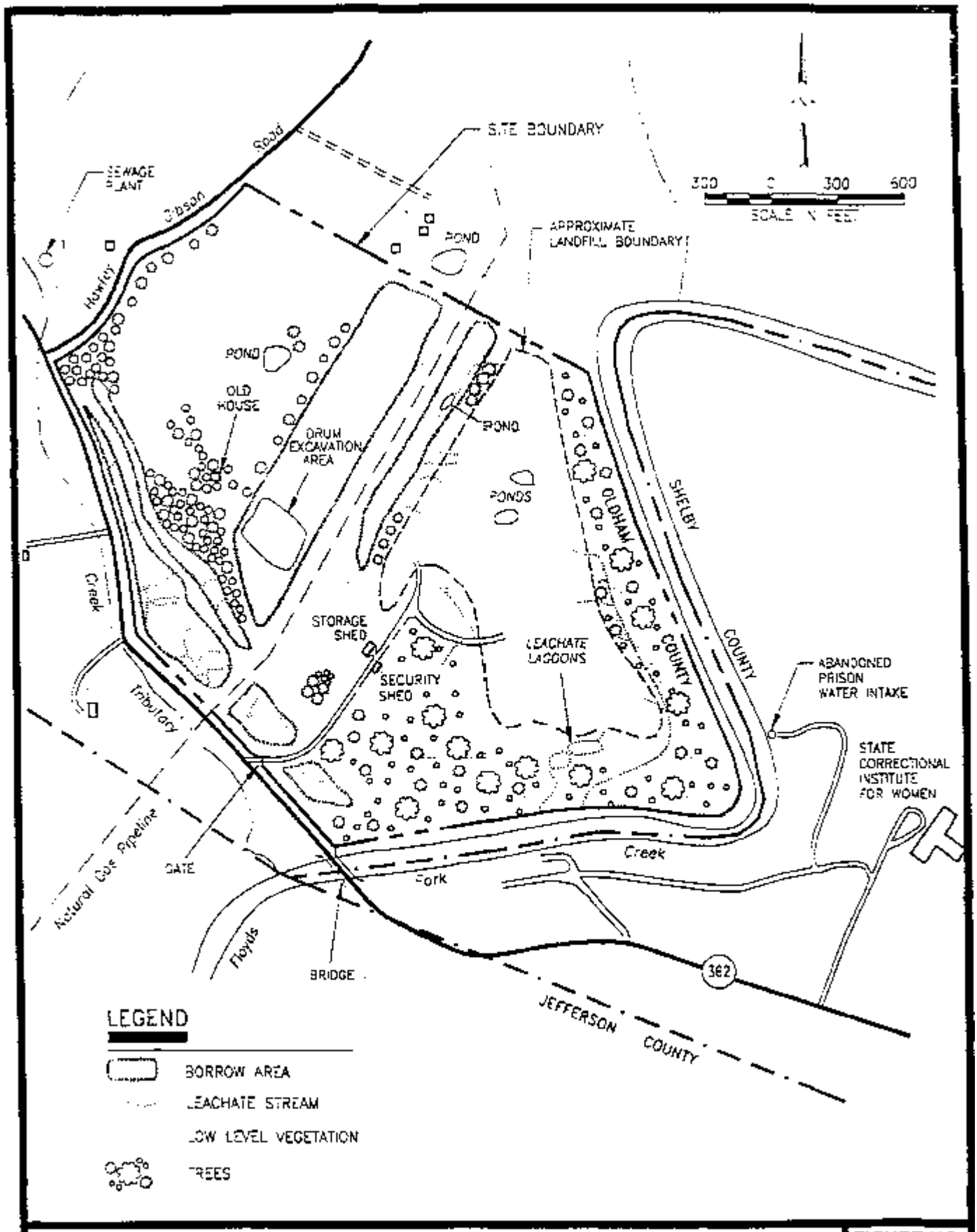
SITE LOCATION MAP

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO

1



ARCS IV

SITE FEATURES MAP

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO.

2

to operate a landfill at the site was issued by the Oldham County Health Department in 1959, to the Red Penn Sanitation Company. In 1968, the company obtained a solid waste disposal permit from the Kentucky Department of Health to use 85 acres of the property as a sanitary landfill. Although the permit excluded industrial wastes, Red Penn Sanitation Company contracted to accept industrial rubbish and sludge from the Louisville Scrap Material Company for disposal at the site in 1972.

Subsequently, the Red Penn site was inspected regularly by the Kentucky Division of Solid Waste which later became known as the Division of Hazardous Material and Waste Management, and is now called the Kentucky Division of Waste Management (KDWM). KDWM's files for this site indicate that violations of state and local regulations by the operator were frequent. Between 1972 and 1982, Red Penn Sanitation was cited repeatedly for improper operational problems, including creek pollution from overflowing leachate collection ponds, cover soil deficiencies, and consistently unsatisfactory site conditions.

In November 1982, KDWM discovered through discussions with Robert Layer, an independent Red Penn contractor that he had hauled several thousand drums of waste from the Anaconda Wire and Cable Company in LaGrange and dumped them in the landfill between 1967 and 1974. These drums allegedly contained waste enamels, drawing solution from the curing of copper wire, and possibly scrap varnish. Based on the information provided by Mr. Layer, KDWM estimated the number of drums dumped in the landfill to be at least 5400. Apparently, the drums were unloaded from his truck near the operating cell of the landfill and spread out over the landfill by the bulldozer operator at the site. Mr. Layer claimed that the drums were never empty. Fifteen drums were also taken to his own property where the contents were burned and the drums used as garbage cans. In addition, approximately 100 drums were taken to a Jim Sanders' property on Dawkins Road in Oldham County.

In April 1987, KDWM discovered through an interview with Mr. Donald Puckett, a former bulldozer operator at the landfill, that several drums containing paint waste and sludge generated by the Ford Motor Company plant in Jefferson County were dumped in the landfill between 1968 and 1974.

Based on the information provided by Mr. Puckett, KDWM estimated the number of drums dumped in the landfill to be at least 7800. Approximately 100 drums were also taken to Mr. Puckett's own property.

2.2 ENFORCEMENT ACTIVITIES

In March 1986, John Guelda, a part owner of the Red Penn Sanitation Company who bought half interest in 1979, notified KDWM that suspected hazardous waste had been found at the site. Upon inspection, KDWM found several drums and a pile of contaminated soil which had been excavated from the borrow area and dumped at the entrance of the landfill. Several drums were also found protruding from the excavation area. Two soil samples were collected from the drum and the pile at the entrance to the site during the inspection. Limited chemical analysis of the samples revealed the presence of toluene and xylene at concentrations of 153 and 62.5 milligrams per kilogram (mg/kg), respectively.

In 1986, KDWM conducted a preliminary assessment of the site and concluded that a site investigation was appropriate. The site investigation was conducted later in the same year. Samples of soil and wastes from the site, surface water and sediment from the Floyds Fork Creek, and groundwater from the site and private wells were analyzed for the entire list of priority pollutants. In addition, air sampling and magnetometer surveys were conducted. Several pollutants from industrial activities were detected in the various samples at significant levels of concentration particularly, metals, pesticides and volatile organic compounds. No readings above the background were observed from the magnetometer survey. Therefore, the extent of suspected drum burial could not be ascertained.

Based on the results of the site investigation, KDWM filed a Request for Appropriate Action and a Notice of Violation against the Red Penn Sanitation Company in 1986. The company agreed to clean up the drum excavation area and the pile of waste at the landfill entrance. In September and October 1986, approximately 207 cubic yards of contaminated soil and 85 drums (a total of about 154 tons

of material) were removed from the two locations by the Red Penn Sanitation Company under the direction of EPA's Emergency Response contractor. Upon completion of the removal action, KDWM collected and analyzed random soil samples from the excavation area and determined that further soil removal was necessary at the site. Red Penn Sanitation was ordered to conduct the additional removal work but defied the order. The permit to operate the landfill expired in December 1986. Although the company ceased operating the facility, the landfill was not properly closed. In April 1987, the Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC) issued letters to several parties, notifying them that they were responsible for disposal of hazardous substances at the site. The letters requested voluntary participation by these parties in investigating the site, proposing a remedial plan, and implementing an acceptable remedial action.

The site was scored by the State in late 1987, and listed as a National Priorities Site by EPA in 1989, based on a score of 38.1 using the Hazard Ranking System. The high score was driven primarily by the groundwater and surface water pathways. A major source of drinking water in the area is the Laurel aquifer which is shallow (21 feet), is highly permeable due to karst features and is exposed at the landfill. Floyds Fork Creek is a major stream which served as the source of potable water for approximately 250 inmates and staff at the nearby women's reformatory. The creek also supports recreational fishing in the area.

EPA conducted a search of the entities associated with the dumping of unauthorized waste at the landfill and identified several potentially responsible parties (PRPs) in 1988. Notice letters were sent to the parties in February 1989, to inform them of their potential liability, request additional information from them, and to advise them that EPA was considering spending public funds to conduct Remedial Investigation/Feasibility Studies (RI/FS) at the site. On June 19, 1989, two of the PRPs (Ford Motor Company and Waste Management, Inc.) met with EPA staff to discuss the possibility of a PRP lead RI/FS. EPA's conclusion from the discussions was that no PRP was interested in funding the studies. Therefore, a fund-lead RI/FS was initiated in late 1989.

In July 1993, EPA concluded from its RI studies that a Superfund remedial action at the site could not be justified. However, because the landfill was not properly closed, EPA advised KDWM to

solicit the PRPs to conduct a corrective action at the site under its authority. KDWM acted accordingly. In August 1994, the PRPs submitted a draft scope of work to the Commonwealth for capping the landfill. After revising the proposal several times, it was finalized in May 1998. Following an extensive negotiation, the Commonwealth and several PRPs entered into an Agreed Order in August 1999, requiring the PRPs to implement the remedial plan for the landfill. Pursuant to the provisions of the Agreed Order, the design for site remediation was prepared by the responsible parties and approved by KDWM in October 1999. The PRPs began construction of the remedy in April 2000, under the Commonwealth's authority and oversight.

3.0 COMMUNITY PARTICIPATION HIGHLIGHTS

The community relations program for the site began in June 1991, prior to starting the Remedial Investigation (RI) field work. EPA personnel interviewed the city and county officials, civic leaders, and area residents to determine their concerns and understanding of site issues. In addition, the interviews provided a basis for developing a comprehensive community relations plan for the site. Those interviewed were informed of the Superfund process and how it would be applied at the Red Penn site beginning with the pending Remedial Investigation and Feasibility Studies (RI/FS). The door to door interviews were held on June 3 and 4, 1991. The local library, South Oldham Library in Crestwood, was visited during the interview, and established as one of two information repositories for the site. The other repository was the EPA record center in Atlanta, Georgia. Establishment of the repositories was announced to the public early in the process, and information at both places was updated as necessary.

Several Fact Sheets were published to inform the public about EPA activities on this site. The first one, published in August 1991, reviewed site history and the work being planned for the site by EPA, particularly the RI/FS. The second Fact Sheet was written in May 1993, to review EPA's work progress. An analysis of site evaluation, and the results of risk assessment were reported in a July 1993 Proposed Plan Fact Sheet which also announced that EPA could not justify a Superfund Remedial Action at the site. A second Proposed Plan Fact Sheet was published in April 2000, to re-state why Superfund cleanup could not be conducted at the site and to inform the public that the

responsible parties were in the process of conducting the necessary landfill closure under Kentucky's authority and supervision.

KDWM also issued three fact sheets on the site between August 1994 and April 2000. The first fact sheet informed the public that the Commonwealth of Kentucky would exercise its independent authority to effect a corrective action at the site by working directly with the potentially responsible parties. The second issue was published in November 1999, to discuss the progress of negotiation between the Commonwealth and the responsible parties. In April 2000, Kentucky's third fact sheet was published to discuss the remedial action construction which the responsible parties were about to begin at the site.

In addition to the fact sheets, EPA and KDWM conducted several meetings between September 1991 and April 2000, to discuss the site with the public. The meetings were attended by federal, state, county, and city officials, environmental activists, responsible parties, area residents and members of the local news media. Appendix A includes the transcript of the Proposed Plan Public Meeting held on April 20, 2000.

In summary, public participation in the Red Penn Landfill site events was promoted actively by both EPA and KDWM. In turn, the public indicated a high level of interest in site activities. To encourage the public to review and understand the technical issues and documents related to the site, availability of the Technical Assistance Grant was announced at the beginning of the project. However, no applications were received for the grant.

4.0 CURRENT AND POTENTIAL SITE RESOURCE USE

4.1 DEMOGRAPHICS

There are three towns within a 4 mile radius of the Red Penn landfill. These are Pewee Valley, Crestwood, and Anchorage with a combined population of approximately 4,800 people according to the 1990 census. Pewee Valley is located at approximately 1.5 miles, northwest of the site and

has a population of approximately 1,283 people. Crestwood is 2.5 miles north of the site and has an estimated population of 1,435 people. Anchorage has a population of 2,082 people and is located at 3.5 miles southwest of the site. Several residences that are not considered parts of these towns, constituting some 2,200 people, are estimated to be within four miles of the site.

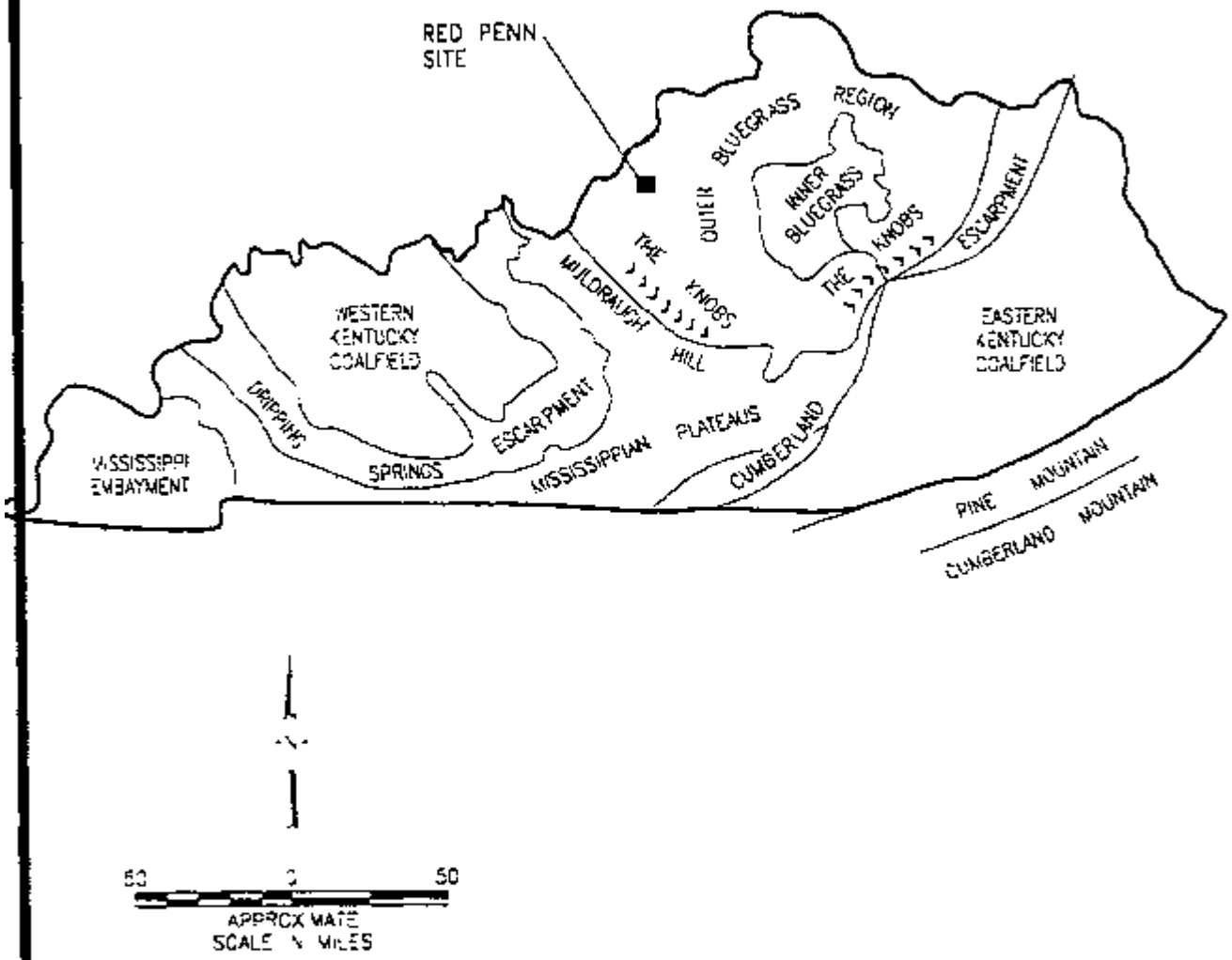
4.2 LAND USE

Land around the site is used primarily for agricultural and residential purposes. Agricultural activities include raising of crops and livestock. No parks or recreational areas are within a close proximity of the site. The property containing the landfill is designated for mix-use by the Oldham County Comprehensive Development Plan published in 1982. Development of the Red Penn property through year 2000 is planned to include commercial and office buildings, and medium to high density residences. The surrounding area is planned for low density residences. The Floyds Fork Creek which supports an active recreational fishing is designated as a resource protection item in the plan.

5.0 SUMMARY OF SITE CHARACTERISTICS

5.1 PHYSIOGRAPHY

As shown in Figure 3, Oldham County is located in the Outer Bluegrass Physiographic Province of Kentucky. The county consists of gently rolling to hilly terrain with upland elevations ranging from 650 feet above mean sea level (msl) in the western part, to 900 feet above msl in the eastern part. The Ohio River marks the northwest border of the county. In the western part of the county, wide expanses of gently rolling to nearly flat land are present. In the eastern part the terrain is dissected by several streams and is noticeably hilly. A few ridges are flat-topped, with the width of the ridges increasing westward in the county. Local relief is slight in the county except near Floyds Fork Creek, which has carved a valley 150 to 200 feet below the surrounding upland in some areas.



SOURCE: McGrain and Currens, 1978.

ARCS IV

PHYSIOGRAPHIC REGIONS OF KENTUCKY

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO

3

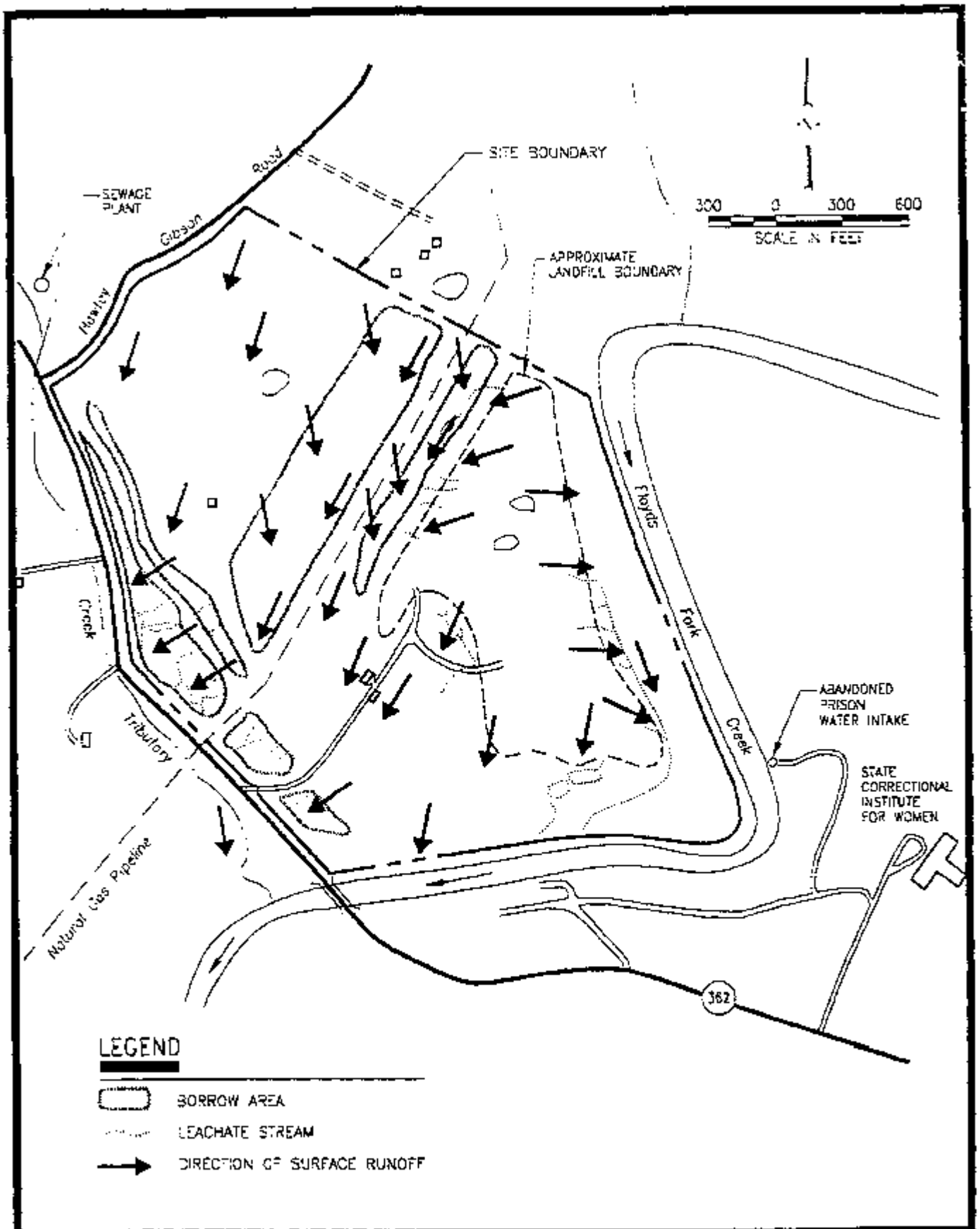
5.2 TOPOGRAPHY

The topography at the site has been altered significantly due to years of filling and borrowing activities. A review of the original (pre-development) topographic contours of the area during the RI indicated that a north-south trending drainage swale dissected the center of the property formerly and provided drainage into the Floyds Fork Creek. Presently, however, there is at least 50 feet of fill over this drainage swale. As part of the RI, a ground survey of the site was conducted and aerial photographs were obtained. The ground survey was conducted to locate a 100 foot sample grid over the entire 85 acres of the landfill and a 200 foot sample grid over the remainder of the property. The aerial photographs were utilized in conjunction with the ground survey to define current topography and to produce study base maps.

The crest of the landfill is approximately 700 feet above msl and approximately 100 feet above Floyds Fork Creek. Because the landfill is mound shaped, surface runoff occurs at the site radially and then proceeds south, east, or west towards the creeks along the site boundary. See Figure 4. To control the direct discharge of runoff from the site into the creek, a system of berm and catchment basin was constructed by the landfill operators. As shown in Figure 5, the site is not within the 100-year flood plain.

5.3 SURFACE HYDROLOGY

The surface waters potentially affected by the site are Floyds Fork Creek and the creek tributary. The creek tributary is approximately 10 feet wide where it borders the site and appears to be normally less than 1 foot deep based on observations made during the RI. The tributary flows southwest into the Floyds Fork Creek. Floyds Fork Creek is a perennial. It is a southwest flowing fork of the Salt River and is approximately 20 feet wide where it borders the site. Its depth is normally about 1 to 2 feet deep. However, high water marks of 6 or more feet above the stream banks were observed during site visits for this study. The Salt River is located approximately 12 miles south of the site. It flows



ARCS IV

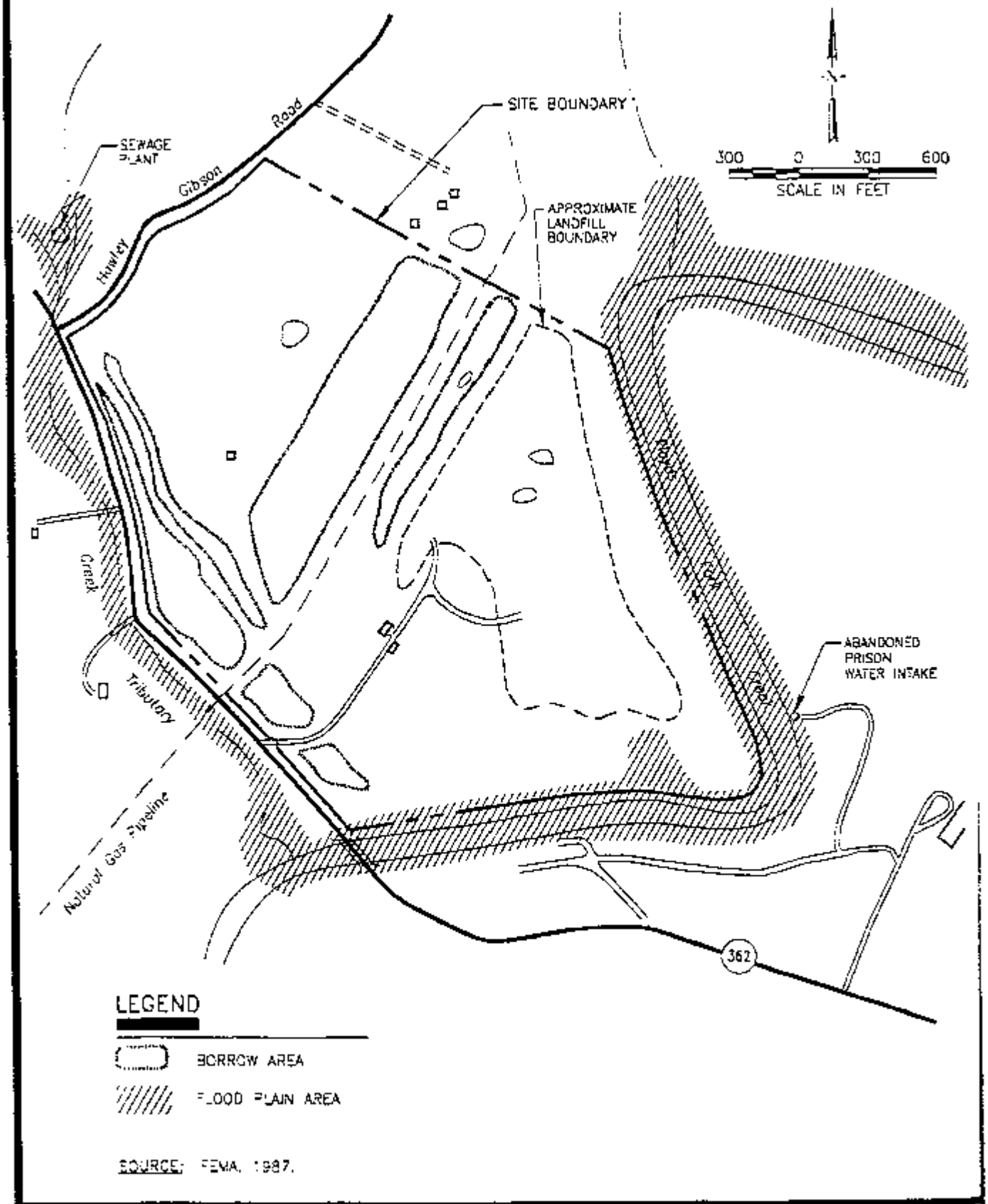
SURFACE RUNOFF PATHWAYS

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO.

4



ARCS IV

100-YEAR FLOOD PLAIN

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO.

5

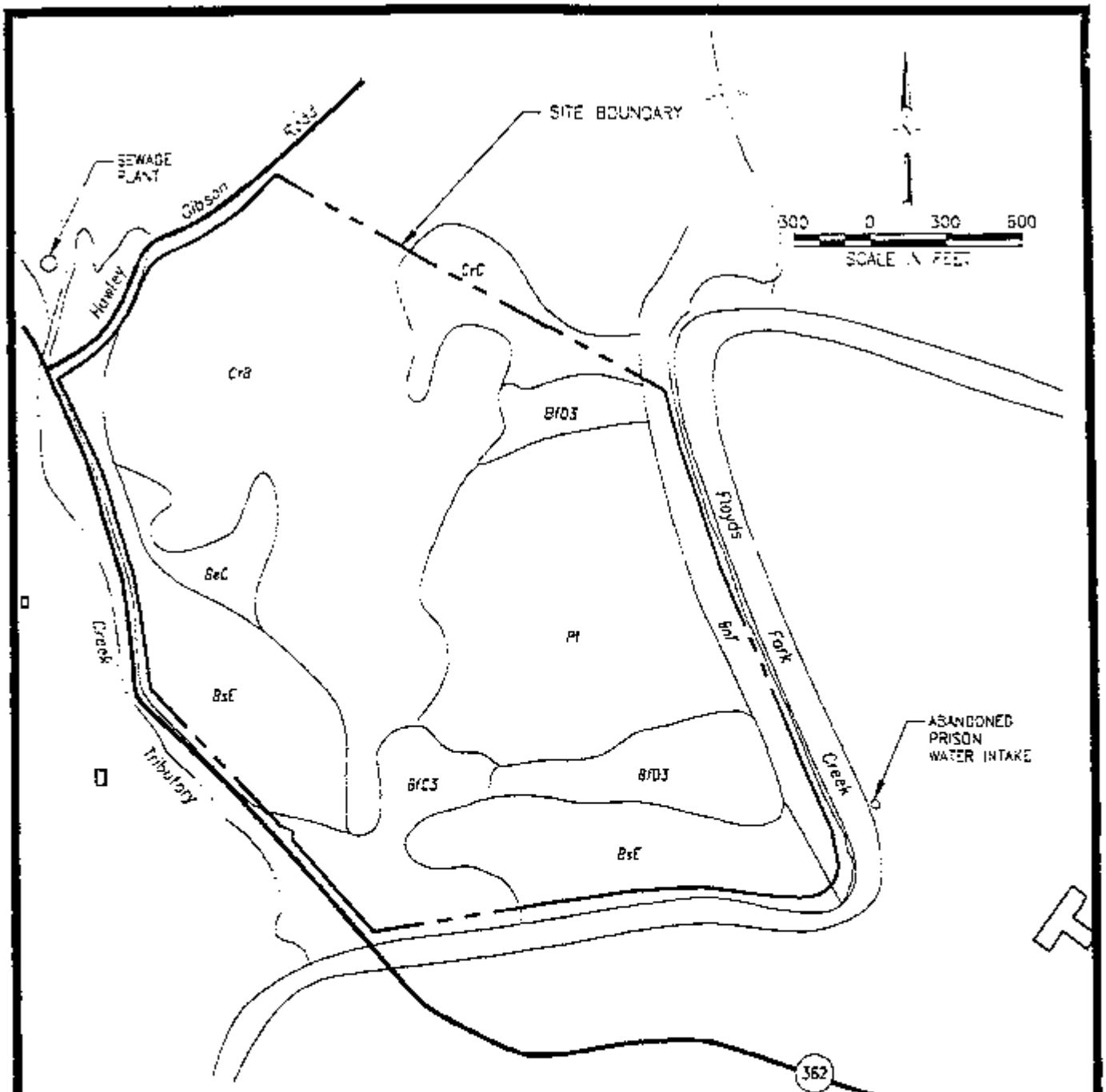
westward into the Ohio River. The U.S. Geological Survey (USGS) has a permanent stream gage on Floyds Fork Creek located approximately four miles upstream from the site and monitors the creek's rate of flow. A review of the USGS record indicated that during the dry season, Floyds Fork Creek may dry up or its flow rate may be too small to measure.

5.4 SOILS

Soil depth at the site varies from 0 to 12 feet. The soil type distribution at the site, according to the Soil Survey of Oldham County which was conducted in 1975, is shown in Figure 6. It is noteworthy that the soil type distribution depicted by the figure is representative of conditions as they existed prior to 1975. Due to land filling and borrowing activities since then, these conditions may have been altered. Nevertheless, the map provides a general indication of the types of soils present at the site.

5.5 GEOLOGY

Oldham County lies within the Ohio Geological Region which is made up of a series of bedrock units. The bedrock series vary greatly in thickness and hydrogeologic characteristics, and range in age from Precambrian to Tertiary. Two basins, the Appalachian and the Illinois, are the most conspicuous structural features in the area. These basins are separated from each other by the Cincinnati, the Findlay, and the Kankakee arches, and the Nashville dome. The surface of the basement complex slopes from the arch areas toward the Appalachian and Illinois basins. This slope is the key geologic feature controlling the strike and dip of the younger bedrock series overlying the basement complex. These younger units form the bedrock aquifer system. Oldham County lies on the western flank of the Cincinnati arch. The dip of the younger bedrock west of the Cincinnati arch and south of the Kankakee arch is generally toward the low point of the Illinois basement depression. Local geologic structures in the counties surrounding the site can be described as a series of synclines and anticlines, generally plunging to the west-southwest. The axis of the Lyndon Syncline, a local structural feature, traverses the central section of the site. Strike and dip measurements on the rock units outcropping at the surface indicate that the site is situated on a very gentle swale of the syncline. The dip of the



SOIL LEGEND

BeC	BEASLEY SILT LOAM, 6 TO 12% SLOPES
BfC3	BEASLEY SILTY CLAY LOAM, 6 TO 12% SLOPES, SEVERELY ERODED
BfD3	BEASLEY SILTY CLAY LOAM, 12 TO 20% SLOPES, SEVERELY ERODED
BnF	BEASLEY–CANEYVILLE ROCKY SILT LOAMS, 30 TO 60% SLOPES
BsE	BRASSFIELD–BEASLEY SILT LOAMS, 20 TO 30% SLOPES
CrB	CRIDER SILT LOAM, 2 TO 6% SLOPES
CrC	CRIDER SILT LOAM, 6 TO 12% SLOPES
Pf	PITS

SOURCE: SCS, 1977.

ARCS IV

SOIL TYPE DISTRIBUTION

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO.

6

bedrock units is generally less than 3 degrees, and influences the surface-water flow direction. The formation underlying the site is made up of fine grained carbonates and shales. Alluvial deposits are also found along Floyds Fork Creek and its tributaries. These sediments are of Quaternary age flood plain deposits composed principally of sands, silts, clays, and gravels. The unconsolidated sediments are commonly 8 to 10 feet in thickness along Floyds Fork Creek. Figure 7 is a map of the site showing the locations where two schematic geologic cross-sections (A-A' and B-B') have been constructed. Section A-A' is an east-west cross-section which is shown in Figure 8. Section B-B' is a north-south cross-section depicted in Figure 9.

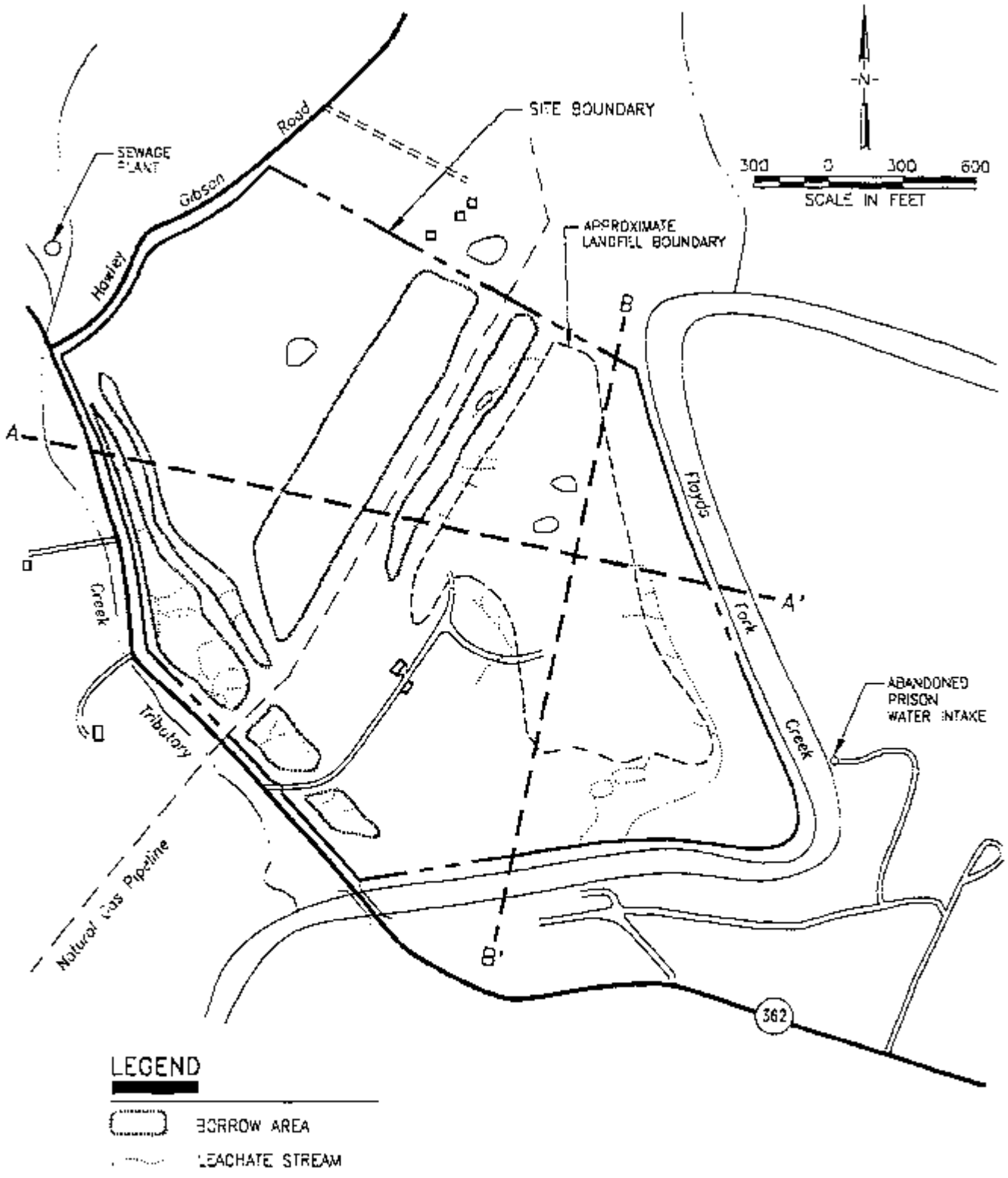
5.6 HYDROGEOLOGY

The occurrence and movement of ground water in this region appear to be controlled by three major factors. These are : (1) the fractures and solution-enlarged openings in the rocks, (2) the western-southwestern dip of the bedrock units, and (3) the creeks incising the bedrock aquifers. Generally, the limestone and dolomite beds transmit large quantities of water through openings along joints and bedding planes enlarged by solutioning. The shale beds, however, generally impede the upward and downward movement of water from the adjacent limestone and dolomite beds due to fewer and smaller fractures. The water bearing potentials of the stratigraphic units in the area are described below:

The Louisville limestone typically yields more than 500 gallons of water per day (gpd) to wells drilled in valley bottoms or along streams and broad uplands. At many locations, the limestone is highly porous and permeable along joints and bedding planes. Wells intersecting these openings usually yield a sustainable domestic supply of water. Springs are commonly found in the Louisville limestone just above the contact with the underlying Waldrom shale.

The Waldron shale yields little water. It tends to act as an aquitard which impedes recharge to the underlying Laurel dolomite.

The Laurel dolomite is fine-grained. It crops out in valleys of south-flowing streams such as the Floyds Fork Creek. Karst features, including sinkholes and solution channels are common in this unit. The Laurel dolomite typically yields 100 to 500



ARCS IV

GEOLOGIC CROSS-SECTION LOCATION MAP

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO

7

ARCS IV

GEOLOGIC CROSS-SECTION A-A'

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO.

8

ARCS IV

GEOLOGIC CROSS SECTION B-B'

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO.

9

gpd of water to wells located along streams. The unit, however, does not have sustainable yields of fresh water where it is extensively overlain by the Waldron shale.

The Osgood Formation underlying the Laurel dolomite consists of dolomitic shale, mudstone, and dolomite. The units yield little water to wells and impede recharge to the underlying limestones and dolomites. However, it yields water to small springs and seeps at locations where the contact between the dolomite and shale is exposed.

The Brassfield limestone underlying the Osgood Formation also yields water to springs. Karst features are common in this unit, however the formation is generally thin and has low capacity. Therefore, it is not a principal drinking water source in the area.

The Saluda dolomite is a member of the Drakes Formation which typically yields between 100 and 500 gpd of water to wells in valley bottoms such as near the Floyds Fork Creek. Karst features are common in the upper part of this formation but less common in the lower part.

In view of the above hydrogeologic characteristics, three major aquifers are potentially affected by the Red Penn Landfill. These are: the Louisville Limestone Aquifer, the Laurel Dolomite/Upper Osgood Formation Aquifer, and the Brassfield Limestone/Saluda Dolomite Aquifer. The first and second aquifers are separated by the Waldron shale, and the second and third aquifers are separated by the lower Osgood Formation aquitard. Around the site, a significant amount of the Louisville limestone and the Waldron shale has been eroded away, leaving the Laurel dolomite as the first formation encountered. The base of the Red Penn landfill lies on top of the Laurel dolomite, and leachate springs at the landfill have been observed to accumulate on top of the Osgood Formation beneath the Laurel dolomite. Therefore, the aquifers of primary concern at this site are the Laurel and the Saluda.

Generally, carbonate formations are potentially host to solution enhanced permeabilities and karst development which may present unpredictable and complicated groundwater flow patterns with variable transmissivities. These characteristics were observed at the site. Accordingly, the special technique of dye tracing was applied to study the groundwater flow pattern in the area. The following were the findings of the study.

- A vertical sequence of aquifers and confining layers exists at the site. The Louisville limestone represents a water-table aquifer extending down to the top of the Waldron shale, which is an effective confining layer. These units occur only at the most northern portion of the site and are not impacted by the landfill except by borrow activities.

- The aquifers of concern at the site are the Laurel and Saluda dolomites. While neither is a well-developed karst aquifer due to interbedding of shale and dolomite strata, they are anisotropic carbonate aquifers. The Laurel is a fractured dolomitic aquifer exposed at the land surface over most of the site. It exhibits a high degree of secondary permeability due to solution-enlarged joints and bedding-plane partings. While groundwater storage in the Laurel aquifer may be low, recharge occurring during wet periods travels at high velocity (on the order of 500 feet per hour) through discrete conduits in relatively narrow groundwater basins. The Osgood shales effectively limit downward percolation of groundwater from the Laurel aquifer into the Saluda aquifer, limiting dissolutional enlargement of fractures in the Saluda. Therefore, the Saluda is significantly less permeable than the Laurel. Both aquifers are gently folded by the west-southwest-plunging Lyndon Syncline, the axis of which bisects the site.

- Surface geophysical surveys conducted at the site detected no extensive areas of groundwater flow. However, the data indicated that flow of groundwater away from the landfill is limited to localized and discrete zones.

- Numerous small intermittent springs and several leachate streams flow from the landfill area into the Floyds Fork. However, due to structural control of groundwater flow by the west-southwest-plunging Lyndon Syncline, the greatest discharge occurs through the quarry springs which flow into the creek tributary. These springs occur primarily in the Laurel dolomite and are perched on the shaly Osgood Formation.

- Most groundwater flow from the site discharges through springs into Floyds Fork and the creek tributary. These streams are deeply incised and appear to form a local base level for

groundwater flow at the site. The dye-tracing investigation provided no evidence of groundwater migrating off site except via discharge into these streams.

6.0 SUMMARY OF SITE RISKS

EPA initiated sampling activities at the site in September 1989, primarily to assess current impact on the creeks especially because the nearby correctional institute obtained its drinking water from the Floyds Fork Creek. Surface water and sediment samples were collected and analyzed to determine the need for any emergency action. Although, toluene and heavy metals were detected in the samples, no emergency response was deemed necessary. Shortly after this event, RI began at the site.

6.1 REMEDIAL INVESTIGATION SUMMARY

During the RI, various studies were conducted to determine the nature and extent of site contamination. The studies included site sampling and laboratory analyses, evaluation of the risks potentially posed by site contamination to human health and the environment, and determination of site clean-up options. Details of the studies are in the Administrative Record and their results are summarized in the following sections.

6.1.1 Soil Gas Sampling

A passive soil gas survey was conducted to identify volatile organic compounds in the landfill and to determine potential source areas and migration pathways. Soil gas samples were collected from 222 grid points on and around the landfill. Results of the survey indicated presence of chemical compounds commonly found in solvents and fuel products primarily within the boundaries of the site. The results also indicated possible off-site migration of the compounds towards the creeks.

6.1.2 Surface Soil Sampling

Fifty-one soil samples were collected from and around the landfill to determine the chemical compounds of potential threat to human health due to direct contact. All samples were obtained from within one foot of the landfill surface and analyzed for complete target compound list/target analyte list (TCL/TAL). In addition, presence of cyanide was investigated. Several metals and cyanide were detected in the soil samples at low levels of concentration. The most predominant metals were chromium, iron, lead, vanadium, zinc, sodium, potassium, calcium and magnesium. Isolated occurrences of pesticides, polycyclic aromatic hydrocarbons and toluene were also reported.

6.1.3 Surface Water and Sediment Sampling

Surface water and sediment samples were collected from five locations along the Floyds Fork Creek, four locations along the creek tributary, and three on-site catchment basins. The samples were analyzed for TCL/TAL parameters and cyanide. Chloroform and bromodichloromethane were found in one surface water sample from the creek tributary and lindane was detected in a surface water sample from the Floyds Fork Creek. Sediments from the three on-site catchment basins showed the presence of PAHs. Concentrations of the contaminants found in the surface water and sediment samples were insignificant.

6.1.4 Groundwater Evaluation

Groundwater samples were collected from one up-gradient and two down-gradient domestic wells, two on-site monitoring wells, and one domestic source spring near the site. The samples were analyzed for chemical compounds of potential human health concern. No contaminants were found at significant concentrations in the wells with the exception of the up-gradient sample which showed the presence of lead and cadmium at elevated levels.

In addition to these samples which were collected by EPA contractors, Kentucky conducted a

confirmatory monitoring program to characterize seasonal fluctuations in contaminant levels. Groundwater was sampled quarterly over a period of one year between 1996 and 1997, under a cooperative agreement with EPA. Eleven on-site locations including two new wells, and one private well were sampled. Contaminants similar to those obtained during previous sampling efforts were obtained at levels within the ranges from previous laboratory results.

Groundwater flow and contaminant transport characteristics were evaluated using dye trace analysis. The analysis concluded that the primary aquifers underlying the landfill flow towards and discharge into the adjacent creeks. Consequently, landfill contaminants transported by the groundwater would be discharged into the creeks. However, sampling of the creeks indicated low contaminant concentrations. Furthermore, the dye trace study indicated that a confining layer exists above the deeper aquifer (Saluda) which would limit its contamination by the landfill.

6.1.5 Leachate Sampling

Several leachate springs, seeps, and ponds were found on and adjacent to the site during the RI. Six locations were chosen and sampled. The samples indicated the presence of several organic and inorganic compounds at varying concentrations which were determined to constitute a minimal threat to human health.

6.2 Summary of Human Health Risk Assessment

Human health risks posed by the Red Penn site were evaluated as part of the RI. The process of evaluation included: (1) identification of chemicals of potential concern at the site, (2) exposure assessment, (3) toxicity analysis, and (4) risk characterization.

6.2.1 Chemicals of Potential Concern

The RI field and laboratory activities were designed and conducted with proper quality control

measures to identify the chemical compounds associated with the site. Upon completing the activities, approximately sixty-six different chemicals were found at the site. A listing of the chemicals is presented in Table 1. A subset of the listed chemicals was selected as the contaminants of potential concern (COCS), by evaluating each chemical's toxicity, concentration; and frequency of occurrence. The COCS are cadmium, chromium, lead, cyanide, benzene, three isomers of benzene hexachloride (alpha, beta, gamma), bis(2-ethylhexyl)phthalate, and carbon disulfide. Rationales for selecting these chemicals are stated in Table 1.

6.2.2 Exposure Assessment

An analysis of potential human contact with the chemicals of concern at Red Penn was conducted. Site physical setting, fate and transport of the COCS, the potentially exposed populations, and all relevant exposure pathways were considered as detailed in the RI report. The various qualitative factors considered in the exposure assessment are outlined in the Conceptual Site Model of Figure 10. Exposure to COCS was expressed numerically and designated as Chronic Daily Intake (CDI). Quantitative factors used to calculate chronic daily intake for each COC, including reasonable maximum exposure, contaminant concentration, frequency, and duration of exposure, were based on worst case scenarios so as to derive conservative exposure information.

6.2.3 Toxicity Analysis

Toxicity analysis was conducted to evaluate the potential for cases of cancer and/other adverse human health problems as a result of exposure to each COC. The analysis was based on EPA's slope factors for carcinogenic effects and reference doses (RfDs) for non-carcinogenic effects. Results of the analysis are shown in Tables 2 and 3.

6.2.4 Risk Characterization

By integrating the results of exposure assessment and toxicity analysis, various cancer and non-cancer

TABLE 1

Occurrence and Distribution of Contaminants
Red Penn Site
Pewee Valley, Kentucky

Parameter	Media(1)	Control(2)	Range of Detects(3)	Average(4)	Frequency(5)	COC	Rational for Inclusion or Exclusion
ALUMINUM	SS	5200 – 14000	1900 – 45000	10,600	41/41		
	LH	NA	430 – 4500	1100	5/6	No	Mean concentration less than 2 x background In all media.
	SD	11000	1600 – 17000	8000	11/11		No EPA toxicity values available.
	SW	3900	1200 – 4200	1500	5/9		
	GW	NA	280 – 2400	1340	2/2		
ANTIMONY	SS	ND(8.5 – 20)	2.5 – 3.3	2.8	3/41		
	LH	NA	ND(30)	NA	0/6	No	Less than preliminary remediation goal (PRG) for surface soil,
	SD	ND(30)	ND(20 – 30)	NA	0/11		(110 mg/kg).
	SW	ND(30)	ND(30 – 60)	NA	0/9		Not detected in other media.
	GW	NA	ND(30)	NA	0/2		
ARSENIC	SS	3 – 12	2.5 – 23	12.8	19/41		
	LH	NA	13 – 34	21	4/6	No	Less than 2 x background for surface soil and sediment.
	SD	80	3 – 78	40	10/11		Less than MCL (50) in leachate.
	SW	ND(30)	ND(3 – 30)	NA	0/9		Less than PRG for surface soil (274 mg/kg)
	GW	ND(30)	NA	NA	0/2		
BARIUM	SS	36 – 120	15 – 170	72	41/41		
	LH	NA	150 – 440	292	6/6	No	Less than MCL (2,000) in leachate.
	SD	420	21 – 440	210	11/11		Less than PRGs for surface soil (13,700 mg/kg) and leachate
	SW	63	63 – 300	120	6/9		(1,830 ug/L)
	GW	NA	27 – 98	63	2/2		
BERYLLIUM	SS	0.50 – 1.0	0.34 – 1.7	0.72	41/41		
	LH	NA	ND(1 – 5.0)	NA	0/6	No	Less than 2 x background in surface soil and sediment.
	SD	5.3	0.41 – 5.8	2.7	9/11		Not detected in leachate or surface water.
	SW	ND(5.0)	ND(1 – 5.0)	NA	0/9		
	GW	NA	ND(5.0)	NA	0/2		
CADMIUM *	SS	ND(0.48 – 1.5)	ND(0.41 – 1.5)	NA	0/41		
	LH	NA	9 – 13	10	3/6	Yes	Exceeds MCL (5) in leachate.
	SD	ND(5.0)	0.85 – 2.7	1.8	2/11		
	SW	ND(5.0)	3 – 6	4	5/9		
	GW	NA	ND(5.0)	NA	0/2		
CALCIUM	SS	800 – 150000	1000 – 150000	58,300	41/41		
	LH	NA	76000 – 145000	110000	6/6	No	Less than 2 x background in all media.
	SD	74000	8100 – 140000	75000	10/10		No EPA toxicity values available.
	SW	41000	41000 – 72000	56000	9/9		
	GW	NA	48000 – 100000	74000	2/2		

TABLE 1 (continued)
Occurrence and Distribution of Contaminants
Red Penn Site
Pewee Valley, Kentucky

Parameter	Media(1)	Control(2)	Range of Detects(3)	Average(4)	Frequency(5)	COC	Rational for Inclusion or Exclusion
4,4'–DDD (P,P'–DDD)	SS	ND(3.7 – 4.7)	6.4	6.4	1/41		
	LH	NA	ND(0.10 – 0.25)	NA	0/6	No	Less than PRG for surface soil (2,670 ug/kg).
	SD	ND(32)	ND(3.9 – 33)	NA	0/11		Not detected in other media.
	SW	ND(0.25)	ND(0.10 – 0.25)	NA	0/9		
	GW	NA	ND(0.20)	NA	0/2		
4,4'–DDT (P,P'–DDT)	SS	3.9 – 22	18	18	1/41		
	LH	NA	ND(0.10 – 0.25)	NA	0/6	No	Less than PRG for surface soil (1,880 ug/kg).
	SD	ND(40)	ND(3.9 – 41)	NA	0/11		Not detected in other media.
	SW	ND(0.25)	ND(10 – 0.25)	NA	0/9		
	GW	NA	ND(0.25)	NA	0/2		
BENZENE *	SS	ND(11 – 14)	ND(11 – 14)	NA	0/41		
	LH	NA	3.5 – 6.5	5.0	3/6	Yes	Exceeds MCL (5) in leachate.
	SD	ND(31)	ND(12 – 65)	NA	0/11		
	SW	ND(5.0)	ND(5.0 – 10)	NA	0/9		
	GW	NA	ND(5.0)	NA	0/2		
BENZO(A)ANTHRACENE	SS	ND(380 – 460)	92	92	1/41		
	LH	NA	ND(10)	NA	0/6	No	Less than PRG for surface soil (877 ug/kg).
	SD	ND(1600)	54	54	1/11		Less than Effects Range–Low (ER–L) for sediment.
	SW	ND(10)	ND(10)	NA	0/9		Infrequent, isolated occurrence.
	GW	NA	ND(10)	NA	0/2		
BENZO(B AND/OR K)–FLUORANTHRENE	SS	ND(380 – 460)	89	89	1/41		
	LH	NA	ND(10)	NA	0/6	No	Less than PRG for surface soil (877 ug/kg).
	SD	ND(1600)	88	88	1/11		Infrequent, isolated occurrence.
	SW	ND(10)	ND(10)	NA	0/9		
	GW	NA	ND(10)	NA	0/2		
BHC–ALPHA *	SS	ND(1.9 – 2.4)	ND(1.9 – 2.4)	NA	0/41		
	LH	NA	0.062	0.062	1/6	Yes	Exceeds PRG for leachate (0.00285 ug/L)
	SD	ND(7.9)	ND(2.0 – 8.1)	NA	0/11		
	SW	ND(0.10)	ND(0.05 – 0.10)	NA	0/9		
	GW	NA	ND(0.050 – 0.053)	NA	0/2		
BHC–BETA *	SS	ND(1.9 – 2.4)	ND(1.9 – 2.4)	NA	0/41		
	LH	NA	0.12	0.12	1/6	Yes	Exceeds PRG for leachate (0.00996 ug/L).
	SD	ND(16)	ND(2.0 – 16)	NA	0/11		
	SW	ND(0.10)	ND(0.05 – 0.10)	NA	0/9		
	GW	NA	ND(0.10)	NA	0/2		

TABLE 1 (continued)
Occurrence and Distribution of Contaminants
Red Penn Site
Pewee Valley, Kentucky

Parameter	Media(1)	Control(2)	Range of Detects(3)	Average(4)	Frequency(5)	COC	Rational for Inclusion or Exclusion
CHLOROETHANE	SS	ND(11– 14)	ND(11 – 14)	NA	0/41		
	LH	NA	1.2 – 2.0	1.6	2/6	No	Less than PRG for leachate (28,200 ug/L).
	SD	ND(31)	ND(12 – 65)	NA	0/11		Not detected in other media.
	SW	ND(5.0)	ND(5.0 – 10)	NA	0/9		
	GW	NA	ND(5.0)	NA	0/2		
CHLOROFORM	SS	ND(11 – 14)	ND(11 – 14)	NA	0/41		
	LH	NA	ND(5.0 – 10)	NA	0/6	No	Not detected in surface soil, leachate or sediment.
	SD	ND(31)	ND(12 – 65)	NA	0/11		Infrequent, isolated occurrence.
	SW	ND(5.0)	26	26	1/9		
	GW	NA	ND(5.0)	NA	0/2		
CHLOROMETHANE	SS	ND(11 – 14)	ND(11 – 14)	NA	0/41		
	LH	NA	1.0	1.0	1/6	No	Isolated occurrence equal to PRG for leachate (1 ug/L).
	SD	ND(31)	ND(12 – 65)	NA	0/11		Not detected in other media.
	SW	ND(5.0)	ND(5. 0– 10)	NA	0/9		
	GW	NA	ND(5.0)	NA	0/2		
CHRYSENE	SS	ND(380 – 460)	93	93	1/41		
	LH	NA	ND(10)	NA	0/6	No	Less than PRG for surface soil (8,770 ug/kg).
	SD	ND(1600)	45	45	1/11		Less than ER–L in sediment.
	SW	ND(10)	ND(10)	NA	0/9		Infrequent, isolated occurrence.
	GW	NA	ND(10)	NA	0/2		
1,2–DICHLOROETHANE	SS	ND(11 – 14)	ND(11 – 14)	NA	0/41		
	LH	NA	0.70	0.70	1/6	No	Less than MCL (5) in leachate.
	SD	ND(31)	ND(12 – 65)	NA	0/11		Not detected in other media.
	SW	ND(5.0)	ND(5.0 – 10)	NA	0/9		
	GW	NA	ND(5.0)	NA	0/2		
cis–1,2–DICHLOROETHENE	SS	ND(11 – 14)	ND(11 – 14)	NA	0/41		
	LH	NA	0.78 – 0.85	0.82	2/6	No	Less than MCL (70) in leachate.
	SD	ND(31)	ND(12 – 65)	NA	0/11		Not detected in other media.
	SW	ND(5.0)	ND(5.0 – 10)	NA	0/9		
	GW	NA	ND(5.0)	NA	0/2		
DIELDRIN	SS	ND(3.7 – 4.7)	1.7	1.7	1/41		
	LH	NA	ND(0.10 – 0.15	NA	0/6	No	Less than PRG for surface soil (40 ug/kg).
	SD	ND(16)	2.6	2.6	1/11		Not detected in leachate or surface water.
	SW	ND(.10)	ND(.10)	NA	0/9		Infrequent, isolated occurrence.
	GW	NA	ND(0.10)	NA	0/2		

TABLE 1 (continued)
Occurrence and Distribution of Contaminants
Red Penn Site
Pewee Valley, Kentucky

Parameter	Media(1)	Control(2)	Range of Detects(3)	Average(4)	Frequency(5)	COC	Rational for Inclusion or Exclusion
CHROMIUM *	SS	7 – 21	4.4 – 56	16	41/41		
	LH	NA	35 – 65	53	3/6	Yes	Exceeds state drinking water quality standard (50) in leachate.
	SD	91	5.5 – 110	43	11/11		
	SW	ND(10)	11 – 31	16	5/9		
	GW	NA	18	18	1/2		
COLBALT	SS	4.8 – 16	2.2 – 19	8.9	41/41		
	LH	NA	55	55	1/6	No	Less than 2 x background in all media.
	SD	91	3.1 – 91	57	7/11		No EPA toxicity values available.
	SW	ND(10)	ND(4 – 30)	NA	0/9		
	GW	NA	ND(10)	NA	0/2		
COPPER	SS	4.3 – 16	2 – 31	8.9	31/41		
	LH	NA	ND(10 – 30)	NA	0/6	No	Less than 2 x background in all media.
	SD	33	2.8 – 33	16.7	6/11		Less than PRGs for surface soil (10,200 mg/kg) and leachate.
	SW	13	11	11	1/9		(1,350 ug/L)
	GW	NA	ND(10)	NA	0/2		
IRON	SS	10000 – 25000	8600 – 54000	22,300	41/41		
	LH	NA	1400 – 9000	13200	6/6	No	Mean concentration less than 2 x background in all media.
	SD	200000	6000 – 210000	109000	11/11		No EPA toxicity values available..
	SW	3800	1050 – 6900	2700	6/9		
	GW	NA	440 – 5200	2820	2/2		
LEAD *	SS	18 – 25	1.1–100	19.6	41/41		
	LH	NA	5 – 9	7	2/6	Yes	Exceeds 2 x background in surface soil.
	SD	78	4.6 – 98	39	11/11		
	SW	ND(40)	5	5	1/9		
	GW	NA	ND(40)	NA	0/2		
MAGNESIUM	SS	1000 – 58000	1300 – 61000	32,500	41/41		
	LH	NA	56000 – 190000	109000	6/6	No	Mean concentration less than 2 x background in all media.
	SD	3600	3100 – 63000	20000	11/11		No EPA toxicity values available.
	SW	15000	15000 – 74000	29000	9/9		
	GW	NA	43000 – 48000	45500	2/2		
MANGANESE	SS	560 – 2100	260 – 2900	1,100	41/41		
	LH	NA	340 – 825	550	6/6	No	Mean concentration less than 2 x background in all media.
	SD	10000	380 – 7100	3200	11/11		Less than PRGs in surface soil (27,400 mg/kg) and leachate.
	SW	120	21 – 320	112	9/9		(3,650 ug/L)
	GW	NA	21 – 160	91	2/2		

TABLE 1 (continued)
Occurrence and Distribution of Contaminants
Red Penn Site
Pewee Valley, Kentucky

Parameter	Media(1)	Control(2)	Range of Detects(3)	Average(4)	Frequency(5)	COC	Rational for Inclusion or Exclusion
MERCURY	SS	ND(0.11 – 0.15)	0.12 – 0.23	0.17	3/41		
	LH	NA	ND(0.2 – 0.3)	NA	0/6	No	Not detected above background in sediment.
	SD	0.06	0.05	0.05	4/11		Less than PRG in surface soil (82.3 mg/kg)
	SW	ND(0.2)	ND(0.2)	NA	0/9		Not detected in other media.
	GW	NA	ND(0.2)	NA	0/2		
MOLYBDENUM	SS	NA	NA	NA	NA		
	LH	NA	ND(10)	NA	0/3	No	Not analyzed for in surface soil or leachate.
	SD	ND(10)	ND(10)	NA	0/4		No evidence to link to the site.
	SW	ND(10)	11 – 20	16	4/4		
	GW	NA	ND(10)	NA	0/2		
NICKEL	SS	5.2 – 16	3.4 – 36	12	41/41		
	LH	NA	34 – 81	54	3/6	No	Less than MCL (100) in leachate.
	SD	73	3.1 – 75	37	11/11		Less than PRGs in surface soil (5,490 mg/kg) and leachate,
	SW	ND(20)	17 – 46	32	2/9		(730 ug/L)
	GW	NA	ND(20)	NA	0/2		
POTASSIUM	SS	480 – 1800	780 – 3800	2100	41/41		
	LH	NA	17000 – 580000	260000	6/6	No	Mean concentration less than 2 x background in all media.
	SD	ND(2000)	450 – 2200	1200	7/11		No EPA toxicity values available.
	SW	5800	5800 – 230000	34000	9/9		
	GW	NA	3800–6100	4950	2/2		
SILVER	SS	ND(0.72 – 1.9)	18	18	1/41		
	LH	NA	ND(2 – 10)	NA	0/6	No	Less than PRG in surface soil (823 mg/kg).
	SD	ND(10)	9.6	9.6	1/11		Not detected in leachate or surface water.
	SW	ND(10)	ND(3 – 10)	NA	0/9		Infrequent, isolated occurrence.
	GW	NA	ND(10)	NA	0/2		
SODIUM	SS	ND(50 – 210)	93 – 700	177	24/41		
	LH	NA	68000 – 1000000	440000	6/6	No	No EPA toxicity values available.
	SD	ND(1000)	220 – 860	350	7/11		
	SW	28000	28000 – 400000	93000	9/9		
	GW	NA	12000 – 25000	18500	2/2		
STRONTIUM	SS	NA	NA	NA	NA		
	LH	NA	160 – 560	290	3/3	No	Less than 2 x background in surface water and sediment.
	SD	90	76 – 120	90	4/4		No EPA toxicity values available.
	SW	72	75 – 83	80	4/4		
	GW	NA	460 – 1000	730	2/2		

TABLE 1 (continued)
Occurrence and Distribution of Contaminants
Red Penn Site
Pewee Valley, Kentucky

Parameter	Media(1)	Control(2)	Range of Detects(3)	Average(4)	Frequency(5)	COC	Rational for Inclusion or Exclusion
TIN	SS	NA	NA	NA	NA		
	LH	NA	NA(25)	NA	0/6	No	Not detected in site leachate, sediment or surface water.
	SD	160	ND(25)	NA	0/4		Not analyzed for in surface soil.
	SW	ND(25)	ND(25)	NA	0/4		
	GW	NA	ND(25)	NA	0/2		
TITANIUM	SS	NA	NA	NA	NA		
	LH	NA	13 – 14	14	2/3	No	Less than 2 x background in surface water and sediment.
	SD	85	95 – 130	110	4/4		No EPA toxicity values available.
	SW	45	19 – 44	31	4/4		
	GW	NA	10 – 39	25	2/2		
VANADIUM	SS	13 – 37	9.1 – 82	27	41/41		
	LH	NA	ND(10 – 100)	NA	0/6	No	Less than 2 x background in sediment.
	SD	120	12 – 140	75	9/11		Less than PRG for surface soil (1,920 mg/kg).
	SW	ND(10)	ND(6 – 20)	NA	0/9		Not detected in leachate or surface water.
	GW	NA	ND(10)	NA	0/2		
YTTRIUM	SS	NA	NA	NA	NA		
	LH	NA	ND(10)	NA	0/3	No	Less than 2 x background in sediment.
	SD	45	46 – 62	52	4/4		Not detected in othermedia.
	SW	ND(10)	ND(10)	NA	0/4		
	GW	NA	ND(10)	NA	0/2		
ZINC	SS	24 – 54	11 – 170	29	30/41		
	LH	NA	14 – 120	69	4/6	No	Less than 2 x background in sediment.
	SD	73	24 – 100	64	9/11		Less than PRG for surface soil (54,900 mg/kg).
	SW	14	16 – 88	52	2/9		Less than SMCL (5,000) in leachate.
	GW	NA	28 – 36	32	2/2		
CYANIDE *	SS	ND(0.59 – 0.80)	0.54 – 2.8	1.5	15/41		
	LH	NA	51 – 69	60	2/6	Yes	Exceeds 2 x background in surface soil and surface water.
	SD	ND(0.24)	ND(0.24 – 1.0)	NA	0/11		
	SW	ND(4)	350	350	1/9		
	GW	NA	ND(4)	NA	0/2		
4,4'DDE (P,P'–DDE)	SS	3.9 – 36	2.3 – 14	8.2	2/41		
	LH	NA	ND(0.10 – 0.25)	NA	0/6	No	Less than PRG for surface soil (1,880 ug/kg).
	SD	ND(16)	ND(3.9 – 16)	NA	0/11		Not detected in other media.
	SW	ND(0.10)	ND(0.10)	NA	0/9		
	GW	NA	ND(0.10)	NA	0/2		

TABLE 1 (continued)
Occurrence and Distribution of Contaminants
Red Penn Site
Pewee Valley, Kentucky

Parameter	Media(1)	Control(2)	Range of Detects(3)	Average(4)	Frequency(5)	COC	Rational for Inclusion or Exclusion
BHC–GAMMA (LINDANE) *	SS	ND(1.9 – 2.4)	ND(1.9–2.4)	NA	0/41		
	LH	NA	0.94	0.94	1/6	Yes	Exceeds PRG for leachate (0.0655 ug/L).
	SD	ND(7.9)	ND(2.0–16)	NA	0/11		
	SW	ND(0.10)	0.028	0.028	1/9		
	GW	NA	ND(0.050–0.054)	NA	0/2		
BIS(2–ETHYLHEXYL)PHTHALATE *	SS	ND(380 – 460)	ND(380–460)	NA	0/41		
	LH	NA	ND(10)	NA	0/6	Yes	Exceeds MCL (6 ug/L) in monitoring well.
	SD	ND(1600)	ND(390–1600)	NA	0/11		
	SW	ND(10)	ND(10)	NA	0/9		
	GW	NA	46	46	1/2		
BROMODICHLOROMETHANE	SS	ND(11 – 14)	ND(11 – 14)	NA	0/41		
	LH	NA	ND(5.0 – 10)	NA	0/6	No	Not detected in surface soil, leachate or sediment.
	SD	ND(31)	ND(12 – 65)	NA	0/11		Infrequent, isolated occurrence.
	SW	ND(5.0)	5	5	1/9		
	GW	NA	ND(5.0)	NA	0/2		
CARBAZOLE	SS	ND(380 – 460)	ND(380 – 460)	NA	0/41		
	LH	NA	2	2	1/6	No	Less than PRG for leachate (4.26 ug/L).
	SD	ND(1600)	ND(390 – 1600)	NA	0/11		Not detected in other media.
	SW	ND(10)	ND(10)	NA	0/9		
	GW	NA	ND(10)	NA	0/2		
CARBON DISULFIDE *	SS	ND(11 – 14)	ND(11 – 14)	NA	0/41		
	LH	NA	1.8 – 17	9.4	2/6	Yes	Detected in both monitoring wells.
	SD	ND(77)	ND(12 – 160)	NA	0/11		
	SW	ND(12)	ND(10 – 12)	NA	0/9		
	GW	NA	20 – 42	31	2/2		
CHLORDANE ALPHA /2	SS	ND(1.9 – 2.4)	6.5	6.5	1/41		
	LH	NA	ND(0.05 – 0.62)	NA	0/6	No	Less than PRG for surface soil (493 ug/kg).
	SD	ND(98)	ND(2.0 – 100)	NA	0/11		Not detected in other media.
	SW	ND(0.62)	ND(0.05 – 0.62)	NA	0/9		
	GW	NA	ND(0.62)	NA	0/2		
CHLORDANE–GAMMA /2	SS	ND(1.9 – 2.4)	4.7 – 5.1	4.9	2/41		
	LH	NA	ND(0.05 – 0.62)	NA	0/6	No	Less than PRG for surface soil (493 ug/kg).
	SD	ND(98)	ND(2.0 – 100)	NA	0/11		Not detected in other media.
	SW	ND(0.62)	ND(0.05 – 0.62)	NA	0/9		
	GW	NA	ND(0.62)	NA	0/2		
CHLOROBENZENE	SS	ND(11 – 14)	ND(11 – 14)	NA	0/41		
	LH	NA	4.3 – 9.4	6.8	3/6	No	Less than MCL (100) inleachate.
	SD	ND(31)	ND(12 – 65)	NA	0/11		Not detected in other media.
	SW	ND(5.0)	ND(5.0 - 10)	NA	0/9		
	GW	NA	ND(5.0)	NA	0/2		

TABLE 1 (continued)

Occurrence and Distribution of Contaminants
Red Penn Site
Pewee Valley, Kentucky

Parameter	Media(1)	Control(2)	Range of Detects(3)	Average(4)	Frequency(5)	COC	Rationale for Inclusion or Exclusion
DIETHYL PHTHALATE	SS	ND(380–460)	41–46	44	3/41		
	LH	NA	ND(10)	NA	0/6	No	Less than PRG for surface soil (220,000 ug/kg).
	SD	ND(1600)	ND(390–1600)	NA	0/11		Not detected in other media.
	SW	ND(10)	ND(10)	NA	0/9		
	GW	NA	ND(10)	NA	0/2		
DI-N-BUTYLPHTHALATE	SS	ND(380–460)	ND(380–460)	NA	0/41		
	LH	NA	ND(10)	NA	0/6	No	Not detected in surface soil, leachate or surface water.
	SD	ND(1600)	120	120	1/11		Infrequent, isolated occurrence.
	SW	ND(10)	ND(10)	NA	0/9		
	GW	NA	ND(10)	NA	0/2		
ENDRIN	SS	ND(3.7–4.7)	0.72–2.2	1.5	2/41		
	LH	NA	ND(0.10–0.25)	NA	0/6	No	Less than PRG for surface soil (10,900 ug/kg).
	SD	ND(32)	ND(4.0–34)	NA	0/11		Not detected in other media.
	SW	ND(.25)	ND(.10–0.25)	NA	0/9		
	GW	NA	ND(0.20–0.21)	NA	0/2		
FLUORANTHENE	SS	ND(380–460)	67	67	1/41		
	LH	NA	ND(10)	NA	0/6	No	Less than PRG for surface soil (1460 ug/kg).
	SD	ND(1600)	92	92	1/11		Less than ER–L for sediment.
	SW	ND(10)	ND(10)	NA	0/9		Infrequent, isolated occurrence.
	GW	NA	ND(10)	NA	0/2		
METHYL BUTYL KETONE	SS	ND(11–14)	ND(11–14)	NA	0/41		
	LH	NA	2.2	2.2	1/6	No	Less than PRG for leachate (176 ug/L).
	SD	ND(77)	ND(12–160)	NA	0/11		Not detected in other media.
	SW	ND(12)	ND(10–12)	NA	0/9		
	GW	NA	ND(12)	NA	0/2		
METHYL ETHYL KETONE	SS	ND(11–14)	ND(11–14)	NA	0/41		
	LH	NA	ND(10–50)	NA	0/6	No	Not detected in surface soil, leachate or surface water.
	SD	ND(310)	59	59	1/11		Infrequent, isolated occurrence.
	SW	ND(50)	ND(10–50)	NA	0/9		
	GW	NA	ND(50)	NA	0/2		
NAPHTHALENE	SS	ND(380–460)	ND(380–460)	NA	0/41		
	LH	NA	1.5	1.5	1/6	No	Less than PRG for leachate (1460 ug/L).
	SD	ND(1600)	ND(390–1600)	NA	0/11		Not detected in other media.
	SW	ND(10)	ND(10)	NA	0/9		
	GW	NA	ND(10)	NA	0/2		

TABLE 1 (continued)

Occurrence and Distribution of Contaminants
Red Penn Site
Pewee Valley, Kentucky

Parameter	Media(1)	Control(2)	Range of Detects(3)	Average(4)	Frequency(5)	COC	Rationale for Inclusion or Exclusion
PCB–1254 (AROCLOR 1254)	SS	ND(37–47)	48–190	110	2/41		
	LH	NA	ND(1.0–2.5)	NA	0/6	No	Less than EPA remediation goal (1 ppm) for surface soil.
	SD	ND(190)	ND(40–200)	NA	0/11		Not detect in other media.
	SW	ND(1.2)	ND(1.0–1.2)	NA	0/9		
	GW	NA	ND(1.2)	NA	0/2		
PHENANTHRENE	SS	ND(380–460)	46–48	47	3/41		
	LH	NA	ND(10)	NA	0/6	No	Less than PRG for surface soil (8,230,000 ug/kg).
	SD	ND(1600)	65	65	1/11		Not detect in leachate or surface water.
	SW	ND(10)	ND(10)	NA	0/9		Less than ER–L in sediment.
	GW	NA	ND(10)	NA	0/2		
PYRENE	SS	ND(380–460)	59	59	1/41		
	LH	NA	ND(10)	NA	0/6	No	Less than PRG for surface soil (8,230,000 ug/kg).
	SD	ND(1600)	86	86	1/11		Not detected in leachate or surface water.
	SW	ND(10)	ND(10)	NA	0/9		Less than ER–L in sediment.
	GW	NA	ND(10)	NA	0/2		
TOLUENE	SS	ND(11–14)	2–4	3	3/41		
	LH	NA	0.58	0.58	1/6	No	Less than PRGs for surface soil (54,900 ug/kg) and leachate, (3,150 ug/L).
	SD	ND(31)	ND(12–65)	NA	0/11		
	SW	ND(5.0)	ND(5.0–10)	NA	0/9		Not detected in sediment or surface water.
	GW	NA	ND(5.0)	NA	0/2		
XYLENE-O	SS	ND(11–14)	ND(11-14)	NA	0/41		
	LH	NA	0.57	0.57	1/6	No	Less than PRG for leachate (828 ug/L).
	SD	ND(31)	ND(12–65)	NA	0/11		Less than MCL (10,000) in leachate.
	SW	ND(5.0)	ND(5.0–10)	NA	0/9		Not detected in other media.
	GW	NA	ND(5.0)	NA	0/2		
XYLENE (M–AND/OR P–)	SS	ND(11–14)	ND(11–14)	NA	0/41		
	LH	NA	0.52–1.5	1.1	3/6	No	Less than PRG for leachate (828 ug/L).
	SD	ND(31)	ND(12–65)	NA	0/11		less than MCL (10,000) in leachate.
	SW	ND(5.0)	ND(5.0–10)	NA	0/9		Infrequent, isolated occurrence.
	GW	NA	ND(5.0)	NA	0/2		
XYLENES (TOTAL)	SS	ND(11–14)	ND(11–14)	NA	0/41		
	LH	NA	1–2	1.5	1/6	No	Less than PRG for leachate (828 ug/L).
	SD	ND(310)	47	47	2/11		Less than MCL (10,000) in leachate.
	SW	ND(5.0)	ND(5.0–10)	NA	0/9		Infrequent, isolated occurrence.
	GW	NA	ND(5.0)	NA	0/2		

TABLE 1 (continued)

Occurrence and Distribution of Contaminants
Red Penn Site
Pewee Valley, Kentucky

Notes:

1. SS is surface soil. LH is leachate. SD is sediment. SW is surface water. GW is groundwater.

2. Control samples are: surface soil– samples: SS–01, SS–04, SS–05, SS–06, SS–07, SS–08, SS-29, SS–30.
   Leachate– not applicable. Sediment–SD–06. Surface water– SW–06. Groundwater – none.

3. Surface soil samples were collected in October 1991. Leachate samples were collected in August and October 1991.
   Sediment samples were collected in September, October, and November 1991. Surface water samples were collected in September and October 1991.
   Units are: ug/kg for organic soil samples, ug/l for organic water samples (including leachate), mg/kg for inorganic soil samples, and ug/l for inorganic water samples (including leachate).

4. Arithmetic mean of samples with detected contamination “hits”. Surface soil samples SS–02 and SS–03 not included.

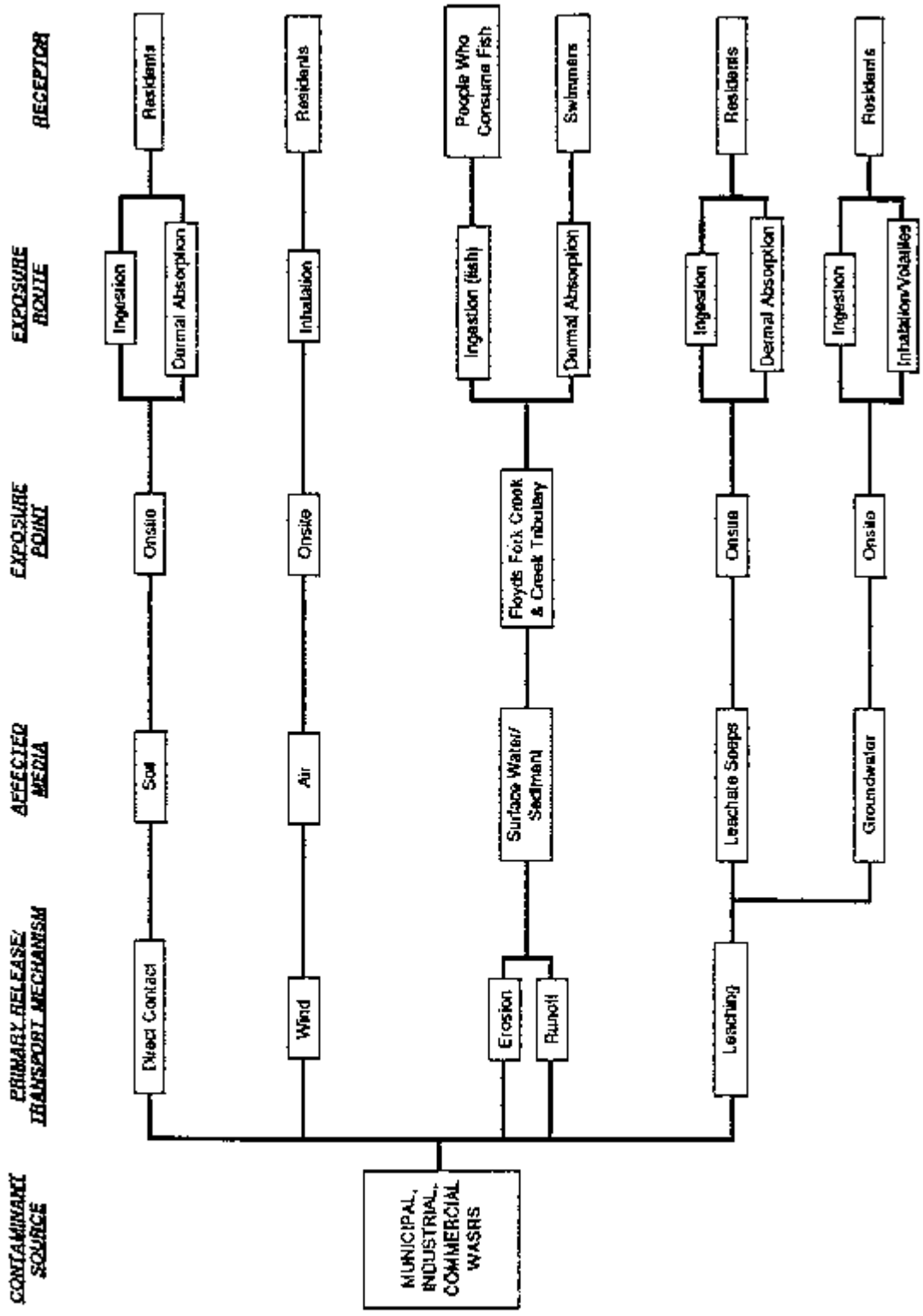
5. Detected contamination “hits” per sample location. Duplicate samples were combined, using the higher detected value.

   COC Contaminant of Concern

   ND( ) Not detected. The number (or range) is the sample quantitation limit (or range of SQLs).

   NA Not applicable.

• Contaminant of Concern



COM FEDERAL ARCS IV

CONCEPTUAL SITE MODEL

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO.

10

TABLE 2

Cancer Slope Factors, Tumor Sites and EPA Cancer Classifications for Contaminants of Concern
Red Penn Site
Pewee Valley, Kentucky

COC	CSF(mg/kg/day)–1			Tumor Sites		EPA Classification
	Oral	Inhalation	Dermal (1)	Oral/Dermal	Inhalation	
CADMIUM	NA	6.3E+00 (2)	NA	NA	respiratory tract	B1
CHROMIUM VI	NA	4.2E+00 (2)	NA	NA	lung	A
LEAD	NA	NA	NA	NA	NA	B2
CYANIDE	NA	NA	NA	NA	NA	D
BENZENE	2.9E–02 (2)	2.9E–02 (2)	3.6E–02	hematological changes	hematological changes	A
ALPHA–BHC	6.3E+00 (2)	6.3E+00 (2)	1.3E+01	liver	liver	B2
BETA–BHC	1.8E+00 (2)	1.8E+00 (2)	3.6E+00	liver	NA	C
GAMMA–BHC (LINDANE)	1.3E+00 (3)	NA	2.6E+00	liver	NA	B2
BIS(2–ETHYLHEXYL)PHTHALATE	1.4E–02 (2)	NA	2.8E–02	liver	NA	B2
CARBON DISULFIDE	NA	NA	NA	NA	NA	D

(1) Derived from administered dose (oral) using a conversion factor of 80% for benzene, 50% for BHC isomers (Region IV guidance, march 23, 1993)
(2) IRIS, 1992
(3) HEAST, 1992

COC Contaminant of Concern
CSF Cancer Slope Factor
NA Not Applicable
EPA Classifications:
A Human Carcinogen
B1 Probable Human Carcinogen
B2 Probably Human Carcinogen
C Possible Human Carcinogen
D Not Classifiable as to Human Carcinogenicity

TABLE 3

Reference Doses, Target Sites, and Confidence Levels for Contaminants of Concern
Red Penn Site
Pewee Valley, Kentucky

COC	RfD(mg/kg/day)–1			Target Sites		Uncertainty Factor		
	Oral	Inhalation	Dermal (1)	Oral/Dermal	Inhalation	Oral	Inhalation	Dermal
CADMIUM	5.0E–04 (2)	NA	1.0E–04	kidney	NA	10	Na	High
CHROMIUM VI	5.0E–03 (2)	NA	1.0E–03	not defined	nasal mucosa atrophy	500	NA	High
LEAD	NA	NA	NA	CNS, hematological changes	NA	NA	NA	NA
CYANIDE	2.0E–02 (2)	NA	4.0E–03	weight loss, thyroid effects.	NA	100	NA	NA
BENZENE	NA	NA	NA	NA	NA	NA	NA	NA
ALPHA–BHC	NA	NA	NA	NA	NA	NA	NA	NA
BETA–BHC	NA	NA	NA	NA	NA	NA	NA	NA
GAMMA–BHC (LINDANE)	3.0E–04 (2)	NA	1.5E–04	liver, kidney	NA	1000	NA	High
BIX(2–ETHYLHEXYL)PHTHALATE	2.0E–02 (2)	NA	1.0E–02	liver	NA	1000	NA	High
CARBON DISULFIDE	1.0E–01 (2)	2.9E–03	8.0E–02	fetal toxicity	fetal toxicity	100	1000	High

(1) Derived from administered dose (oral) using a conversion factor of 20% for inorganics and 50% for semivolatiles, and 80% for volatiles (EPA guidance, march 23, 1993)
(2) IRIS, 1992

COC Contaminant of Concern
RfD Reference Dose
NA Not Applicable

risks were calculated. The process considered pertinent exposure pathways and routes in addition to other factors such as body weight and age of the person at risk, exposure to a single COC, simultaneous exposures to several COCS, and duration of exposure. Results of the calculations are summarized in Table 4. A review of the table indicates that estimates of cancer risk are as follows:

	Child Resident	Adult Resident
Exposure to Leachate	1.3E-6	2.2E-6
Exposure to Soil	1.6E-9	1.7E-9
Exposure to Groundwater	3.5E-6	6.0E-6

By summing the risks for a child and an adult across all pathways, the total cancer risk of 1.3E-5 is obtained for the site. This level of cancer risk is within EPA's acceptable range of 1.0E-4 to 1.0E-6. Therefore, no contaminants of concern were identified for the site.

As Table 4 indicates, a total Hazard Index of 0.98 was obtained for the site by summing the indices for a child and an adult over all exposure routes. The total HI is close to the EPA's threshold of 1.0 for unacceptable non-cancer risks. Never-the-less, adverse health effects are not expected for either a child or an adult resident since the residential scenario and/or consumption of leachate assumed in the calculations exaggerated actual exposure conditions. In addition, summing of the hazard indices assumed that toxic effects from the various exposure pathways would impact the same target organ. Most likely, however, the organ potentially affected by the COCS would vary with respect to exposure pathways. As presented in Table 5, HI ranges from approximately 0.1 to 0.5 for the different target organs and does not signify an unacceptable non-cancer risk.

6.3 Summary of Ecological Risk Assessment

A site reconnaissance was conducted to assess ecological risks associated with the landfill in 1991. The aim was to identify dominant species of fauna, flora, ecological receptors, and stressed environments in the area. In addition, the survey researched the endangered species and their habitats

TABLE 4

Summary of Site Risk
Red Penn Site
Pewee Valley, Kentucky

	Child Resident		Adult Resident		Child and Adult Resident	
Exposure to Soil	Cancer	HI	Cancer	HI	Cancer	HI
Oral	NA	0.06	NA	0.01	NA	0.07
Inhalation (dust)	1.6E–09	NA	1.7E–09	NA	3.3E–09	NA
Dermal Contact	NA	0.01	NA	0.003	NA	0.01
Total Source–Specific Risk	1.6E–09	0.07	1.7E–09	0.01	3.3E–09	0.08
Exposure to Leachate	Cancer	HI	Cancer	HI	Cancer	HI
Oral	2.4E–07	0.18	2.1E–07	0.04	4.5E–07	0.2
Dermal Contact	1.1E–06	0.03	2.0E–06	0.012	3.1E–06	0.04
Total Source–Specific Risk	1.3E–06	0.21	2.2E–06	0.05	3.5E–06	0.26
Exposure to Groundwater	Cancer	HI	Cancer	HI	Cancer	HI
Oral	3.5E–06	0.4	6.0E–06	0.2	9.5E–06	0.60
Inhalation (VOCs)	NA	0.03	NA	0.01	NA	0.04
Total Source–Specific Risk	3.5E–06	0.43	6.0E–06	0.21	9.5E–06	0.64
Total Site Risk	4.8E–06	0.7	8.2E–06	0.3	1.3E–05	0.98 *

HI Hazard Index (noncancer risk)
NA Not Applicable

* See Table 6–39–A

TABLE 5

Breakdown of Total Site Hazard Index by Target Organ
Red Penn Site
Pewee Valley, Kentucky

Exposure Route	Hazard Quotient at Target Organ					Total Source–Specific Hazard Index
	Kidney	Not Defined	Liver	Weight Loss, Thyroid	Fetal Toxicity	
Exposure to Soil						
Oral – Child	0.01	0.05	–	0.0005	–	0.06
Oral – Adult	0.001	0.005	–	0.00006	–	0.01
Inhalation of Dust – Child	–	–	–	–	–	–
Inhalation of Dust – Adult	–	–	–	–	–	–
Dermal Contact – Child	0.001	0.01	–	0.0001	–	0.01
Dermal Contact – Adult	0.0006	0.002	–	0.0002	–	0.003
Exposure to Leachate						
Oral – Child	0.08	0.04	0.001	0.06	0.0005	0.2
Oral – Adult	0.02	0.01	0.0002	0.01	0.0001	0.04
Dermal – Child	0.01	0.01	0.004	0.01	0.001	0.04
Dermal – Adult	0.006	0.002	0.002	0.003	0.001	0.01
Exposure to Groundwater						
Oral – Child	–	0.2	0.2	–	0.03	0.4
Oral – Adult	–	0.1	0.1	–	0.01	0.02
Inhalation (VOCs) – Child	–	–	–	–	0.03	0.03
Inhalation (VOCs) – Adult	–	–	–	–	0.01	0.01
Total Site Hazard Index						
Total Target Organ–Specific Hazard Index	0.1	0.5	0.3	0.1	0.08	

Target Site Notes:

Kidney Toxicity – Cadmium

Not Defined – Chromium VI

Liver Toxicity – Lindane, Bis(2-ethylhexyl)phthaiate

Weight loss, thyroid effects – Cyanide

Fetal Toxicity – Carbon Disulfide

– Not applicable

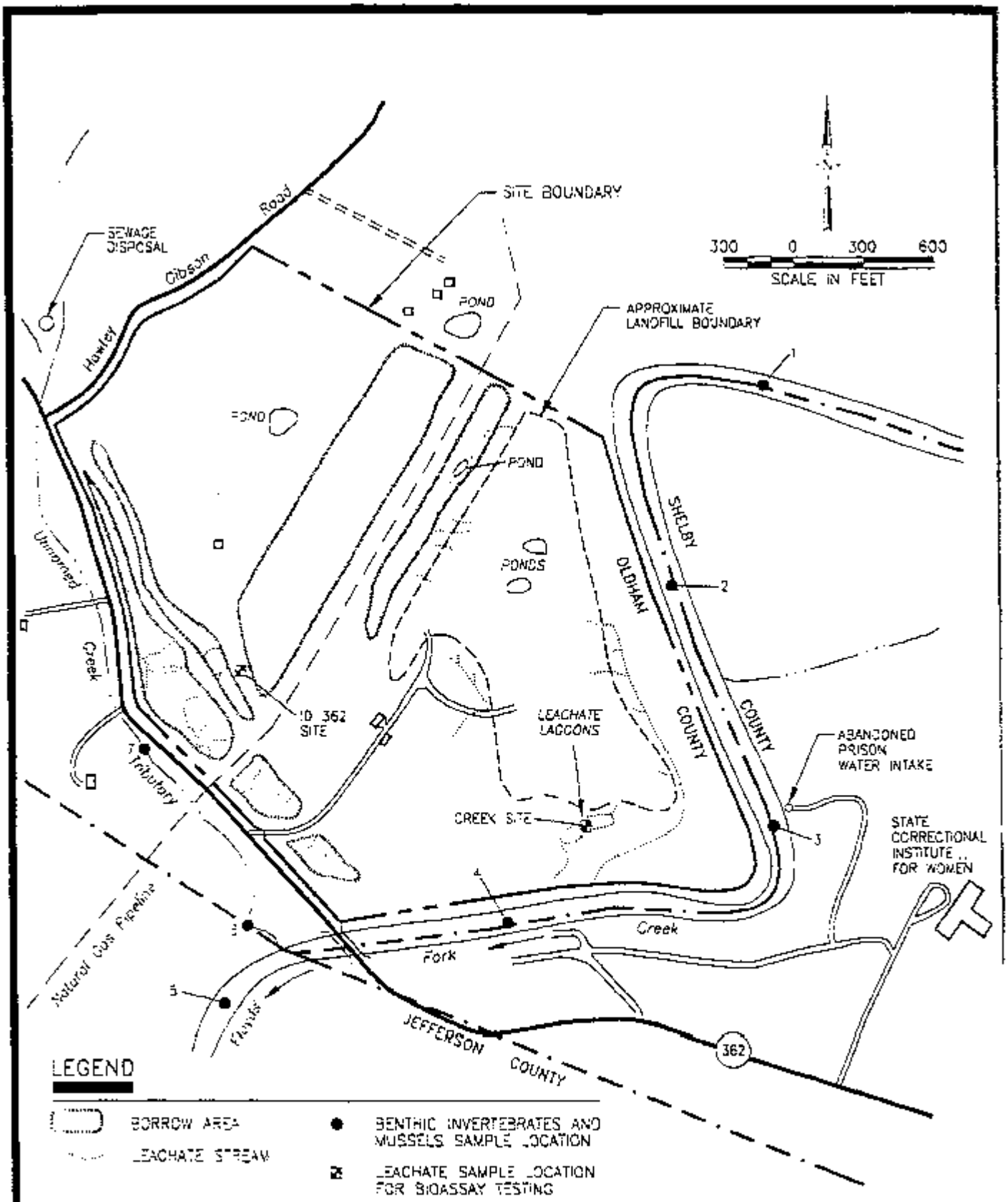
on and near the site. Stressed vegetation was observed in the vicinity of leachate seeps and their flow paths. No endangered or threatened flora or fauna was observed and no threat to their habitats was evident.

Ecological studies were conducted at the site to determine landfill impact on the structure and function of biological communities in the creek. The studies included collection and identification of benthic macro invertebrate, mussels sampling and metal analysis, and leachate toxicity testing on bioassay. Four locations on Floyds Fork Creek and two locations on the tributary were sampled for benthic macro invertebrates. The sampling locations are shown on Figure 11 where the background test location is labeled "1". Samples were processed in the laboratory where the organisms were identified to the lowest taxonomic level possible. Results of the species identification did not indicate a significant difference in diversity between the locations sampled. The diversity index calculated ranged from 2.42 to 2.98 which was considered normal for the area. However, at test locations #3 and #4, the study observed relatively high numbers of pollution tolerant species.

Fresh water mussels were collected by hand from stations 1 through 5 (Figure 11), on the Floyds Fork Creek. for tissue metal analysis. Table 6 presents the results and demonstrates that lead contamination was observed in the creek except in the up-gradient sample.

Toxicity analysis was conducted by obtaining leachate from two locations on the site. Two different aquatic communities (ceriodaphnia dubia and pimephales pomelos) were immersed in the leachate samples at various concentrations for ninety-six hours. Test results are presented in Table 7. The study showed that the populations of both test organisms were reduced considerably even at low leachate concentrations.

A fish study of the area conducted by the Commonwealth of Kentucky was reviewed during the RI. The study reported that Floyds Fork Creek supported a good amount of sport fishing. The report identified as many as eighteen species of fish at various stages of life and classified the population as 50% fingerlings, 46% of intermediate size, and the remaining 4% as harvestable size population.



ARCS IV

ECOLOGICAL SAMPLING LOCATIONS

RED PENN SITE

PEWEE VALLEY, KENTUCKY

FIGURE NO.

11

TABLE 6

RESULTS OF TISSUE ANALYSIS OF FRESHWATER MUSSELS FROM FLOYDS FORK OLDHAM COUNTY, KENTUCY 8-17-91

			Parameter (mg/Kg)				
Station	Species	Age (Yrs.)	Cd[1]	Cr[2]	Pb[3]	Hg[4]	Se[5]
1A	*Lampsilis* *Anodonta grandis*	9 5	<0.5*	<1.0*	</0.5*	<0.05*	<0.5*
1B	*L. siliquoidea* *A. grandis*	7 5	<0.5*	<1.0*	<0.5*	<0.05*	<0.5*
2A	*L. siliquoidea* *A. grandis*	10 5	<0.5*	<1.0*	0.7	<0.05*	<0.5*
2B	*L. siliquoidea* *L. siliquoidea*	7 5	<0.5*	<1.0*	1.4	<0.05*	<0.5*
3A	*L. siliquoidea* *L. siliquoidea*	7 7	<0.5*	<1.0*	0.9	0.40	<0.5*
3B	*L. siliquoidea* *A. grandis*	7 5	<0.5*	<1.0*	0.8	<0.05*	<0.5*
4A	*A. grandis* *A. grandis*	4 3	<0.5*	<1.0*	1.1	<0.05*	<0.5*
4B	*L. siliquoidea* *A. grandis*	5 4	<0.5*	<1.0*	35.0	<0.05*	<0.05*
5A	*L. siliquoidea* *L. siliquoidea*	5 5	<0.5*	<1.0*	11.6	<0.05*	<0.5*
5B	*A. grandis* *Potamilus alata*	5 5	<0.5*	<1.0*	9.4	<0.05*	<0.5*

2. Cadmium - EPA method 200.7/9.3
3. Chromium - EPA method 200.7/9.3
4. Lead - EPA method 200.7/239.2
5. Mercury - EPA method 245.5
6. Selenium - EPA method 270.2/4.1.3

* Detection limit

NOTE: A and B represent replicates at the same college station

TABLE 7

TOXICITY TEST RESULTS OF SAMPLES COLLECTED ON AUGUST 7, 1991 RED PENN LANDFILL SITE, PEWEE VALLEY, KENTUCKY

Acute, 96-Hour, Static, Screening Test

Test Organism	Sample Description	Sample ID/Concentration (%)	Survival (%)
Ceriodaphnia dubia	Control	- - -	90
	ID 362	6.25	65
		12.5	50
		25	45
		50	60
		100	15

FINDING: LC_{50} = 20% Effluent Concentration

Test Organism	Sample Description	Sample ID/Concentration (%)	Survival (%)
Pimephales promeias	Control	- - -	95
	ID 362	6.25	100
		12.5	100
		25	100
		50	100
		100	15

FINDING: LC_{50} = 78% Effluent Concentration

TABLE 7 (continued)

TOXICITY TEST RESULTS OF SAMPLES COLLECTED ON AUGUST 7, 1991 RED PENN LANDFILL SITE, PEWEE VALLEY, KENTUCKY

Acute, 96-Hour, Static, Screening Test

Test Organism	Sample Description	Sample ID/Concentration (%)	Survival (%)
Ceriodaphnia dubia	Control	- - -	90
	Creek Site	6.25	100
		12.5	0
		25	0
		50	0
		100	0

FINDING: LC_{50} = 9 % Effluent Concentration

Test Organism	Sample Description	Sample ID/Concentration (%)	Survival (%)
Pimephaies promeias	Control	- - -	95
	Creek Site	6.25	90
		12.5	0
		25	0
		50	0
		100	0

FINDING: LC_{50} = 8% Effluent Concentration

Independent fish tissue studies conducted by KDWM and the Agency for Toxic Substances and Disease Registry relative to the site were also reviewed. KDWM concluded that there were no clear indications of adverse site impact on their environmental specimens. Similarly, ATSDR concluded that consumption of fish from the creeks near the site should not result in adverse health conditions.

The most significant adverse ecological impact observed at this site is related to the leachate which apparently limited plant growth, and killed test aquatic micro-organisms upon direct contact. However, leachate outbreaks are localized and the flow can be restricted to the site. As stated before, a study of flora and fauna during the RI concluded that there were no endangered species or habitats in the area. Therefore, no major ecological risks appear to be associated with the landfill.

7.0 SCOPE AND ROLE OF RESPONSE ACTION

Over sixty different contaminants were identified during the laboratory analyses of field data from this site. Only ten of them were considered as COPCs. Human health and environmental risks associated with the COPCs were evaluated and found to be within acceptable levels based on EPA criteria. The current and future populations in the area are not expected to be affected adversely as a result of exposure to site contaminants. Therefore, no Superfund remedial action is warranted at the site. These conclusions were arrived at in 1993, when the RI was completed. At that time, EPA proposed an additional year of groundwater monitoring to validate RI results relative to seasonal variations. The confirmatory sampling was accomplished by KDWM in 1997. The results were similar to those obtained during the RI. In addition, EPA advised KDWM that proper closure of the landfill was necessary to minimize leachate problems. To address landfill closure, KDWM began negotiations with the responsible parties in 1994. The negotiations were concluded in 1999, when the responsible parties agreed to close the landfill properly by installing an approved cap. EPA reviewed the closure plan and concluded that it would adequately address site issues if implemented as designed. Essentially, the work would include landfill regrading, geosynthetic clay liner installation, re-vegetation, and site monitoring. Currently, construction of the landfill cap is in progress. To protect the cap, EPA recommends to the Commonwealth of Kentucky that future use of the property which

contains the landfill be restricted. Activities which may compromise the integrity of the liner should be prohibited by formal institutional controls.

EPA will continue to review site information from the Commonwealth or any other entity to ensure that acceptable human health and environmental standards are maintained. EPA may initiate further Superfund work at this site if additional information and/or new data reveal an unacceptable level of risk without re-ranking.

8.0 RESPONSIVENESS SUMMARY

When the RI was completed in 1993, EPA published a Proposed Plan. The document summarized the findings of site studies and risk assessment, indicated that no Superfund remedial action was warranted at the site, and scheduled a public meeting for August 5, 1993. A group of local environmentalists, local officials, and KDWM disagreed with EPA's "no action" proposal. EPA canceled the public meeting and engaged in a series of dialogue with the stakeholders. During the meetings, EPA explained the rationales for the Proposed Plan and that the unlined landfill needed to be properly closed under Kentucky's authority. KDWM expressed concerns about EPA's risk assessment methodology in general. Local officials and the environmentalists wanted all landfill content removed and disposed of elsewhere. Color and odor of leachate from the site were of concern in addition to landfill aesthetics. On August 5, 1993, top level officials and staff from the Commonwealth of Kentucky and EPA Region 4 met at the site with personnel from the local news media. At the meeting, EPA re-iterated the RI findings and the Superfund process, recommended to the Commonwealth to work directly with the PRPs for resolution of site issues, and reiterated the need to close the landfill properly. The Commonwealth requested EPA to postpone this ROD pending the results of the confirmatory site sampling, and the negotiations with the PRPs to close the landfill properly. KDWM began the negotiations with the PRPs in March 1994, and an Agreed Order to conduct the landfill closure was signed in late 1999, by the parties.

In April 2000, EPA re-published its Proposed Plan for a no-action ROD and held a joint public meeting with KDWM on April 20, 2000. During the meeting, EPA indicated that the landfill. closure would be conducted by the PRPs under KDWM supervision. KDWM personnel then explained the details of the planned landfill cap to the meeting attendees. No objections were raised to EPA's Proposed Plan. However, several questions were posed to KDWM and were addressed appropriately as reported in the meeting transcript, Appendix A.

There were no written or verbal comments to EPA from the public during the comment period of April 13 to May 12, 2000. In June, 2000, five letters were received from four local residents and one congressman (Honorable Ken Lucas). The letters essentially expressed concerns that capping would not adequately address site issues. The letters and EPA responses are included in Appendix B. In addition, two local newspaper editors contacted EPA by telephone for an explanation of capping as an appropriate solution to the issues at the site.

APPENDIX A

PROPOSED PLAN PUBLIC MEETING TRANSCRIPT

RED PENN LANDFILL SITE

PROPOSED PLAN PUBLIC MEETING

HELD ON APRIL 20, 2000

BARBARA J. CRAWFORD
Court Reporter
8503 Wyndstar Place
Louisville, Kentucky 40242-4520
(502) 339-8212

The Proposed Plan Public meeting for the Red Penn Landfill Site, on Thursday, April 20, 2000 7:00 p.m., at the Oldham County Community & Convention Center, 1551 North Highway 393, Buckner, Oldham County, Kentucky.

MS. BARRETT: We want to welcome you to the meeting tonight. My name is Diane Barrett. I do community relations for the EPA out of our Atlanta office. So, I'm here tonight to make sure that everybody has got information and can ask questions regarding community involvement.

The purpose tonight of course is to discuss the Red Penn Landfill and what actions are going to be taken at this site.

To start, I want to give you just a little bit of an overview of the Superfund process. I hope you all picked this up. I don't know how familiar you are with the Superfund process, but this is it in a nutshell, front and back.

As you see, there's the site discovery phase. And then, in 1989, the site, Red Penn Landfill, was placed on the National Priorities list, the Superfund National Priorities List, which made it eligible for EPA funding, in the event there was a responsible party that

was not able to pay for cleanup or bankrupt or deceased, or whatever. So, that fund is there for those kind of sites.

Then, in 1991 through 1993, EPA began their remedial investigation, and feasibility studies started after that.

And we are at this point now where we're at, our proposed plan public meeting. And tonight, Femi Akindele, who is the project manager, Mr. Akindele here, will provide you information about the site, a little bit of history in what the EPA is proposing. Then, Mr. Rick Hogan, for the State, will go over what the State's plans are.

This meeting is by law having to be recorded by a court reporter. So, when the court reporter is taking your words or our words as we talk, please make sure that you enunciate plainly.

And if at any time she doesn't understand you, I've asked her to just stop and ask you to repeat it. So, if you'll just give your name and your question so she can hear that, we would appreciate it.

And then, this transcript will be made available and placed in the information repository for this site so that you all can review that.

The record of decision, after the comment

period, which is a 30-day comment period -- the comment period runs from April the 13th to May the 12th. And if you desire additional time, we can grant that for you.

But once the comment period is closed, then the record of decision will be prepared. And this is our document that states what the EPA's action is, what their decision is.

Then, normally after that is done, there's a remedial design prepared. In this case, the design has already been prepared as a capping. And then, remedial action takes place.

So, that, in kind of a nutshell, when you read through this, that will give you what we're in the process of doing.

At this time, I will turn it over to Mr. Femi Akindele, and he will go on with the EPA. Thank you very much for your attention.

MR. AKINDEL: Well, good evening, ladies and gentlemen. I'm going to sit down, and, if it gets to a point where you can't understand me or you don't hear me, I'll get up and walk around or do whatever needs to be done.

Has everybody got a chance to read the fact sheet prepared by the EPA? There were two that came out recently, one from the State of Kentucky or Commonwealth

of Kentucky, and another one from the U.S. EPA out of Atlanta.

Is there anybody here that is not familiar with the site? Then, I am not going to waste your time going over the history and how we came to where we are.

There are only three points I'd like to make tonight and I'm going to turn it over to Rick after those three points are made. One is that EPA is responsible to find sites and clean them, if they require cleaning.

Particularly the Superfund group is responsible for finding and cleaning sites that are abandoned, like the Red Penn Landfill. We try to do those things, finding them and cleaning them, if cleaning is needed, by following some guidelines, and those guidelines are recorded in the fact sheet that Diane was talking about early on, the Superfund process.

In addition to following the guidelines, we do the best we can with science and engineering to study the sites and clean them, as best as we can, whenever cleaning is required. At times, cleaning will not be required, especially by the Superfund group, if the criteria that the law stipulates are not met.

With respect to the Red Penn Landfill, the U.S. EPA got involved about twelve years ago and came out here and evaluated the site, collected as much information as

we could, and evaluated the results of lab analysis.

We concluded after doing risk assessment that the site did not meet the criteria established for Superfund cleanup. But that does not mean that the site does not require some action.

Consequently we pointed it out to the State that the landfill needed to be capped. The landfill was never properly closed after the operation ceased.

With the fact that some PRP's were found viable and the fact that the State was also interested in making sure that the site protects human health and the environment, EPA stood along the side of the State while negotiations were being made with the PRP's to do the appropriate things with respect to capping the site.

I think it's been about three months or so, maybe a little more than that now, that the State was able to reach agreement with the PRP's, and plans are in place to completely take care of the problems at the Red Penn site.

Consequently, the EPA's plan, which was actually made after we did the studies about five years ago, to do nothing with Superfund money, is now going to be published. And that's why we published the proposed plan.

Because we did one back in 1993, I believe, and

it states exactly what I'm saying now, that we studied the site, we found some problems, some chemicals that are not acceptable or conducive to human health and the environment.

However, when we evaluated the risks associated with those chemicals, the criteria for cleanup with Superfund money were not met. Again, we felt like the site needed some action. Therefore, we asked the State to directly contact the PRP's and get them to do what is right.

At this point, like I said earlier on, the State has successfully negotiated a cleanup action for the site. Therefore, EPA is going to publish the record of decision to state the activities that we performed at the site and conclusions that we reached.

At this point, Rick will discuss what the plan of action is, and I'll take questions after his discussion.

MR. HOGAN: I'm Rick Hogan, with the State Division of Waste Management. And we met with many, if not all, of you in December to discuss the plan for this site.

And I realize that it's a little confusing that EPA is saying that they're not going to take any action, yet we are going to take action, but they have their procedures that they have to follow.

There are criteria which have to be met before they can take an action. Those criteria were not met; they could not take an action.

The State negotiated directly, beginning in about 1994, with the responsible parties. It has taken way too long for us reach agreement, but we have. We negotiated a design for the site. We approved the design for the site.

Construction activities will begin very shortly. We have a construction contractor, which has been selected. They're Kester Contracting out of Evansville, Indiana.

The oversight engineering contractor will be RMT, Incorporated, out of Madison, Wisconsin. They also have representatives here. And then also, of course, the State of Kentucky will be overseeing the activities.

They're set to begin shortly; they're going to be mobilizing in a couple of weeks, bringing in their equipment. There won't be a lot of traffic that you'll see; you may not see any traffic in the area, unless you're there at the right time, minimum of truck activity.

They'll be working there all Summer. They'll be grading the site, clearing a lot of trees over the next month or two, shaping the site. There won't be a lot of earth moved, just generally regrading a few areas to

prepare a proper bed for the geosynthetic material, which is going to cap the site. And that material will prevent rain water from coming in and infiltrating into the waste and leaching out into the environment, as it has been doing for the last 20 or 30 years.

This is something we should have done many years ago. I apologize that we have not taken action earlier; we haven't, but we're going to this Summer and hopefully eliminate this contamination which is emanating from the site.

That's really all about I have to say. I'll welcome any questions that you have about the specifics.

MR. AKINDELE: I just want to make one more comment before the questions come out. Because the site has been on the NPL, or the National Priorities List, meaning that it qualified for Superfund activities, means that EPA will continue to review information passed on to EPA, and EPA will come in any time that human health and the environment or human health or the environment is in jeopardy. So, let's keep that in mind.

The fact that EPA says the results of our evaluation show that there will he no action at this point does not mean that we abandoned the site forever. We'll come back and do what has to be done to make the site safe for human health and the environment, if additional

information indicates that we need to do anything different than what action we are taking now.

MR. DON DAVIS: I'm Don Davis. I live on Hawley Gibson Road. How big an area is condemned?

MR. HOGAN: About 50 acres. The actual active landfill site is about 50 acres. So, that will be the area which will be capped.

They will also be utilizing another 30 or 40 acres as a borrow area, which will be near to Hawley Gibson Road. So, you may see some activity over there. You probably won't see much going on at the actual landfill site, but you'll see activity in the borrow area.

MR. DAVIS: Well, there's another area at the north end of Francis Avenue that was -- that's not part of this, right?

MR. HOGAN: No. I'm not familiar with the property you're speaking of, but I know it's not part of this

MR. DAVIS: Well, it's about maybe a quarter of a mile away, and I understood thatthere was an area there that was part of this Red Penn.

MR. HOGAN: I'm familiar with the Puckett property

MR. DAVIS: No. It used to be the Marshall Auto Dump, or something.

MS. YATES: It's Griffith Auto Salvage.

MR. DAVIS: They had taken some of the material from

Red Penn to that area.

MR. HOGAN: Yeah, I'm sorry, I'm not at all familiar with that site.

MR. DAVIS: Will you look into that?

MR. HOGAN: Yes, sure. What's the name of it again?

MS. YATES: Griffith. It's at the very beginning of Richard Griffith's property.

MR. HOGAN: Griffin property?

MS. YATES: Griffith, I think. I-t-h, I believe.

MR. HOGAN: And where? On Francis?

MS. YATES: It's at the end of Francis Avenue.

MR. HOGAN: Francis Avenue.

MS. PAYNE: Doesn't Francis run into Hawley Gibson?

MS. YATES: Yes, it does.

MR. HOGAN: If you'll give me your name and phone number afterwards, I'll check on that and give you a call. Yes, sir?

MR. BILL WETTER: I'm Bill Wetter. I'm the Environmental Health Director for Jefferson County. Rick, I'm interested in continuing ground water monitoring at event sites after camping takes place. Any plans to continue that, and for how long?

MR. HOGAN: Yes, our agreement with the responsible parties requires that they conduct ground water monitoring for a minimum of five years. At the end of five years, we

will evaluate the results to determine whether additional monitoring beyond that time is necessary.

In addition, we are contracting with USGS to do a general ground water user study in the area, and that will be conducted possibly this Summer. And if we find wells or springs which we feel like may be connected to the site, we'll sample those areas also. These will be off-site areas, down-gradient of the landfill. Yes?

MR. MARK JACKIE: My name is Mark Jackie. I live on Ash Avenue. Is there a way for us to see what area within that 150 acres is going to be capped?

I live directly across the street, on a far hillside, and, you know, I look out and I see rocks. And I was under the impression that was something else when I moved in; I wasn't from around this area.

But my concerns are (1) in that area on Ash Avenue when we have heavy rains, the road is completely flooded. To give you an idea, my mailbox at one point was two feet under water.

Now, that water runs across Ash Avenue, up my property some 20, 30 yards, all the way across to the bottom of that rock wall. I've walked that area, not very much, but I've seen something coming out of the ground in that area.

You know, my concerns are, when we have heavy

rains, there's a creek that runs parallel with Ash, I think it's called Flat Rock Creek, I'm not sure --

MR. HOGAN: We've called it Ash Creek, I think.

MR. JACKIE: Well, it runs into Floyds Fork --

MR. HOGAN: Yes.

MR. JACKIE: -- three or 400 yards down the road. I mean it's just a mess. It's flooded for 300 yards --

MR. HOGAN: I noticed the culverts to perhaps your next-door neighbor were blocked with debris today. There was evidence of some heavy flow.

MR. JACKIE: Oh, it's ridiculous, you know. A hundred-year flood plain, and I believe it.

MR. HOGAN: Well, I do have, in answer to your first question, some maps over here which will show you the areas which will be actively remediated. There will be an erosion control plan to prevent sediment runoff from the entire area.

As far as controlling the runoff of water, I'm afraid we're not going to be improving that, at least during the construction.

After construction is completed, runoff should be directed more toward Floyds Fork rather than across Ash Avenue. It perhaps would help some. But I'm not sure we're going to be able to help your flooding problem.

MR. JACKIE: Well, that's not what I'm asking. I mean

it's been doing that forever.

MR. HOGAN: Yeah.

MR. JACKIE: But it is a concern of mine that whatever is coming out is coming over.

MR. HOGAN: And there are springs which exit -- that you're probably referring to, that exit that rock cliff --

MR. JACKIE: Right.

MR. HOGAN: -- there are springs. And those are some of the springs we'll be monitoring, because there has been some contamination coming out that way. So, we may in fact dry those springs up; we hope to.

MR. DAVIS: Has any ground been moved in that area?

MR. HOGAN: No. No, there's been no activity there.

MR. DAVIS: It looked like there had been some work done years ago.

MR. HOGAN: Oh, yes. Oh, certainly, yes. When there's an active landfill --

MR. DAVIS: I mean since it closed.

MR. HOGAN: There was one small drum removal about '86, but not since that time.

MR. JACKIE: Nothing grows on that area that I'm speaking of.

MR. HOGAN: Right, nearest to Ash Avenue.

MR. JACKIE: Right. And that does concern me. There's nothing --

MR. HOGAN: Yeah, it's bedrock. And there's no plan to do anything with that area.

MR. JACKIE: Once the landfill is capped, how much, if any, maintenance will be required and who will be responsible for that maintenance.

MR. HOGAN: Well, that site will need to be maintained.

MR. JACKIE: In what way?

MR. HOGAN: Into the near future. We cannot allow trees to grow on that site. Trees will penetrate that cap and create conduits for the flow of water. So, we have to keep that site mowed.

And by we, I mean the responsible parties, Ford Motor Company waste management will have a contractor out there to mow the site and to repair any erosion, to repair anything that goes wrong for the foreseeable future.

MR. JACKIE: Will the residential waste and litter and trash be taken care of at the same time? The area I'm talking about is a slope that runs down basically towards Floyds Fork. It's a treed area. I understand at one point it was used for residential waste.

There are areas there that you can't stay on your feet, there's so much garbage in there. Will that be --

MR. HOGAN: I believe so, yes. I'll show you on the

map, and I think I know where you're talking about. Those areas will all be cleaned up.

A lot of trees will be removed. Some of those areas are so old, there are trees this big. And unfortunately we're going to have to remove a whole lot of trees, which I hate to do, but that's the only way to get a cap on those areas. Tim?

MR. TIM FEELEY: I'm Tim Feeley, from Crestwood. Two questions. First, since our last meeting, which I think was in December, has there been any further inquiry into where the barrels are? I remember we talked last time, and we know there are some out there but didn't know exactly where they were.

MR. HOGAN: No, no further work.

MR. FEELEY: I apologize, I came a little late, but did you give a timetable for when work will begin?

MR. HOGAN: Work will begin in the very near future. In the next couple of weeks, the contractor will be mobilizing, bringing their equipment onto the site. Shortly thereafter, they will begin the earth work, which will be the majority of the work.

The intent is to have the project finished by the end of the construction season, November, December. But, as I said before, I suspect they'll be back out there next Spring to tidy things up, correct some erosion

problems. So, I think you will see some people out there next Spring.

MR. JOHN KIELKOFF: Do you have a plan for what you're going to plant, what kind of grass, and so forth?

MR. HOGAN: The specification is what is called the DOT mixture. It's what the Department of Transportation approves for planting on the properties that they have.

And so, as the construction contractor or someone pointed out earlier today, if you'll drive down the road and look at the vegetation on the side of the road, that's basically what will be on the site.

Now, if you have suggestions, I'm certainly open to suggestions for plantings which could enhance the appearance or value of that property, I would certainly take that into consideration, and I would hope that the contractors, the responsible parties, would, too. Yes, sir?

MR. TERRY GAGEL: On the tree removal on the stream side, how far down would you be removing trees? Would you get down to the flood plain?

MR. HOGAN: No, I don't think so. We're going to get very close. They've submitted an application to construct within the flood plain, but they will just barely get into what is defined as the flood plain. The toe of the landfill will essentially be that break where the flood

plain sort of begins.

MR. GAGEL: And that will be the extent of the cap? It will come to that point?

MR. HOGAN: Yes. Yes. And you'll see rock riprap all around the base of that landfill. And that riprap itself will, I believe, sit slightly in the flood plain. It won't be right next to the stream, but it will be in that flat area which is defined as the flood plain.

MR. JOHN BLACK: I'm the County Judge/Executive here in Oldham County. What kind of bricks does the landfill -- what is opposing -- just as it sits there today and just in capping, the extent that you're going to do the cleanup, is that just because of the appropriation of what's allowable to go into that site, or if more could have been spent or appropriated, would it have been done in a different manner, you know, and to what degree further?

MR. HOGAN: Well, I believe, given the situation, we're doing what -- the best that technology has to offer, within reason. You could go in, remove all of the materials, at a tremendous expense, and I'm not sure, in the long run, you will have created a better environment overall.

You can imagine quite an effort would have to be made. You'd have tens and hundreds and thousands of

trucks hauling materials away along your roads. You would be digging into the materials, exposing waste materials, which would be difficult to contain.

It's just not something that's done. To my knowledge, it's never been done in the United States, where you dig up a landfill of this magnitude.

Given the situation, the best that you can do is simply put an impermeable cover on it. It's not a perfect solution. The site is going to be there a hundred years from now with contamination.

I don't really like the thought of passing something like this down to our children and grandchildren. But given the realities, that's about the best that we can do at this time.

Perhaps in the future, technologies will be discovered where we can inject microbes or chemicals or something into the landfill which will act to remediate it on its own. But presently, that technology is in its infancy.

MR. GAGEL: There are monitoring wells on the landfill now, is that correct?

MR. HOGAN: There's one monitoring well on the perimeter. There are three lysimeters, which simply monitor water level within the landfill itself, but only one monitoring well.

MR. GAGEL: The monitoring well, will you test that on an annual basis?

MR. HOGAN: That will be tested on a quarterly basis for two or three years and then a semi-annual basis for the next two or three years, at which time we will evaluate the data to determine future monitoring requirements.

MR. GAGEL: What has been the results of the data up to now?

MR. HOGAN: We found relatively low levels of various chemical compounds and heavy metals to date. Really the springs are a better indicator of what's coming off the site.

We monitor four -- or we will be monitoring four or five different springs, and they are really the best indicator of what's coming off the site.

But two of the main contaminants that I recall are PCB's and heavy metal lead were the ones that kind of stuck out in my mind.

MR. WAMPLER: Are there any plans for retention basins or retaining walls to help keep what water flow there might be out of Floyds Fork?

MR. HOGAN: Well, no, no retention basins. An erosion control plan has been submitted, and I understand perhaps it's been -- it is going to be approved for silt fences.

Silt fences will be the primary method of containing erosion. And it will be around, oh, about 75 percent of the site or more, a continuous fence to catch sediment particles.

But no sediment basins are proposed. That could change. If they're needed, I think they'll be constructed.

REPORTER: May I have your name, sir?

MR. WAMPLER: Roger Wampler. I'm solid waste coordinator for Oldham County.

MR. HOGAN: We have individuals here, as I mentioned, from the engineering oversight management team, RMT and from Kester Contracting. So, afterward, if you'd like to speak individually to them, I think they'd be glad to talk to you about specifics.

MR. BLACK: How much is this project going to cost to clean up?

MR. HOGAN: Somewhere on the order of Three or Four Million Dollars, I think. Any other questions?

MR. SHAWN TAPP: My name is Shawn Tapp. Is the State of Kentucky going to take over the control of the property or are they going to be kept owned by the Red Penn people, or whoever owns it?

MR. HOGAN: No, the State doesn't want the property, federal government doesn't want the property. It will

remain in the hands of the current owners, which I believe is Red Penn Sanitation Corporation.

MR. TAPP: Is the State planning on putting any kind of restrictions --

MR. HOGAN: There will be deed restrictions on the use of the property so that the cap is not in any way punctured or it remains intact. Yes, there will be deed restrictions.

MR. JACKIE: I think there's a Texas gas line that runs somewhere through that property, I think two pretty large transmission lines. Is that in any way affected? Was the contaminated area near those gas lines? And if so, what happens if they've got to go work on these transmission lines?

MR. HOGAN: Well, that issue was studied several years back, and it was concluded that those transmission lines in no way provide a conduit for the flow of contamination, nor would activities along that line affect the landfill itself.

MR. JACKIE: How far is that contaminated area from those gas lines, approximately?

MR. HOGAN: The map will give you the specifics, but it's 50 yards, a hundred yards, I think. There's also, as many of you may know, a road which is being planned to go through that area.

And I just happened to pick up a map showing that there are basically three alternatives for that road through the area. And many of you may already know all of this, but I got the map recently, and it's not an official map, but it will show the alignment of those three options.

None of those options will go through the landfill. One or two of the options will impinge upon the northern end of the property, along Hawley Gibson Road. Yes, ma'am?

MS. BARBARA YATES: I'm Barbara Yates. I'm the one that sent you the Commonwealth technology statement.

MR. HOGAN: Oh, okay.

MS. YATES: My question is in regards to the silt fencing and the road. Does the road alignment in any way look like it's going to impinge upon the silt fencing or borrow area --

MR. HOGAN: Well, the silt fence will be a temporary measure.

MS. YATES: It's temporary only?

MR. HOGAN: So, I think, by the time the road is constructed, it will be gone.

MS. YATES: Okay.

MR. ERNIE HARRIS: Is there going to need to be a gas collection system on this?

MR. HOGAN: No. We discussed that and evaluated it and decided we would not need that for a landfill of this age.

MS. BARRETT: Are there any other questions before we adjourn?

MR. BLACK: How many types of personnel or numbers will be working in there through the Summer?

MR. HOGAN: Somebody from Kester can answer that better than I.

MR. NIEHAUS: My name is Rick Niehaus. I'll be the project manager there. We anticipate an initial work force around 15 workers, doing the initial clearing and earth moving.

Once the liner installer comes on board, he will have a work force probably of another 12 to 15 workers. So, at a maximum, it will be a peak of 30. And then, once the liner is done, the final finishing, we'll be back down to 12 to 15 toward Fall.

MR. BLACK: Will you have to bring any dirt to the site or pretty much use what's there.

MR. NIEHAUS: The current plan is to use what's there from the borrow site adjacent to the landfill, depending on the geological conditions and the depth of the rock, the extent of that borrow area. Steps are being finalized.

MR. HOGAN: You'll see very little traffic. You may not even know these guys are there.

MR. JACKIE: I will.

MR. HOGAN: You will. I noticed a very fine home being constructed across Floyds Fork from the site. Mr. Jackie, are you familiar with that construction? Does that fellow know what's going to be going on?

MR. JACKIE: I don't know. He hasn't come and asked me.

MR. HOGAN: Roger?

MR. WAMPLER: With the test wells you're going to have, the analyses that you're going to be doing on the water in those wells and in those springs, are those going to be available for us to see?

MR. HOGAN: Yes, and that's a good point. And someone suggested at the last public meeting that we set up a website so that we can provide that information. And we do intend to post that information on our website as it becomes available.

That testing will not begin until after the construction is finished. So, that will be next year about this time that we'll begin sampling.

But I will develop information on our website. I think I gave that address; I hope that was the correct address. And the information -- there's no information

there now regarding Red Penn, but there will be.

MR. WAMPLER: While the process is going on, could Richard Benton and myself -- would we be allowed to observe from time to time?

MR. HOGAN: Absolutely, yes.

MR. WAMPLER: Okay, very good.

MR. HOGAN: Yeah, you could call me or I can give you a contact at the site if you want to call them.

MR. WAMPLER: Thank you, Rick.

MR. JACKIE: I'd like to have that.

MR. HOGAN: Sure. Sure. I'll give you my card. I have a card over there on the table. We intend to be over there, myself and Eric Liebenhauer, my associate. We intend to be over there every week or two or more, as conditions warrant.

In addition, RMT will have a person on site all of the time. So, we'll have plenty of oversight, I think.

MR. BLACK: Is the reason you actually cap a site like this so the rainwater won't go down through the surface and push the things outward, so they're pretty much contained and let them sit there as they are? Is that the purpose of that?

MR. HOGAN: Yes, that's it in a nutshell.

MR. JACKIE: This may be way out there, but it will be the last thing I ask you. Have there been any studies

done on any wildlife as far as toxin buildup in deer, small game, for that matter, cattle that water in that area? Have there been any tests done on that?

MR. HOGAN: We have not done any. I don't think, Femi, that EPA did any during its investigation either.

MR. AKINDELE: If I remember well, there was fish studyied.

MR. HOGAN: Okay, yeah.

MR. JACKIE: And they showed no sign of --

MR. HOGAN: They did show some signs. In fact, again, I'm glad you brought that up, someone at the last meeting asked if we were going to continue to evaluate the stream, the microorganisms and the fish in the stream. And, yes, we will do that.

I talked to our experts in the Division of Water. They suggested that a study of that type would best be done perhaps a couple of years after the site is remediated because you wouldn't see the effects immediately in the organisms in the stream. But after a couple of years, we should begin to see the effect of eliminating the source of contamination.

MR. AKINDELE: There is a short paragraph here in paper that shows the effects.

MR. BLACK: I want to thank you all for giving us the opportunity. It's only because we contacted you all to

have another session to see if there were any final questions, or anything, so I appreciate the State and the federal folks for coming in tonight to see if there were any further questions to be answered or asked.

MR. HOGAN: If you like, we can conduct another meeting, perhaps in the Fall, when construction is about over. We don't have one planned right now, but if there is interest, give me a call and we'll have another meeting at that time.

MR. DAVIS: Can we have one just for quality control, update on what you did do, maybe after it's finished?

MR. HOGAN: Sure.

MS. BARRETT: Any other questions? Thank you very much for coming. Your questions were great, and we appreciate it. We look forward to seeing you again. Thank you.

STATE OF KENTUCKY)

(SS:

COUNTY OF OLDHAM)

I, BARBARA J. CRAWFORD, a Notary Public within and for the State of Kentucky at Large, do hereby certify the foregoing transcript of the Proposed Plan Public Meeting on the Red Penn Landfill Site was transcribed by me in the presence of all who attended the meeting; that the foregoing is a full, true and correct transcript of the said Meeting.

WITNESS MY SIGNATURE THIS 1st day of May, 2000.

My commission expires the 5th day of April, 2002.

Barbara J. Crawford

BARBARA J. CRAWFORD
Notary Public,
State at Large, Kentucky.

APPENDIX B

CORRESPONDENCE ON LANDFILL CAPPING

4TH DISTRICT
KENTUCKY
COMMITTEES:
AGRICULTURE
BUDGET

Congress of the United States
House of Representatives
Washington, DC 20515

OFFICES:
1237 LONGWORTH H.O.B.
WASHINGTON, DC 20515
(202) 225-3465
277 BUTTERMILK PIKE
FORT MITCHELL, KY 41017
(606) 426-0080
FEDERAL BLDG., SUITE 236
1405 GREENUP AVENUE
ASHLAND, KY 41101
(606) 324-9898

Ms. Dianne Barrett
Enviromental Protection Agency
Region IV
61 Forysth Ave., S.W.
Atlanta, GA 30303

Dear Dianne:

I have been contacted by several of my constituents who are concerned about efforts to cap the Red Penn toxic waste landfill in Pewee Valley, Kentucky. My constituents are worried that the cap will only postpone the inevitable leakage of toxic waste into the surrounding residential and farmland area. An area which includes nearby creeks where children play and animals drink. They have requested that the EPA investigate thier concerns before continuing with the implementation of the site cover.

I would like to take this opportunity to express my intrest in this situation and ask that I be provided with information upon which to base a reply to my constituent. Please respond to my Fort Mitchell District office.

Best wishes and thank you for your consideration.

Sincerely,

Ken Lucas
Member of Congress

KL:sb

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CEENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

JUN 19 2000

Honorable Ken Lucas
Member, United States
House of Representatives
277 Buttermilk Pike
Fort Mitchell, KY 41017

Dear Congressman Lucas:

Thank you for your letter dated May 12, 2000, regarding the Red Penn Landfill in Pewee Valley, Kentucky. I am pleased to provide this response to address your constituents' concerns relative to the on-goling remedial action at the site.

The Red Penn Landfill was a permitted household waste disposal facility which operated from 1954 to 1986, and accepted unauthorized industrial waste. The abandoned landfill was declared a federal Superfund site in 1989, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). EPA conducted a remedial investigation of the site and concluded in 1993, that the landfill did not pose sufficient human health or environmental risk to warrant a federal Superfund cleanup action. Nevertheless, the facility required proper closure. Consequently, EPA advised the Kentucky Department of Environmental Protection (KDEP) to work directly with the responsible parties on closing the landfill properly. In 1994, KDEP began site clean-up negotiations with the responsible parties. The negotiations resulted in an agreed order requiring Ford Motor Company, Waste Management of Kentucky, Red Penn Sanitation Company, the former owners/operators of the landfill (John Redmon, Guy Redmon and John Guelda) and the Atlantic Richfield Company to clean the site.

The agreed order requires the principal responsible parties to construct an engineered impermeable protective cap over the entire extent of the landfill. The cap will consist of a geosynthetic clay liner, a drainage net, and an eighteen inch soil cover with approved vegetation to control surface water runoff and prevent infiltration of water. It is designed to eliminate the potential for continued migration of contaminants from the landfill into the environment. Clearing and grubbing, the initial phases of the construction, are currently underway, and the total cap installation work is scheduled to be completed by the end of November 2000.

Under the agreed order, the responsible parties will monitor the protective cover in perpetuity. In addition, they are required to sample surface water and groundwater quarterly to ensure that the cap effectively prevents offsite migration of contaminants. If the results of these activities indicate that the implemented remedy is not effective, further remedial action will be required by the KDEP.

EPA evaluated the proposed remedy and concluded that the project as designed includes sufficient measures to result in an.effective resolution of the environmental issues at the site. I assure you that EPA is interested in mitigating unacceptable human health and environmental risks at the Red Penn Landfill. We will continue to review information on the site to ensure that the remedy under construction is effective. As provided for by the CERCLA, EPA will take an appropriate action or require furthertleanup activities at the site if future conditions so indicate.

If I may be of further assistance, please feel free to contact me or the Office of External Affairs at (404) 562-8327.

Sincerely,

John H. Hankinson, Jr.
Regional Administrator

cc: Jeff Pratt w/ incoming letter
KDEP

June 12, 2000

Environmental Protection Agency
Region IV
Atlanta, Georgia

Re: Redd-Penn Landfill

The Redd-Penn Landfill located in Oldham County near Pewee Valley is a topic that is most frightening to those of us who live anywhere nearby.

The cancer victims in the area are becoming so numerous and we feel we have a right to be concerned.

Please, do whatever you can to help REMOVE these toxic wastes, instead of CAPPING; not only for us, but for future generations.

Respectfully.
Virginia H. Chaudoin

Virginia H. Chaudoin
P.O. Box 444
Pewee Valley, Ky. 40056

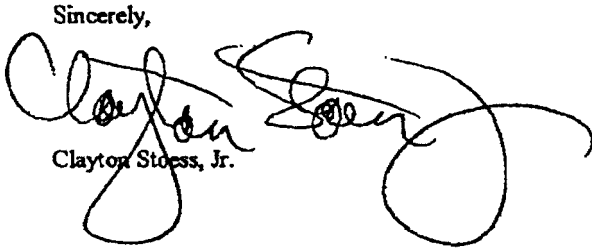
April 23,2000
Pewee Valley, KY

The Environental Protection Agency
Region IV
Atlanta, GA

Dear Editor:

The plan to cap the Red Peon toxic waste, landfill is woefully inadequate. To even suggest that it will solve the problem is ludicrous. The cap will only postpone the inevitable leakage of toxic waste into the surrounding area. There is no question that it will eventually happen. The very idea that we would knowingly leave this poison catastrophe for our children and possibly their children is unconscionable. I really don't know who made this deal for the community, but whoever it was should go back to the drawing board and vehemently insist that the toxic waste be removed from the area and disposed of properly.

Sincerely,



Clayton Stoess, Jr.

June 12,2000

Environmental Protection Agency
Region IV
Atlanta, Georgia

Re: Redd-Penn Landfill

As you know there are plans to "CAP" the Redd-Penn Landfill in Oldham County. In view of the extremely hazardous waste involved, I feel this would be a very big and costly mistake.

I would a ppreciate your investigating this plan THOROUGHLY before giving your approval since the health of so many people, especially little children, is involved.

A thorough CLEAN-UP would be very expensive, but in the longrun would save money as well as lives.

Respectfully,
Louise H. Marker

Louise H. Marker
P.O. Box 54
Pewee Valley, Ky. 40056

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

June 20, 2000

Subject: Red Penn Landfill Site
Pewee Valley, Kentucky

From: Femi Akindele

To: Ms. Louise H. Marker
P. 0. Box 54
Pewee Valley, KY 40056

As the EPA Remedial Project Manager for Red Penn Landfill Site, a copy of the memo you recently wrote regarding the landfill cap under construction at the site was forwarded to me. The attached letter from our Regional Administrator to Congressman Ken Lucas may be of interest to you as it addresses concerns similar to yours.

As the letter states, EPA believes that capping the site will address site issues adequately, based on current information. If new information indicates otherwise, EPA will take appropriate actions.

Thank you very much.

Sincerely,

Femi Akindele

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

June 20, 2000

Subject: Red Penn Landfill Site
Pewee Valley, Kentucky

From: Fermi Akindele

To: Ms Virginia H. Chaudoin
P. O. Box 444
Pewee Valley, KY 40056

As the EPA Remedial Project Manager for Red Penn Landfill Site, a copy of the memo you recently wrote regarding the landfill cap under construction at the site was forwarded to me. The attached letter from our Regional Administrator to Congressman Ken Lucas may be of interest to you as it addresses concerns similar to yours.

As the letter states, EPA believes that capping the site will address site issues adequately, based on current information. If new information indicates otherwise, EPA will take appropriate actions.

Thank you very much.

Sincerely,

Fermi Akindele

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

June 20, 2000

Subject: Red Penn Landfill Site
Pewee Valley, Kentucky

From: Femi Akindele

To: Mr. Clayton Stoess, Jr.
Pewee Valley, KY 40056

As the EPA Remedial Project Manager for Red Penn Landfill Site, a copy of the memo you recently wrote regarding the landfill. cap under construction at the site was forwarded to me. The attached letter from our Regional Administrator to Congressman Ken Lucas may be of interest to you as it addresses concerns similar to yours.

As the letter states, EPA believes that capping the site will address site issues adequately, based on current information. If new information indicates otherwise, EPA will take appropriate actions.

Thank you very much.

Sincerely,

Femi Akindele

Appendix N1 – Fox Run

48 X 38

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plan of FOX RUN SUBDIVISION – SECTION 1

and does hereby dedicate to public use the FOX BEND COURT AND WOODMONT PARK LANE

shown thereon.

OWNER: GLEN-MAR DEVELOPMENT, INC. PRES

CERTIFICATE OF ACKNOWLEDGEMENT

STATE OF KENTUCKY
COUNTY OF JEFFERSON

Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of Fox Run Subdivision was this day presented to me by PR.

known to me, who executed the Certificates in my presence and acknowledge it to be his/her free act and deed.

Witness my hand and seal this 19th day of Sept. 2002

My Commission expires: 11th day of Sept. 2002

Notary Public

CERTIFICATE OF APPROVAL

Approved this 11th day of Sept. 2002

LOUISVILLE AND JEFFERSON COUNTY PLANNING COMMISSION

DOCKET NO.'S 10-28-00

CERTIFICATE OF RESERVATION OF GAS, ELECTRIC & TELECOMM. EASEMENTS

The spaces outlined by dashed lines and marked "gas, electric and telecomm. easement" are hereby reserved as easements for gas, electric and telecomm. utility purposes, which include: (1) the right of ingress and egress across all lots, access areas, and ways in and from the easements; (2) the right to cut down or trim any trees within the easement; (3) the right to trim or cut down any trees outside easement area within 10' of the nearest crosswalk within the easement or a public way; (4) the right to cut down or trim any trees on private property that may be so definitive as to present a hazard in the utility lines after reasonable notice to the property owner; (5) the right of any utility company using said easements to construct permanent structures of obstructions within the easement. No permanent structures shall be erected within the easement. Fences, shrubbery and gardens may occupy easement area of property owner's risk. The developer is to remove all trees that may interfere with the original construction of the gas lines, electric lines and telephone lines to serve this subdivision.

(A) All property owners electric utility service lines shall be underground at locations designated by Louisville Gas and Electric Company (from L.G.& E.'s termination point throughout length of service lines to customer's building) and title thereto shall remain in, and the cost of installation and maintenance thereof shall be borne exclusively by the respective lot owner upon which the said service line is located.

Appropriate easements are hereby dedicated and reserved to each property owner, together with the right of ingress and egress over abutting lots or properties to install, operate and maintain electric service lines to L.G.& E.'s termination points. Electric service lines, as installed, shall determine the exact location of said easements.

(B) All property owners gas utility supply lines shall be at locations designated by Louisville Gas and Electric Company (from L.G. & E.'s termination point throughout length of service and house lines and through customer's building), and title thereto shall remain in, and the cost of installation and maintenance thereof shall be borne individually by the respective lot owner upon which the said gas line serves.

Appropriate easements are hereby dedicated and reserved to each property owner, together with the right of ingress and egress over abutting lots or properties to install, operate and maintain gas lines to L.G. & E.'s termination points. Gas lines, as installed, shall determine the exact location of said easements.

(C) No gas, electric or telecom. easements place on this plat shall be subdivided and preserved in their present condition and no encroachment thereto and no change in the grade of elevation thereof shall be made by any person or any owner without the consent in writing of the Louisville Gas and Electric Company and Bellsouth Telecommunications.

(D) Easements for overhead electric transmission and distribution feeder lines, poles and equipment appropriate in connection therewith are reserved over, across and under all spaces designated park, open and drainage space area(s), marked by dash lines and designated for underground and overhead facilities.

Above ground electric transformers and pedestals may be installed at appropriate points in any electric easement.

In consideration of L.G. & E. bringing service to the property shown on this plat it is granted the right to make further extensions of its lines from all overhead and underground distribution lines.

(E) Above ground telecomm. facilities and pedestals may be installed at appropriate points in any telecomm. easement.

(F) Construction fencing shall be erected prior to any grading or construction activities – preventing compaction of root systems of trees to be preserved. The fencing shall enclose the area beneath the dripline of the tree canopy and shall remain in place until all construction is completed. No parking, material storage, or construction activities shall be permitted within the fenced area.

NOTE
Also the right to construct lots with screened-in porches facing Ext

OWNER: GLEN-MAR DEVELOPMENT, INC. PRES

CERTIFICATE OF RESERVATION OF SANITARY SEWER AND DRAINAGE EASEMENTS

An easement for sanitary sewer and drainage purposes is hereby reserved as, over and under the strips of land and spaces as ordered and bounded by dashed lines marked "Sanitary Sewer and Drainage Easement", together with the right of ingress and egress over all lots to and from the easements, for construction, operation and maintenance of sewers and drains over said land. No permanent structure of any kind shall be placed on, over or under the land which is subject to said easements. No easement shall be for the benefit of the land in the subdivision, and other land which naturally drains therein and said sewers and drains may be constructed by the Louisville and Jefferson County Metropolitan Sewer District, or any other public agency having legal authority for such construction, or by others subject to approval by the aforesaid Sewer District.

OWNER: GLEN-MAR DEVELOPMENT, INC. PRES

PROPERTY OWNER'S OBLIGATION

Certain improvements on this subdivision are required by the Metropolitan Subdivision Regulations as specified by an approved construction plan on file in the office of the Director of Works. It is the obligation of every property owner in the subdivision not to damage, alter or destroy those improvements and not to alter any condition or activity on his property that will impair the proper functioning of those improvements. For violation of this provision, the property shall be subject to the imposition of a lien for the amount necessary to remedy the violation which may be enforced in the same manner that mortgages are enforced, and persons responsible shall be subject to fine.

BUILDERS OBLIGATION

The builder of each lot in this subdivision is required to grade the lot so that cross-lot drainage is in conformance with the approved Composite Drainage Plan for the subdivision and all drainage from the lot is directed to a public drainage facility in easement or right-of-way.

CERTIFICATE OF RESERVATION OF WATER LINE EASEMENT

Permanent easement(s) for water mains and appurtenances are hereby reserved as, over, under and through the strip(s) of land as ordered and bounded by dashed lines marked "Louisville Water Company Easement" together with the right of ingress and egress over all lots to and from the easement(s) for constructing, repairing, removing, replacing, relocating, reconstructing, maintaining and enlarging of water mains. No permanent structure of any kind shall be erected on the said easement(s) without written consent of Louisville Water Company. Fences, shrubbery, and gardens may occupy easement area of the property owner's risk. Temporary rights are hereby granted to use land adjacent to the permanent easement(s) hereby granted for storage and movement of excavated earth, pipe, construction materials, tools and equipment during construction of said water lines.

OWNERS: GLEN-MAR DEVELOPMENT, INC. PRES

SIGNATURE ENTRANCE CERTIFICATE

An easement for signature entrance purposes, including walls, fences and landscaping, is hereby reserved as, over and under the strip of land and spaces dashed and bounded by dashed lines marked "Signature Entrance Easement" for the installation, maintenance and repair of signature walls, fences and landscaping. This easement shall be for the benefit of Fox Run Homeowners Association, Inc and it's assigns or agents. Any public agency responsible for maintenance of location within the right-of-way may require, for any reason the removal of a signature entrance located within the right-of-way. The removal shall be done at Owners/Developers expense and shall in no way limit replacing the entrance sign.

OWNERS: GLEN-MAR DEVELOPMENT, INC. PRES

NOTICE OF BOND REQUIREMENT

After construction approval and release of the undersigned subdivider's bond by the Louisville and Jefferson County Planning Commission, the owner of any lot may be required to post a cash bond in the amount of 1,000 as a condition of obtaining a building permit pursuant to Section 2.70 of the Metropolitan Subdivision Regulations.

LAND SURVEYOR'S CERTIFICATE

I hereby certify that this plat and survey were made under my supervision, and that the angular and linear measurements as interpreted by monuments shown hereon, are true and correct to the best of my knowledge and belief. This plat meets the requirements of a Class A (Suburban Land) Survey. The unadjusted traverse closure ratio exceeds an accuracy of 1:10000 and an angular closure of 15 seconds per angle.

David L. Wahle #3492 9-10-02
Signature PLS # Date

COMMONWEALTH OF KENTUCKY
DAVID B. WINKLER
3492
LICENSED
PROFESSIONAL
LAND SURVEYOR

CENTERLINE CURVE DATA

1. Δ = 28°43'24" R = 400.00' T = 95.01' L = 186.56'
2. Δ = 17°30'40" R = 700.00' T = 107.81' L = 213.94'
3. Δ = 07°43'22" R = 1000.00' T = 67.50' L = 134.79'

NOTES:

1) NO LOTS SHOWN HEREON MAY BE SUBDIVIDED OR RESUBDIVIDED RESULTING IN THE CREATION OF A GREATER NUMBER OF LOTS THAN ORIGINALLY APPROVED BY THE PLANNING COMMISSION

2) THIS PLAT IS SUBJECT TO DEED OF RESTRICTION AS RECORDED IN DEED BOOK 7939 PAGE 910

3) ALL OPEN SPACES SHALL BE MAINTAINED BY NEIGHBORHOOD ASSOCIATION.

4) CONSTRUCTION FENCING SHALL BE ERECTED PRIOR TO ANY GRADING OR CONSTRUCTION ACTIVITIES– PREVENTING COMPACTION OF ROOT SYSTEMS OF TREES TO BE PRESERVED. THE FENCING SHALL ENCLOSE THE AREA BENEATH THE DRIPLINE OF THE TREE CANOPY AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IS COMPLETED. NO PARKING, MATERIAL STORAGE, OR CONSTRUCTION ACTIVITIES SHALL BE PERMITTED WITHIN THE FENCED AREA.

5) 1/2" x 18" IRON PIN W/CAP L.S. #3492 SET AT ALL CORNERS UNLESS OTHERWISE NOTED.

6) THE PRINCIPAL MERIDIAN USED ON THIS PLAT TO DETERMINE THE DIRECTIONS OF SURVEY LINES WAS BASED ON THE DEED BEARING OF S20°28'12"E ALONG THE EAST LINE OF TRACT 1 OF PLAT ATTACHED TO AND RECORDED IN D.B.7689, PG.501

7) NO PORTION OF THIS TRACT LIES IN A FLOOD AREA FROM A REVIEW OF F.E.M.A. MAP #21111C0105 D DATED FEBRUARY 2, 1984.

8) UNADJUSTED CLOSURE FOR THIS TRACT IS 1 PART IN 84,600 FEET. THIS SURVEY SHOWN HEREON IS A CLASS "A" SURVEY WHICH WAS MADE BY THE METHOD OF RANDOM TRAVERSE WITH SIDESHOTS.

9) THIS PLAT SUBJECT TO CONDITIONS OF APPROVAL IN DOCKET NUMBERS 10-28-00 ON FILE IN THE OFFICE OF THE PLANNING COMMISSION.

10) THE BUILDING UNIT LINE SHOWN ON THIS PLAT MAY BE AMENDED AT ANY TIME BY THE LOUISVILLE & JEFFERSON COUNTY PLANNING COMMISSION IN ACCORDANCE WITH APPLICABLE SUBDIVISION REGULATIONS.

11) A SOIL EROSION AND SEDIMENT CONTROL PLAN SHALL BE DEVELOPED AND IMPLEMENTED IN ACCORDANCE WITH THE METROPOLITAN SEWER DISTRICT AND U.S.D.A., SOIL CONSERVATION SERVICE RECOMMENDATIONS AND A COPY OF SAID PLAN SHALL BE SUBMITTED TO THE PLANNING COMMISSION.

12) THERE SHALL BE NO DIRECT ACCESS TO OLD HENRY ROAD FROM LOTS 2 AND 44.

13) ALL NECESSARY RIGHTS FOR SANITARY SEWER & DRAINAGE, & PUBLIC UTILITY PURPOSES ARE HEREBY RESERVED THROUGH AREAS MARKED "OPEN SPACE".

14) LOTS 2, 3, 43, 44, 46 & 47 WILL REMAIN NON-BUILDABLE LOTS UNTIL A DECISION IS MADE BY THE STATE DIVISION OF HIGHWAYS REGARDING THE PLACEMENT OF THE OLD HENRY ROAD/ CRESTWOOD CONNECTOR EXTENSION.

15) ACCESS EASEMENT MUST CONFORM TO ORDINANCE 17, SERIES 1991, JEFFERSON COUNTY FISCAL COURT.

16) MINIMUM OPENING ELEVATION IS REQUIRED FOR LOTS 5 AND 6.

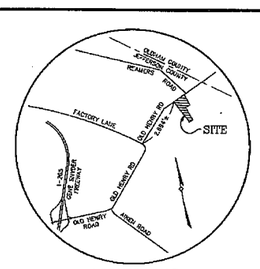
17) LOTS 1 AND 45 HAVE BEEN DELETED FROM THIS PLAT.

18) 50'B/L, PARKWAY BUFFER, ACCESS AND PUBLIC UTILITY EASEMENT MAY BE DEDICATED TO PUBLIC RIGHT-OF-WAY IF REQUIRED BY THE DIRECTOR OF WORKS AT NO COST TO JEFFERSON COUNTY.

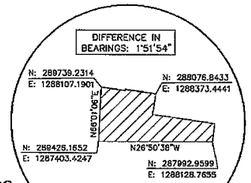
19) KENTUCKY DIVISION OF TRANSPORTATION (KDOT) IS RESPONSIBLE FOR THE REMOVAL AND RELOCATION OF SIGNATURE ENTRANCE WALLS AT KDOT'S EXPENSE IF NECESSARY.

20) IF KENTUCKY DIVISION OF TRANSPORTATION (KDOT) DECIDES NOT TO UTILIZE THE ADDITIONAL 30' OF DEDICATED RIGHT-OF-WAY ALONG OLD HENRY ROAD, THIS RIGHT-OF-WAY WILL REVERT BACK TO GLEN-MAR DEVELOPMENT, INC. AT KDOT'S EXPENSE.

21) AS OF THE DATE OF RECORDATION OF THIS PLAT, THE KY. DEPT OF TRANS. HAS NOT DECIDED ON PLACEMENT OF THE OLD HENRY Rd./CRESTWOOD CONNECTOR. VARIOUS LOCATIONS ARE BEING CONSIDERED BY KDOT, WHICH, IF SELECTED, MAY AFFECT OTHER LOTS OF THIS SUBDIVISION.



LOCATION MAP
NOT TO SCALE



KENTUCKY COORDINATE SYSTEM OF 1993

Russell L. & Marlynn A. Fox
D.B.6357, Pg 70

Larry & Brenda Kelsey
D.B.8579, Pg. 808
D.B.7946, Pg. 853

Larry & Brenda Kelsey
D.B.8579, Pg. 808
D.B.7946, Pg. 853

Michael & Mary Sosse
D.B.6071, Pg.949

Edward & Nancy Schickli
D.B 4921, Pg.412

Ollie & Delores Phillips
Leonard & Evelyn Phillips
D.B.5013, Pg.496

Cr 15' LG&E Esm't D.B.5250, Pg.47

Cr 15' LG&E Esm't D.B.5250, Pg.47

Cr 15' LG&E Esm't D.B.5220, Pg.42

Ex. 2 Story Residence BRICK WOOD

OLD HENRY ROAD – R/W VARIES

FOX BEND COURT 50'R/W

WOODMONT PARK LANE 50'R/W

"OPEN SPACE" (NON-BUILDABLE LOT) 28,851 S.F.

M.O.E. 667.00

M.O.E. 667.00

1	13,199 S.F.	25	11,178 S.F.
2	28,957 S.F.	26	14,349 S.F.
3	14,577 S.F.	27	12,940 S.F.
4	14,122 S.F.	28	11,679 S.F.
5	13,714 S.F.	29	12,100 S.F.
6	10,906 S.F.	30	15,795 S.F.
7	10,432 S.F.	31	10,048 S.F.
8	11,144 S.F.	32	14,285 S.F.
9	11,565 S.F.	33	19,386 S.F.
10	11,189 S.F.	34	20,844 S.F.
11	11,181 S.F.	35	13,022 S.F.
12	10,664 S.F.	36	13,199 S.F.
13	10,137 S.F.	37	14,885 S.F.
14	9,609 S.F.	38	16,468 S.F.
15	9,082 S.F.	39	13,246 S.F.
16	10,794 S.F.	40	10,751 S.F.
17	9,288 S.F.	41	12,163 S.F.
18	11,490 S.F.	42	18,848 S.F.
19	15,501 S.F.	43	11,685 S.F.
20	9,722 S.F.	44	22,220 S.F.
21	9,981 S.F.	45	19,515 S.F.
22	10,280 S.F.	46	53,564 S.F.
23	10,580 S.F.	47	21,128 S.F.

SEE NOTE 14

770.26' N64°09'12"E

S20°28'33"E 334.63'

N68°48'51"E 17.00'

S20°28'33"E 440.16'

S70°53'06"W 295.19'

S20°28'12"E 892.86'

S69°12'42"W 258.66'

N28°42'32"W 1606.30'

80.3'

PROJECT DATA

TOTAL SITE AREA	=	18.90 ACRES
EXISTING ZONING	=	R-4
TOTAL # RESIDENTIAL LOTS	=	46
TOTAL # OPEN SPACE LOTS	=	1
TOTAL AREA OF R/W	=	3.11 ACRES
NET AREA	=	15.13 ACRES
GROSS DENSITY	=	2.49 DU/AC.
NET DENSITY	=	3.11 DU/AC.
TOTAL AREA OF LOTS	=	16.25 ACRES
OPEN SPACE PROVIDED	=	0.66 ACRES
MINIMUM YARD REQUIREMENTS:		
FRONT YARD	=	30 FEET
SIDE YARD:		
Total For Both	=	10 FEET
Minimum	=	5 FEET
STREET SIDE YARD	=	30 FEET
REAR YARD	=	25 FEET

ENGINEER/LAND SURVEYOR

LD&D
LAND DESIGN & DEVELOPMENT, INC.
ENGINEERS • LAND SURVEYORS • LANDSCAPE ARCHITECTURE
8011 WESTPORT AVENUE, SUITE B
LOUISVILLE, KENTUCKY 40228
PHONE: (502) 426-3974 FAX: (502) 426-5978

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

RECORD PLAT OF FOX RUN SUBDIVISION

OWNER/DEVELOPER
GLEN-MAR DEVELOPMENT, INC.
206 OLD HARRODS CREEK ROAD
LOUISVILLE, KENTUCKY 40223
D.B.7689, PG.501/D.B.7689, PG.508/D.B.7946, PG.853
T.B. 16, LOTS 56 & 65

PLAT DATE: 1/24/02

Recorded in Plat Book No. 48 Page No. 38

BOOK 079581PG0947

Document No.: #2002016572
Lodged By: at mb 09/11/2002 11:17:17:06
Recorded On:
Total Fees: 10.00
Transfer Tax: .00
County Clerk: Bobbie Holsclaw-IN
Deputy Clerk: tbobbie

48 X 38

CF 9/11/02

Appendix N2 – Glen Mar

6

THIS DEED Between JAMES H. ERICKSON and CARLA JEAN ERICKSON, husband and wife, Parties of the First Part 850 Washburn Avenue, Apt #6, Louisville, KY. 40222 and
RUSSELL L. FOX and MARLYNN A. FOX, husband and wife, Parties of the Second Part,
9225 OLD HENRY ROAD, LOUISVILLE, KENTUCKY 40245

WITNESSETH: That for a VALUABLE CONSIDERATION in the sum of $175,000.00, the receipt of which is hereby acknowledged, the parties of the first part hereby convey , with covenant of GENERAL WARRANTY, unto the parties of the second part, for their joint lives with remainder in fee simple to the survivor of them the following described real estate situated in JEFFERSON County, KENTUCKY, to-wit:

(See "EXHIBIT A" attached hereto and made a part hereof)

Said estate is free from all encumbrances except restrictions, stipulations and easements of record, and except for taxes for the year 1993, which are to be prorated between parties.

IN TESTIMONY WHEREOF, witness the signatures of the parties of the first part this 10th day of September, 1993.

James H. Erickson
JAMES H. ERICKSON

Carla Jean Erickson
CARLA JEAN ERICKSON

STATE OF KENTUCKY)
}SS
COUNTY OF JEFFERSON)

The foregoing instrument was acknowledged before me this 10th day of September, 1993 by JAMES H. ERICKSON and CARLA JEAN ERICKSON, husband and wife.

Witness my signature this 10th day of September, 1993.

My commission expires August 16, 1997

Notary Public, State at Large, Kentucky

THIS INSTRUMENT PREPARED BY:

ROBERT C. ENGLISH, ATTORNEY
10213 LINN STATION RD.
SUITE 2
LOUISVILLE, KENTUCKY 40223

[redacted]

CONSIDERATION CERTIFICATE

We, the undersigned, hereby certify that the consideration of $175,000.00, reflected in this Deed is the full consideration paid for subject property.

GRANTOR(S):

James H. Erickson
James H. Erickson

Carla Jean Erickson
Carla Jean Erickson

GRANTEE(S):

Russell L. Fox
Russell L. Fox

Marlynn A. Fox
Marlynn A. Fox

STATE OF KENTUCKY)
) SS
COUNTY OF JEFFERSON)

The foregoing Consideration Certificate was acknowledged and sworn to before me this 10th day of September, 1993, by James H. Erickson and Carla Jean Erickson, husband and wife, Grantors and by Russell L. Fox and Marlynn A. Fox, husband and wife, Grantees.

My commission expires: August 16, 1997

NOTARY PUBLIC, STATE AT LARGE, KENTUCKY

THIS INSTRUMENT PREPARED BY:

ROBERT C. ENGLISH, ATTORNEY
10213 Linn Station Road, Suite 2
Louisville, Kentucky 40223

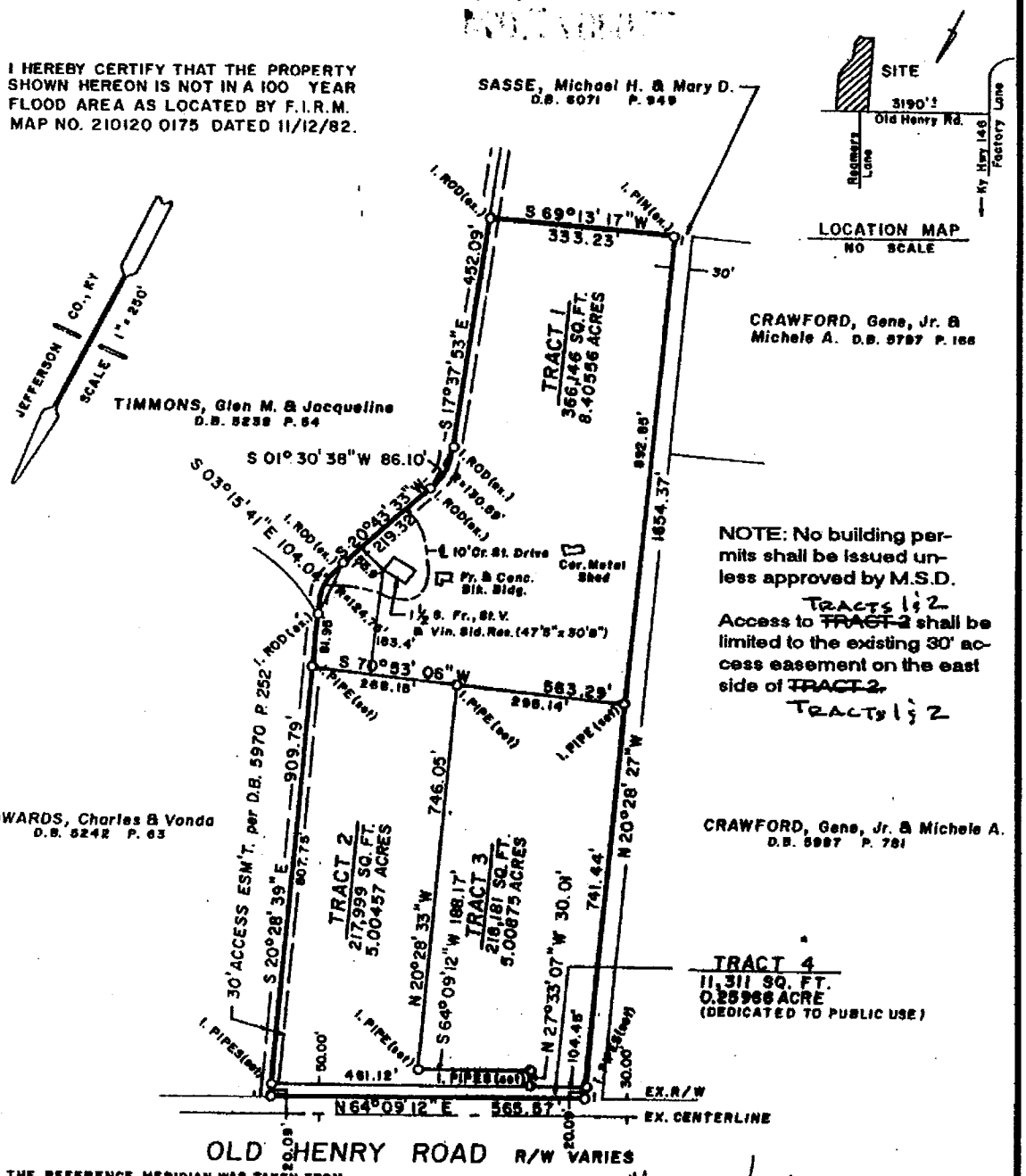
EXHIBIT "A"

BEGINNING at an iron rod at the northeast corner of a tract of land conveyed to Michael H. and Mary D. Sasse by deed dated June 7, 1991, and recorded in Deed Book 6071, page 949, in the Office of the County Clerk of Jefferson County, Kentucky; thence with the north line of said tract South 69 degrees 13 minutes 17 seconds West 333.23 feet to an iron pin; thence North 20 degrees 28 minutes 27 seconds West 892.85 feet to an iron pipe; thence with the new division line of Erickson North 70 degrees 53 minutes 06 seconds East 563.29 feet to an iron pipe in the centerline of a 30 foot access easement as shown on minor subdivision plat dated April 9, 1990, and recorded in Deed Book 5970, page 252, in the office aforesaid; thence with said centerline South 20 degrees 38 minutes 39 seconds East 81.95 feet to an iron rod; thence with the chord of a curve to the right having a radius of 124.75 feet South 03 degrees 15 minutes 41 seconds East 104.04 feet to an iron rod; thence South 20 degrees 43 minutes 33 seconds West 219.32 feet to an iron road; thence with the chord of a curve to the left having a radius of 130.59 feet South 01 degree 30 minutes 38 seconds West 86.10 feet to an iron rod; thence South 17 degrees 37 minutes 53 seconds East 452.09 feet to the point of beginning and containing 8.40556 acres, Also being shown as Tract 1 on minor subdivision plat dated August 3, 1993, attached hereto and made a part of Deed dated September 10, 1993, of record in Deed Book 6357, Page 70, in the Office of the County Clerk aforesaid.

BEING a part of the same property acquired by parties of the first part by deed dated June 30, 1981, of record in Deed Book 5238, page 68, in the Office of the County Clerk of Jefferson County,Kentucky.

NOTE: Survey subject to all legal roadways; easements and rights-of-way if any.

I HEREBY CERTIFY THAT THE PROPERTY SHOWN HEREON IS NOT IN A 100 YEAR FLOOD AREA AS LOCATED BY F.I.R.M. MAP NO. 210120 0175 DATED 11/12/82.



THE REFERENCE MERIDIAN WAS TAKEN FROM A MINOR PLAT BY DESIGN ENG., INC. DATED 4/9/90 ALONG THE S. R/W CALL S 64°09' 12"W 565.58'. THE METHOD OF SURVEY WAS RANDOM TRAVERSE AND WAS ADJUSTED FOR CLOSURE.

I hereby certify that this plat and survey were made under my supervision, and that the angular and linear measurements shown hereon, are true and correct to the best of my knowledge and belief. This survey and plat, as shown, meets or exceeds the minimum standards of the governing authorities.

9/9/93

Mark E. Garber
Professional Land Surveyor
Kentucky Registration No. 2975

STATE OF KENTUCKY
MARK E. GARBER
2975
REGISTERED
LAND SURVEYOR

Approved this 13th day of September 1993
LOUISVILLE AND JEFFERSON COUNTY
PLANNING COMMISSION

Charles Drees

PRECISE LAND COMPANY

LAND SURVEYORS
1101 LARCHMONT AVENUE
LOUISVILLE, KENTUCKY 40216
(502) 581-7733

TAX BLOCK 16 LOT 45

FOR JAMES H. & CARLA J. ERICKSON

DESCRIPTION 9225 OLD HENRY ROAD
D.B. 5238 P. 68

JOB NO. 93537 DATE 8/3/93 BY M.T.C.
REV. 9/9/93 LOT AREAS

0 250 500

MINOR PLAT
APPROVAL
JEFFERSON COUNTY
DEPT. OF PUBLIC WORKS
BY: MWA
DATE: 9.9.93

Note:
Tract 1 & 2 shall have access only Through Existing access Esmt. AG

LOUISVILLE AND JEFFERSON COUNTY
HEALTH DEPARTMENT

THIS APPROVAL IS FOR LAND OF JEFFERSON COUNTY [illegible]
CONDITIONS FOR [illegible] SEWAGE SYSTEM.

9-10-93
BY: [illegible]
COMMENTS:

PLAT APPROVAL

No permit [illegible] as submitted. Must comply with [illegible] County Ordinance #17 subject to [illegible] and approval.

DATE: Sept. 13, 1993
BY: [illegible]
FIRE DISTRICT: Middletown
COMMENTS:

METROPOLITAN SEWER DISTRICT REVIEW

This plat has been reviewed for storm drainage and sanitary sewer related considerations and Metropolitan Sewer District has no objection to this plat. However, this review does not constitute any form of construction approval for work on this site.

Mark [illegible]/CLC — 9-10-93
Storm Drainage Review — Date

GEB/CLC
Sanitary Sewer Review — Date

STANDARD CERTIFICATE FORM

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of 9225 Old Henry Road D.B. 5238 P. 68

[(fill in subdivision name; owner's name(s) and deed book(s) and page number(s)] and does hereby dedicate to public use the Tract 4 shown thereon.

x James W. Erickson
x Carla Jean Erickson
Name(s)

9225 Old Henry Road
Address

Owners
Title

ZONING CERTIFICATE

I/We hereby certify all of the lots of this minor subdivision and any existing buildings and improvements thereon and/or any buildings and improvements included in a building permit either applied for or approved thereon are in compliance with all the provisions of the Zoning District Regulations. Any such buildings or improvements not in compliance with the Zoning District Regulations have been granted all necessary variances by the Board of Zoning Adjustment as described in Docket N/A or documentation of the existence of the buildings or improvements prior to the adoption of the Zoning District Regulations has been accepted by the Planning Commission staff as valid evidence of their non-conforming status.

x James W Erickson
x Carla Jean Erickson
Owner(s)

CERTIFICATION OF ACKNOWLEDGMENT

State of Kentucky)
County of Jefferson) SS

I, Evelyn Argert, a Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of 9225 Old Henry Road D.B. 5238 P. 68 was this day presented to me by
(descriptive location of property)

James and Carla Erickson, known to me, who executed Certificates in my presence and acknowledge it to be their free act and deed.
(her, his, their)

Witness my hand and seal this 9 day of Sept., 1993.

My Commission expires: 7 day of May, 1997.

Evelyn Argert
Notary Public

EVELYN ARGERT NOTARY PUBLIC STATE AT LARGE KENTUCKY

END OF DOCUMENT

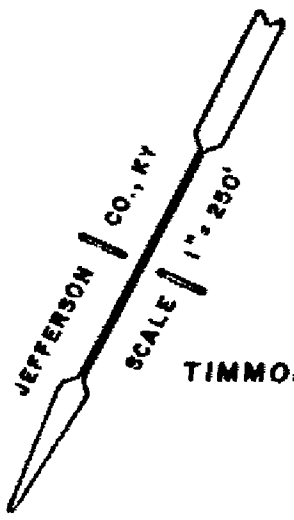
196-93

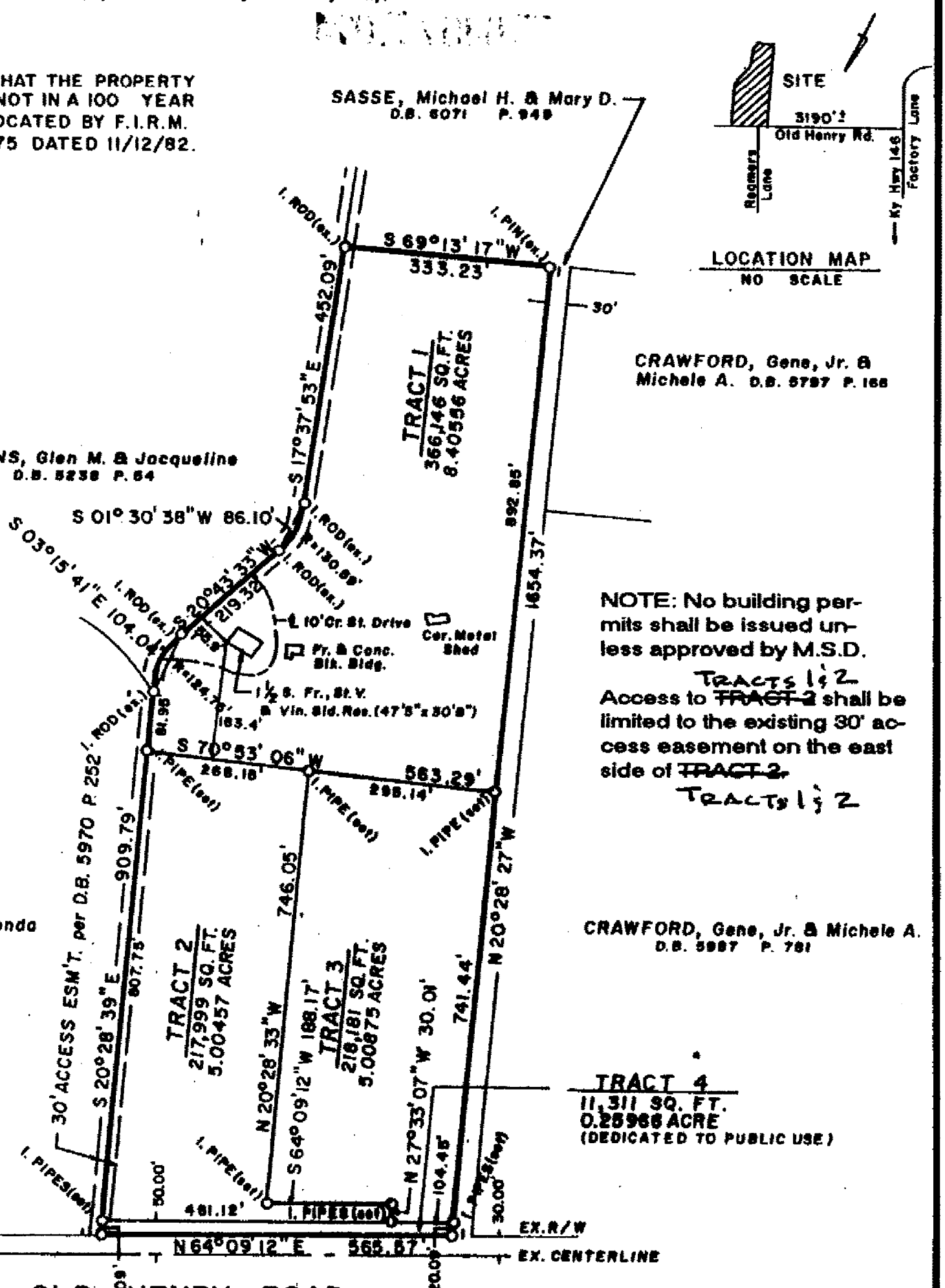
120453

Document No: 1993120453
Lodged By: ENGLISH
Recorded On: Sep 14, 1993 01:24:09 P.M.
Total Fees: $15.00
Transfer Tax: $175.00
Deputy Clerk: Pamela Jackson

NOTE: Survey subject to all legal roadways; easements and rights-of-way if any.

I HEREBY CERTIFY THAT THE PROPERTY SHOWN HEREON IS NOT IN A 100 YEAR FLOOD AREA AS LOCATED BY F.I.R.M. MAP NO. 210120 0175 DATED 11/12/82.





NOTE: No building permits shall be issued unless approved by M.S.D.

TRACTS 1 & 2

Access to ~~TRACT 2~~ shall be limited to the existing 30' access easement on the east side of ~~TRACT 2.~~

TRACTS 1 & 2

THE REFERENCE MERIDIAN WAS TAKEN FROM A MINOR PLAT BY DESIGN ENG., INC. DATED 4/9/90 ALONG THE S. R/W CALL S 64°09' 12"W 565.88'. THE METHOD OF SURVEY WAS RANDOM TRAVERSE AND WAS ADJUSTED FOR CLOSURE.

I hereby certify that this plat and survey were made under my supervision, and that the angular and linear measurements shown hereon, are true and correct to the best of my knowledge and belief. This survey and plat, as shown, meets or exceeds the minimum standards of the governing authorities.

9/7/93

Mark E. Garber
Professional Land Surveyor
Kentucky Registration No. 2975

STATE OF KENTUCKY
MARK E. GARBER
2975
REGISTERED
LAND SURVEYOR

Approved this 13th day of September 1993
LOUISVILLE AND JEFFERSON COUNTY
PLANNING COMMISSION
Charles Dorsa

PRECISE LAND COMPANY

LAND SURVEYORS
1101 LARCHMONT AVENUE
LOUISVILLE, KENTUCKY 40215
(502) 361-7733

TAX BLOCK 16 LOT 45

FOR JAMES H. & CARLA J. ERICKSON

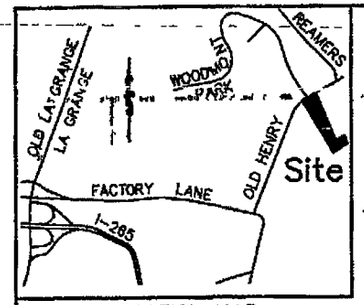
DESCRIPTION 9225 OLD HENRY ROAD
D.B. 5238 P. 68

JOB NO. 93537 DATE 8/3/93 BY M.T.C.
REV. 9/8/93 LOT AREAS

0 250 500

 196-93

DB 07689 PG 0504



LOCATION MAP
NOT TO SCALE

EDWARD & NANCY SCHICKU
D B 4921, PG 412

OLLIE & DELORES PHILLIPS
LEONARD & EVELYN PHILLIPS
D B 5013, PG 496

2,692'± TO FACTORY LN

N28°42'32"W 1626 32'

8.2' 9.1'

1606.30'

633 8'

20 02'

30 00'

N29°00'00"W 351 90'

TRACT 2
3 86 Acres

2-STORY FRAME RESIDENCE
(SEE DETAIL "A")

23 7' X 35 5
METAL SHED
(TO BE REMOVED WITHIN 180 DAYS OF MINOR PLAT APPROVAL)

TRACT 1A
0 23 Acres
(Dedicated To R/W)

N64°09'12"E 491 00'

493 88'

OLD HENRY ROAD—R/W VARIES

N69°13'33"E 258.66'

228.66'

30 00'

TRACT 1
13 89 Acres

536 72'

S68°38'00"W

164 3

156 3

270.6

EX GRAVEL DRIVE

2-STORY FRAME RESIDENCE
(SEE DETAIL "B")

EX GRAVEL DRIVE

577 7'

EX 50' B/L AND PARKWAY BUFFER AREA PER DOCKET NO 10-28-00

130.7'

130 9'

S20°28'12"E 1634 36'

20 09'

1654 45'

N64°09'12"E

30 00'

TOMMY W. & DONNA G HILTZMAN
D B 5970, PG 252

RUSSELL L & MARLYNN A FOX
D B 6357, PG 70

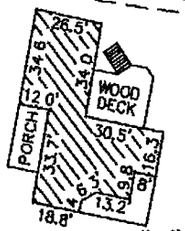
GREGORY A & SUSAN CARPENTER
D B 6483, PG 973

N69°13'33"E 1333 14'

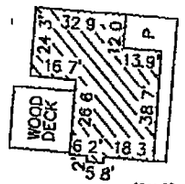
"APPLE HILL ROAD"
℄ EX 30' ACCESS ESM'T
D B 5970, PG 252

S17°35'32"E 250 00'

GLENN MARK & JACQUELINE C. TIMMONS
D B 5238, PG 54



DETAIL "A"



DETAIL "B"

NOTES

- There will be no further division of Tract 2
- This plat is subject to all legal roadways, easements and right-of-ways, if any whether shown hereon or not
- Bearings for this tract have been adjusted to agree with the plat bearing as shown on and made part of D B 5970 Pg.252 and is the basis for the meridian shown hereon Having a bearing of S20 28 12"E
- Unadjusted closure for this tract exceeds 1 part in 84,600 plus 0.05 feet. This tract has not been adjusted for closure. Survey was conducted by Random Traverse Method. This is a Class "A" Survey
- This plat is subject to Conditions of approval and notes of Docket Number 10-28-00 (Fox Run Subdivision) on file in the office of the Louisville and Jefferson County Planning Commission
- Existing access from Tract 1 to Old Henry Road shall be eliminated after road creation per Docket Number 10-28-00.

LEGEND

● = SET 1/2" BY 18" IRON PIN W/CAP STAMPED WINK #3492

○ = FOUND #5 REBAR (UNLESS OTHERWISE NOTED)

STATE OF KENTUCKY
DAVID B WINKLER
3492
LICENSED PROFESSIONAL LAND SURVEYOR

LAND SURVEYOR'S CERTIFICATE

I hereby certify that this plat and survey were made under my supervision and that the angular and linear measurements as witnessed by monuments shown hereon are true and correct to the best of my knowledge and belief This survey and plat meets or exceeds the minimum standards of governing authorities

David Winkler #3492 6-27-01
Surveyor's Signature PLS# DATE

0' 100' 200' 400'
SCALE 1"=200'

CERTIFICATE OF APPROVAL

Approved this 10th day of July 20 01

Invalid if not recorded before this date 7/10/02

BY: _____
LOUISVILLE AND JEFFERSON COUNTY PLANNING COMMISSION

Approval subject to attached certificates

Special requirement(s) N/A

Docket Number 10-28-01

MINOR SUBDIVISION PLAT

"SHIFT PROPERTY LINES TO CREATE TWO TRACTS AND DEDICATE R/W"

Owners

GLEN MAR DEVELOPMENT, INC
206 OLD HARRODS CREEK ROAD, LOU., KY 40223
TAX BLK 16, PARCELS 51 & 56 – DEED BOOK 7632, PG 296

MICHAEL H & MARY D SASSE
3400 APPLE HILL ROAD, LOU, KY 40245
TAX BLK 16, PARCELS 58 & 59 – DEED BOOK 6071, PG 949

Site Address
3400 APPLE HILL ROAD, LOU, KY 40245
14801 OLD HENRY ROAD, LOU, KY 40245

LAND DESIGN & DEVELOPMENT, INC
Engineering Land Surveying Landscape Architecture
8014 Vinecrest Avenue Louisville Kentucky 40222
phone (502) 426-9374 fax (502) 426-9375

PLAT DATE JUNE 04, 2001

OZ 00018mpl dwg DATE June 26, 2001

ENVIRONMENTAL HEALTH & PROTECTION
JEFFERSON COUNTY HEALTH DEPARTMENT

THIS APPROVAL IS FOR LAND CONFIGURATION ONLY
IT DOES NOT CONSTITUTE APPROVAL FOR SEWER
CONNECTION OR ON SITE SEWAGE SYSTEM

7/2/01
DATE

BY Gary Patterson
COMMENTS ~~Sewers are not~~
~~available~~

METROPOLITAN SEWER DISTRICT REVIEW

This plat has been reviewed for storm drainage and sanitary sewer related considerations and Metropolitan Sewer District has no objection to this plat However this review does not constitute any form of construction approval for work on this site

Storm Drainage Review — Date 7/5/01

SEE NOTE # No MSD SEWER SERVICE

Sanitary Sewer Review — Date

PLAT
APPROVAL
JEFFERSON COUNTY
DEPT. OF PUBLIC WORKS
BY
DATE 6/29/01

PLAT APPROVAL

No present objections as submitted. Must comply with Jefferson County Ordinance #( ) subject to construction review and approval.

DATE 7/9/01
BY
FIRE DISTRICT: MIDDLETOWN
COMMENTS: No PUBLIC WATER ON "APPLE HILL RD"

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of GLEN MAR DEVELOPMENT, INC DEED BOOK 7632, PAGE 296 and does hereby dedicate to public use TRACT 1A shown thereon.

Owner(s) Signature

206 OLD HARRODS CREEK ROAD
LOUISVILLE, KY 40223
Address

PRES
Title

ZONING CERTIFICATE

I/We hereby certify all of the lots of this minor subdivision and any existing buildings and improvements thereon and/or any buildings and improvements included in a building permit either applied for or approved thereon are in compliance with all the provisions of the Zoning District Regulations Any such buildings or improvements not in compliance with the Zoning District Regulations have been granted all necessary variances by the Board of Zoning Adjustment as described in Docket No N/A or documentation of the existence of the buildings or improvements prior to the adoption of the Zoning District Regulations has been accepted by the Planning Commission staff as valid evidence of their non-conforming status

Owner(s) Signature

CERTICATE OF ACKNOWLEDGEMENT

State of Kentucky)
) SS
County of Jefferson)

I, , a Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of GLEN MAR DEVELOPMENT, INC DEED BOOK 7632 PAGE 296 was this day presented to me by , known to me, who executed Certificates in my presence and acknowledged it to be his free act and deed

Witness my hand and seal this 29th day of June, 2001

My Commission expires 16th day of October 2002

Notary Public

1/10-01

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of MICHAEL H & MARY D SASSE DEED BOOK 6071, PAGE 949 *and does hereby dedicate to public use* TRACT 1A *shown thereon*

Michael Sasse Mary D Sasse
Owner(s) Signature

3400 APPLE HILL ROAD
LOUISVILLE, KY 40245
Address

"OWNERS"
Title

ZONING CERTIFICATE

I/We hereby certify all of the lots of this minor subdivision and any existing buildings and improvements thereon and/or any buildings and improvements included in a building permit either applied for or approved thereon are in compliance with all the provisions of the Zoning District Regulations Any such buildings or improvements not in compliance with the Zoning District Regulations have been granted all necessary variances by the Board of Zoning Adjustment as described in Docket No N/A *or documentation of the existence of the buildings or improvements prior to the adoption of the Zoning District Regulations has been accepted by the Planning Commission staff as valid evidence of their non-conforming status*

Michael Sasse Mary D Sasse
Owner(s) Signature

CERTICATE OF ACKNOWLEDGEMENT

State of Kentucky)
SS
County of Jefferson)

I, [illegible], *a Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of* MICHAEL H & MARY D SASSE DEED BOOK 6071 PAGE 949 *was this day presented to me by* Michael H. & Mary D. Sasse, *known to me, who executed Certificates in my presence and acknowledged it to be* their *free act and deed*

Witness my hand and seal this 30th *day of* June, 2021

My Commission expires 16th *day of* October, 2022

[illegible]
Notary Public

Sheet 3 of 3

Document No.: DN2001119811
Lodged By: CLT
Recorded On: 07/20/2001 02:22:19
Total Fees: 45.00
Transfer Tax: 25.00
County Clerk: Bobbie Holsclaw-JEFF CO KY
Deputy Clerk: DONREI

END OF DOCUMENT

DEED

THIS DEED made this 20th day of **JULY, 2001,** between – **MICHAEL H. SASSE and MARY D. SASSE, husband and wife,** parties of the first part, whose mailing address is 3400 Apple Hill Road, Louisville, KY 40245, and **GLEN-MAR DEVELOPMENT, INC., a Kentucky Corporation,** party of the second part, whose mailing address is 206 Old Harrods Creek Road, Louisville, KY 40223,

The total sale price of the property herein conveyed is **$25,000.00;**

WITNESSETH: - That for a valuable consideration paid, the receipt of which is hereby acknowledged, the parties of the first part hereby convey with covenant of **GENERAL WARRANTY** unto the party of the second part in fee simple, so much of the following described real property, namely all of Tract 2 a/k/a Tract 4 as shown on Minor Subdivision Plat 113-90 attached to Deed Book 5970, Page 252, as first parties acquired by Deed of record in Deed Book 6071, Page 949, both in the Office of the Clerk of the County Court of Jefferson County, Kentucky, being more particularly described as follows, located in Jefferson County, Kentucky, to-wit.

BEING TRACT #1, as shown on Minor Subdivision Plat Docket No. 140-01, of record in Deed Book 7689, Page 501, in the Office of the Clerk of the County Court of Jefferson County, Kentucky, having been approved by the Louisville and Jefferson County Planning Commission on July 10, 2001.

119811
7-20-01

BEING a part of the property, namely all of Tract 2 a/k/a Tract 4 as shown on Minor Subdivision Plat 113-90 attached to Deed Book 5970, Page 252, acquired by **Michael H. Sasse and Mary D. Sasse, husband and wife,** by Deed dated June 7, 1991, of record in Deed Book 6071, Page 949, both in the Office of the Clerk aforesaid.

The warranties contained in this Deed only apply to that portion of **Tract #1** as shown on Minor Subdivision Plat Docket No. 140-01 aforesaid, as was conveyed herein to second party.

The parties of the first part covenant that they are lawfully seized of the estate hereby conveyed, have full right and power to convey the same, and that said estate is free from all encumbrances except State, County, School and Fire District Taxes assessed and payable in the year 2001, and all subsequent taxes which party of the second part hereby assumes and agrees to pay.

PROVIDED, HOWEVER, there is excepted any restrictions, stipulations and easements of record affecting said property

IN TESTIMONY WHEREOF, witness the signatures of the parties of the first part, this the date first herein written.

MICHAEL H. SASSE

MARY D. SASSE

CONSIDERATION CERTIFICATE

The Consideration reflected in this Deed is the full consideration paid for the property herein conveyed.

GLEN-MAR DEVELOMENT, INC., a Kentucky Corporation

BY:

STATE OF KENTUCKY)
) SS
COUNTY OF JEFFERSON)

The foregoing Deed was acknowledged before me this 20th day of JULY, **2001**, by **MICHAEL H. SASSE and MARY D. SASSE, husband and wife**, and the Consideration Certificate was sworn to by them.

Notary Public, Jefferson County, KY

My commission expires AUGUST 4 2003

STATE OF KENTUCKY)
) SS
COUNTY OF JEFFERSON)

The foregoing Consideration Certificate was sworn to me this 20th day of JULY, **2001,** by H. DOUGLAS MANN as AGENT of **GLEN-MAR DEVELOPMENT, INC., a Kentucky Corporation.**

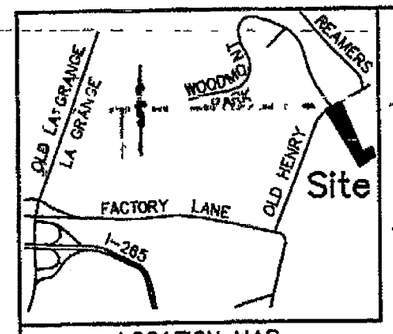
Notary Public, Jefferson County, KY

My commission expires APRIL 9, 2002

PREPARED BY:

H DOUGLAS MANN, ATTORNEY
22ND FLOOR CITIZENS PLAZA
LOUISVILLE, KY 40202
502-587-6544

DB 07689 PG 0504



LOCATION MAP
NOT TO SCALE

EDWARD & NANCY SCHICKU
D B 4921, PG 412

OLLIE & DELORES PHILLIPS
LEONARD & EVELYN PHILLIPS
D B 5013, PG 496

2,692± TO FACTORY LN

N28°42'32"W 1626 32'

8 2' 9 1'

1606.30'

633 8'

20 02'

23 7' X 35 5
METAL SHED
(TO BE REMOVED WITHIN 180 DAYS
OF MINOR PLAT APPROVAL)

TRACT 1A
0 23 Acres
(Dedicated To R/W)

30 00'

493 88'

491 00'

N64°09'12"E

OLD HENRY ROAD - R/W VARIES

N29°00'00"W 351 90'

TRACT 2
3 86 Acres

2-STORY FRAME
RESIDENCE
(SEE DETAIL "A")

536 72'

N69°13'33"E 258 66'

228 66'

30 00'

TRACT 1
13 89 Acres

2-STORY FRAME
RESIDENCE
(SEE DETAIL "B")

EX GRAVEL DRIVE

577 7'

EX 50' B/L AND
PARKWAY BUFFER AREA
PER DOCKET NO 10-28-00

130 7'

130 9'

S20°28'12"E 1634 36'

20 09'

1654 45'

TOMMY W. & DONNA G HILTZMAN
D B 5970, PG 252

164 3'

156 3'

S58°38'00"W

270 6'

EX GRAVEL DRIVE

N69°13'33"E 1333 14'

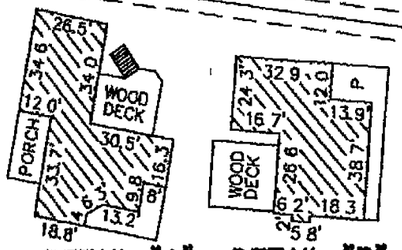
RUSSELL L & MARLYNN A FOX
D B 6357, PG 70

GREGORY A & SUSAN CARPENTER
D B 6483, PG 973

"APPLE HILL ROAD"
℄ EX 30' ACCESS ESM'T,
D B 5970, PG 252

S17°35'32"E 250 00'

GLENN MARK & JACQUELINE C. TIMMONS
D B 5238, PG 54



DETAIL "A"

DETAIL "B"

NOTES

- There will be no further division of Tract 2
- This plat is subject to all legal roadways, easements and right-of-ways, if any whether shown hereon or not
- Bearings for this tract have been adjusted to agree with the plat bearing as shown on and made part of D B 5970 Pg.252 and is the basis for the meridian shown hereon Having a bearing of S20 28 12"E
- Unadjusted closure for this tract exceeds 1 part in 84,800 plus 0.05 feet. This tract has not been adjusted for closure. Survey was conducted by Random Traverse Method. This is a Class "A" Survey
- This plat is subject to Conditions of approval and notes of Docket Number 10-28-00 (Fox Run Subdivision) on file in the office of the Louisville and Jefferson County Planning Commission
- Existing access from Tract 1 to Old Henry Road shall be eliminated after road creation per Docket Number 10-28-00.

LEGEND

● = SET 1/2" BY 18" IRON PIN W/CAP STAMPED WINK #3492

O = FOUND #5 REBAR (UNLESS OTHERWISE NOTED)

STATE OF KENTUCKY
DAVID B
WINKLER
3492
LICENSED
PROFESSIONAL
LAND SURVEYOR

LAND SURVEYOR'S CERTIFICATE

I hereby certify that this plat and survey were made under my supervision and that the angular and linear measurements as witnessed by monuments shown hereon are true and correct to the best of my knowledge and belief This survey and plat meets or exceeds the minimum standards of governing authorities

David Winkler #3492 6-27-01
Surveyor's Signature PLS# DATE

0' 100' 200' 400'
SCALE 1"=200'

CERTIFICATE OF APPROVAL

Approved this 10th day of July 20 01

Invalid if not recorded before this date 7/10/02

BY: _____
LOUISVILLE AND JEFFERSON COUNTY
PLANNING COMMISSION

Approval subject to attached certificates

Special requirement(s) N/A

Docket Number 10-01

MINOR SUBDIVISION PLAT

"SHIFT PROPERTY LINES TO CREATE TWO TRACTS AND DEDICATE R/W"

Owners

GLEN MAR DEVELOPMENT, INC
206 OLD HARRODS CREEK ROAD, LOU., KY 40223
TAX BLK 16, PARCELS 51 & 56 - DEED BOOK 7632, PG 296

MICHAEL H & MARY D SASSE
3400 APPLE HILL ROAD, LOU , KY 40245
TAX BLK 16, PARCELS 58 & 59 - DEED BOOK 6071, PG 949

Site Address
3400 APPLE HILL ROAD, LOU , KY 40245
14801 OLD HENRY ROAD, LOU , KY 40245

LAND DESIGN & DEVELOPMENT, INC
Engineering Land Surveying Landscape Architecture
8014 Vinecrest Avenue Louisville Kentucky 40222
phone (502) 426-9374 fax (502) 426-9375

PLAT DATE JUNE 04, 2001

OZ 00018mpl dwg DATE June 26, 2001

THIS DEED OF CONVEYANCE made and entered into this 20 day of July, 2001, by and between **GREGORY A. CARPENTER and SUSAN H. CARPENTER**, his wife, whose post office address is 14805 Old Henry Road, Louisville, Kentucky 40245, parties of the first part, and **GLEN-MAR DEVELOPMENT, INC., a Kentucky corporation,** whose post office address is 206 Old Harrods Creek Road, Louisville, 40223, party of the second part

WITNESSETH

In consideration of the sum of **THREE HUNDRED THIRTY FIVE THOUSAND DOLLARS ($335,000.00)**, cash in hand paid, the receipt of which is hereby acknowledged, the parties of the first part have sold and do by these presents bargain, sell, transfer and convey unto the party of the second part, its successors and assigns in fee simple, the following described property

Situated in Jefferson County, Kentucky and thus described

BEING **Tract 3** as shown on Minor Subdivision Plat attached to and made part of deed dated September 10, 1993, and recorded in Deed Book 6357, Page 70, in the Office of the Clerk of the County Court of Jefferson County, Kentucky

BEING the same property conveyed to Gregory A Carpenter and Susan H Carpenter, his wife, by deed dated July 29 1994, from Gregory A Carpenter and Susan H Carpenter, and of record in the Jefferson County Clerk's Office in Deed Book 6483, Page 973

Said conveyance is made subject to all easements and restrictions of record and the rules and regulations of the Jefferson County Planning and Zoning Commission

TO HAVE AND TO HOLD the foregoing described property together with all and singular the appurtenances thereunto belonging unto the party of the second part, its successors and assigns in fee simple, and with covenant of general warranty

Payment of the 2001 taxes on the property herein conveyed shall be prorated between first parties and second party as of date of delivery of deed

P O BOX 88
SHELBYVILLE KENTUCKY
40066-0088
TEL (502) 633-3534
FAX (502) 633-3577

IN TESTIMONY WHEREOF, Witness the hands of the first parties, the date first above written

GREGORY A. CARPENTER

SUSAN H. CARPENTER

STATE OF KENTUCKY
COUNTY OF SHELBY

The foregoing Deed of Conveyance was signed and acknowledged before me by **Gregory A. Carpenter and Susan H. Carpenter, his wife** to be their voluntary act and deed, this 20 day of July, 2001

Notary Public, Kentucky State at Large
My Commission Expires August 12, 2004

CONSIDERATION CERTIFICATE
BETWEEN CARPENTER & GLEN-MAR

We, the undersigned, hereby certify that the consideration reflected in this deed is the full consideration paid for the property

GREGORY A. CARPENTER

SUSAN H. CARPENTER

GLEN-MAR DEVELOPMENT, INC.

BY:
ANTHONY I. MARTIN, PRESIDENT

521 MAIN ST
P O BOX 88
SHELBYVILLE, KENTUCKY
40066-0088
TEL (502) 633-3534
FAX (502) 633-3577

STATE OF KENTUCKY
COUNTY OF SHELBY

The foregoing Consideration Certificate was signed, acknowledged and sworn to before me this 20 day of July, 2001, by **Gregory A. Carpenter and Susan H. Carpenter, his wife,** parties of the first part, and **Anthony I. Martin, as President of Glen-Mar Development, Inc., a Kentucky corporation,** party of the second part

William H Hays Jr

Notary Public, Kentucky State at Large
My Commission Expires August 12, 2004

This instrument prepared by
William H Hays, Jr , Attorney
P O Box 88
Shelbyville, KY 40066-0088

William H Hays Jr

HAYS LAW OFFICE
521 MAIN ST
P O BOX 88
SHELBYVILLE, KENTUCKY
40066-0088
TEL (502) 633-3534
FAX (502) 633-3577

Document No.: DN2001119813
Lodged By: CLT
Recorded On: 07/20/2001 02:23:24
Total Fees: 347.00
Transfer Tax: 335.00
County Clerk: Bobbie Holsclaw-JEFF CO KY
Deputy Clerk: DONREI

END OF DOCUMENT

CERTIFICATE OF APPROVAL

Approved this 7th day of AUGUST 20 02

Invalid if not recorded before this date 8/7/03

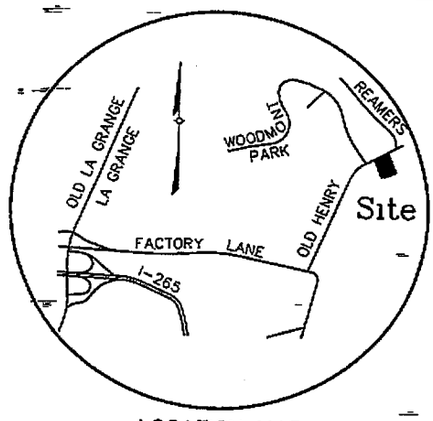
BY _____

LOUISVILLE AND JEFFERSON COUNTY
PLANNING COMMISSION

Approval subject to attached certificates

Special requirement(s) _____

Docket Number 156-02



LOCATION MAP
NOT TO SCALE

Chas H & Vonda K Edwards
D B 5242, Pg 63

"APPLE HILL ROAD"
℄ Ex 30' Access Esm't
D B 5970, Pg 252

Ex Iron Rod

S20°29'06"E 466 75'

S20°29'06"E 341 00'

Ex Iron Rod

50

Conc

Gravel

341 2

181

56 2

13 4

105 2

34 1

20 2

69 6

46

69 6

279

38 7

98 8

286 33'

N64°09'12"E

TRACT 1
3 01 Acres

2 Story Brick Residence

S70°53'06"W 163 64

℄ 15' SAN SEWER & DRAINAGE ESM'T (GRANTED)

TRACT 2
2 00 Acres

N32°00'00"E 131 83'

Ex Pond

268 28'

S70°53'06"W

Russell & Marlynn Fox
D B 6357, Pg 70

120 1

Z

S20°28'33"E 181 94'

258 22'

S20°28'33"E 440 16'

334 63'

17 00

S68 48'51"W

Ex Rebar

59 6

58 4

194 2

14 0

27 0

34 2

22 2

32 6'

14 0

58 8

23 2

Ex Fence

N64°09'12"E

279 26'

TRACT 3
5 01 Acres

2 Story Brick Residence

Asphalt

295 19'

S70°53'06"W

OLD HENRY ROAD—R/W VARIES

EX 50 B/L AND PARKWAY BUFFER AREA PER DOCKET NO 10-28-00

24 3

Metal Building

24 3

24 2 6

50'

Ex I Pipe (Bent)

741 43'

32 4

33 4

Ex I Pipe

S20°28'12"E

3 183 ± To Factory Lane

Glen Mar Development, Inc
D B 7632 Pg 296

LEGEND

● = SET 1/2" BY 18' IRON PIN W/CAP STAMPED "WINK #3492"

0' 60' 120' 240'

SCALE 1"=120'

NOTES

- This plat is subject to all legal roadways, easements and right-of-ways if any, whether shown hereon or not
- Bearings for this survey have been adjusted to agree with the east line of Tract 1 of minor plat as recorded in D B 7689 Pg 501 and is the basis for the meridian shown hereon Having a bearing of S20°28'12"E
- Unadjusted closure for this tract exceeds 1 part in 10,000 plus 0 05 feet This tract has been adjusted for closure Survey was conducted by Random Traverse Method This is a Class A Survey
- This plat is subject to Conditions of approval and notes of Docket Number 10-28-00 (Fox Run Subdivision) on file in the office of the Louisville and Jefferson County Planning Commission

STATE OF KENTUCKY
DAVID B WINKLER
3492
LICENSED PROFESSIONAL LAND SURVEYOR

LAND SURVEYOR'S CERTIFICATE

I hereby certify that this plat and survey were made under my supervision and that the angular and linear measurements as witnessed by monuments shown hereon, are true and correct to the best of my knowledge and belief This survey and plat meets or exceeds the minimum standards of governing authorities

David B Winkler #3492 7-30-02
Surveyor's Signature PLS# DATE

MINOR SUBDIVISION PLAT
"TO SHIFT PROPERTY LINE AND" CREATE ADDITIONAL TRACT

Owners

GLEN MAR DEVELOPMENT, INC
206 OLD HARRODS CREEK ROAD, LOU , KY 40223
TAX BLOCK 16, LOT 65 – D B 7689, PG 508

LARRY & BRENDA KELSEY
14809 OLD HENRY ROAD, LOU , KY 40245
TAX BLOCK 16, LOT 64 – D B 6579, PG 808

Site Address
14805 & 14809 OLD HENRY ROAD

LAND DESIGN & DEVELOPMENT, INC
Engineering Land Surveying Landscape Architecture
8014 Vinecrest Avenue Louisville Kentucky 40222
phone (502) 426-9374 fax (502) 426-9375

PLAT DATE APRIL 10 , 2002

G:\Current Projects\00018\dwg\02055mpl.dwg 05/15/02

MINOR PLAT
APPROVAL
JEFFERSON COUNTY
DEPT. PUBLIC WORKS
BY D Bossmeyer
DATE 8/6/02

METROPOLITAN SEWER DISTRICT REVIEW

This plat has been reviewed for storm drainage and sanitary sewer related considerations and Metropolitan Sewer District has no objection to this plat. However, this review does not constitute any form of construction approval or work on this site.

Storm Drainage Review — Date 7/30/02

Sewers by L.E.
Sanitary Sewer Review — Date

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of GLEN MAR DEVELOPMENT, INC., DEED BOOK 7689 PAGE 508 *and does hereby dedicate to public use* N/A *shown thereon*

Owner(s) Signature

206 OLD HARRODS CREEK ROAD
LOUISVILLE, KY 40223
Address

VICE PRESIDENT
Title

ZONING CERTIFICATE

I/We hereby certify all of the lots of this minor subdivision and any existing buildings and improvements thereon and/or any buildings and improvements included in a building permit either applied for or approved thereon are in compliance with all the provisions of the Zoning District Regulations. Any such buildings or improvements not in compliance with the Zoning District Regulations have been granted all necessary variances by the Board of Zoning Adjustment as described in Docket No. N/A *or documentation of the existence of the buildings or improvements prior to the adoption of the Zoning District Regulations has been accepted by the Planning Commission staff as valid evidence of their non-conforming status.*

Owner(s) Signature

CERTICATE OF ACKNOWLEDGEMENT

State of Kentucky)
) SS
County of Jefferson)

I, _____, a Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of GLEN MAR DEVELOPMENT, INC., DEED BOOK 7689 PAGE 508 was this day presented to me by _____, known to me, who executed Certificates in my presence and acknowledged it to be his free act and deed.

Witness my hand and seal this 28th day of June, 2022

My Commission expires 16th day of October 2022

Notary Public

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of LARRY & BRENDA KELSEY, DEED BOOK 6579 PAGE 808 and does hereby dedicate to public use N/A shown thereon

Larry Kelsey
Brenda Kelsey
Owner(s) Signature

14809 OLD HENRY ROAD
LOUISVILLE, KY 40245
Address

"OWNER"
Title

ZONING CERTIFICATE

I/We hereby certify all of the lots of this minor subdivision and any existing buildings and improvements thereon and/or any buildings and improvements included in a building permit either applied for or approved thereon are in compliance with all the provisions of the Zoning District Regulations Any such buildings or improvements not in compliance with the Zoning District Regulations have been granted all necessary variances by the Board of Zoning Adjustment as described in Docket No N/A or documentation of the existence of the buildings or improvements prior to the adoption of the Zoning District Regulations has been accepted by the Planning Commission staff as valid evidence of their non-conforming status

Larry Kelsey
Brenda Kelsey
Owner(s) Signature

CERTICATE OF ACKNOWLEDGEMENT

State of Kentucky)
) SS
County of Jefferson)

I, [illegible], a Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of LARRY & BRENDA KELSEY, DEED BOOK 6579 PAGE 808 was this day presented to me by Larry & Brenda Kelsey, known to me, who executed Certificates in my presence, and acknowledged it to be their free act and deed

Witness my hand and seal this 29th day of July, 2022

My Commission expires 16th day of Oct. 2022

[illegible]
Notary Public

CERTIFICATE OF SANITARY SEWER AND DRAINAGE EASEMENT

For valuable consideration, the receipt of which is hereby acknowledged by LARRY & BRENDA KELSEY, **GRANTORS** hereby grants to **LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT (MSD)**, its successors and assigns, a perpetual easement on, over and under strips of land and spaces as defined and marked "Sanitary Sewer And Drainage Easement" on the plat attached hereto

This grant is made on the following terms

1 **MSD** has the right of ingress and egress over **GRANTOR's** property to and from the easement at all times for the purpose of constructing, operating, maintaining, repairing and reconstructing sanitary sewers, drains, and related equipment, structures or materials, hereinafter referred to as appurtenances, under **MSD's** jurisdiction, control, and supervision.

2 Nothing shall be placed in, on, over or under the sanitary sewer and drainage easement which will obstruct or interfere with the purpose of said easement

3 **MSD** may authorize any public agency or others to carry out the purposes as set forth in paragraph 1

4 The **GRANTOR** covenants that they are (he/she is) lawfully seized of the property through which the sanitary sewer and drainage easement is granted and that they have (he/she has) full right and power to convey the same and said property is free from all encumbrances, except current taxes and restrictions and/or mortgages of record

5 The **GRANTOR** acknowledges that the consideration received for the conveyance made herein does not include any express or implied release or waiver by **MSD** of rights to subject **GRANTOR** and their (his/her) property to sewer rates, drainage fees, rentals and other charges, including special assessments, as may be authorized by law

6 **MSD** covenants that it will assume full responsibility for claims resulting from damage to any land, improvement, or the environment within or outside the sanitary sewer and drainage easement granted herein, or to any land or improvements used for ingress and egress to such easement, caused by **MSD** during construction, operation, maintenance, repair or reconstruction of said sanitary sewers, drains, and appurtenances unless damage is caused by the placing of any structure within or outside the easement in violation of this certificate, in such case no liability will be assumed by **MSD**

7. If shown, a temporary easement, as defined and marked "Temporary Construction Easement" on the plat attached hereto is hereby reserved for **MSD's** use as needed during original construction of said sanitary sewers, drains, and appurtenances Such easement shall terminate and automatically revert to the property owners upon completion of the original construction

IN TESTIMONY WHEREOF, witness the signature of the **GRANTOR** on this 29 day of JULY, 2002

Larry Kelsey
GRANTOR

Brenda Kelsey
GRANTOR

LOUISVILLE AND JEFFERSON COUNTY
METROPOLITAN SEWER DISTRICT
700 WEST LIBERTY
LOUISVILLE, KENTUCKY 40203-1913

Record No _____
Parcel No. _____

Document No. : DN2002154886
Lodged By: GLEN MAR DEV
Recorded On: 08/23/2002 09:42:34
Total Fees: 16.00
Transfer Tax: .00
County Clerk: Bobbie Holsclaw-JEFF CO KY
Deputy Clerk: YOLL0G2

03/05/96
CERTEASE

END OF DOCUMENT

CERTIFICATE OF APPROVAL

Approved this 7th day of AUGUST 20 02

Invalid if not recorded before this date 8/7/03

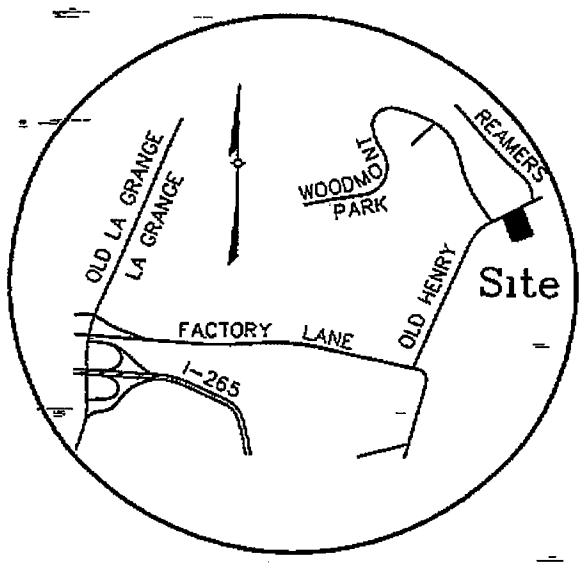
BY _____

LOUISVILLE AND JEFFERSON COUNTY
PLANNING COMMISSION

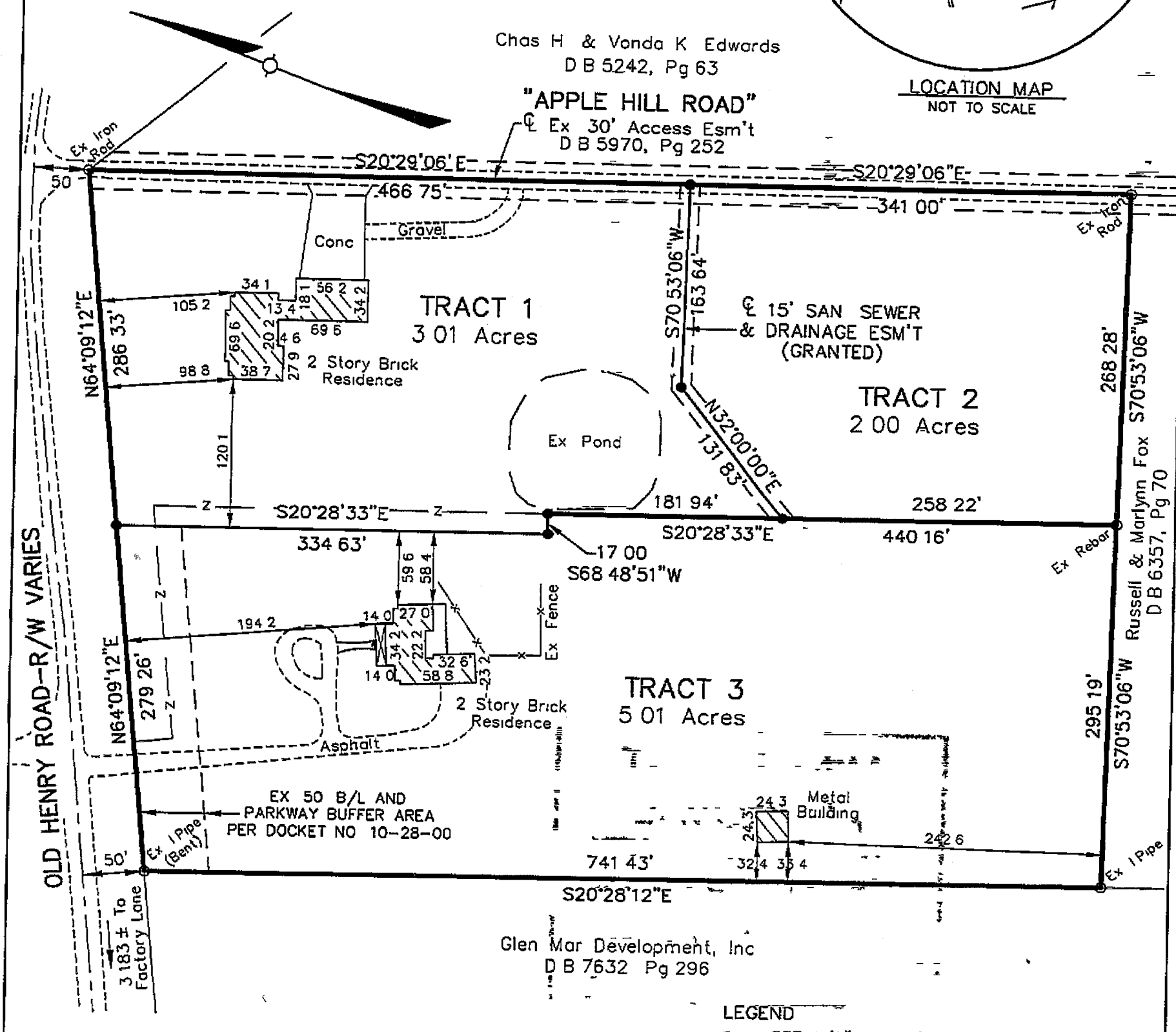
Approval subject to attached certificates

Special requierment(s) _____

Docket Number 156-02



LOCATION MAP
NOT TO SCALE



NOTES

- This plat is subject to all legal roadways, easements and right-of-ways if any, whether shown hereon or not
- Bearings for this survey have been adjusted to agree with the east line of Tract 1 of minor plat as recorded in D B 7689 Pg 501 and is the basis for the meridian shown hereon Having a bearing of S20°28'12"E
- Unadjusted closure for this tract exceeds 1 part in 10,000 plus 0 05 feet This tract has been adjusted for closure Survey was conducted by Random Traverse Method This is a Class A Survey
- This plat is subject to Conditions of approval and notes of Docket Number 10-28-00 (Fox Run Subdivision) on file in the office of the Louisville and Jefferson County Planning Commission

LEGEND

● = SET 1/2" BY 18' IRON PIN W/CAP STAMPED "WINK #3492"

0' 60' 120' 240'

SCALE 1"=120'

STATE OF KENTUCKY
DAVID B WINKLER
LICENSED PROFESSIONAL LAND SURVEYOR

LAND SURVEYOR'S CERTIFICATE

I hereby certify that this plat and survey were made under my supervision and that the angular and linear measurements as witnessed by monuments shown hereon, are true and correct to the best of my knowledge and belief This survey and plat meets or exceeds the minimum standards of governing authorities

David Winkler #3492 7-30-02
Surveyor's Signature PLS# DATE

MINOR SUBDIVISION PLAT
"TO SHIFT PROPERTY LINE AND" CREATE ADDITIONAL TRACT

Owners

GLEN MAR DEVELOPMENT, INC
206 OLD HARRODS CREEK ROAD, LOU , KY 40223
TAX BLOCK 16, LOT 65 – D B 7689, PG 508

LARRY & BRENDA KELSEY
14809 OLD HENRY ROAD, LOU , KY 40245
TAX BLOCK 16, LOT 64 – D B 6579, PG 808

Site Address
14805 & 14809 OLD HENRY ROAD

LAND DESIGN & DEVELOPMENT, INC
Engineering Land Surveying Landscape Architecture
8014 Vinecrest Avenue Louisville Kentucky 40222
phone (502) 426-9374 fax (502) 426-9375

PLAT DATE APRIL 10 , 2002

G:\Current Projects\00018\dwg\02055mpl.dwg 05/15/02

Appendix N3 – LOJIC



400 0 400

N

Map Created: 2/22/2011 10:35 AM

LOJIC™
Louisville/Jefferson County Information Consortium

Copyright (c) 2011, LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT (MSD), LOUISVILLE WATER COMPANY (LWC), LOUISVILLE METRO GOVERNMENT, and JEFFERSON COUNTY PROPERTY VALUATION ADMINISTRATOR (PVA). All Rights Reserved.



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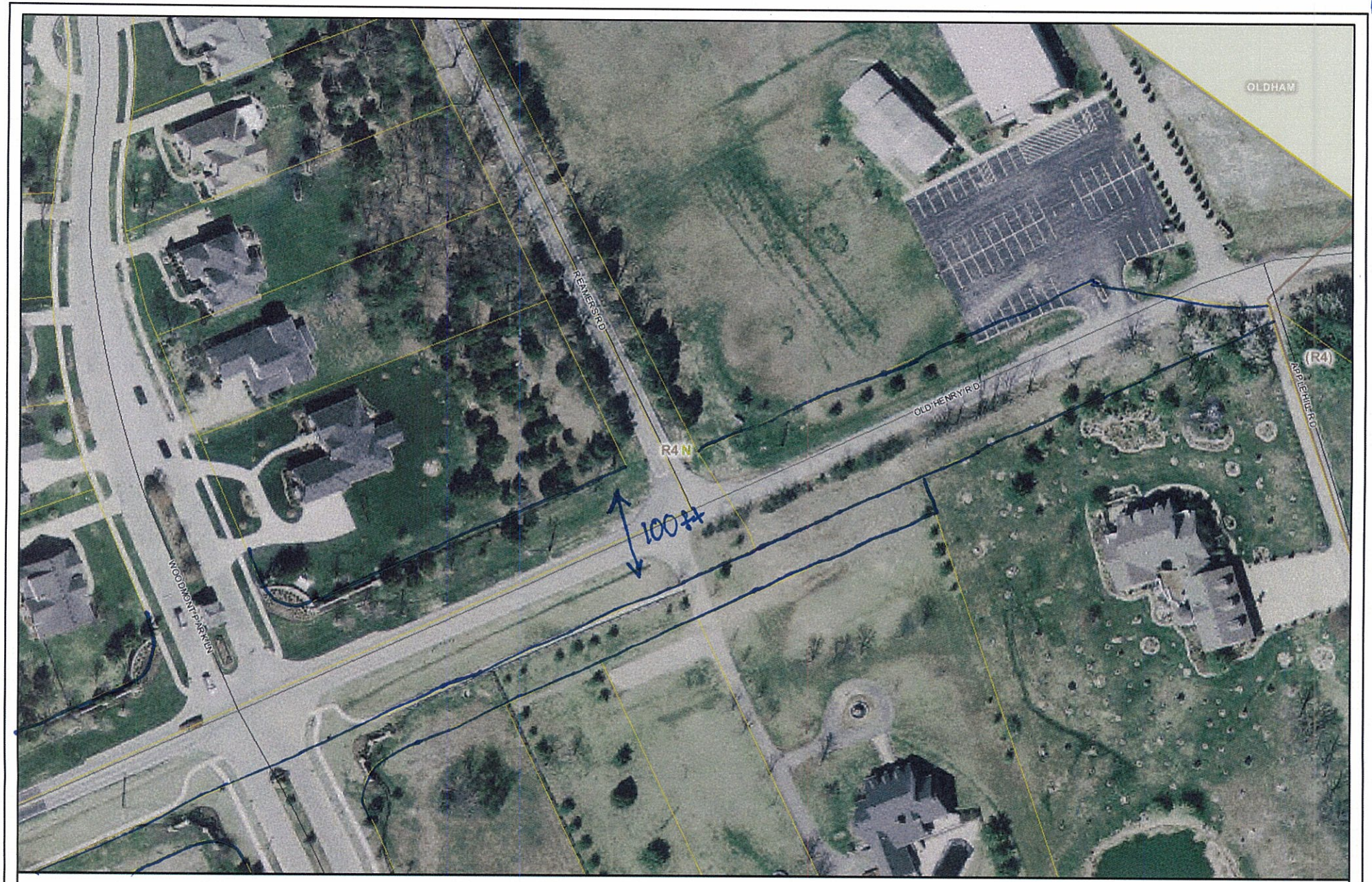
Copyright (c) 2011, LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT (MSD), LOUISVILLE WATER COMPANY (LWC), LOUISVILLE METRO GOVERNMENT, and JEFFERSON COUNTY PROPERTY VALUATION ADMINISTRATOR (PVA). All Rights Reserved.



100 0 100

N

Map Created: 2/22/2011 10:47 AM

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Appendix N4 – Old Henry Farms

BK 32 X P54

257

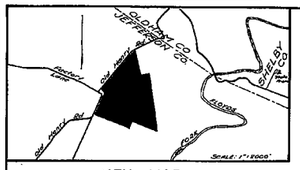
Jeffersontown Planning Comm.

R. Pait D.C.

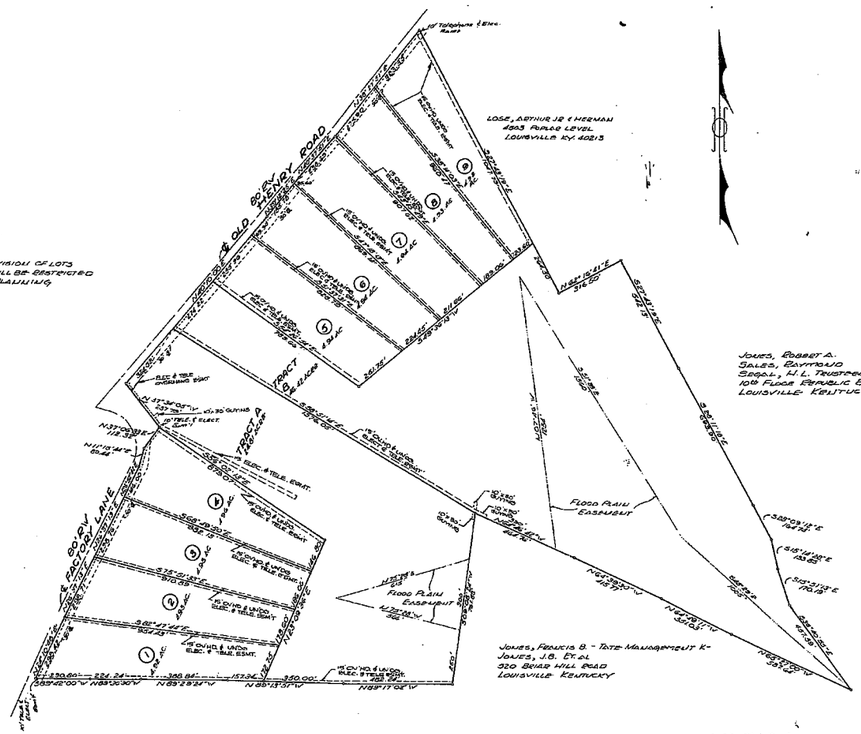
Recorded in Plat Book
No. 32 Page 54
Part No.

OLD HENRY FARMS

OWNERS: MULLOY & TASSIE
AREA = 115 Gd AC.
DATE: 8/31/76



KEY MAP



NOTE:
THERE WILL BE NO FURTHUR SUBDIVISION OF LOTS 1 THRU 9 AND TRACTS A AND B WILL BE RESTRICTED TO A MAXIMUM OF 3 LOTS WITH PLANNING COMMISSION APPROVAL.

JONES, ROBERT A.
SALES, RAYMOND
SIEGEL, H. L. TRUSTEE
10th FLOOR REPUBLIC BLDG.
LOUISVILLE KENTUCKY 40202

Recorded In Plat Book
No. 32 Page 54
Part No.

Note: This tract of land is subject to easements apparent w of record.
This survey is based on magnetic north.
All property corners are monumented by iron pins
Flood plain shown hereon projected on 100 year floodplain elevation 672.00

0 100 200 300 400 500

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be his plat

"Old Henry Farms"

and does hereby dedicate public use the 40' From center of Old Henry Rd & Factory Lane

Owners: William P. Mulloy, Willie H. Tassie

CERTIFICATE OF ACKNOWLEDGMENT

STATE OF KENTUCKY
COUNTY OF JEFFERSON

William P. Mulloy, Willie H. Tassie

Anne L. Groves

Notary Public, Jefferson County, Kentucky

CERTIFICATE OF APPROVAL

Approved this 15th day of April, 1977

LOUISVILLE AND JEFFERSON COUNTY PLANNING COMMISSION

Secretary

LAND SURVEYOR'S CERTIFICATE

I hereby certify that this plat and survey were made by me or under my supervision and that it is correct to the best of my knowledge and belief.

Kenny R. Mayes
Registered Land Surveyor

EASEMENT FOR GAS UTILITIES

The owners conferred by deeded liens and marked "Gas Easement" are hereby granted an easement for underground gas lines and appurtenances thereof, including the right to construct, operate, maintain, repair, alter, remove, replace and enlarge the same within and under the lots or tracts designated as such and the right of ingress and egress over all lots to said gas line easements and the right to cut down any trees and/or the underbrush that may interfere with the installation and operation of said lines. No permanent structure shall be erected within the easements, but an owner may use the land for any purpose which does not interfere with or injure or obstruct the rights granted hereby.

Owners: William P. Mulloy, Willie H. Tassie

NOTE
Also, the right to an ordinary bus with service wires to serve adjoining lots.

EASEMENT FOR ELECTRIC AND TELEPHONE UTILITIES

The owners conferred by deeded liens and marked "Utility Easement" are hereby granted an easement for underground electric, telephone, cable television and gas lines and the right to construct, operate, maintain, repair, alter, remove, replace and enlarge the same within and under the lots or tract designated as such and the right of ingress and egress over all lots to said gas line easements and the right to cut down any trees and/or the underbrush that may interfere with the installation and operation of said lines. No permanent structure shall be erected within the easements, but an owner may use the land for any purpose which does not interfere with or injure or obstruct the rights granted hereby.

(a) All property owners abutting sanitary sewer lines shall be understood to have knowledge of the plans for the sewer lines and the fact that assessments for sewer lines may be based upon the length of sewer lines abutting property, and the owners shall consent to the use of the sewer lines by the Louisville and Jefferson County Metropolitan Sewer District.

(b) Each property owner shall be responsible for the connection of his sanitary sewer service line to the sewer line provided by the Louisville and Jefferson County Metropolitan Sewer District.

(c) No sewage, or wastewater effluent, shall be discharged into or upon the ground as a result of the failure to connect to sanitary sewer service when sanitary sewer service is available, as determined by the Louisville and Jefferson County Metropolitan Sewer District, in accordance with applicable regulations of the Louisville and Jefferson County Metropolitan Sewer District. Each property owner shall pay his pro rata share of the cost of sanitary sewer service as assessed by the Louisville and Jefferson County Metropolitan Sewer District.

(d) Sanitary sewer service may be terminated for violation of these restrictions, which violation shall be enforceable by the owners of the property benefited hereby.

Owners: William P. Mulloy, Willie H. Tassie

EASEMENT FOR SANITARY AND STORM SEWER UTILITIES

An easement for sanitary sewer and drainage purposes is hereby created as shown on the plat and the owners of land and grantees in the deeds conveying such land hereby grant to the Louisville and Jefferson County Metropolitan Sewer District the right of ingress and egress over all lots to and from the easements, for construction, operation and maintenance of sanitary sewer and storm sewer facilities, and the right to cut down any trees and/or the underbrush that may interfere with the installation and operation of said facilities and easements. This easement shall be for the benefit of the land in the subdivision and other land which may hereafter be added, and sewer rents and service may be rendered by the Louisville and Jefferson County Metropolitan Sewer District to the owners of such property hereby granting the easement for such easements or to others adjacent to or adjacent to the Louisville Water Company.

Owners: William P. Mulloy, Willie H. Tassie

CERTIFICATE OF RESERVATION OF DRAINAGE RETENTION BASIN EASEMENT

Each owner (or developer) and grantee (or grantees) hereby reserves an easement for drainage retention basin purposes in the area designated "Drainage Retention Basin Easement," together with the right of ingress and egress over all lots to and from the easements, for construction, operation and maintenance of drainage retention basin facilities and other drainage improvements for conservation control of the land to be graded on or over all lots and/or said easements, except for those areas occupied by buildings, and the right to cut down any trees and/or the underbrush that may interfere with the installation and operation of said facilities and easements. The easements shall be for the benefit of the land in the subdivision and other land which may hereafter be added, and drainage retention basin facilities and other drainage improvements may be maintained by Louisville and Jefferson County Metropolitan Sewer District, Jefferson County, or by any other public or private agency having the authority to maintain such facilities and improvements, which violation shall be enforceable by the owners of the property benefited hereby or by said Sewer District, Jefferson County, or another responsible public or private agency having the authority to maintain such facilities and improvements.

Owners: William P. Mulloy, Willie H. Tassie

PLANS BY
W. H. BROWN & ASSOCIATES
CONSULTING ENGINEERS & LAND SURVEYORS
5271/2 MAIN STREET
SHELBYVILLE KENTUCKY 40065

DRAWN BY L. TUDGLE

BK 32 X P3 54

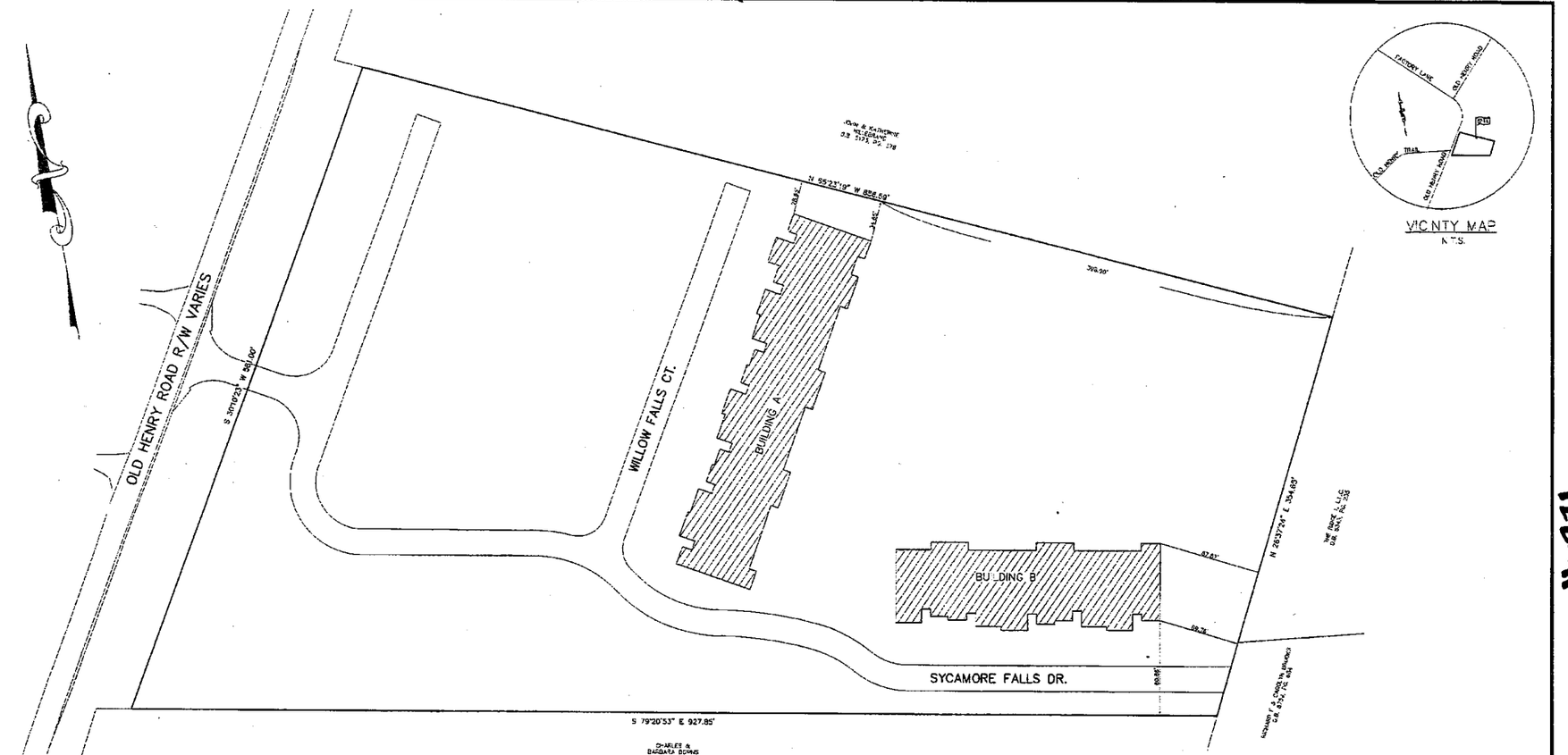
32 x 54

BK 32 X P3 54

Appendix N5 – The Falls at Old Henry

122×91

122×91



122×91

THE FALLS AT OLD HENRY

"CONDOMINIUMS"

BUILDINGS A & B, UNITS 20-31

OWNER: THE RIDGE, L.L.C.
209 TOWNEPARK CIRCLE, STE. 100-101
LOUISVILLE, KENTUCKY 40243-2323
D.B. 8889, Pg. 985
TAX BLOCK 1699, LOT 2
JEFFERSON COUNTY
DATE: NOVEMBER 2007

C. R. P. & ASSOCIATES, INC.
7321 New LaGrange Road
Suite 111
Louisville, KY 40222-4853
(502) 423-8747

SHEET 1 OF 3

LAND SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAT DEPICTS THE LAYOUT, LOCATION UNIT NUMBERS AND DIMENSIONS OF THESE CONDOMINIUMS AS BUILT.

I HEREBY CERTIFY THAT THIS CONDOMINIUM PLAT WAS MADE UNDER MY SUPERVISION AND IS A TRUE REPRESENTATION OF THE CONDITIONS FOUND AT THE TIME OF THE INSPECTION. THIS CONDOMINIUM PLAT DOES NO NOT CONSTITUTE A BOUNDARY SURVEY. THE INFORMATION SHOWN HEREON SHOULD NOT BE USED OR RELIED UPON FOR THE ESTABLISHMENT OF ANY FENCE, STRUCTURE OR OTHER IMPROVEMENTS. THIS PLAT IS SUBJECT TO ANY FIRST-TIME EASEMENTS, RESTRICTIONS OR LIMITATIONS AFFECTING SAID PROPERTY THAT A SUBSEQUENT BOUNDARY SURVEY MAY DISCLOSE. THE LINEAR AND ANGULAR VALUES SHOWN HEREON ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS PLAT MEETS OR EXCEEDS THE MINIMUM STANDARDS OF GOVERNING AUTHORITIES.

STATE OF KENTUCKY
R.L. ROSENBAUM, JR.
2600
LICENSED PROFESSIONAL LAND SURVEYOR

12-3-07
LAND SURVEYOR — KY. P.L.S. #2600 — DATE

BOUNDARY AND MONUMENTATION BY MINDEL-SCOTT & ASSOCIATES.

BENCHMARK

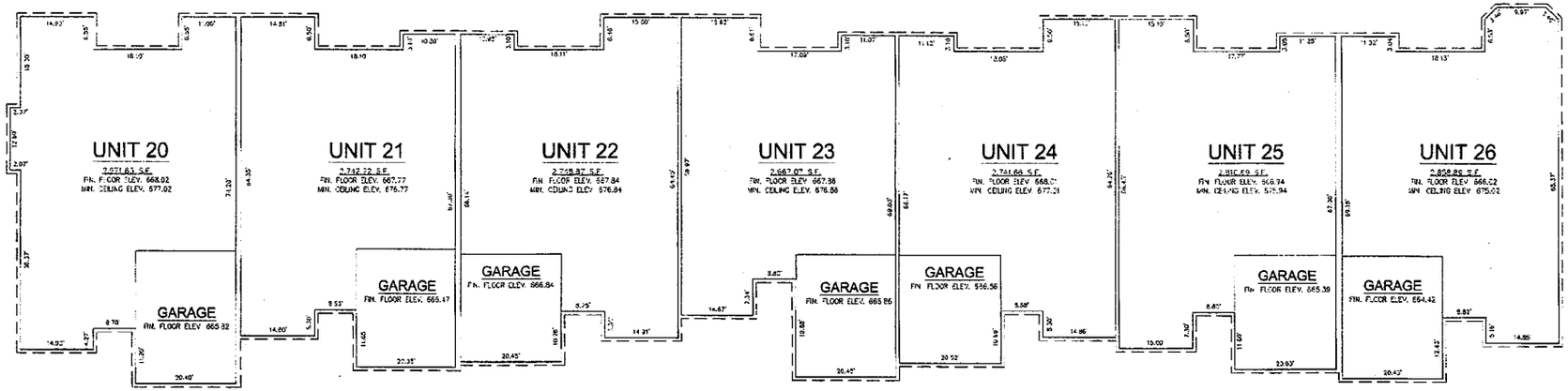
RAILROAD SPIKE IN POWER POLE LOCATED APPROX. 20' SOUTH OF A GRAVEL DRIVE AND 232' WEST OF SOUTHEAST PROPERTY CORNER. NGVD29 ELEV. 656.99'

40 0 40

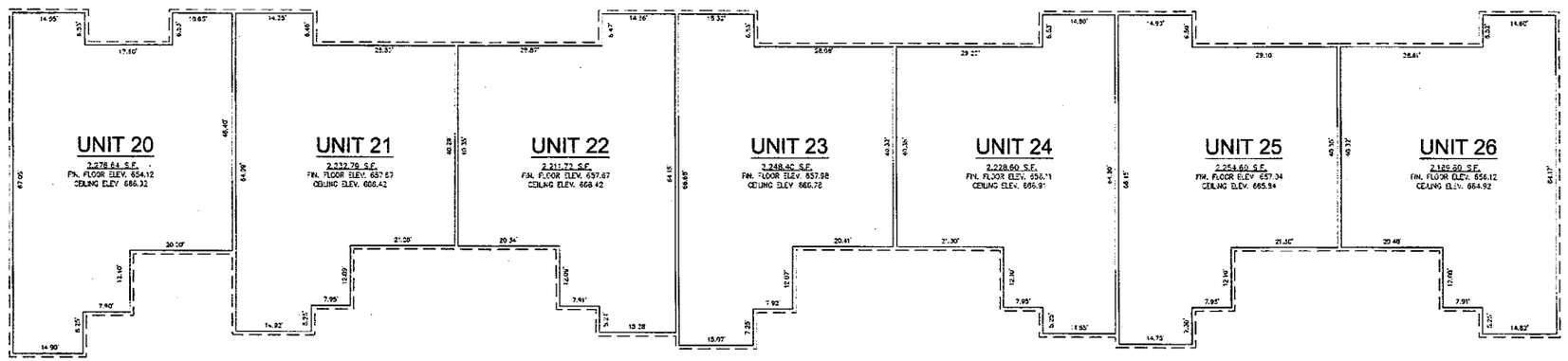
Recorded in Condo Book No. 122 Page 91 Part No. 25516

122×91

122x92



FIRST FLOOR



BASEMENT

122x92

122x92

NOTES

1. EACH CONDOMINIUM UNIT CONSISTS OF THE SPACE BOUNDED BY A VERTICAL PROJECTION OF THE CONDOMINIUM UNIT BOUNDARY LINES SHOWN AND BY THE HORIZONTAL PLANES AT THE FLOOR AND CEILING ELEVATION. HOWEVER, CEILING ELEVATION MAY VARY, THEREFORE, BOUNDARY IS ASSUMED TO THE CEILING REGARDLESS OF HEIGHT.

2. ELEVATIONS SHOWN IN FEET ARE BASED UPON A U.S.C. & G.S. MEAN LEVEL DATUM BENCH MARK. FLOOR AND CEILING ELEVATIONS REFER TO THIS DATUM.

3. LEGEND

————	BOUNDARY OF CONDOMINIUM UNITS
- - - - - -	INDICATES COMMON ELEMENT
F.F.E.	FINISHED FLOOR ELEVATION

4. ALL INTERIOR ANGLES OF CONDOMINIUMS ARE 90 DEGREES UNLESS OTHERWISE SHOWN.

5. EASEMENTS & RESTRICTIONS OF RECORD ARE NOT SHOWN

6. ALL EXPOSED UTILITY PIPES ARE WRONG TO BE COMMON AREA.

BUILDING "A"

C. R. P. & ASSOCIATES, INC.
7321 New LaGrange Road
Suite 111
Louisville, KY 40222-4853
(502) 423-8747

THE FALLS AT OLD HENRY

"C O N D O M I N I U M S"

BUILDING A, UNITS 20-26

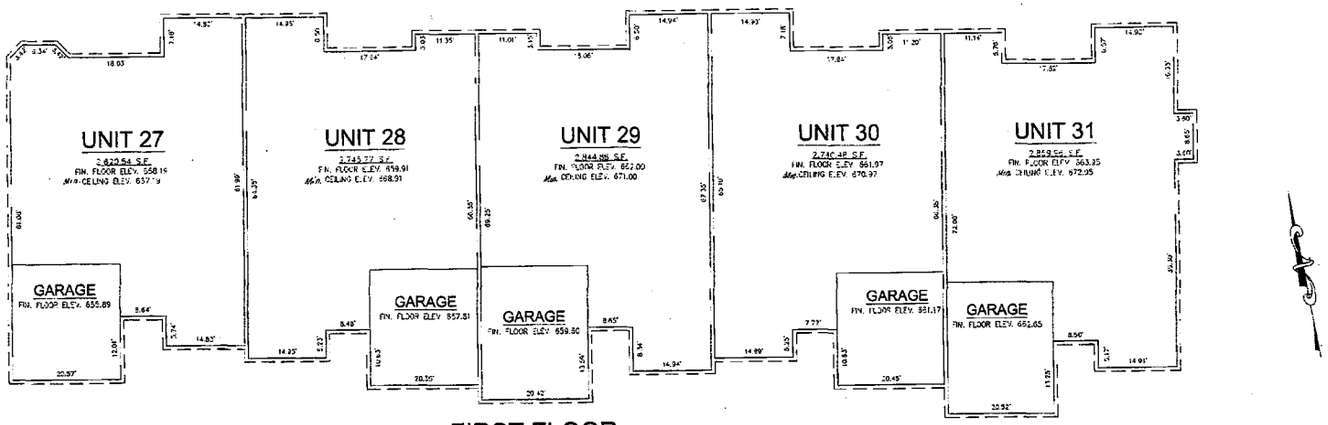
OWNER: THE RIDGE, L.L.C.
209 TOWNEPARK CIRCLE, STE. 100-101
LOUISVILLE, KENTUCKY 40243-2323
D.B. 8889, Pg. 985
TAX BLOCK 1699, LOT 2
JEFFERSON COUNTY
DATE: NOVEMBER, 2007

SHEET 2 OF 3

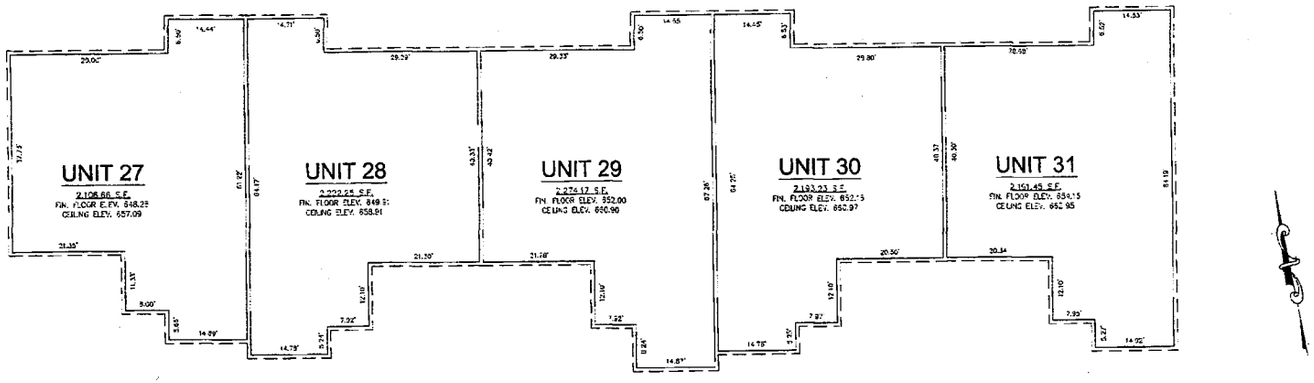
Recorded In Condo Book
No. 122 Page 92
Part No. 25-16

122x92

122x93



FIRST FLOOR



BASEMENT

BUILDING "B"

10 0 10

NOTES

1. EACH CONDOMINIUM UNIT CONSISTS OF THE SPACE BOUNDED BY A VERTICAL PROJECTION OF THE CONDOMINIUM UNIT BOUNDARY LINES SHOWN AND BY THE HORIZONTAL PLANES AT THE FLOOR AND CEILING ELEVATION. HOWEVER, CEILING ELEVATION MAY VARY, THEREFORE, BOUNDARY IS ASSUMED TO THE CEILING REGARDLESS OF HEIGHT.

2. ELEVATIONS SHOWN IN FEET ARE BASED UPON A U.S.C. & G.S. MEAN LEVEL DATUM BENCH MARK. FLOOR AND CEILING ELEVATIONS REFER TO THIS DATUM.

3. LEGEND

——— BOUNDARY OF CONDOMINIUM UNITS

– – – – INDICATES COMMON ELEMENT

F.F.E. FINISHED FLOOR ELEVATION

4. ALL INTERIOR ANGLES OF CONDOMINIUMS ARE 90 DEGREES UNLESS OTHERWISE SHOWN.

5. EASEMENTS & RESTRICTIONS OF RECORD ARE NOT SHOWN.

6. ALL EXPOSED UTILITY PIPES AND WIRING TO BE COMMON AREA.

C. R. P. & ASSOCIATES, INC.
7321 New LaGrange Road
Suite 111
Louisville, KY 40222-4853
(502) 423-8747

THE FALLS AT OLD HENRY

"C O N D O M I N I U M S"

BUILDING B, UNITS 27-31

OWNER: THE RIDGE, L.L.C.
209 TOWNEPARK CIRCLE, STE. 100-101
LOUISVILLE, KENTUCKY 40243-2323
D.B. 8889, Pg. 985
TAX BLOCK 1699, LOT 2
JEFFERSON COUNTY
DATE: NOVEMBER, 2007

SHEET 3 OF 3

09150PG 944

Recorded In Condo Book
No. 122 Page 93
Part No.

122x93

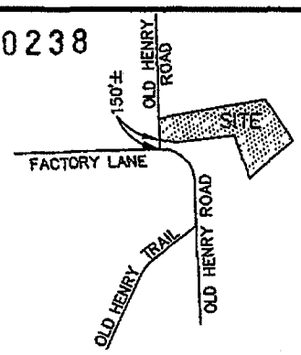
122x93

122x93

Appendix N6 – The Ridge 1

DB 08343PG0238

NOTES:
1. THE PURPOSE OF THIS PLAT IS TO CREATE 2 TRACTS OF LAND, TO DEDICATE ADDITIONAL RIGHT-OF-WAY AND TO GRANT ACCESS.
2. THIS PLAT IS SUBJECT TO EASEMENTS AND RESTRICTIONS WHETHER RECORDED OR NOT.
3. ACCESS EASEMENT MUST CONFORM TO ORDINANCE 187, SERIES 2003 JEFFERSON COUNTY PLANNING COMMISSION.
4. KENTUCKY DIVISION OF TRANSPORTATION (KDOT) IS RESPONSIBLE FOR THE REMOVAL AND RELOCATION OF SIGNATURE ENTRANCE WALLS AT KDOT'S EXPENSE IF NECESSARY.
5. IF KDOT DECIDES NOT TO UTILIZE THE DEDICATED RIGHT-OF-WAY ALONG OLD HENRY ROAD, THIS RIGHT-OF-WAY WILL REVERT BACK TO RICHARD F. BROOKS (OWNER) AT KDOTS EXPENSE.
6. AS OF THE DATE OF RECORDATION OF THIS PLAT, KDOT HAS NOT DECIDED ON PLACEMENT OF THE OLD HENRY ROAD/CRESTWOOD CONNECTOR. VARIOUS LOCATIONS ARE BEING CONSIDERED BY KDOT.
7. THIS SITE IS SUBJECT TO BINDING ELEMENTS, CONDITIONS OF APPROVAL AND NOTES OF DOCKET NUMBERS 9-63-01 AND 10-27-89 ON FILE IN THE OFFICE OF THE LOUISVILLE METRO PLANNING COMMISSION.



LOCATION MAP
NO SCALE

- DENOTES SET 1/2" REBAR W/ CAP #2843, UNLESS NOTED.
- FOUND 1/2" REBAR AT CORNER
- FOUND 3/4" PIPE AT CORNER
- FOUND IRON PIPE W/CAP #228 AT CORNER

EASEMENTS

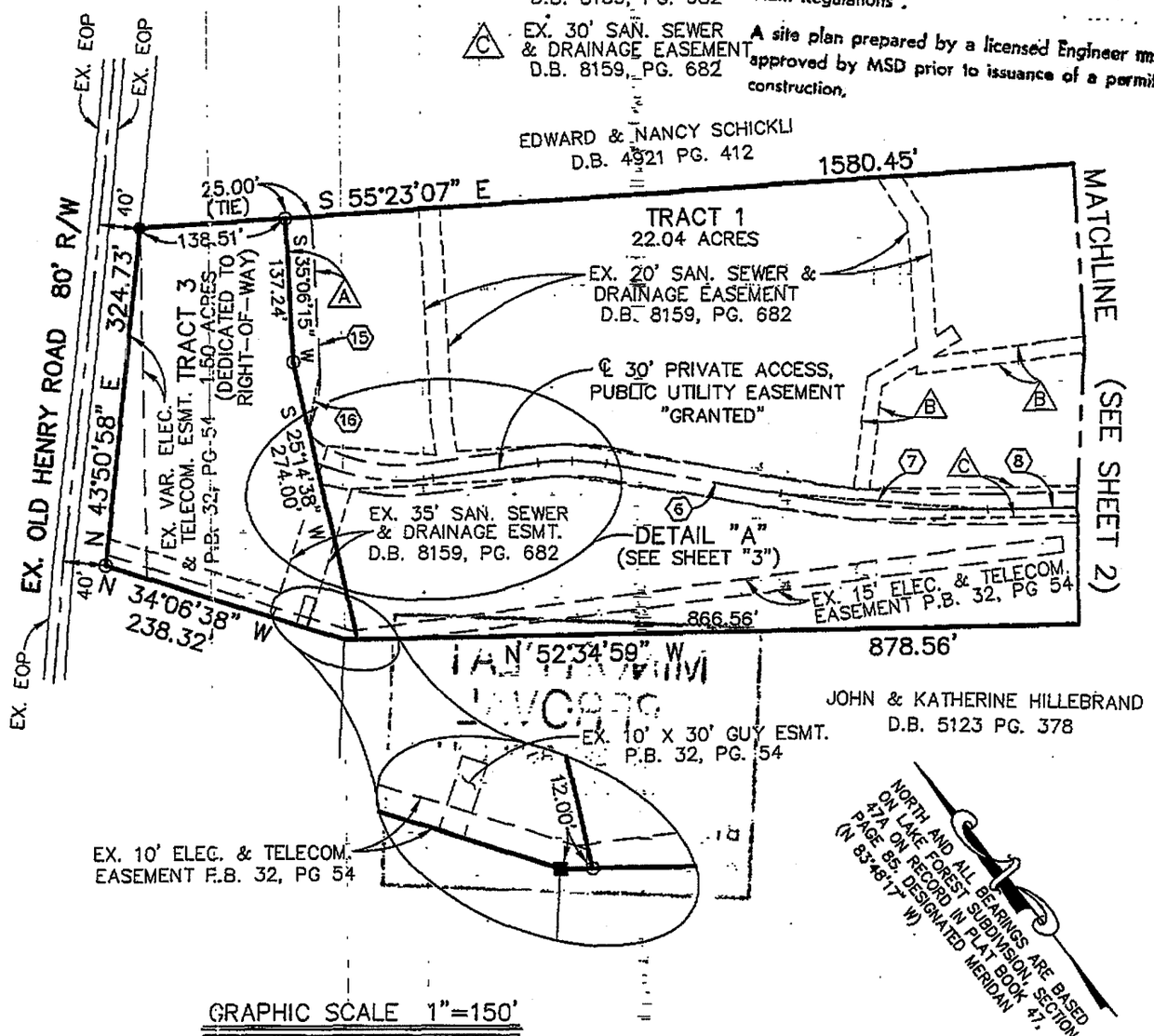
(A) 25' PRIVATE ACCESS, PUBLIC UTILITY, SAN. SEWER & DRAINAGE EASEMENT "GRANTED"

(B) EX. 15' SAN. SEWER & DRAINAGE EASEMENT D.B. 8159, PG. 682

(C) EX. 30' SAN. SEWER & DRAINAGE EASEMENT D.B. 8159, PG. 682

portions of these tracts are flood prone and proposed construction or development is governed by the "Flood Plain Regulations".

A site plan prepared by a licensed Engineer must be approved by MSD prior to issuance of a permit for construction.



GRAPHIC SCALE 1"=150'
0 75 150 300

STATE OF KENTUCKY
DAVID A. MINDEL 2843
LICENSED PROFESSIONAL LAND SURVEYOR

Land Surveyor's Certificate

I hereby certify that the survey depicted by this plat was performed by persons under my direct supervision by the method of random traverse with sideshots and the unadjusted precision ratio of the traverse exceeds 1:10,000 The bearings, distances and traverse shown hereon were adjusted for closure. This survey meets or exceeds the minimum standards for a class "A" survey as established by the state of Kentucky, per 201 KAR 18:150 and in effect on the date of this survey.

12/9/03

DAVID A. MINDEL PLS# 2843 DATE:

MINDEL • SCOTT & ASSOCIATES INC.
PLANNING • ENGINEERING • SURVEYING
LANDSCAPE ARCHITECTURE
P.O. BOX 7246 Louisville, Kentucky 40257-0246
(502) 485-1508

Certificate of Approval

Approved this 10 day of Dec, 2003.
Invalid if not recorded before this date: 12/10/04
By: _____
Louisville Metro Planning Commission
Approval subject to attached Certificates.
Special requirement(s): _____
DOCKET NO.: 256-03

MINOR SUBDIVISION PLAT

OWNER: THE RIDGE 1, L.L.C.
DEED BOOK 8000, PAGE 932
206 OLD HARRODS CREEK ROAD
LOUISVILLE, KENTUCKY 40223
TAX BLOCK 1699, LOT 10

LOCATION: 14405 OLD HENRY ROAD
JEFFERSON COUNTY, KENTUCKY 40245

DATE: 12/08/03 SCALE: 1=150'

JOB NO.: 1773-MP2

MINOR PLAT APPROVAL
LOUISVILLE/JEFFERSON COUNTY METRO PUBLIC WORKS
BY: T. [illegible]
DATE: 12/10/03

METROPOLITAN SEWER DISTRICT REVIEW

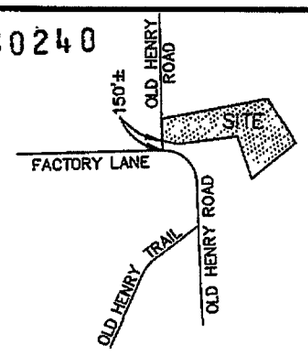
This plat has been reviewed for storm drainage and sanitary sewer related considerations and Metropolitan Sewer District has no objection to this plat. However, this review does not constitute any form of construction approval for work on this site.

[signature] 12/10/03
Storm Drainage Review Date

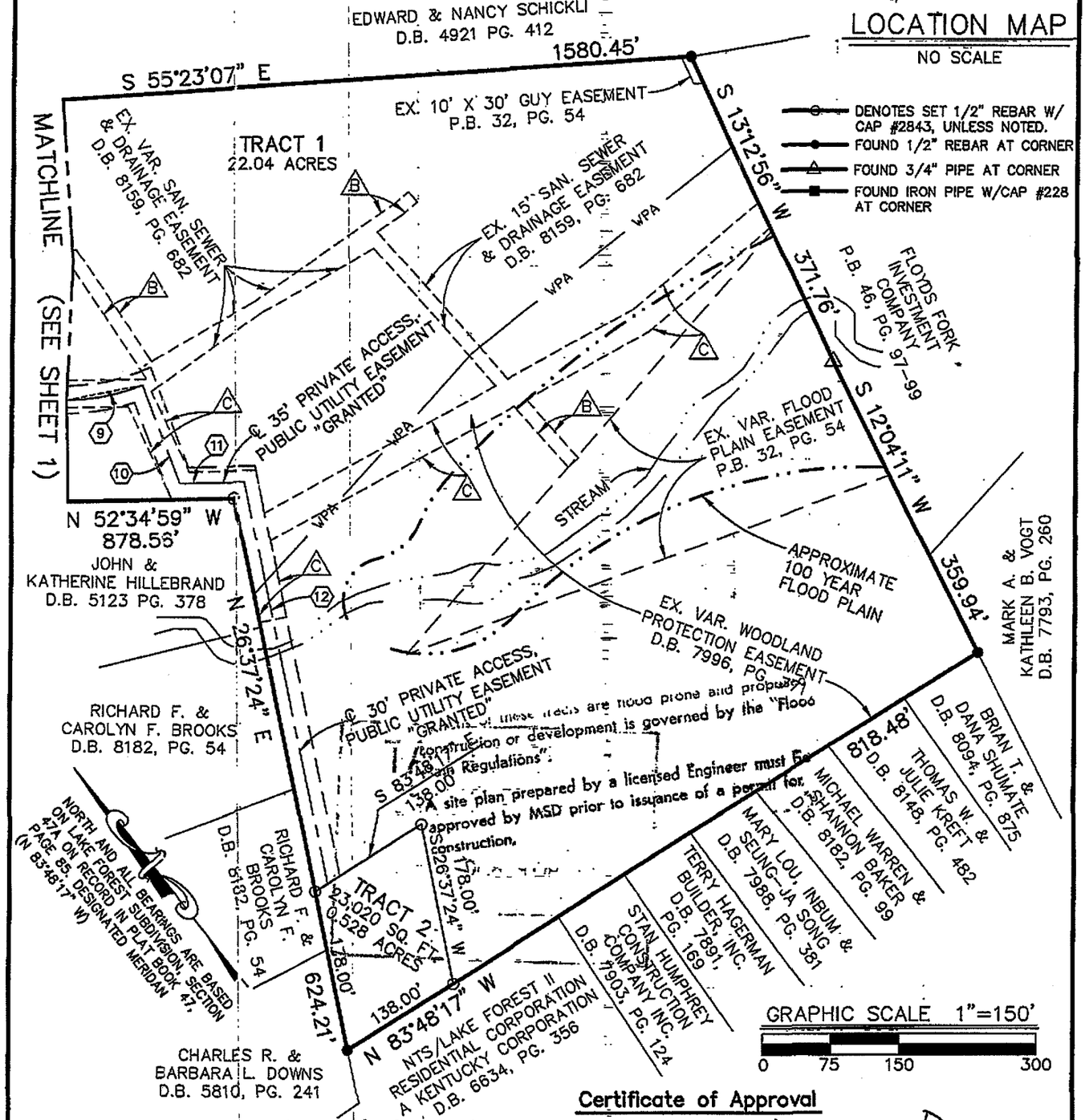
Sewers by L.E.
Sanitary Sewer Review Date

DB 08343PG0240

NOTES:
1. THE PURPOSE OF THIS PLAT IS TO CREATE 2 TRACTS OF LAND, TO DEDICATE ADDITIONAL RIGHT-OF-WAY AND TO GRANT ACCESS.
2. THIS PLAT IS SUBJECT TO EASEMENTS AND RESTRICTIONS WHETHER RECORDED OR NOT.
3. ACCESS EASEMENT MUST CONFORM TO ORDINANCE 187, SERIES 2003 JEFFERSON COUNTY PLANNING COMMISSION.
4. KENTUCKY DIVISION OF TRANSPORTATION (KDOT) IS RESPONSIBLE FOR THE REMOVAL AND RELOCATION OF SIGNATURE ENTRANCE WALLS AT KDOT'S EXPENSE IF NECESSARY.
5. IF KDOT DECIDES NOT TO UTILIZE THE DEDICATED RIGHT-OF-WAY ALONG OLD HENRY ROAD, THIS RIGHT-OF-WAY WILL REVERT BACK TO RICHARD F. BROOKS (OWNER) AT KDOTS EXPENSE.
6. AS OF THE DATE OF RECORDATION OF THIS PLAT, KDOT HAS NOT DECIDED ON PLACEMENT OF THE OLD HENRY ROAD/CRESTWOOD CONNECTOR. VARIOUS LOCATIONS ARE BEING CONSIDERED BY KDOT.
7. THIS SITE IS SUBJECT TO BINDING ELEMENTS, CONDITIONS OF APPROVAL AND NOTES OF DOCKET NUMBERS 9-63-01 AND 10-27-89 ON FILE IN THE OFFICE OF THE LOUISVILLE METRO PLANNING COMMISSION.



LOCATION MAP
NO SCALE



These tracts are flood prone and property construction or development is governed by the "Flood Plain Regulations".
A site plan prepared by a licensed Engineer must be approved by MSD prior to issuance of a permit for construction.

Land Surveyor's Certificate

I hereby certify that the survey depicted by this plat was performed by persons under my direct supervision by the method of random traverse with sideshots and the unadjusted precision ratio of the traverse exceeds 1:10,000 The bearings, distances and traverse shown hereon were adjusted for closure. This survey meets or exceeds the minimum standards for a class "A" survey as established by the state of Kentucky, per 201 KAR 18:150 and in effect on the date of this survey.

STATE OF KENTUCKY
DAVID A. MINDEL 2843
LICENSED PROFESSIONAL LAND SURVEYOR

12/9/03

DAVID A. MINDEL PLS# 2843 DATE:

MINDEL • SCOTT & ASSOCIATES INC.
PLANNING • ENGINEERING • SURVEYING
LANDSCAPE ARCHITECTURE
P.O. BOX 7246 Louisville, Kentucky 40257-0246
(502) 485-1508

Certificate of Approval

Approved this 10 day of Dec, 2003.
Invalid if not recorded before this date: 12/10/04
By: _____
Louisville Metro Planning Commission
Approval subject to attached Certificates.
Special requirement(s): _____
DOCKET NO.: 256-03

MINOR SUBDIVISION PLAT

OWNER: THE RIDGE 1, L.L.C.
DEED BOOK 8000, PAGE 932
206 OLD HARRODS CREEK ROAD
LOUISVILLE, KENTUCKY 40223
TAX BLOCK 1699, LOT 10

LOCATION: 14405 OLD HENRY ROAD
JEFFERSON COUNTY, KENTUCKY 40245

DATE: 12/08/03 SCALE: 1=150'

MINOR PLAT
APPROVAL
LOUISVILLE/JEFFERSON COUNTY
METRO PUBLIC WORKS
BY: _____
DATE: 12/12/03

METROPOLITAN SEWER DISTRICT REVIEW

This plat has been reviewed for storm drainage and sanitary sewer related considerations and Metropolitan Sewer District has no objection to this plat. However, this review does not constitute any form of construction approval for work on this site.

_____ 12/10/03
Storm Drainage Review — Date

Sewers by L.E.
_____ _____
Sanitary Sewer Review — Date

DB 08343PG0242

NOTES:
1. THE PURPOSE OF THIS PLAT IS TO CREATE 2 TRACTS OF LAND, TO DEDICATE ADDITIONAL RIGHT-OF-WAY AND TO GRANT ACCESS.
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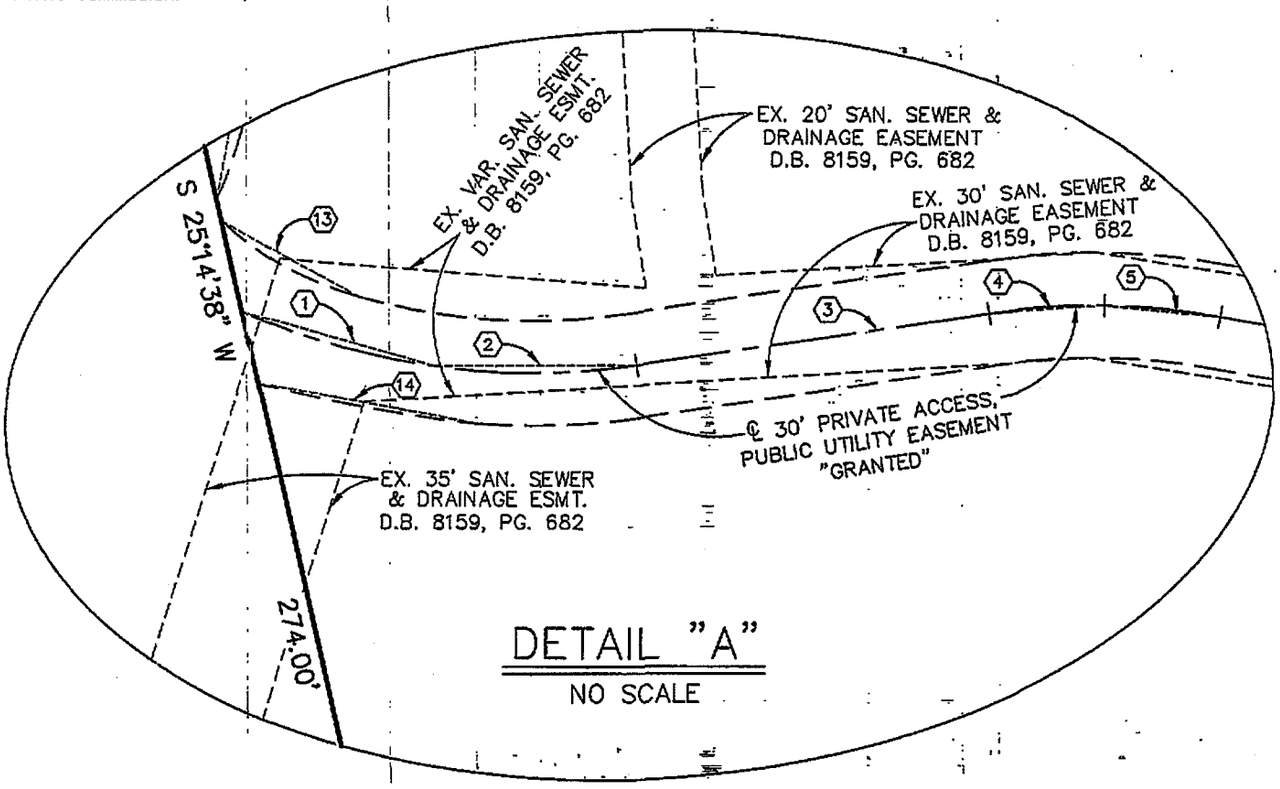
5. IF KDOT DECIDES NOT TO UTILIZE THE DEDICATED RIGHT-OF-WAY ALONG OLD HENRY ROAD, THIS RIGHT-OF-WAY WILL REVERT BACK TO RICHARD F. BROOKS (OWNER) AT KDOTS EXPENSE.
6. AS OF THE DATE OF RECORDATION OF THIS PLAT, KDOT HAS NOT DECIDED ON PLACEMENT OF THE OLD HENRY ROAD/CRESTWOOD CONNECTOR. VARIOUS LOCATIONS ARE BEING CONSIDERED BY KDOT.
7. THIS SITE IS SUBJECT TO BINDING ELEMENTS, CONDITIONS OF APPROVAL AND NOTES OF DOCKET NUMBERS 9-63-01 AND 10-27-89 ON FILE IN THE OFFICE OF THE LOUISVILLE METRO PLANNING COMMISSION.



DETAIL "A"
NO SCALE

ACCESS EASEMENT CALLS

1	S 35°22'58" E	57.00'	R=200.00'	9	S 62°19'17" E	84.58'	R=250.00'
2	S 51°46'05" E	57.00'	R=200.00'	10	S 17°24'53" W	115.79'	
3	S 59°57'39" E	100.36'		11	S 52°34'59" E	68.31'	
4	S 55°17'24" E	32.57'	R=200.00'	12	S 26°37'24" W	476.71'	
5	S 45°56'55" E	32.57'	R=200.00'	13	S 22°51'42" E	44.86'	R=97.50'
6	S 41°16'41" E	168.88'		14	S 41°02'00" E	62.83'	R=393.00'
7	S 46°55'50" E	196.99'	R=1000.00'	15	S 35°06'15" W	147.99'	
8	S 52°34'59" E	84.17'		16	S 49°01'24" W	56.61'	

Portions of these tracts are flood prone and proposed construction or development is governed by the "Flood Plain Regulations".

A site plan prepared by a licensed Engineer must be approved by MSD prior to issuance of a permit for construction.

STATE OF KENTUCKY
DAVID A. MINDEL
2843
LICENSED PROFESSIONAL LAND SURVEYOR

Land Surveyor's Certificate

I hereby certify that the survey depicted by this plat was performed by persons under my direct supervision by the method of random traverse with sideshots and the unadjusted precision ratio of the traverse exceeds 1:10,000 The bearings, distances and traverse shown hereon were adjusted for closure. This survey meets or exceeds the minimum standards for a class "A" survey as established by the state of Kentucky, per 201 KAR 18:150 and in effect on the date of this survey.

12/9/03

DAVID A. MINDEL PLS# 2843 DATE:

MINDEL • SCOTT & ASSOCIATES INC.
PLANNING • ENGINEERING • SURVEYING
LANDSCAPE ARCHITECTURE
P.O. BOX 7246 Louisville, Kentucky 40257-0246
(502) 485-1508

Certificate of Approval

Approved this 10 day of Dec, 2003.
Invalid if not recorded before this date: 12/10/04

By: _____
Louisville Metro Planning Commission
Approval subject to attached Certificates.

Special requirement(s): _____

DOCKET NO.: 256-03

MINOR SUBDIVISION PLAT

OWNER: THE RIDGE 1, L.L.C.
DEED BOOK 8000, PAGE 932
206 OLD HARRODS CREEK ROAD
LOUISVILLE, KENTUCKY 40223
TAX BLOCK 1699, LOT 10

LOCATION: 14405 OLD HENRY ROAD
JEFFERSON COUNTY, KENTUCKY 40245

DATE: 11/13/03 SCALE: 1=150'

JOB NO.: 1773-MP2

MINOR PLAT APPROVAL
LOUISVILLE/JEFFERSON COUNTY
METRO PUBLIC WORKS
BY:
DATE: 12/10/03

METROPOLITAN SEWER DISTRICT REVIEW

This plat has been reviewed for storm drainage and sanitary sewer related considerations and Metropolitan Sewer District has no objection to this plat. However, this review does not constitute any form of construction approval for work on this site

Storm Drainage Review — 12/10/03
Date

SEWERS by L.E.
Sanitary Sewer Review — Date

STANDARD CERTIFICATE FORM

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of THE RIDGE 1, L.L.C. Deed Book 8000, Page 932 and does hereby dedicate to public use Tract 3 shown thereon.

Owner (s) Signature & Title

ZONING CERTIFICATE

I/WE hereby certify all of the lots of this minor subdivision and any existing buildings and improvements thereon and/or any buildings and improvements included in a building permit either applied for or approved thereon are in compliance with all the provisions of the Zoning District Regulations. Any such buildings or improvements not in compliance with all the Zoning District Regulations as described in Docket No. N/A or documentation of the existence of the building or improvements prior to the adoption of the Zoning District Regulations has been accepted by the Planning Commission staff as valid evidence of their non-conforming status.

Owner (s) Signature & Title

CERTIFICATE OF ACKNOWLEDGMENT

State of Kentucky)
) SS
County of Jefferson)

I, Rhonda Logsdon, a Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of THE RIDGE 1, L.L.C. Deed Book 8000, Page 932 was this day presented to me by Amos Marston, known to me, who executed Certificates in my presence and acknowledge it to be his free act and deed.
(her, his, their)

Witness my hand and seal this 1st day of December, 2003.
My Commission expires: 30th day of August, 2006.

Rhonda Logsdon
Notary Public

Mindel, Scott & Associates, Inc.
Planning Engineering Surveying
P. O. Box 7246
Louisville, KY 40257-0246
(502) 485-1508

DEDICATION OF PUBLIC UTILITY , SANITARY SEWER DRAINAGE AND PRIVATE ACCESS EASEMENTS

THIS INSTRUMENT made and entered into on this 1st day of December 2003 by the undersigned Owners, THE RIDGE 1, L.L.C. per Deed Book 8000, Page 932 confers the rights and obligations regarding certain real property as follows:

This is to certify that the undersigned GRANTOR is the owner of the land shown on the plat attached hereto and made a part hereof and that a perpetual easement for roadway , courts, drives, public utilities, including, but not necessarily limited to, water, electric, gas, telephone, cable, sewers and drains are hereby dedicated and reserved on, over and under the strips of land and spaces so designated on the attached plat as "Public Utility, Sewer, Drainage and Private Access Easements", together with the right of ingress and egress over GRANTOR'S property to and from easements for construction, operation, maintenance, and reconstruction of the aforesaid public utilities, sewers and drains.

No permanent structure of any kind shall be placed on, over or under the land within the perpetual easements. The perpetual easements shall run with the land and shall be for the benefit and use of the GRANTOR'S property and all lands abutting the aforesaid easements.

Access easements, to the extent they are not occupied by a public utility, shall be maintained by the GRANTOR, his heirs, executors, administrators, assigns, or the owners of the underlying fee simple title until said easements are accepted for maintenance by the public utilities.

12/1/03
Date

Owner's Signature

STATE OF KENTUCKY)
)SS
COUNTY OF JEFFERSON)

The foregoing Dedication of Public Utility, Sewer, Drainage and Private Access Easements was signed and acknowledged before me by Amos Martin GRANTOR, this 1st day of December, 2003.

Rhonda Lonsdon
Notary Public, Kentucky State-At-Large

My Commission expires: 8/20/2006

EASEMENT, RESTRICTIONS, AND MAINTENANCE REQUIREMENTS FOR TWO LOTS ON A MINOR PLAT

THIS INSTRUMENT made and entered into on this 1st day of December 2003 by the undersigned Owners, THE RIDGE 1, L.L.C. Per Deed Book 8000, Page 932 confers the rights and obligations regarding certain real property as follows:

1. The owner(s)or occupants of Tract 2 are hereby granted the easement shown on the attached plat for ingress and egress across the property designated as Tract 1 on said plat. Said easement shall be for the benefit of said owners or occupants, their guests and invitees.

2. The rights conveyed by said easement are limited to such as is customarily incidental to RESIDENTIAL usage of the lot.

3. All costs of expenses incidental to the maintenance, repair or rebuilding of said roads so as to keep it in a good and passable condition as a private road shall be borne one-half by the owners of each lot.

The lot of any owner who fails to pay his share of said expense promptly upon demand by the person who has initially borne it shall be subject to lien upon filing of an appropriate notice in the County Clerk's Office. The lien of such assessments may be enforced against the property in the same manner as mortgages are foreclosed upon real property.

4. The road shall not be dedicated to or maintained by the public except by agreement of the owners of said lots and approval of the Louisville, and Jefferson County Planning Commission.

6. The provisions of this instrument shall be considered a covenant running with the land, shall be binding on the parties hereto and their respective successors, heirs and assigns, and may be enforced by any one or more owners of said lots in a civil action in law or equity.

7. The provisions hereof are severable, and if one or more of said provisions are held invalid, the remaining provisions shall remain in full force and effect.

In testimony whereof, witness the signature of the owners of said lots as of the day and year set out above.

Owners Signature

Amos Martin
Name Typed

State of Kentucky)
)
County of Jefferson)

I, a notary public in and for the County aforesaid, do hereby certify the foregoing instrument was this day presented to me by Amos Martin who acknowledged it to be the free act and deed of that person. Witness my hand this 1st day of December 2003.

My Commission expires on 8/30/2006

Rhonda Logsdon
Notary Public

DB 08343PG0247

CERTIFICATE OF SEWER EXTENSION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges that this plat is being approved with the condition that prior to any construction activity (including but not limited to clearing, grading, excavation or issuance of building permits) on any of the lots created hereby, a contract for extension of the sanitary sewer collection system (also known as "lateral extension contract") shall be executed with the Louisville & Jefferson County Metropolitan Sewer District.

Owner (s) Signature & Title

206 Old Harrods Creek Rd., Unit 1, Louisville KY 40223

Address

Manager

Title

Mindel, Scott & Associates, Inc.
Planning Engineering Surveying
P. O. Box 7246
Louisville, KY 40257-0246
(502) 485-1508

BEST COPY OF DOCUMENT

Document No.: DN2004012078
Lodged By: SALYERS
Recorded On: 01/23/2004 11:03:11
Total Fees: 32.00
Transfer Tax: .00
County Clerk: BOBBIE HOLSCLAW-JEFF CO KY
Deputy Clerk: EVEMAY

DEED

THIS DEED is made and entered into as of this 22nd day of January, 2004, by and between:

The Ridge I, L.L.C.
a Kentucky limited liability company
206 Old Harrods Creek Road
Louisville, KY 40223 ("Grantor")

and

The Ridge I, L.L.C.
a Kentucky limited liability company
206 Old Harrods Creek Road
Louisville, KY 40223 ("Grantee")

WITNESSETH:

WHEREAS, Grantor is the owner of certain property located in Louisville, Jefferson County, Kentucky by virtue of a certain deed of record in Deed Book 8000, Page 932, in the Office of the Clerk of Jefferson County, Kentucky; and

WHEREAS, Grantor desires to divide said property into three tracts for the purpose of dedication of right of way and division of the remainder of the property;

NOW, THEREFORE, for a valuable consideration, the receipt of which is hereby acknowledged, Grantor redescribes the property as Tract 1, Tract 2, and Tract 3 as shown on Minor Subdivision Plat, dated December 9, 2003, prepared by Mindel Scott & Associates, Inc., and approved on December 10, 2003 by the Louisville Metro Planning Commission under Docket No 256-03, together with all improvements thereon, located in Louisville, Jefferson County, Kentucky, which shall now be more particularly described as follows:

> **BEING** Tract 1, Tract 2, and Tract 3 all as shown on minor subdivision plat approved by the Louisville Metro Planning Commission on December 10, 2003, bearing Docket No. 256-03, attached hereto as **Exhibit A** and incorporated herein by reference.
>
> **BEING** the same property conveyed to Grantor by instrument of record in Deed Book 8000, Page 932, in the office of the Clerk of Jefferson County, Kentucky.

Grantor hereby dedicates Tract 3 as shown on the aforementioned Minor Plat to public use as part of the Old Henry Road right-of-way.

Grantor covenants that it is lawfully seized of the estate in such manner hereby conveyed and that it has full right and power to convey same, and that estate is free of all encumbrances,

except easements, restrictions of record and zoning laws affecting said property, if any, and except State, County, School and Fire District taxes payable in the year 2004, and all subsequent taxes, which the Grantee hereby assumes and agrees to pay.

The value of the property is $ 1,100,000.00 . This Deed corrects the legal description of the above referenced property. No real estate transfer tax is due pursuant to KRS 142.050(7)(d).

IN TESTIMONY WHEREOF, witness the signature of the parties on the day and year first above written.

The Ridge I, L.L.C.
a Kentucky limited liability company,
GRANTOR AND GRANTEE

Amos Martin, Member

STATE OF KENTUCKY)
)
COUNTY OF JEFFERSON)

I, a Notary public in and for the State and County aforesaid, do hereby certify that on this 22nd day of January, 2004, Amos Martin, Member of The Ridge I, L.L.C., appeared before me and before me acknowledged that he executed and delivered the foregoing instrument as his free and voluntary act and deed and as the free and voluntary act and deed of The Ridge I, L.L.C., a Kentucky limited liability company.

My Commission expires: 11/18/07

Jeanette T. Revell
NOTARY PUBLIC
STATE AT LARGE, KENTUCKY

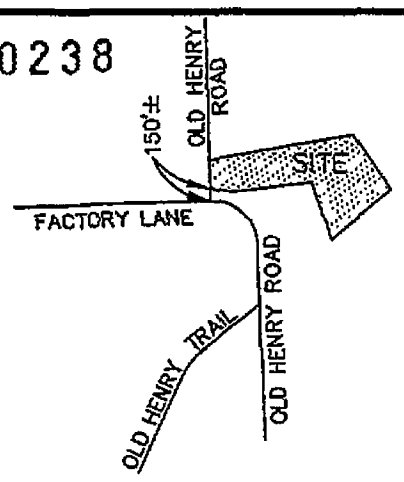
THIS INSTRUMENT PREPARED BY:

Clifford H. Ashburner
BARDENWERPER & TALBOTT, PLLC
8311 Shelbyville Road
Louisville, Kentucky 40222
(502) 426-6688

E:\WBB-NOV2002\Amos Martin\Tassie-Old Henry Rd\The Ridge-Deed1.doc

Rev. 7/23/03 4:35 PM

NOTES:
1. THE PURPOSE OF THIS PLAT IS TO CREATE 2 TRACTS OF LAND, TO DEDICATE ADDITIONAL RIGHT-OF-WAY AND TO GRANT ACCESS.
2. THIS PLAT IS SUBJECT TO EASEMENTS AND RESTRICTIONS WHETHER RECORDED OR NOT.
3. ACCESS EASEMENT MUST CONFORM TO ORDINANCE 187, SERIES 2003 JEFFERSON COUNTY PLANNING COMMISSION.
4. KENTUCKY DIVISION OF TRANSPORTATION (KDOT) IS RESPONSIBLE FOR THE REMOVAL AND RELOCATION OF SIGNATURE ENTRANCE WALLS AT KDOT'S EXPENSE IF NECESSARY.
5. IF KDOT DECIDES NOT TO UTILIZE THE DEDICATED RIGHT-OF-WAY ALONG OLD HENRY ROAD, THIS RIGHT-OF-WAY WILL REVERT BACK TO RICHARD F. BROOKS (OWNER) AT KDOTS EXPENSE.
6. AS OF THE DATE OF RECORDATION OF THIS PLAT, KDOT HAS NOT DECIDED ON PLACEMENT OF THE OLD HENRY ROAD/CRESTWOOD CONNECTOR. VARIOUS LOCATIONS ARE BEING CONSIDERED BY KDOT.
7. THIS SITE IS SUBJECT TO BINDING ELEMENTS, CONDITIONS OF APPROVAL AND NOTES OF DOCKET NUMBERS 9-63-01 AND 10-27-89 ON FILE IN THE OFFICE OF THE LOUISVILLE METRO PLANNING COMMISSION.



LOCATION MAP
NO SCALE

- DENOTES SET 1/2" REBAR W/ CAP #2843, UNLESS NOTED.
- FOUND 1/2" REBAR AT CORNER
- FOUND 3/4" PIPE AT CORNER
- FOUND IRON PIPE W/CAP #228 AT CORNER

EASEMENTS

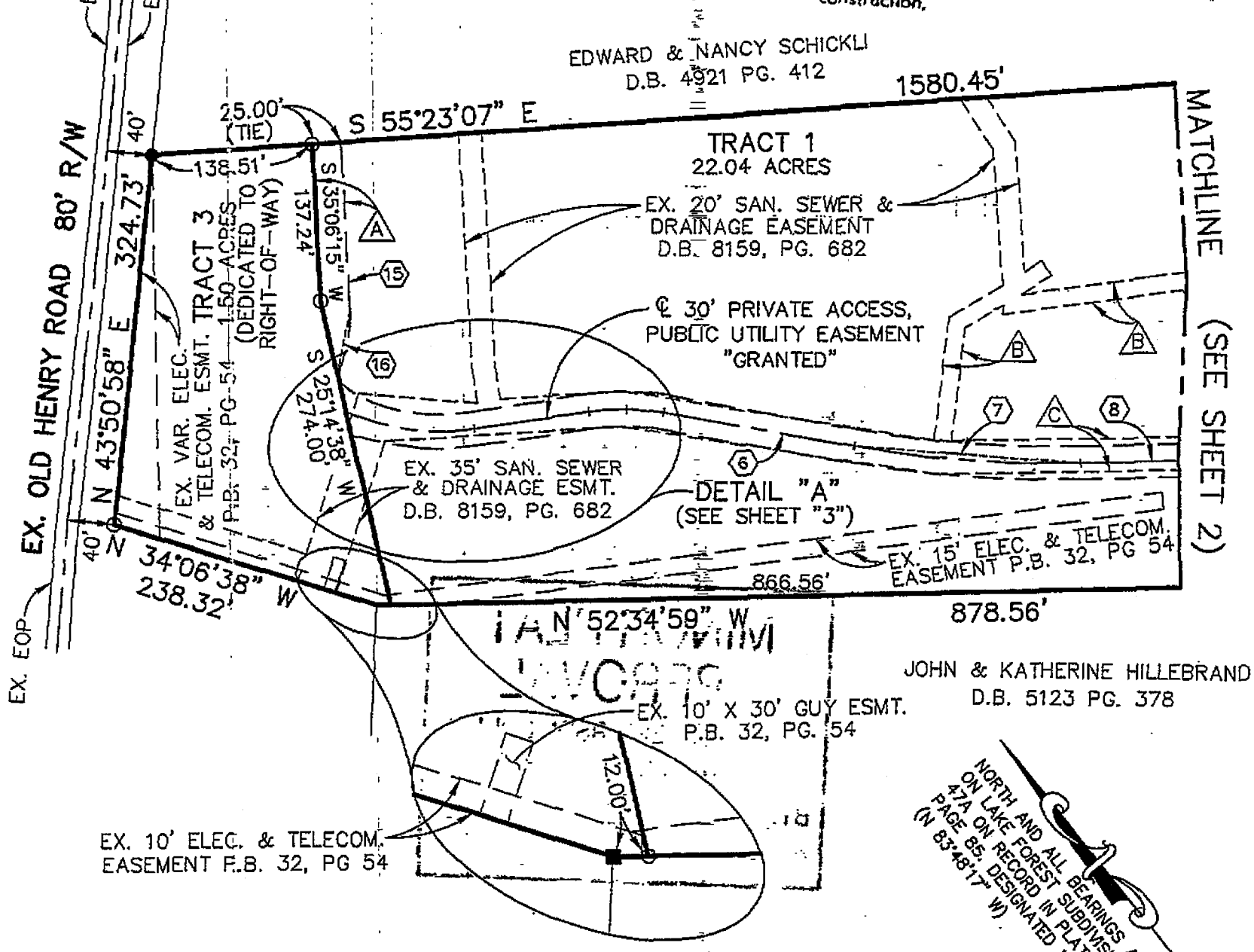
A — 25' PRIVATE ACCESS, PUBLIC UTILITY, SAN. SEWER & DRAINAGE EASEMENT "GRANTED"

B — EX. 15' SAN. SEWER & DRAINAGE EASEMENT D.B. 8159, PG. 682

C — EX. 30' SAN. SEWER & DRAINAGE EASEMENT D.B. 8159, PG. 682

portions of these tracts are flood prone and proposed construction or development is governed by the "Flood Plain Regulations".

A site plan prepared by a licensed Engineer must be approved by MSD prior to issuance of a permit for construction.



GRAPHIC SCALE 1"=150'
0 75 150 300

STATE OF KENTUCKY
DAVID A. MINDEL
2843
LICENSED PROFESSIONAL LAND SURVEYOR

Land Surveyor's Certificate
I hereby certify that the survey depicted by this plat was performed by persons under my direct supervision by the method of random traverse with sideshots and the unadjusted precision ratio of the traverse exceeds 1:10,000 The bearings, distances and traverse shown hereon were adjusted for closure. This survey meets or exceeds the minimum standards for a class "A" survey as established by the state of Kentucky, per 201 KAR 18:150 and in effect on the date of this survey.

DAVID A. MINDEL PLS# 2843 DATE: 12-9-03

MINDEL • SCOTT & ASSOCIATES INC.
PLANNING • ENGINEERING • SURVEYING
LANDSCAPE ARCHITECTURE
P.O. BOX 7246 Louisville, Kentucky 40257-0246
(502) 485-1508

Certificate of Approval
Approved this 10 day of Dec, 2003.
Invalid if not recorded before this date: 12/10/04
By: _____
Louisville Metro Planning Commission
Approval subject to attached Certificates.
Special requirement(s): _____
DOCKET NO.: 256-03

MINOR SUBDIVISION PLAT
OWNER: THE RIDGE 1, L.L.C.
DEED BOOK 8000, PAGE 932
206 OLD HARRODS CREEK ROAD
LOUISVILLE, KENTUCKY 40223
TAX BLOCK 1699, LOT 10
LOCATION: 14405 OLD HENRY ROAD
JEFFERSON COUNTY, KENTUCKY 40245
DATE: 12/08/03 SCALE: 1=150'

1 of 7

DEED

THIS DEED is made and entered into as of May 25, 2005, by and between JOHN M. HILLEBRAND and KATHERINE P. HILLEBRAND, husband and wife, 14319 Old Henry Road, Louisville, Kentucky 40245 ("**Grantors**") and THE RIDGE I, LLC, a Kentucky limited liability company, 204 Old Harrods Creek, Unit 11, Louisville, Kentucky 40223 ("**Grantee**").

WITNESSETH

For a total consideration of $20,000.00, receipt and sufficiency of which are acknowledged by Grantors, Grantors grant and convey to Grantee in fee simple, and with covenant of General Warranty, the real property located in Jefferson County, Kentucky, and more particularly described as follows:

> BEING so much of Residual Tract 1 as was conveyed to Grantors by deed dated October 3, 1979, of record in Deed Book 5123, Page 378, and is now added to and consolidated with that that Residual Tract 1 owned by Grantee pursuant to this deed and to a deed of record in Deed 8343, Page 235, in the office of the Clerk of Jefferson County, Kentucky, as that Residual Tract 1 is shown on the Minor Subdivision Plat approved by the Louisville Metro Planning Commission on April 5, 2005, Docket No. 064-05, which Minor Subdivision Plat is attached to and made part of this Deed (the portion of the property being conveyed being shown on that Minor Subdivision Plat in parentheses as 5604 square feet or 0.13 acre).
>
> BEING part of the property conveyed to Grantors by deed dated October 3, 1979, of record in Deed Book 5123, Page 378, in the office of the Clerk of Jefferson County, Kentucky.

Grantors covenant lawful seisin of the estate hereby conveyed, full right and power to convey same, and that said property is free and clear of liens and encumbrances, except easements, restrictions and stipulations of record, real property taxes and assessments due and payable in 2005 and thereafter, which Grantee assumes and agrees to pay, and zoning regulations affecting the property.

Consideration Certificate

Grantors and Grantee hereby certify that the consideration stated in this Deed is the full actual consideration paid for the property.

WITNESS the signature of Grantors and Grantee as of the above date, but actually on the dates set forth in the notarial certificates below, with Grantee executing this instrument for purposes of the consideration certificate only.

GRANTORS:

John M. Hillebrand

Katherine P. Hillebrand

GRANTEE:
THE RIDGE I, LLC

By
Anthony I. Martin, Manager

COMMONWEALTH OF KENTUCKY)
) SS
COUNTY OF JEFFERSON)

The foregoing instrument was acknowledged and sworn to before me on May 25, 2005, by John M. Hillebrand and Katherine P. Hillebrand.

Notary Public
Commission expires: 11/17/2007

COMMONWEALTH OF KENTUCKY)
) SS
COUNTY OF JEFFERSON)

The foregoing instrument was acknowledged before me on May 25, 2005, by Anthony I. Martin, Manager of The Ridge I, LLC, a Kentucky limited liability company, on behalf of the company.

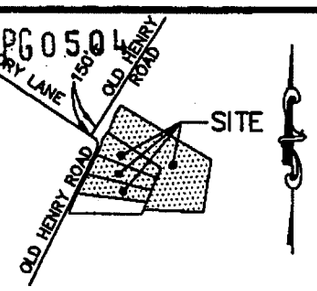
Notary Public
Commission expires: 11/17/2007

This instrument prepared by:

David B. Buechler
Salyers & Buechler, P. S. C.
The 1000 Building, Suite 204
6200 Dutchmans Lane
Louisville, Kentucky 40205

DB 0862 PG 0504

NOTES:
1. THE PURPOSE OF THIS PLAT IS TO CONSOLIDATE A PORTION OF RESIDUAL TRACT 1 WITH TRACT 2 AND TO CONSOLIDATE A PORTION OF TRACT 3 WITH TRACT 2 AND TO DEDICATE ADDITIONAL RIGHT-OF-WAY.
2. A PORTION OF THIS SITE LIES WITHIN A 100 YEAR FLOOD HAZARD ELEVATION. PER FEMA'S FIRM MAPPING (21111CO 105 D).
2. THIS PLAT IS SUBJECT TO EASEMENTS AND RESTRICTIONS WHETHER RECORDED OR NOT.
3. THIS SITE IS SUBJECT TO THE BINDING ELEMENTS OF DOCKET NUMBER 9-02-04 AND DOCKET NUMBER 9-63-01 ON FILE IN THE OFFICES OF THE LOUISVILLE METRO PLANNING COMMISSION.
4. THIS PLAT AMENDS PLAT BOOK 32, PAGE 54 OLD HENRY FARMS SUBDIVISION.
5. THIS SITE CONTAINS A PROTECTED WATERWAY AND IS SUBJECT TO THE BUFFERING AND OTHER REQUIREMENTS OF CHAPTER 4.8 OF THE LAND DEVELOPMENT CODE.



LOCATION MAP
NO SCALE

EDWARD & NANCY SCHICKLI
D.B. 4921 PG. 412

S 55°23'07" E
1441.95'
180.5'

DENOTES SET 1/2" REBAR WITH CAP #2843, UNLESS NOTED OTHERWISE.
FOUND 1/2" REBAR WITH CAP #2843
FOUND 1/2" IRON PIN WITH CAP #2675
FOUND 1/2" REBAR "BENT"
FOUND IRON PIPE WITH CAP #228

EX. OLD HENRY ROAD R/W VARIES

RESIDUAL TRACT 1
966,114 SQ. FT.
20.18 ACRES

NORTH AND ALL BEARINGS ARE BASED ON DEED BOOK 8343, PAGE 235. REFERENCE BEARING (S 52°34'59" E)

THE RIDGE 1 LLC.
D.B. 8343, PG. 235
(960,510 SQ. FT.)
(22.05 ACRES)

APPROXIMATE 100 YEAR FLOOD PLAIN

274.0'
307.13'
S 52°34'59" E

EX. 15' ELECTRIC & TELECOM. EASEMENT
P.B. 32, PG. 54
(5604 SQ. FT.)
(0.13 ACRES)

130.6'
111.6'
141.2'
EX. HOUSE "A" SEE DETAIL
12'X10' SHEDS

TRACT 2
218,893 SQ. FT.
5.03 ACRES
(215,683 SQ. FT.)
(4.95 ACRES)

JOHN M. & KATHERINE HILLEBRAND
D.B. 5123, PG. 378

DRIVEWAY
STREAM
STREAM
WPA
WPA
WPA
WPA
VAR.

40.0'
10.05'
10.01'
(8,814 SQ. FT.)
(0.20 ACRES)

EX. 15' ELECTRIC & TELECOM. EASEMENT
P.B. 32, PG. 54

WOODLAND PROTECTION AREA

EX. VAR. WOODLAND PROTECTION EASEMENT
D.B. 7996, PG. 771

50' PARKWAY BUFFER
65.0'
65.0'
65.0'

TRACT 4
7,177 SQ. FT.
0.16 ACRES
(DEDICATED TO RIGHT-OF-WAY)

CAROLYN F. & RICHARD F. BROOKS
D.B. 8182, PG. 54
(214,598 SQ. FT.)
(4.93 ACRES)

EX. 15' ELECTRIC & TELECOM. EASEMENT
P.B. 32, PG. 54

TRACT 3
405,847 SQ. FT.
9.32 ACRES

N 83°48'17" W
680.48'

75' BUILDING LIMIT

CAROLYN F. & RICHARD F. BROOKS
D.B. 8182, PG. 54
(214,668 SQ. FT.)
(4.93 ACRES)

927.85'

TRACT 5
7,429 SQ. FT.
0.17 ACRES
(DEDICATED TO RIGHT-OF-WAY)

N 79°20'53" W
EX. 15' ELECTRIC & TELECOM. EASEMENT
P.B. 32, PG. 54

AMOS MARTIN CONSTRUCTION COMPANY, INC.
D.B. 8439, PG. 321

EX. OLD HENRY ROAD R/W VARIES

CHARLES R. & BARBARA L. DOWNS
D.B. 5810, PG. 241

GRAPHIC SCALE 1"=200'
0 100 200 400

Certificate of Approval

Approved this 11th day of April, 2005.
Invalid if not recorded before this date: 4/5/06
By: _____
Louisville Metro Planning Commission
Approval subject to attached Certificates.
Special requirement(s): _____

DOCKET NO.: 064-05

Land Surveyor's Certificate

I hereby certify that the survey depicted by this plat was performed by persons under my direct supervision by the method of random traverse with sideshots and the unadjusted precision ratio of the traverse exceeds 1:10,000 The bearings, distances and traverse shown hereon were adjusted for closure. This survey meets or exceeds the minimum standards for a class "A" survey as established by the state of Kentucky, per 201 KAR 18:150 and is effective on the date of this survey.

STATE OF KENTUCKY
DAVID A. MINDEL
2843
LICENSED PROFESSIONAL LAND SURVEYOR

DAVID A. MINDEL PLS# 2843 DATE: 4/5/05

MINDEL • SCOTT & ASSOCIATES, INC.
PLANNING • ENGINEERING • SURVEYING
LANDSCAPE ARCHITECTURE
4545 Bishop Lane, Suite 200
Louisville, Kentucky 40218
(502) 485-1508

MINOR SUBDIVISION PLAT

OWNER: THE RIDGE 1, LLC.
206 OLD HARRODS CREEK ROAD
LOUISVILLE, KENTUCKY 40223
DEED BOOK 8343, PAGE 235
TAX BLOCK 1699, LOT 12

OWNER: RICHARD F. & CAROLYN F. BROOKS
12714 ST. CLAIR DRIVE
LOUISVILLE, KENTUCKY 40245
DEED BOOK 8182, PAGE 54
TAX BLOCK 1699, LOT 3

OWNER: JOHN M. & KATHERINE HILLEBRAND
14319 OLD HENRY ROAD
LOUISVILLE, KENTUCKY 40245
DEED BOOK 5123, PAGE 378
TAX BLOCK 1699, LOTS 4

LOCATION: 14611, 14315 & 14319 OLD HENRY ROAD
LOUISVILLE, KENTUCKY 40245
FORM DIST: N ZONED: R4 & R5A
DATE: 04/04/05 SCALE: 1=200'

TRANSPORTATION APPROVAL
MINOR PLAT
BY: P. Wahl
DATE: 4/5/05

METROPOLITAN SEWER DISTRICT REVIEW

This plat has been reviewed for storm drainage and sanitary sewer related considerations and Metropolitan Sewer District has no objection to this plat. However, this review does not constitute any form of construction approval for work on this site Ex. MSD Sewer Service to all tracts

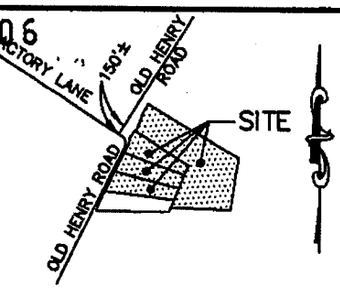
Storm Drainage Review — Date

J. Dougherty — 4-5-05
Sanitary Drainage Review — Date

08629PG0506

NOTES:
1. THE PURPOSE OF THIS PLAT IS TO CONSOLIDATE A PORTION OF RESIDUAL TRACT WITH TRACT 2 AND TO CONSOLIDATE A PORTION OF TRACT 3 WITH TRACT 2 AND TO DEDICATE ADDITIONAL RIGHT-OF-WAY.
2. A PORTION OF THIS SITE LIES WITHIN A 100 YEAR FLOOD HAZARD ELEVATION. PER FEMA'S FIRM MAPPING (21111CO 105 D).
2. THIS PLAT IS SUBJECT TO EASEMENTS AND RESTRICTIONS WHETHER RECORDED OR NOT.
3. THIS SITE IS SUBJECT TO THE BINDING ELEMENTS OF DOCKET NUMBER 9-02-04 AND DOCKET NUMBER 9-63-01 ON FILE IN THE OFFICES OF THE LOUISVILLE METRO PLANNING COMMISSION.
4. THIS PLAT AMENDS PLAT BOOK 32, PAGE 54 OLD HENRY FARMS SUBDIVISION.
5. THIS SITE CONTAINS A PROTECTED WATERWAY AND IS SUBJECT TO THE BUFFERING AND OTHER REQUIREMENTS OF CHAPTER 4.8 OF THE LAND DEVELOPMENT CODE.

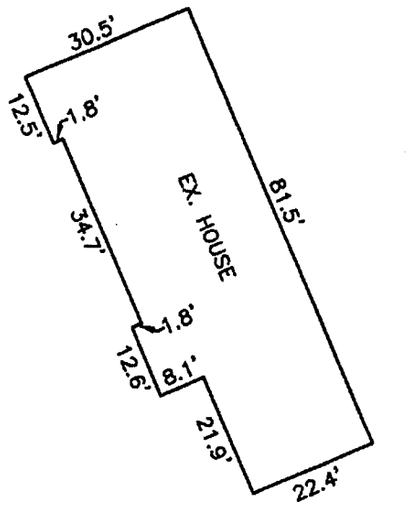
- DENOTES SET 1/2" REBAR WITH CAP #2843, UNLESS NOTED OTHERWISE.
- FOUND 1/2" REBAR WITH CAP #2843
- FOUND 1/2" IRON PIN WITH CAP #2675
- FOUND 1/2" REBAR "BENT"
- FOUND IRON PIPE WITH CAP #228



LOCATION MAP
NO SCALE

BEARINGS & DISTANCES

1	N	35°06'15" E	137.24'
2	N	25°14'38" E	274.00'
3	S	52°34'59" E	12.00'
4	N	37°25'01" E	10.00'
5	S	52°34'59" E	561.34'
6	N	52°34'59" W	559.44'
7	S	26°37'24" W	10.18'
8	N	26°37'24" E	146.63'
9	S	65°23'19" E	881.08'
10	S	65°23'19" E	856.59'
11	N	26°37'24" E	176.05'
12	S	72°24'48" W	884.71'
13	N	26°37'24" E	113.35'
14	S	26°37'24" W	65.25'
15	N	83°48'17" W	138.00'
16	N	26°37'24" E	178.00'
17	N	79°20'53" W	26.52'
18	N	30°10'23" E	298.79'
19	S	30°10'23" W	295.51'
20	N	72°24'48" W	25.62'
21	N	30°10'23" E	288.63'
22	S	30°10'23" W	285.49'
23	S	65°23'19" E	25.12'
24	N	30°10'23" E	156.06'
25	N	14°40'46" E	89.44'
26	N	40°31'35" E	112.32'



DETAIL "A"
NO SCALE

GRAPHIC SCALE 1"=200'
0 100 200 400

Certificate of Approval
Approved this 11th day of April, 2005.
Invalid if not recorded before this date: 4/5/06
By: _____
Louisville Metro Planning Commission
Approval subject to attached Certificates.
Special requirement(s): _____
DOCKET NO.: 064-05

Land Surveyor's Certificate

I hereby certify that the survey depicted by this plat was performed by persons under my direct supervision by the method of random traverse with sideshots and the unadjusted precision ratio of the traverse exceeds 1:10,000 The bearings, distances and traverse shown hereon were adjusted for closure. This survey meets or exceeds the minimum standards for a Class "A" survey as established by the state of Kentucky per 201 KAR 18:150 in effect on the date of this survey.

STATE OF KENTUCKY
DAVID A. MINDEL 2843
LICENSED PROFESSIONAL LAND SURVEYOR

DAVID A. MINDEL PLS# 2843 DATE:

MINDEL • SCOTT & ASSOCIATES, INC.
PLANNING • ENGINEERING • SURVEYING
LANDSCAPE ARCHITECTURE
4545 Bishop Lane, Suite 200
Louisville, Kentucky 40218
(502) 485-1508

MINOR SUBDIVISION PLAT

OWNER: THE RIDGE 1, LLC.
206 OLD HARRODS CREEK ROAD
LOUISVILLE, KENTUCKY 40223
DEED BOOK 8343, PAGE 235
TAX BLOCK 1699, LOT 12

OWNER: RICHARD F. & CAROLYN F. BROOKS
12714 ST. CLAIR DRIVE
LOUISVILLE, KENTUCKY 40243
DEED BOOK 8182, PAGE 54
TAX BLOCK 1699, LOT 3

OWNER: JOHN M. & KATHERINE HILLEBRAND
14319 OLD HENRY ROADNE
LOUISVILLE, KENTUCKY 40245
DEED BOOK 5123, PAGE 378
TAX BLOCK 1699, LOTS 4

LOCATION: 14611, 14315 & 14319 OLD HENRY ROAD
LOUISVILLE, KENTUCKY 40245
FORM DIST: N ZONED: R4 & R5A
DATE: 04/04/05 SCALE: 1=200'

TRANSPORTATION APPROVAL
MINOR PLAT
BY: P. Wahl
DATE: 4/5/05

METROPOLITAN SEWER DISTRICT REVIEW

This plat has been reviewed for storm drainage and sanitary sewer related considerations and Metropolitan Sewer District has no objection to this plat. However, this review does not constitute any form of construction approval for work on this site Ex. MSD Tracts sewer service to all

Storm Drainage Review — Date

J. Dougherty — 4-5-05
Sanitary Drainage Review — Date

STANDARD CERTIFICATE FORM

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of
RICHARD F. BROOKS & CAROLYN F. BROOKS Deed Book 8182, Page 54 and does hereby dedicate to public use Tracts 4 & 5.

R F Brooks
Owner (s) Signature & Title
owner

Carolyn F Brooks
Owner (s) Signature & Title

ZONING CERTIFICATE

I/WE hereby certify all of the lots of this minor subdivision and any existing buildings and improvements thereon and/or any buildings and improvements included in a building permit either applied for or approved thereon are in compliance with all the provisions of the Zoning District Regulations. Any such buildings or improvements not in compliance with all the Zoning District Regulations as described in Docket No. N/A or documentation of the existence of the building or improvements prior to the adoption of the Zoning District Regulations has been accepted by the Planning Commission staff as valid evidence of their non-conforming status.

R F Brooks
Owner (s) Signature & Title
owner

Carolyn F Brooks
Owner (s) Signature & Title

CERTIFICATE OF ACKNOWLEDGMENT

State of Kentucky)
) SS
County of Jefferson)

I, Rhonda Logsdon, a Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of RICHARD F. BROOKS & CAROLYN F. BROOKS Deed Book 8182, Page 54 was this day presented to me by Richard F Brooks & Carolyn F Brooks, known to me, who executed Certificates in my presence and acknowledge it to be (her, his, their) their free act and deed.

Witness my hand and seal this 4th day of April, 2005
My Commission expires: 30th day of August, 2006

Rhonda Logsdon
Notary Public

Mindel, Scott & Associates, Inc.
Planning Engineering Surveying
4545 Bishop Land, Suite 200
Louisville, KY 40218
(502) 485-1508

STANDARD CERTIFICATE FORM

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of THE RIDGE 1, LLC. Deed Book 8343, Page 235 and does hereby dedicate to public use Tract N/A shown thereon.

Owner (s) Signature & Title

ZONING CERTIFICATE

I/WE hereby certify all of the lots of this minor subdivision and any existing buildings and improvements thereon and/or any buildings and improvements included in a building permit either applied for or approved thereon are in compliance with all the provisions of the Zoning District Regulations. Any such buildings or improvements not in compliance with all the Zoning District Regulations as described in Docket No. N/A or documentation of the existence of the building or improvements prior to the adoption of the Zoning District Regulations has been accepted by the Planning Commission staff as valid evidence of their non-conforming status.

Owner (s) Signature & Title

CERTIFICATE OF ACKNOWLEDGMENT

State of Kentucky)
) SS
County of Jefferson)

I, Rhonda Logsdon, a Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of THE RIDGE 1, LLC. Deed Book 8343, Page 235 was this day presented to me by Simon Martin, known to me, who executed Certificates in my presence and acknowledge it to be his free act and deed.
(her, his, their)

Witness my hand and seal this 17th day of March, 2005.
My Commission expires: 30th day of August, 2006.

Rhonda Logsdon
Notary Public

Mindel, Scott & Associates, Inc.
Planning Engineering Surveying
4545 Bishop Lane, Suite 200
Louisville, Kentucky 40218
(502) 485-1508

STANDARD CERTIFICATE FORM

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of
JOHN M. HILLEBRAND & KATHERINE HILLEBRAND Deed Book 5123, Page 378
and does hereby dedicate to public use N/A shown thereon.

John M Hillebrand - Owner
Owner (s) Signature & Title

Katherine Hillebrand - owner
Owner (s) Signature & Title

ZONING CERTIFICATE

I/WE hereby certify all of the lots of this minor subdivision and any existing buildings and improvements thereon and/or any buildings and improvements included in a building permit either applied for or approved thereon are in compliance with all the provisions of the Zoning District Regulations. Any such buildings or improvements not in compliance with all the Zoning District Regulations as described in Docket No. N/A or documentation of the existence of the building or improvements prior to the adoption of the Zoning District Regulations has been accepted by the Planning Commission staff as valid evidence of their non-conforming status.

John M Hillebrand - Owner
Owner (s) Signature & Title

Katherine Hillebrand - owner
Owner (s) Signature & Title

CERTIFICATE OF ACKNOWLEDGMENT

State of Kentucky)
) SS
County of Jefferson)

I, Deborah Whitten, a Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of
JOHN M. HILLEBRAND & KATHERINE HILLEBRAND Deed Book 5123, Page 378
was this day presented to me by
John Hillebrand & Katherine Hillebrand,
known to me, who executed Certificates in my presence and acknowledge it to be
their free act and deed.
(her, his, their)

Witness my hand and seal this 17 day of March, 2005.
My Commission expires: 18 day of December, 2007.

Deborah C Whitten
Notary Public

Mindel, Scott & Associates, Inc.
Planning Engineering Surveying
4545 Bishop Land, Suite 200
Louisville, KY 40218
(502) 485-1508

Document No.: DN2005084424
Lodged By: salyers
Recorded On: 05/26/2005 02:09:36
Total Fees: 46.00
Transfer Tax: 20.00
County Clerk: BOBBIE HOLSCLAW
Deputy Clerk: YOLLOG2

END OF DOC

Appendix N7 – Woodmont Phase 1A

DB 07273 PG 0362

WARRANTY DEED

THIS **WARRANTY DEED** made and entered into as of this 30th day of June, 1999, by and between:

JOHN R. SMITH and ELAINE M. SMITH, husband and wife,
12107 Locust Lane
Anchorage, Kentucky 40223 ("GRANTORS")

and

WOODMONT, LLC, a Kentucky limited liability company
325 W. Main St.,
1802 Waterfront Plaza
Louisville, Kentucky 40202 ("GRANTEE")

WITNESSETH:

That for and in consideration of the sum of Five Hundred Thirty-six Thousand Seven Hundred Eighty and 28/100 Dollars ($536,780.28) the receipt of which is hereby acknowledged, the Grantors hereby convey to GRANTEE, its successors and/or assigns forever, with covenant of General Warranty the following described real property, together with all appurtenants thereto, located in Louisville, Jefferson County, Kentucky, to-wit

BEING Tracts 1 and 3 (comprising in total 25 acres) as shown on the Plat of Minor Subdivision approved by the Louisville and Jefferson County Planning Commission on May 27, 1999, Docket No. 121-99, attached hereto and made a part hereof.

Being a part of the property acquired by Grantors herein by Deed dated February 2, 1984 and filed of record in Deed Book 5404, Page 329, in the Office of the Clerk of Jefferson County, Kentucky.

TO HAVE AND TO HOLD the above-described real property, together with all appurtenances and privileges thereunto belonging, unto Grantee, its successors and/or assigns forever, and the Grantors hereby release and relinquish all their right, title and interest in and to said real property; and the Grantors do hereby covenant that they are lawfully seized in fee simple of said real property, that they have good and lawful right to sell and convey the same as herein done,

and that the title thereto is clear and unencumbered, except as hereinafter stated, the Grantors WARRANT GENERALLY the title thereto.

It is understood and agreed by and between the Parties hereto that this conveyance is made subject to and there are excepted from the foregoing warranties and covenants of title the following:

1. All easements, restrictions, and covenants apparent or of record in the Jefferson County, Kentucky Court Clerk's Office affecting the above-described real property, and all zoning and building restrictions, regulations, and ordinances.

2. All ad valorem taxes for 1999 which will be prorated between the parties and all future taxes to be assessed upon and against the above-described real property, which the Grantee hereby assumes and agrees to pay.

IN TESTIMONY WHEREOF, witness the signatures of the GRANTORS as of the day and date first above written.

JOHN R. SMITH

ELAINE M. SMITH

COMMONWEALTH OF KENTUCKY
COUNTY OF JEFFERSON

The foregoing Deed was sworn to, subscribed and acknowledged before me this 30th day of June, 1999, by John R. Smith and Elaine M. Smith.

Notary Public
State at Large, Kentucky
My Commission Expires: 11/17/01

CONSIDERATION CERTIFICATE

We, Grantors and Grantee, do hereby certify pursuant to KRS Chapter 382 that $536,780.28 is the true, correct and full consideration paid for the property herein conveyed. We further certify our understanding that falsification of the stated consideration or sale price of the property is a Class D felony, subject to one to five years imprisonment and fines up to $10,000.00.

GRANTORS:

John R. Smith
JOHN R. SMITH

Elaine M. Smith
ELAINE M. SMITH

GRANTEE:
WOODMONT, LLC, a Kentucky limited liability company

BY: William H. Cull
Title: MEMBER

COMMONWEALTH OF KENTUCKY
COUNTY OF JEFFERSON

The foregoing Consideration Certificate was sworn to, subscribed and acknowledged before me this 30th day of June, 1999 by John R. Smith and Elaine M. Smith.

Notary Public
State at Large, Kentucky
My Commission Expires: 11/17/01

COMMONWEALTH OF KENTUCKY
COUNTY OF JEFFERSON

Subscribed, sworn to and acknowledged before me this 30th day of June, 1999, by William H Cull, in his capacity as member of WOODMONT, LLC, a Kentucky limited liability company.

Notary Public
State at Large, Kentucky
My Commission Expires: 11/17/01

THIS INSTRUMENT PREPARED BY:

William B. Bardenwerper
William B. Bardenwerper
Bardenwerper & Lobb, PLLC
8311 Shelbyville
Louisville, Kentucky 40222

[Woodmontsmith.ded]

DB 07273 PG 0365

DENOTES 5/8" IRON PIN SET W/CAP STAMPED D.L. KRAUS, L.S. NO. 2613 (UNLESS OTHERWISE NOTED)

DENOTES EX. 5/8" IRON PIN W/CAP STAMPED D.L. KRAUS, L.S. NO. 2613 (UNLESS OTHERWISE NOTED)

DENOTES EX. P.K. NAIL

THIS PLAT IS SUBJECT TO EASEMENTS OF RECORD.

BEARING DATUM USED FOR THIS PLAT IS BASED ON KENTUCKY STATE PLANE COORDINATE NORTH ZONE, NAD 83 ADJUSTMENT. (N 44°34'53" E)

THERE SHALL BE NO DIRECT ACCESS TO REAMERS ROAD FROM TRACT 1.

ACCESS EASEMENT MUST CONFORM TO ORDINANCE 17, SERIES 1991, JEFFERSON FISCAL COURT.

BEARINGS & DISTANCES

1	S 35°47'30" E	48.15'	R=193.75'
2	S 44°27'02" W	31.33'	
3	N 39°03'21" W	31.60'	R=1125.00'
4	S 84°05'24" E	27.83'	R=235.00'
5	S 16°11'37" E	50.08'	
6	S 87°46'22" E	82.68'	
7	N 02°13'38" E	50.00'	
8	N 42°46'22" W	42.43'	R=30.00'
9	N 04°22'49" E	22.54'	R=300.00'
10	N 44°34'56" E	46.66'	
11	S 37°04'46" E	139.58'	R=470.00'
12	S 45°25'48" E	154.67'	
13	S 87°46'22" E	13.34'	

LOCATION MAP
NO SCALE

REAMERS ROAD
TRACT 1
TRACT 2
1775'±
OLD HENRY ROAD

EX. METAL POST 14.20' W 0.70' S
EX. WOOD POST 14.16' W ON LINE
S 28°32'25" E 175.88'
℄ REAMERS RD. 30' R/W (MIN.)
S 45°24'21" E 137.04' R=235.90'
278.67'
S 62°18'58" E
N 28°32'25" W 72.06'
TRACT 3 - 0.464 ACRES DEDICATED TO R\W
N 62°18'58" W 270.43'
286.70'
S 44°27'02" W
LOT 18A

WOODMONT, LLC. D.B. 6998 PG. 597
2807.52'
1427.86'
TRACT 1 24.536 Ac.
S 51°44'56" W 141.78'
S 30°08'22" W 200.00'
S 51°38'20" E 183.10'
LOT 28
LOT 27
LOT 26
LOT 25
LOT 24
LOT 23
LOT 22
LOT 21
LOT 20
LOT 19
EX. WOODMONT PARK LANE 50' R/W
WOODMONT PHASE 1B P.B. 44 P. 97
WOODMONT PARK LANE 50' PUBLIC UTILITY, SEWER, DRAINAGE & PRIVATE ACCESS ESMT. "GRANTED"
S 09°18'15" W 145.99'
N 87°46'22" W 50.00'
N 89°28'19" W 341.06'
N 02°13'38" E 92.97'
S 02°30'57" W 145.41'
LOT 29
LOT 30
LOT 31
LOT 32
LOT 33
LOT 34
LOT 35
S 84°50'17" E 102.12'
S 12°45'57" E 151.18'
EX. WOODMONT PARK LANE 50' R/W
S 13°13'24" E 321.06'
170.00'
151.06'
N 02°13'38" E 136.83'
N 87°46'22" W 220.93'
N 75°28'12" W 146.50'
N 66°18'15" W 340.80'
N 81°34'57" W 318.34'
LARRY R. & DESSIE M. ANDERSON D.B. 6000 PG. 233
N 44°34'53" E 1179.66'
EX. FENCE POST 2.2' N
TRACT 2 26.920 Ac.
987.84'
N 39°04'06" W
1144.61'
727.77'
S 42°16'25" W 142.42'
S 40°28'22" W
DARREL & DEBRA ROGERS D.B. 5350 PG. 876
ARTHUR L. ROBERTS D.B.6019 PG. 474
EX. PIPE
EX. TREE
N 22°19'47" W 250.15'
S 53°18'38" W
LOUIS K. KLEMENZ D.B. 6562 PG. 710
EX. FENCE POST 1.7' N 0.2' E
LEWIS & LINDA CARLISLE D.B. 5853 PG. 716
LEWIS & LINDA CARLISLE D.B. 5981 PG. 675
DONALD & GLENNA CURRIER D.B. 6400 PG. 746
VERNON & CLORA PRIDEMORE D.B. 5064 PG. 617

ADJOINING OWNERS

LOTS 18A,25-29,32 & 33 ARE OWNED BY WOODMONT, LLC.

THIS IS A CLASS "A" SURVEY
UNADJUSTED ERROR OF CLOSURE WAS 0.65 FT. AND PRECISION RATIO OF 1 : 17567. THIS SURVEY WAS ADJUSTED BY LEAST SQUARES.

GRAPHIC SCALE
0 75 150 300 600

STATE OF KENTUCKY
DENNIS L. KRAUS
2613
LICENSED

LAND SURVEYOR'S CERTIFICATE

I hereby certify that the survey for this plat was made under my supervision and that the angular and linear measurements shown thereon are correct to the best

CERTIFICATE OF APPROVAL

Approved this 27th day of May, 1999.
Invalid if not recorded before 05/20/2000
LOUISVILLE AND JEFFERSON COUNTY
PLANNING COMMISSION

Docket No. 121-99

PLAT APPROVAL

To prevent objections as submitted. Must comply with Jefferson County Ordinance # 17 subject to construction review and approval.

DATE: 5-17-99

BY:

FIRE DISTRICT: M-Town

COMMENTS:

METROPOLITAN SEWER DISTRICT REVIEW

This plat has been reviewed for storm drainage and sanitary sewer related considerations and Metropolitan Sewer District has no objection to this plat. However, this review does not constitute any form of construction approval for work on this site.

R. Stamm — 5/19/99
Storm Drainage Review — Date

OLDHAM CO. —
Sanitary Sewer Review — Date

MINOR PLAT APPROVAL
JEFFERSON COUNTY
DEPT. OF PUBLIC WORKS
BY: OK
DATE: 5/14/99

LOUISVILLE AND JEFFERSON COUNTY
HEALTH DEPARTMENT

THIS APPROVAL IS FOR LAND CONFIGURATION ONLY. IT DOES NOT CONSTITUTE APPROVAL FOR SEWER CONNECTION OR ON-SITE SEWAGE SYSTEM.

05/17/99
BY: William Chamberlain (date)
COMMENTS:

ZONING CERTIFICATE

DB 07273 PG 0367

I hereby certify all of the lots of this minor subdivision and any existing buildings and improvements thereon and/or any buildings and improvements included in a building permit either applied for or approved thereon, are in compliance with all of the provisions of the Zoning District Regulations. Any such lots or improvements not in compliance with the Zoning District Regulations have been granted all necessary variances by the Board of Zoning Adjustment as described in Docket N/A or documentation of the existence of the buildings or improvements prior to the adoption of the Zoning District Regulations has been accepted by the Planning Commission staff as valid evidence of their non-conforming status.

John R. Smith
OWNER

Elaine M Smith
OWNER

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of John R. and Elaine M. Smith, Deed Book 5404, Page 329, Tax Block 15, Lot 28 and does hereby dedicate to public use Tract 3 shown thereon.

John R. Smith
OWNER

12107 Locust Ln. Anchorage, Ky.
ADDRESS

Owner
TITLE

Elaine M Smith
OWNER

12107 Locust Ln Anchorage Ky
ADDRESS

Owner
TITLE

CERTIFICATE OF ACKNOWLEDGEMENT

State of Kentucky)
)SS
County of Jefferson)

I, Karen L Foster, a notary public in and for the County aforesaid, do certify that the foregoing plat of John R. and Elaine M. Smith, Deed Book 5404, Page 329, Tax Block 15 Lot 28 was this day presented to me by John R Smith & Elaine M Smith known to me, who executed the Certificate in my presence and acknowledged it to be a free act and deed.

Witness my hand and seal this 14 day of May, 1999.
My commission expires on the 16 day of Oct, 1999.

Karen L Foster
Notary Public

MINOR SUBDIVISION PLAT

DEDICATION OF PUBLIC, SEWER, DRAINAGE AND PRIVATE ACCESS EASEMENTS

THIS INSTRUMENT made and entered into on this ____ day of _____, 1999 by the undersigned Owners, John R. and Elaine M. Smith per Deed Book 5404, Page 329 confers the rights and obligations regarding certain real property as follows:

This is to certify that the undersigned GRANTOR is the owner of the land shown on the plat attached hereto and made a part hereof and that a perpetual easement for roadway, courts, drives, public utilities, including, but not necessarily limited to, water, electric, gas, telephone, cable, sewer and drains are hereby dedicated and reserved on, over and under the strips of land and spaces so designated on the attached plat as "Access and Utility Easements," together with the right of ingress and egress over GRANTOR'S property to and from the easements for construction, operation, maintenance, and reconstruction of the aforesaid public utilities, sewers and drains.

No permanent structure of any kind shall be placed on, over or under the land within the perpetual easements. The perpetual easements shall run with the land and shall be for the benefit and use of the GRANTOR'S property and all lands abutting the aforesaid easements.

Access easements, to the extent they are not occupied by a public utility, shall be maintained by the GRANTOR, his heirs, executors, administrators, assigns or the owners of the underlying fee simple title until said easements are accepted for maintenance by the public utilities.

5/14/99
Date

John R. Smith

5/14/99
Date

Elaine M. Smith
12107 Locust Lane Drive
Prospect, Kentucky 40059

STATE OF KENTUCKY)
)SS
COUNTY OF JEFFERSON)

The foregoing Dedication of Access and Utility Easements was signed and acknowledged before me by John R. Smith, Elaine M. Smith GRANTOR, this 14 day of May 1999.

Karen L. Potts
NOTARY PUBLIC, KENTUCKY STATE-AT-LARGE

My Commission expires: Notary Public, State at Large, KY My commission expires Oct. 16, 1999

EASEMENT, RESTRICTIONS AND MAINTENANCE REQUIREMENTS FOR TWO LOTS ON A MINOR PLAT

THIS INSTRUMENT made and entered in to on this _____ day of _____, 1999 by the undersigned Owners, John R. and Elaine M. Smith, per Deed Book 5404, Page 329 confers the rights and obligations regarding certain real property as follows:

1. The owner(s) or occupants of Tract 2 are hereby granted the easement shown on the attached plat as 50' Public Utility, Sewer and Drainage and Access Easement "Granted" (the "Easement") for ingress and egress across the property designated as Tract 1. Said easement shall be for the benefit of said owners or occupants, their guests, and invitees.

2. The rights conveyed by said Easement are limited to such as is customarily incidental to single family residential usage of the lot.

3. All costs or expenses required for the maintenance, repair, or rebuilding of the Easement shall be borne solely by the owners of Tract 1.

4. The Easement shall not be dedicated to or maintained by the public except by agreement of the owners of said Tract 1 and approval of the Louisville and Jefferson County Planning Commission after finding that it meets all standards required for a newly created public road.

5. The provisions of this document may not be modified except by agreement of the owners of said Tract 1 and approval of the Louisville and Jefferson County Planning Commission.

6. The provisions of this instrument shall be considered a covenant running with the land, shall be binding on the parties hereto and their respective successors, heirs, and assigns, and may be enforced by any one or more owners of Tracts 1 and 2 in a civil action in law or equity.

7. The provisions hereof are severable, and if one or more of said provisions are held invalid, the remaining provisions shall remain in full force and effect.

In testimony whereof, witness the signatures of the owners of said lots as of the day and year set out above.

John R. Smith

Elaine M. Smith

State of Kentucky)
)SS
County of Jefferson)

I, Karen L Porter, a notary public in and for the County aforesaid, do hereby certify the foregoing instrument was this day presented to me by John R and Elaine M Smith, who acknowledged it to be a free act and deed.
Witness my hand this 15 day of May, 1999.

My Commission expires on Notary Public, State at Large, KY My commission expires Oct. 16, 1999

Karen L Porter
NOTARY PUBLIC

This instrument prepared by:

Sabak, Wilson & Lingo, Inc.
Engineers, Landscape Architects
& Planners
315 West Market Street
Louisville, Kentucky 40202

Document No.: DN1999109092
Lodged By: STITES & HARBISON
Recorded On: 06/30/1999 11:52:18
Total Fees: 561.00
Transfer Tax: 537.00
County Clerk: Bobbie Holsclaw
Deputy Clerk: PENNIM

FOR: John R. and Elaine M. Smith

08X44

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges that same to be his plat of:

WOODMONT PHASE 1A

and does hereby dedicate to public use the WOODMONT PARK LANE, WOODMONT PARK PLACE, HARTWOOD PLACE, REAMERS ROAD & OLD HENRY ROAD

Street Names.

OWNERS: Thomas F. Buxton, Member

CERTIFICATE OF ACKNOWLEDGMENT

STATE OF KENTUCKY
COUNTY OF JEFFERSON SS

I, Cathy E. Sharman

a Notary Public in and for the County aforesaid do hereby certify that the foregoing plat of Woodmont LLC

was this day presented to me by Thomas F. Buxton

known to me, who executed the Certificate in my presence and acknowledge it to be his free act and deed.

Witness my hand and seal this 19th day of November, 19 98

My Commission expires the 4th day of March, 19 99

Cathy E. Sharman
Notary Public

CERTIFICATE OF APPROVAL

Approved this 20th day of November, 19 98

LOUISVILLE AND JEFFERSON COUNTY
PLANNING COMMISSION

David M. Hollwell

DOCKET NO. 10-29-98

CERTIFICATE OF RESERVATION OF ELECTRIC & TELECOMMUNICATIONS EASEMENTS

The spaces outlined by dashed lines and marked "Electric and Telecommunication Easement," are hereby reserved and easements for electric and telecommunication utility purposes, which include: (1) the right of ingress and egress across all lots, access areas and ways to and from the easements; (2) the right to cut down or trim any trees within the easement; (3) the right to trim or cut down any trees outside easement area within 10' of the closest conductor within the easement of a public way; (4) the right to cut down or trim any trees on private property that may be so defective as to present a hazard to the utility lines after reasonable notice to the property owner; (5) the right of any utility company using said easement to permanently remove all trees that may interfere with the original construction of the electric lines and/or telecommunication lines to serve this subdivision.

(A) All property owners electric utility service lines shall be underground at locations designated by Louisville Gas and Electric Company (from L.G. & E.'s termination point throughout length of service line to customer's building) and title thereto shall remain in, and the cost of installation and maintenance thereof shall be borne individually by the respective lot owner upon which the said service line is located.

Appropriate easements are hereby dedicated and reserved to each property owner together with the right ingress and egress over abutting lots or properties to install, operate and maintain electric service to L.G. & E.'s termination points. Electric service lines, as installed, shall determine the exact location of said easements.

(B) The electric and telecommunication easements shown on this plat shall be maintained and preserved in their present condition and no encroachment shall be placed in said easements. No structure of any kind shall be made by any person or lot owner without the consent of the Louisville Gas and Electric Company and BellSouth Telecommunications, Inc.

(C) Easements for overhead electric transmission and distribution feeder lines, poles and equipment appropriate to convection therewith are reserved over, across and under all spaces (including park, open and drainage space areas), outlined by dashed lines and designated for underground and overhead facilities.

Above ground electric transformers and pedestals may be installed at appropriate points in any electric easement.

In consideration of L.G. & E.'s bringing service to the property shown on this plat it is granted the right to make further extensions of its lines from all overhead and underground distribution lines.

(D) Above ground telecommunication facilities and pedestals may be installed at appropriate points in any telecommunication easement.

NOTE:
Also the right to overhang lots with service wires across adjoining lots.

OWNERS: Thomas F. Buxton, Member

CERTIFICATE OF RESERVATION OF SANITARY SEWER AND DRAINAGE EASEMENTS

An easement for sanitary sewer and drainage purposes is hereby reserved on, over and under the strips of land and spaces as defined and bounded by dashed lines, marked "Sanitary Sewer and Drain Easement", together with the rights of ingress and egress over all lots to and from the easements for construction, operation and maintenance of sewers and drains, over said land. No permanent structure of any kind is to be placed on, over or under the land which is subject to said easements. The easements shall be for the benefit of the land in the subdivision and other land which naturally drains into the sewers and drains constructed in the easements and the Louisville and Jefferson County Metropolitan Sewer District, or any other public agency having legal authority for such construction, or by others subject to approval by the aforesaid Sewer District.

OWNERS: Thomas F. Buxton, Member

CERTIFICATE OF RESERVATION OF GAS EASEMENT

The spaces outlined by dashed lines and marked "Gas Easements" are hereby reserved as easements for underground gas lines and appurtenances thereof, including the right to construct, operate, maintain, repair and remove such underground gas lines and appurtenances, and the right of ingress and egress over all lots to and from the easements and the right to cut down any trees within the easements that may interfere with the installation or operation of the lines. No permanent structure shall be erected within the easements. Any gas utility using said easement at utility may remove permanent structure or obstruction within the easement. Fences, shrubbery and gardens may occupy easement area at the property owner's risk.

(A) All property owners gas utility supply lines shall be at locations designated by Louisville Gas and Electric Company (from L.G. & E.'s termination point throughout length of service line to customer's building) and title thereto shall remain in, and the cost of installation and maintenance thereof shall be borne individually by the respective lot owner upon which the said gas line serves.

Appropriate easements are hereby dedicated and reserved to each property owner, together with the right of ingress and egress over all lots or properties to install, operate and maintain gas lines to L.G. & E.'s termination points. Gas lines, as installed, shall determine the exact location of said easements.

OWNERS: N/A

CERTIFICATE OF RESERVATION OF DRAINAGE RETENTION BASIN EASEMENT

Easements for drainage and ponding purposes are hereby reserved on and over the land and spaces as defined and bounded by dashed lines marked "Drainage Retention Basin Easement", together with the right of ingress and egress over all lots to and from the easements for construction, operation, maintenance and reconstruction of retention basins and other drainage improvements. No permanent structure of any kind shall be placed on or over the land within said easements except for drainage structures, pavements and landscape planting. The easements shall be for the benefit of the land in the subdivision and additional drainage improvements may be constructed by Louisville and Jefferson County Metropolitan Sewer District, or any other public agency having legal authority for such construction, or by others subject to approval of the aforesaid Sewer District or Jefferson County Works Department. Until said easements are accepted for maintenance by said Sewer District, Jefferson County, or another responsible public agency, said areas shall be maintained by the owners of the underlying fee simple title.

OWNERS: N/A

PROPERTY OWNER'S OBLIGATION

Certain improvements in this subdivision are required by the Metropolitan Subdivision Regulations as specified by an approved construction plan on file in the office of the Director of Works. It is the obligation of every property owner in the subdivision not to damage, alter or destroy these improvements and not to alter any condition or activity on his property that will impair the proper functioning of these improvements. For violation of this provision, the property shall be subject to the imposition of a lien for the amount necessary to remedy the violation which may be enforced in the same manner that mortgages are enforced, and persons responsible shall be subject to fine.

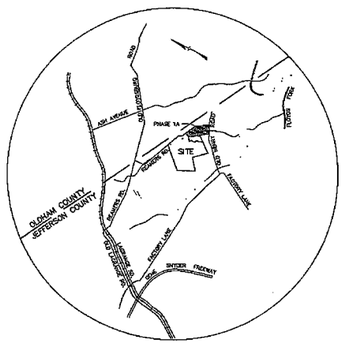
NOTICE OF BOND REQUIREMENT

After construction approval and release of the undersigned subdivider's bond by the Louisville and Jefferson County Planning Commission, the owner of any lot may be required to post a cash bond in the amount of $200.00 as a condition of obtaining a building permit pursuant to Section 3.70 of the Metropolitan Subdivision Regulations.

CERTIFICATE OF RESERVATION OF WALL AND LANDSCAPE EASEMENT

An easement for Wall and Landscape purposes is hereby reserved on, over and under the strips of land and spaces defined and bounded by dashed lines marked "Wall and Landscape Easement" for the installation, maintenance and repair of Walls and Landscaping. The easement(s) shall be for the benefit of WOODMONT, LLC., their Agents or Assigns.

OWNERS: Thomas F. Buxton, Member



LOCATION MAP
NO SCALE

NOTES:

1.) THERE SHALL BE NO FURTHER SUBDIVISION OR RESUBDIVISION OF THE LAND INTO A GREATER NUMBER OF LOTS THAN SHOWN ON THIS PLAT, UNLESS APPROVED BY THE PLANNING COMMISSION.

2.) THE LOTS SHOWN ON THIS PLAT SHALL BE LIMITED TO SINGLE FAMILY RESIDENTIAL USE AND SHALL OBSERVE THE YARD REQUIREMENTS OF THE ZONING DISTRICT IN WHICH EACH IS LOCATED.

3.) THE DEPTH OF ALL ROADSIDE SWALES, INCLUDING DRIVEWAY ENTRANCES AND CULVERTS UNDER DRIVEWAYS, SHALL BE ** INCHES BELOW FINISHED STREET CENTERLINE ELEVATION UNLESS OTHERWISE NOTED.

** NOT APPLICABLE SINCE ALL STREETS ARE CURB AND GUTTER.

4.) THIS PLAT IS SUBJECT TO DEED OF RESTRICTION AS RECORDED IN DEED BOOK , PG. .

5.) LOTS 1-15 & 18A SHALL HAVE NO DIRECT ACCESS TO REAMERS ROAD.

6.) LOTS 1 & 52 SHALL HAVE NO DIRECT ACCESS TO OLD HENRY ROAD.

7.) ALL NECESSARY RIGHTS FOR SANITARY SEWER AND DRAINAGE PURPOSES ARE HEREBY RESERVED THROUGH AREAS MARKED "OPEN SPACE".

8.) NO OPENINGS SHALL BE BELOW THE ELEVATIONS LISTED FOR THE FOLLOWING LOTS.

LOT NO.	ELEVATION
16-17	676.0
45-46	665.0
49	663.0
50	662.0
51	661.0

9.) CONSTRUCTION FENCING SHALL BE ERECTED PRIOR TO ANY GRADING OR CONSTRUCTION ACTIVITIES, PREVENTING COMPACTION OF ROOT SYSTEMS OF TREES TO BE RESERVED. THE FENCING SHALL ENCLOSE THE AREA BENEATH THE DRIPLINE OF THE TREE CANOPY AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IS COMPLETED NO PARKING, MATERIALS STORAGE, OR CONSTRUCTION ACTIVITIES SHALL BE PERMITTED WITHIN THE FENCED AREA.

10.) THIS PROPERTY IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS DETERMINED FROM REVIEW OF F.I.R.M. FLOOD MAP NO. 210120-0105-D DATED FEBRUARY 2, 1994.

11.) BEARING DATUM USED FOR THIS SURVEY IS BASED ON KENTUCKY STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NAD 83 ADJUSTMENT.

12.) LOTS 2 AND 3 SHALL OBSERVE THE CEMETERY BUFFER, AS SHOWN ON THE PLAT, ADJACENT TO THE CEMETERY LOCATED AT THE REAR OF LOTS 2 & 3. THE AREA SHALL BE PRESERVED AS OUTLINED IN ARTICLE 9.8 OF THE DEVELOPMENT CODE (INACTIVE, PRIVATE OR FAMILY CEMETERIES). "ALL BUILDINGS AND STRUCTURES OTHER THAN FENCES SHALL BE LOCATED AT LEAST 30 FEET FROM THE PERIMETER OF ANY INACTIVE PRIVATE OR FAMILY CEMETERY. GRADING, PAVING AND LAND DISTURBANCE WITHIN 30 FEET OF THE PERIMETER SHALL BE MINIMIZED."

13.) THE LAND DEVELOPMENT AND TRANSPORTATION COMMITTEE HAS GRANTED A WAIVER UNDER SECTION 1.90 OF THE METROPOLITAN SUBDIVISION REGULATIONS TO NOT REQUIRE SIDEWALKS TO BE PLACED ALONG THE SOUTH SIDE OF REAMERS ROAD.

14.) DUE TO THE DIVISION OF PHASE 1 INTO TWO PHASES 1A & 1B, THE LOT NUMBERS ON THIS PLAT ARE NON SEQUENTIAL. LOTS 19-37 HAVE BEEN SHOWN ON PHASE 1B.

BEARINGS & DISTANCES

1	N 06°18'11" W	41.47'	R=50.00'
2	S 13°31'27" W	35.29'	R=30.00'
3	S 89°56'23" W	24.42'	R=50.00'
4	S 34°44'37" E	57.87'	R=225.00'
5	S 43°53'54" E	13.85'	R=225.00'

℄ CURVE DATA

1	2	3
Δ = 35°02'43"	Δ = 124°11'40"	Δ = 8°39'37"
R = 300.00'	R = 200.00'	R = 675.00'
T = 94.72'	T = 377.69'	T = 39.28'
L = 183.50'	L = 433.52'	L = 78.46'

BUILDER'S OBLIGATION

The builder of each lot in this subdivision is required to grade the lot so that proper lot drainage is in conformance with the approved Complete Drainage Plan for the subdivision and all drainage from this lot is directed to a public drainage facility as easement or right-of-way.

CERTIFICATE OF RESERVATION OF WATER LINE EASEMENT

Permanent easement(s) for water mains and appurtenances are hereby reserved on, over, under and through the strip(s) of land as defined and bounded by dashed lines marked "Louisville Water Company Easements" together with the right of ingress and egress over all lots to and from the easement(s) for constructing, repairing, removing, replacing, relocating, reconstructing, maintaining and enlarging of water mains. No permanent structure of any kind shall be erected or the grade of the surface of the land changed within the said easement(s) without written consent of Louisville Water Company. Fences, shrubbery, and gardens may occupy easement area at the owner's risk. Temporary rights are hereby reserved to use land adjacent to the permanent easement(s) herein granted for storage and movement of excavated earth, rock, construction materials, tools, and equipment during construction of said water lines.

OWNERS: N/A

LAND SURVEYOR'S CERTIFICATE

I hereby certify that this plat and survey were made under my supervision, and that the angles and linear measurements as witnessed by monuments shown hereon, are true and correct to the best of my knowledge and belief. This survey and plat meets or exceeds the minimum standards of governing authorities

Donnie L. Kraus #2613 11/19/98
Signature P.L.S. # Date

STATE OF KENTUCKY
DONNIE L. KRAUS
2613
REGISTERED
LAND SURVEYOR

THIS IS A CLASS "A" SURVEY
UNADJUSTED ERROR OF CLOSURE WAS 0.65 FT. AND PRECISION RATIO OF 1 : 17567. THIS SURVEY WAS ADJUSTED BY LEAST SQUARES.

FIELD WORK CONDUCTED - OCTOBER, 1997

TOTAL AREA IN SITE : 21.390 Ac.
TOTAL NO. NON-BUILDABLE SITES : 2
TOTAL NO. BUILDING SITES : 31
—•— DENOTES EX. 5/8" IRON PIN W/CAP STAMPED D.L. KRAUS, L.S. NO. 2613
—○— DENOTES 5/8" IRON PIN SET W/CAP STAMPED D.L. KRAUS, L.S. NO. 2613 (UNLESS OTHERWISE NOTED)

GRAPHIC SCALE
0 30 60 120

WOODMONT

PHASE 1A
RECORD PLAT

Recorded In Plat Book No. 44 Page 80
Part No.

BOOK 7140 PAGE 0779

OWNER & DEVELOPER
WOODMONT, LLC.
A KENTUCKY LIMITED LIABILITY CO.
820 WATER FRONT TOWER
325 W. MAIN STREET
LOUISVILLE, KENTUCKY 40202

TAX BLOCK 15 LOTS 29 & 243 D.B. 6992 P. 275 & D.B. 6984 P. 600
NOVEMBER, 1998 SCALE: 1"=60'

SABAK, WILSON & LINGO, INC.
ENGINEERS, LANDSCAPE ARCHITECTS & PLANNERS
315 WEST MARKET STREET LOUISVILLE, KENTUCKY 40202

Document No.: 8819810779
Lodged by: WOODMONT LLC
Recorded On: 11/24/1998 09:11:27
Total Fees: 19.00
Transfer Tax: .00
County Clerk: Rebecca Jackson
Deputy Clerk: DEBBIE

08X80

44X80

H:\JOBS\1040\PLAT\1040PLAT.DWG Wed Nov 18 16:56:50 1998 PLOTTED BY: ROE

Appendix N8 – Woodmont Phase 6

CERTIFICATE OF OWNERSHIP AND DEDICATION

This is to certify that the undersigned is the owner of the land shown on this plat and hereby acknowledges the same to be the plat of:

WOODMONT, PHASE 6

and does hereby dedicate to public use OAKVISTA PLACE, OAKVISTA WAY, WHITESTONE LANE & OLD HENRY ROAD shown thereon.

OWNERS: William H. Cull
WOODMONT, LLC.

CERTIFICATE OF ACKNOWLEDGMENT

STATE OF KENTUCKY
COUNTY OF JEFFERSON SS

I, DENNIS L. KRAUS a Notary Public in and for the County aforesaid do hereby certify that the forgoing plat of WOODMONT PHASE 6 was this day presented to me by WILLIAM H. CULL known to me, who executed the Certificate in my presence and acknowledge it to be HIS free act and deed

Witness my hand and seal this 20 day of OCTOBER 2004

My Commission expires: 14 day of JUNE 2006.

NOTARY PUBLIC Dennis L. Kraus

CERTIFICATE OF APPROVAL

Approved this 21st day of October 2004

LOUISVILLE METRO PLANNING COMMISSION

DOCKET NO. 10-30-03

[signature]

CERTIFICATE OF RESERVATION OF GAS, ELECTRIC AND TELECOMMUNICATIONS EASEMENTS

The spaces outlined by dashed lines and marked "Gas, Electric and Telecommunication Easement", "Gas Easement" or "Electric and Telecommunication Easement" are hereby reserved and easements for gas, electric and telecommunication utility purposes, which include: (1) the right of ingress and egress across all lots, access areas and ways to and from the easement; (2) the right to trim or cut down any trees within the easement; (3) the right to trim or cut down any trees outside easement area within 10' of the closest conductor within the easement of a public way; (4) the right to cut down or trim any trees on private property that may be so defective as to present a hazard to the utility lines after reasonable notice to the property owner; (5) the right of any utility company using said easement to remove permanent structures or obstructions within said easement. No permanent structures shall be erected within the easement. Fences, shrubbery, and gardens may occupy easement area at property owner's risk. The developer is to remove all trees that may interfere with the original construction of the gas, electric and/or telecommunication lines to serve this subdivision.

(A) All property owners gas and electric utility service lines shall be underground at locations designated by Louisville Gas and Electric Company (from LG. & E.'s termination point throughout length of service lines to customer's building); and title thereto shall remain in, and the cost of installation and maintenance thereof shall be borne individually by the respective lot owner upon which the said service line is located.

Appropriate easements are hereby dedicated and reserved to each property owner together with the right ingress and egress over abutting lots or properties to install, operate and maintain electric service to LG. & E.'s termination points. Gas and Electric service lines, as installed, shall determine the exact location of said easements.

(B) The gas, electric and telecommunication easements shown on this plat shall be maintained and preserved in their present condition and no encroachment therein, and no change in the grade or elevation thereof shall be made by any person or lot owner without the consent of the Louisville Gas and Electric Company and BellSouth Telecommunications, Inc.

(C) Easements for overhead electric transmission and distribution feeder lines, poles and equipment appropriate in connection therewith are reserved over, across and under all spaces (including park, open and drainage space areas), outlined by dashed lines and designated for underground and overhead facilities.

Above ground electric transformers and pedestals may be installed at appropriate points in any electric easement.

In consideration of LG. & E.'s bringing service to the property shown on this plat it is granted the right to make further extensions of its lines from all overhead and underground distribution lines.

(D) Above ground telecommunication facilities and pedestals may be installed at appropriate points in any telecommunication easement.

NOTE:
Also the right to overhang lots with service wires to serve adjoining lots.

OWNERS: William H. Cull
WOODMONT, LLC.

CERTIFICATE OF RESERVATION OF SANITARY SEWER AND DRAINAGE EASEMENTS

An easement for sanitary sewer and drainage purposes is hereby reserved on, over and under the strips of land and spaces as defined and bounded by dashed lines, marked "Sanitary Sewer and Drain Easement", together with the rights of ingress and egress over all lots to and from the easements for construction, operation and maintenance of sewers and drains over said land. No permanent structure of any kind is to be placed on, over or under the land which is subject to said easements. The easements shall be for the benefit of the land in the subdivision and other land which naturally drains therein, and said sewers and drains may be constructed by the Louisville and Jefferson County Metropolitan Sewer District, or any other public agency having legal authority for such construction, or by others subject to approval by the aforesaid Sewer District.

OWNERS: William H. Cull
WOODMONT, LLC.

CERTIFICATE OF RESERVATION OF WATER LINE EASEMENT

Permanent easement(s) for water mains and appurtenances are hereby reserved on, over, under and through the strip(s) of land as defined and bounded by dashed lines marked "Louisville Water Company Easements" together with the right of ingress and egress over all lots to and from the easement(s) for constructing, repairing, removing, replacing, relocating, reconstructing, maintaining and enlarging of water mains. No permanent structure of any kind shall be erected or the grade of the surface of the land changed within the said easement(s) without written consent of Louisville Water Company. Fences, shrubbery, and gardens may occupy easement area at the owner's risk. Temporary rights are hereby reserved to use land adjacent to the permanent easement(s) herein granted for storage and movement of excavated earth, rock, construction materials, tools, and equipment during construction of said water lines.

OWNERS: N/A

CERTIFICATE OF RESERVATION OF DRAINAGE RETENTION BASIN EASEMENT

Easements for drainage and ponding purposes are hereby reserved on and over the land and spaces as defined and bounded by dashed lines marked "Drainage Retention Basin Easement", together with the right of ingress and egress over all lots to and from the easements for construction, operation, maintenance and reconstruction of retention basins and other drainage improvements. No permanent structure of any kind shall be placed on or over the land within said easements except for drainage structures, pavements and landscape planting. The easements shall be for the benefit of the land in the subdivision and additional drainage improvements may be constructed by Louisville and Jefferson County Metropolitan Sewer District, Jefferson County, or by any other public agency having legal authority for such construction, or by others subject to approval of the aforesaid Sewer District or Jefferson County Works Department. Until said easement areas are accepted for maintenance by said Sewer District, Jefferson County, or another responsible public agency, said areas shall be maintained by the owners of the underlying fee simple title.

OWNERS: N/A

BUILDERS OBLIGATION

The builder of each lot in this subdivision is required to grade the lot so that cross-lot drainage is in conformance with the approved Composite Drainage Plan for the subdivision and all drainage from the lot is directed to a public drainage facility in easement or right-of-way

PROPERTY OWNER'S OBLIGATION

Certain improvements in this subdivision are required by the Metropolitan Subdivision Regulations as specified by an approved construction plan on file in the office of the Director of Works. It is the obligation of every property owner in the subdivision not to damage, alter or destroy those improvements and not to allow any condition or activity on his property that will impair the proper functioning of those improvements. For violation of this provision, the property shall be subject to the imposition of a lien for the amount necessary to remedy the violation which may be enforced in the same manner that mortgages are enforced, and persons responsible shall be subject to fine.

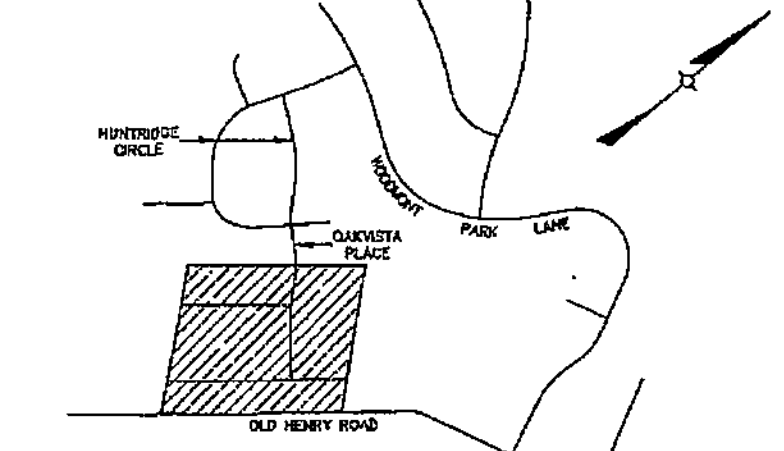
NOTICE OF BOND REQUIREMENT

After construction approval and release of the undersigned subdivider's bond by the Louisville and Jefferson County Planning Commission, the owner of any lot may be required to post a cash bond as a condition of obtaining a building permit pursuant to Section 2.70 of the Metropolitan Subdivision Regulations.

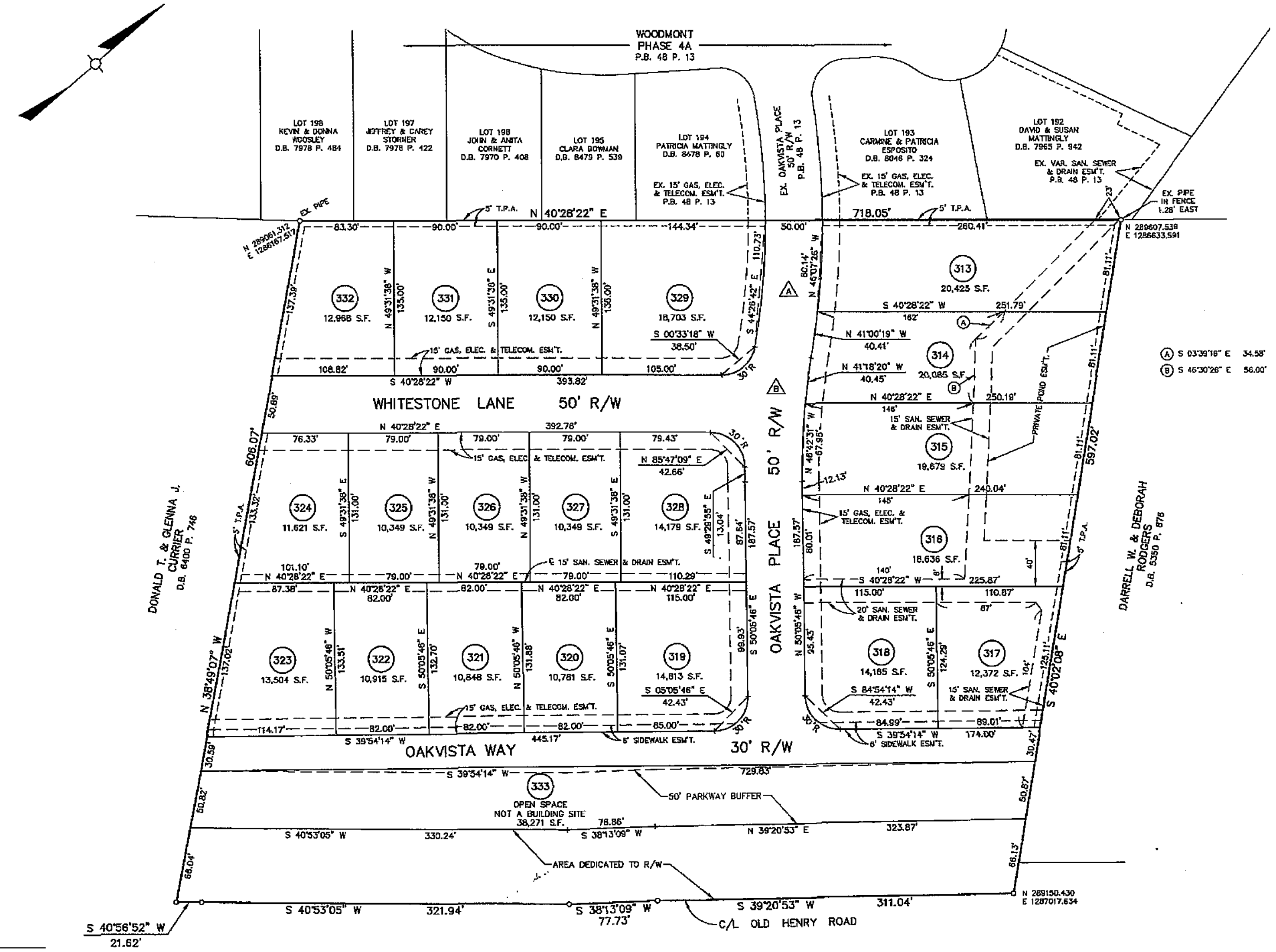
MINIMUM YARD REQUIREMENTS (R-4 ZONING)				
FRONT	SIDE			REAR
	TOTAL	MINIMUM	STREET	
30'	10'	5'	30'	25'

THE FOLLOWING WAIVER HAS BEEN GRANTED UNDER SECTION 6.2.1 OF THE LAND DEVELOPMENT CODE OF LOUISVILLE-JEFFERSON COUNTY, KENTUCKY.

1.) TO EXCLUDE SIDEWALK ALONG THE EASTERN SIDE OF OAKVISTA WAY.



LOCATION MAP
NO SCALE



℄ CURVE DATA

A	B
R = 650.01'	R = 600.00'
Δ = 10°14'14"	Δ = 10°48'22"
T = 58.22'	T = 56.75'
A = 116.14'	A = 113.16'

NOTES:

1.) THERE SHALL BE NO FURTHER RESUBDIVISION OF THE LAND INTO A GREATER NUMBER OF LOTS THAN ORIGINALLY APPROVED, HOWEVER, THIS SHALL NOT PRECLUDE LOT LINE ADJUSTMENTS OR CONSOLIDATION OF LOTS.

2.) THIS PLAT IS SUBJECT TO DEED OF RESTRICTIONS AS RECORDED IN DEED BOOK 8511 PAGE 555.

3.) THE DEPTH OF ALL ROADSIDE SWALES INCLUDING DRIVEWAY ENTRANCES AND CULVERTS UNDER DRIVEWAYS SHALL BE * INCHES BELOW FINISHED STREET CENTERLINE ELEVATION UNLESS

* NOT APPLICABLE SINCE ALL STREETS ARE CURB AND GUTTER.

4.) ALL ISLANDS (AS SHOWN ON APPROVED CONSTRUCTION PLANS), LANDSCAPED AREAS AND ENTRANCE WALLS TO BE MAINTAINED BY THE DEVELOPER, HIS SUCCESSORS AND/OR ASSIGNS.

5.) THE LOTS SHOWN ON THIS PLAT SHALL BE LIMITED TO SINGLE FAMILY RESIDENTIAL USE AND SHALL CONFORM WITH THE YARD REQUIREMENTS THE ZONING DISTRICT IN WHICH EACH IS LOCATED.

6.) THIS PLAT IS SUBJECT TO BINDING ELEMENTS IN DOCKET NO. 10-30-03 ON FILE IN THE OFFICE OF THE LOUISVILLE METRO PLANNING COMMISSION.

7.) CONSTRUCTION FENCING SHALL BE ERECTED PRIOR TO ANY GRADING OR CONSTRUCTION ACTIVITIES – PREVENTING COMPACTION OF ROOT SYSTEMS OF TREES TO BE PRESERVED. THE FENCING SHALL ENCLOSE THE AREA BENEATH THE DRIPLINE OF THE TREE CANOPY AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IS COMPLETED. NO PARKING, MATERIAL STORAGE OR CONSTRUCTION ACTIVITIES SHALL BE PERMITTED WITHIN THE FENCED AREA.

8.) BEARING DATUM USED FOR THIS PLAT IS BASED ON KENTUCKY STATE PLANE COORDINATE, NORTH ZONE.

9.) THIS PROPERTY IS NOT LOCATED IN A 100 YEAR FLOOD HAZARD AREA AS DETERMINED FROM A REVIEW OF FLOOD INSURANCE RATE MAP 210120 0105 D, DATED FEB. 2, 1994.

10.) OPEN SPACE LOT 333 SHALL NOT BE FURTHER SUBDIVIDED OR DEVELOPED FOR ANY OTHER USE AND SHALL REMAIN AS OPEN SPACE, UNLESS REQUIRED IN PART OR WHOLE FOR PUBLIC RIGHT-OF-WAY OR A TEMPORARY CONSTRUCTION EASEMENT AS NEEDED FOR CONSTRUCTION OF THE OLD HENRY ROAD CONNECTOR AT NO COST TO METRO GOVERNMENT.

11.) THE DEVELOPER SHALL BE REQUIRED TO NOTIFY POTENTIAL BUYERS OF LOTS 317, 318, 319, 320, 321, 322 AND 323 THAT A PART OF THE SUBDIVISION PROPERTY IS ADJACENT TO THE POSSIBLE PATH OF A PROPOSED FUTURE ROADWAY CORRIDOR.

12.) THIS IS A CLASS "A" SURVEY. THE UNADJUSTED ERROR OF CLOSURE WAS 0.65 FEET. THE PRECISION RATIO WAS 1:17,567. THIS SURVEY WAS ADJUSTED BY LEAST SQUARES. FIELD WORK FOR THIS SURVEY WAS CONDUCTED IN OCTOBER 1997.

13.) DWELLING ON LOT 316 SHALL HAVE NO OPENING BELOW ELEVATION 694.5. THIS LOT WILL REQUIRE INDIVIDUAL APPROVAL BY MSD PRIOR TO ISSUANCE OF BUILDING PERMIT.

14.) ALL NECESSARY RIGHTS FOR SANITARY SEWER, DRAINAGE AND RETENTION BASIN PURPOSES ARE HEREBY RESERVED THROUGH AREAS MARKED "OPEN SPACE".

15.) THERE SHALL BE NO DIRECT ACCESS TO OLD HENRY ROAD FROM ANY LOT IN THE SUBDIVISION.

CERTIFICATE OF RESERVATION OF PRIVATE POND EASEMENT

Easements for drainage and ponding purposes are hereby reserved on and over the land and spaces as defined and bounded by dashed lines marked "Private Pond Easement", together with the right of ingress and egress over all lots to and from the easements for construction, operation, maintenance and reconstruction of the pond and other drainage improvements. No permanent structure of any kind shall be placed on or over the land within said easement except for drainage structures, and landscaping planting. The easement shall be for the benefit of the land in the subdivision and that additional drainage improvements may be constructed by the developer, his agents, and/or assigns. All rights to maintain or improve the easement reserved herein will be held by the Woodmont Community Association, Inc. and shall be transfered upon turnover of the Association from the developer to the lot owners. Temporary rights are hereby reserved to use the land adjacent to the "Private Pond Easement" for storage and movement of excavated construction materials and equipment in order to maintain said pond. The developer, his agents, and/or assigns has the right an ingress and egress over lots 313, 314, 315, 316, 317 and 318 to and from the easement at all times for the purpose of constructing, operating, maintaining and repairing said pond.

OWNERS: William H. Cull
WOODMONT, LLC

CERTIFICATE OF RESERVATION OF SIDEWALK EASEMENT

The owner hereby grants, declares, establishes, and reserves easements for Pedestrian access along and across that portion of the property outlined by dashed lines and marked "Sidewalk Easement" on the plat. Access along and across the above described easement shall not be obstructed by any fence, wall, or other permanent structure which may be placed within the easement.

OWNERS: William H. Cull
WOODMONT, LLC

LAND SURVEYOR'S CERTIFICATE

I hereby certify that this plat and survey were made under my supervision, and that the angular and linear measurements as witnessed by monuments shown hereon, are true and correct to the best of my knowledge and belief. This survey and plat meets or exceeds the minimum standards of governing authorities.

Signature	P.L.S. #	Date
Brian E. Matherly	3596	10/20/04

STATE OF KENTUCKY
BRIAN E. MATHERLY
3596
LICENSED PROFESSIONAL LAND SURVEYOR

TOTAL AREA IN SITE: 9.892 ACRES
TOTAL NUMBER OF BUILDING SITES: 20
TOTAL NUMBER OF NON-BUILDING SITES: 1
—o— DENOTES 5/8" IRON PIN 18" LONG W/CAP STAMPED B. MATHERLY, L.S. 3596 UNLESS OTHERWISE NOTED

GRAPHIC SCALE
0 30 60 120

TAX BLOCK 15, LOT 31

WOODMONT

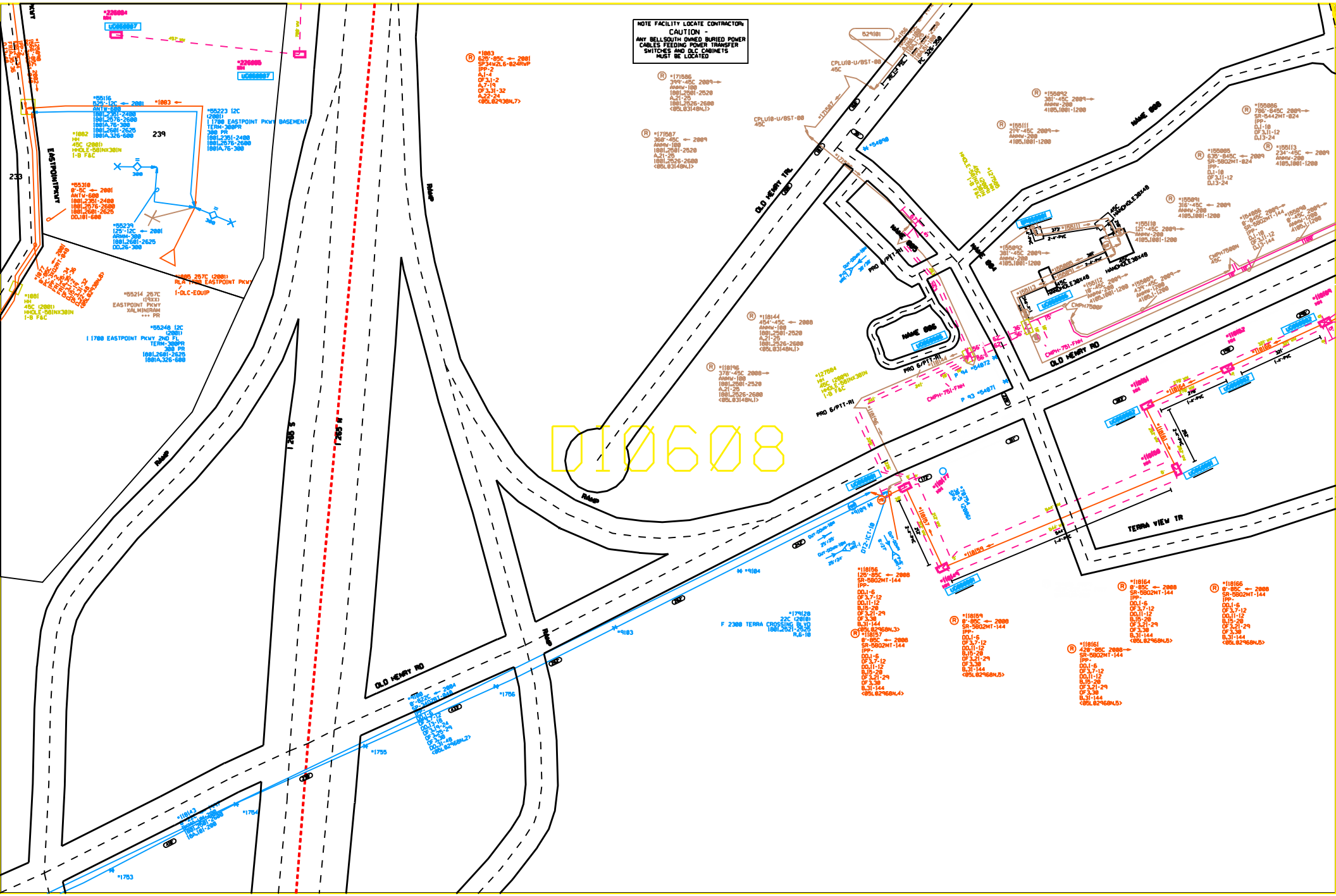
PHASE 6

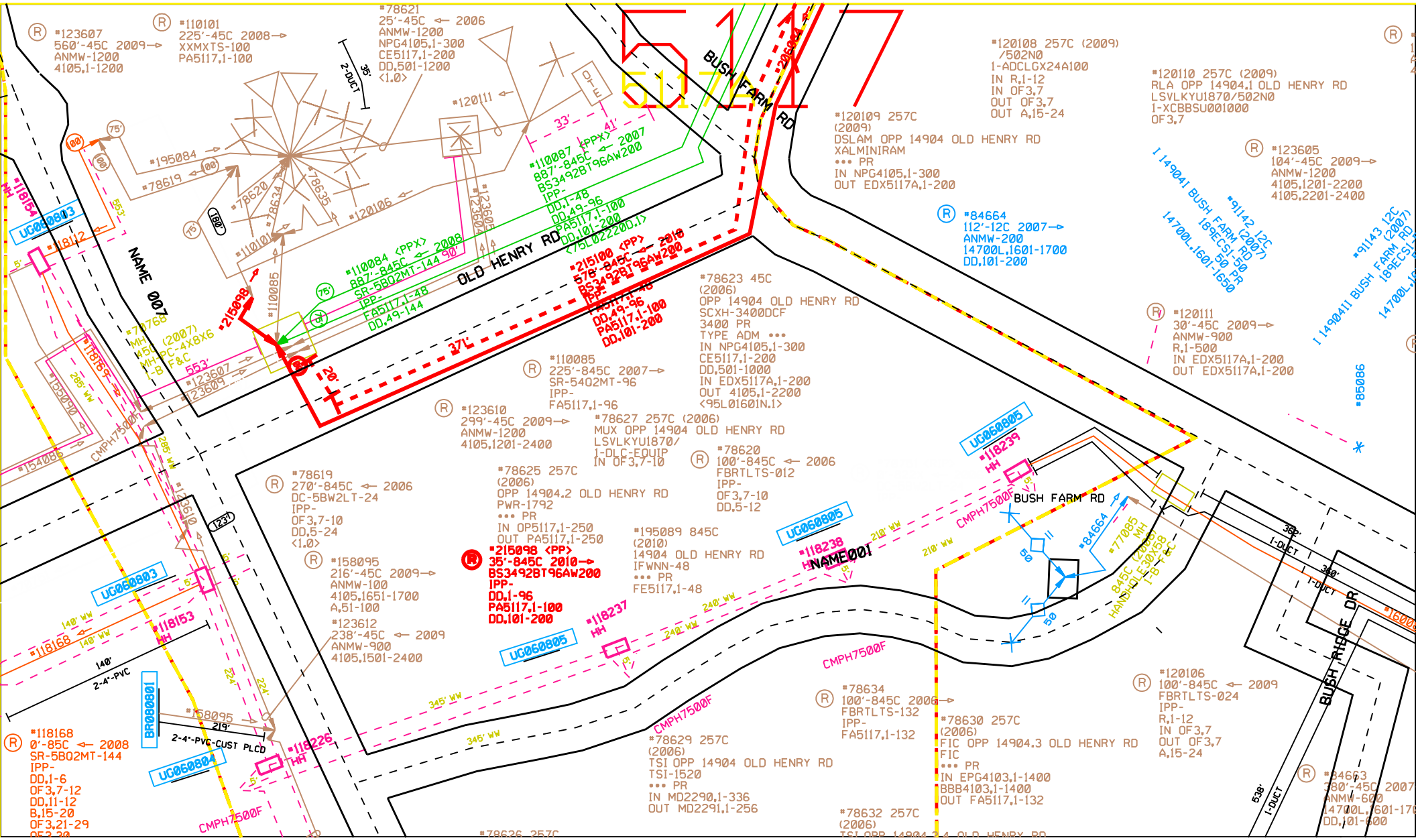
FORMERLY EAST ADDITION TO WOODMONT SUBDIVISION
OWNER & DEVELOPER
WOODMONT, LLC
DEED BOOK 7637, PAGE 525
500 WEST JEFFERSON STREET, SUITE 1510
LOUISVILLE, KENTUCKY 40202
OCTOBER 2004 SCALE 1" = 60'

SABAK, WILSON & LINGO INC.
ENGINEERS, LANDSCAPE ARCHITECTS & PLANNERS
315 WEST MARKET LOUISVILLE, KENTUCKY

DB 8511 PG 555
Document No.: DN2004165521
Lodged By: woodmont
Recorded On: 10/26/2004 01:30:14
Total Fees: 15.00
Transfer Tax: .00
County Clerk: BOBBIE HOLSCLAW-JEFF CO KY
Deputy Clerk: DONREI
Recorded In Plat Book No. 50 Page 39
Part No.
50X39
CF 10/22/04

Appendix O1 – AT&T


NOTE FACILITY LOCATE CONTRACTOR:
CAUTION -
ANY BELLSOUTH OWNED BURIED POWER CABLES FEEDING POWER TRANSFER SWITCHES AND DLC CABINETS MUST BE LOCATED
EASTPOINTPKWY
RAMP
OLD HENRY TRL
OLD HENRY RD
TERRA VIEW TR
NAME 888
NAME 884
NAME 886
I 265 S
I 265 N
D10608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OLD HENRY RD
NAME 007
NAME 001
BUSH RIDGE DR
#215098 <PP>
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BS3492BT96AW200
IPP-
DD,1-96
PA5117,1-100
DD,101-200
#78621
25'-45C ← 2006
ANMW-1200
NPG4105,1-300
CE5117,1-200
DD,501-1200
<1.0>
#123607
560'-45C 2009→
ANMW-1200
4105,1-1200
#110101
225'-45C 2008→
XXMXTS-100
PA5117,1-100
#120109 257C
(2009)
DSLAM OPP 14904 OLD HENRY RD
XALMINIRAM
••• PR
IN NPG4105,1-300
OUT EDX5117A,1-200
#120108 257C (2009)
/502N0
1-ADCLGX24A100
IN R,1-12
IN OF3,7
OUT OF3,7
OUT A,15-24
#120110 257C (2009)
RLA OPP 14904.1 OLD HENRY RD
LSVLKYU1870/502N0
1-XCBBSU001000
OF3,7
#123605
104'-45C 2009→
ANMW-1200
4105,1201-2200
4105,2201-2400
#84664
112'-12C 2007→
ANMW-200
14700L,1601-1700
DD,101-200
#120111
30'-45C 2009→
ANMW-900
R,1-500
IN EDX5117A,1-200
OUT EDX5117A,1-200
#78623 45C
(2006)
OPP 14904 OLD HENRY RD
SCXH-3400DCF
3400 PR
TYPE ADM •••
IN NPG4105,1-300
CE5117,1-200
DD,501-1000
IN EDX5117A,1-200
OUT 4105,1-2200
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225'-845C 2007→
SR-5402MT-96
IPP-
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4105,1201-2400
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MUX OPP 14904 OLD HENRY RD
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IN OF3,7-10
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100'-845C ← 2006
FBRTLTS-012
IPP-
OF3,7-10
DD,5-12
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(2006)
OPP 14904.2 OLD HENRY RD
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OUT PA5117,1-250
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DD,5-24
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216'-45C 2009→
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A,51-100
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238'-45C ← 2009
ANMW-900
4105,1501-2400
#195089 845C
(2010)
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IFWNN-48
••• PR
FE5117,1-48
#78634
100'-845C 2006→
FBRTLTS-132
IPP-
FA5117,1-132
#78629 257C
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TSI OPP 14904 OLD HENRY RD
TSI-1520
••• PR
IN MD2290,1-336
OUT MD2291,1-256
#78630 257C
(2006)
FIC OPP 14904.3 OLD HENRY RD
FIC
••• PR
IN EPG4103,1-1400
BBB4103,1-1400
OUT FA5117,1-132
#78632 257C
(2006)
#118168
0'-85C ← 2008
SR-5B02MT-144
IPP-
DD,1-6
OF3,7-12
DD,11-12
B,15-20
OF3,21-29
#84663
380'-45C 2007
ANMW-600
14700L,1601-17
DD,101-600
UG060803
UG060805
UG060804
BP090901
CMPH7500F
2-4"-PVC
2-4"-PVC-CUST PLCD
1-DUCT
2-DUCT
#118153 HH
#118226 HH
#118237 HH
#118238 HH
#118239 HH
#118154 HH
#118112 HH
#84664
#77085 MH
845C (2008)
HANDHOLE,30X58
1-3"-PC
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#91143 12C (2007)
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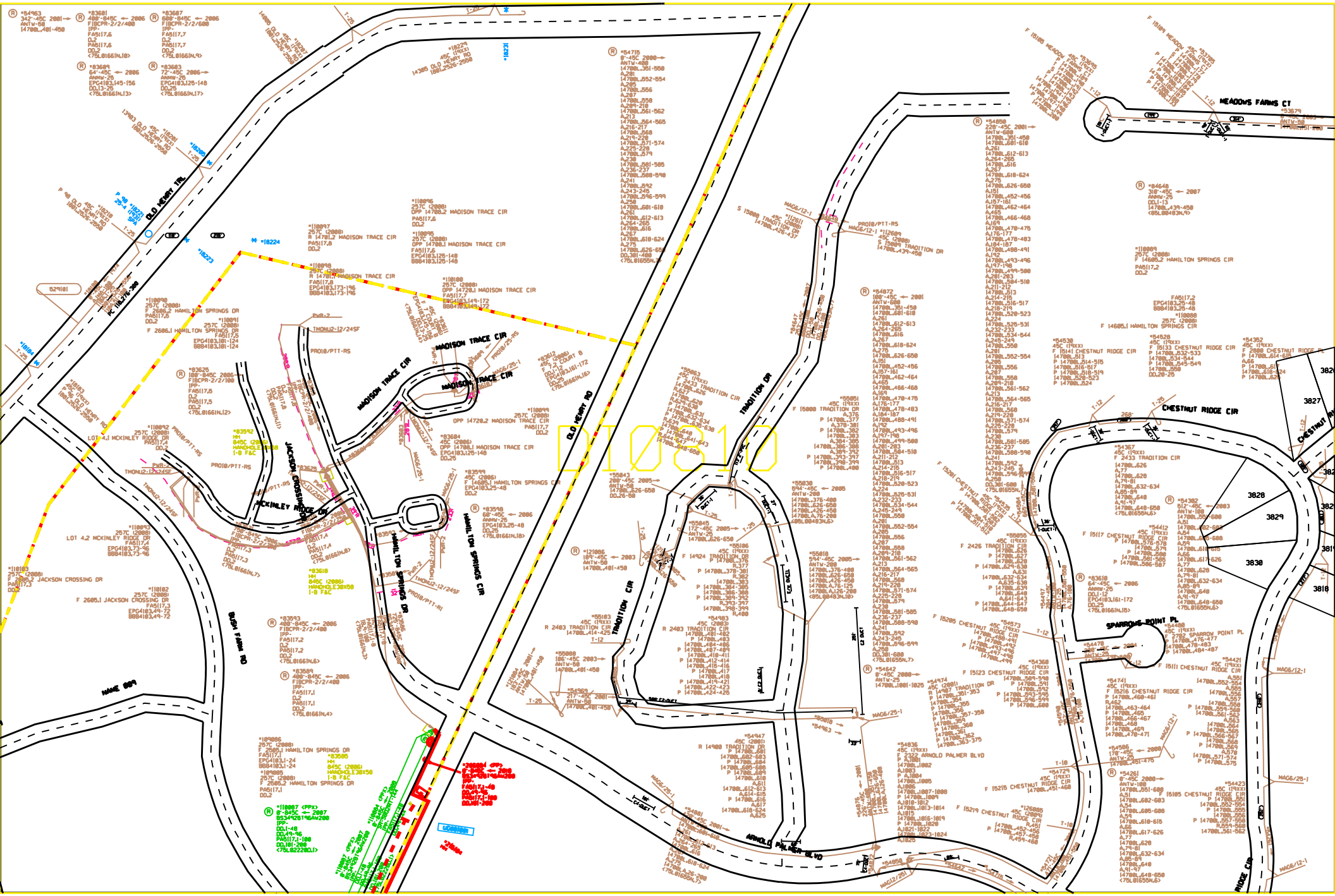
OLD HENRY RD
MADISON TRACE CIR
MADISON TRACE CIR
MADISON TRACE CIR
JACKSON CROSSING DR
MCKINLEY RIDGE DR
HAMILTON SPRINGS DR
HAMILTON SPRINGS CIR
TRADITION DR
TRADITION CIR
TRADITION CIR
MEADOWS FARMS CT
CHESTNUT RIDGE CIR
SPARROWS POINT PL
ARNOLD PALMER BLVD
BUSH FARM RD
NAME 609
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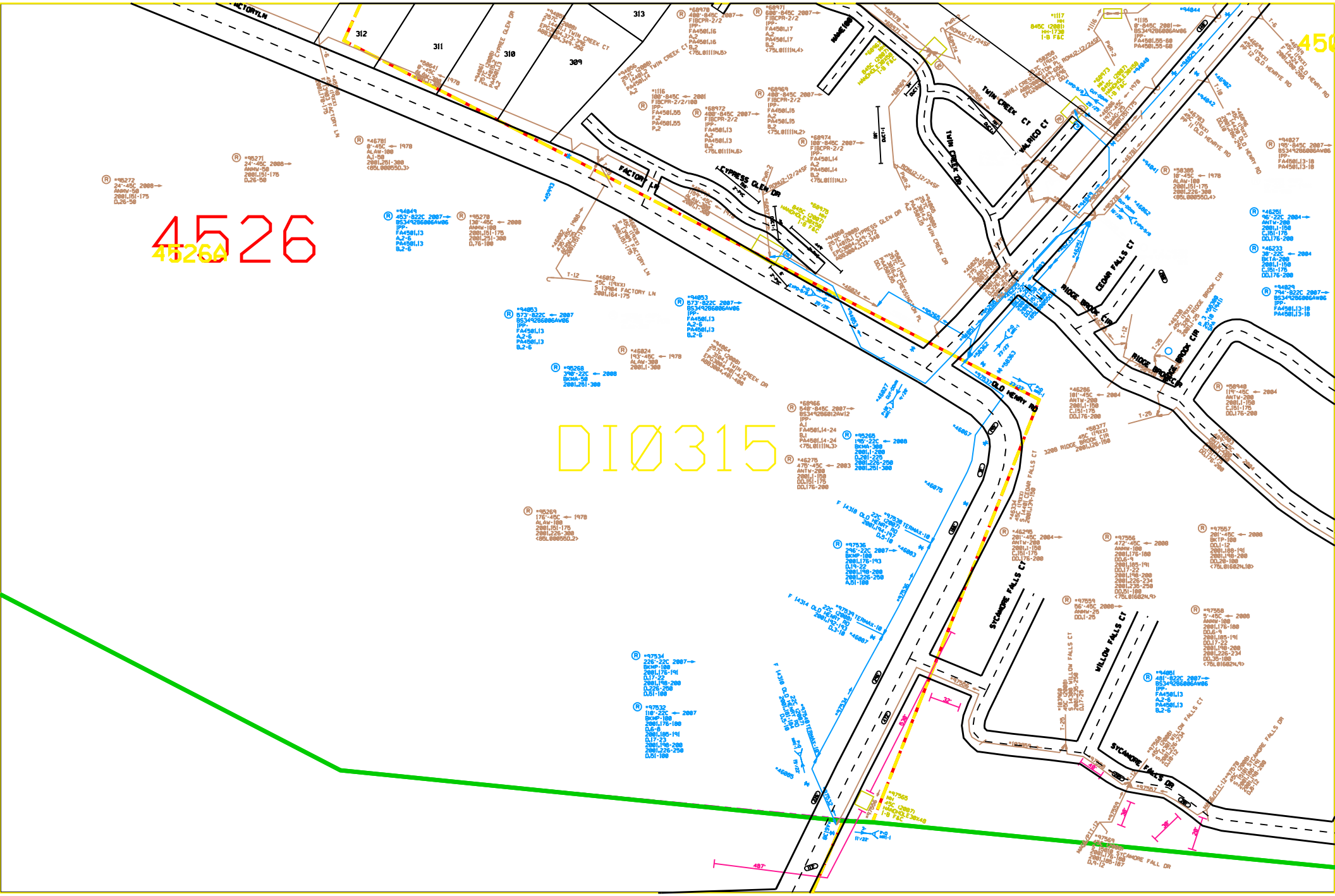
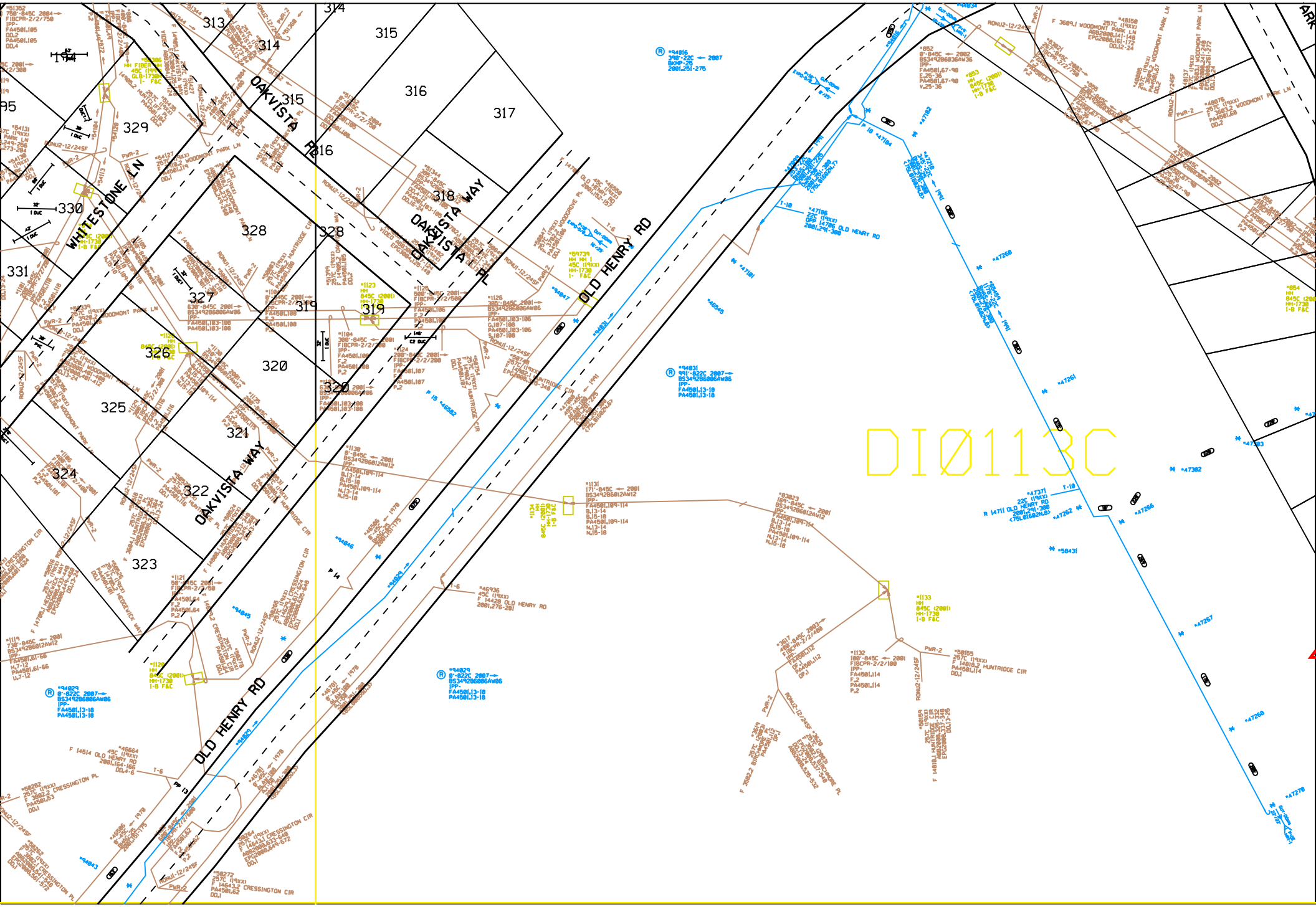
3818


4526
4526A
DI0315
312
311
310
309
313
FACTORY LN
CYPRESS GLEN DR
TWIN CREEK CT
TWIN CREEK CIR
VALRICO CT
OLD HENRY RD
RIDGE BROOK CIR
CEDAR FALLS CT
SYCAMORE FALLS CT
WILLOW FALLS CT
SYCAMORE FALLS DR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OAKVISTA PL
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CRESSINGTON CIR
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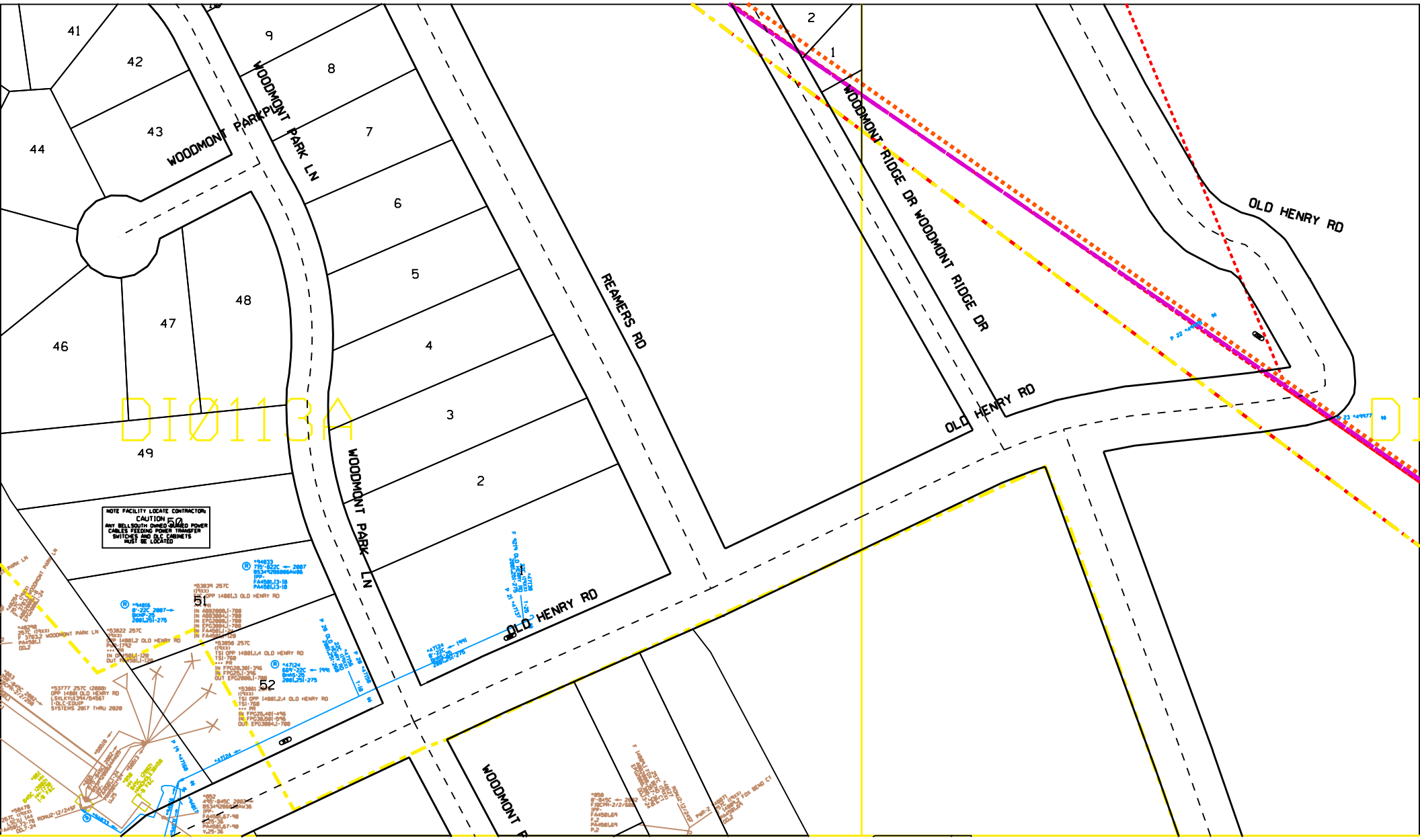
WOODMONT PARK LN
WOODMONT PARK LN
REAMERS RD
WOODMONT RIDGE DR
WOODMONT RIDGE DR
OLD HENRY RD
OLD HENRY RD
OLD HENRY RD
WOODMONT PARK LN
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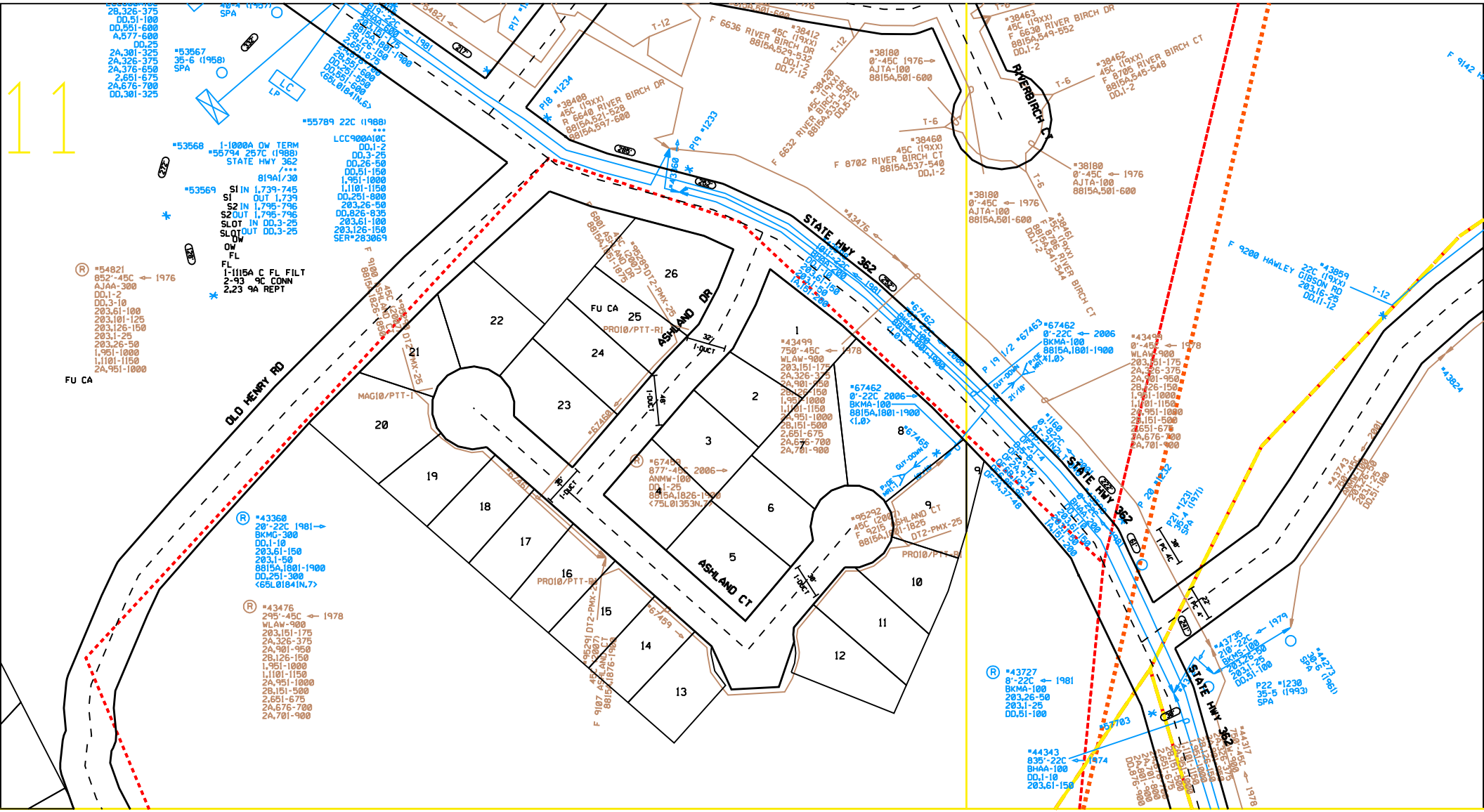
NOTE FACILITY LOCATE CONTRACTOR:
CAUTION
ANY BELLSOUTH OWNED BURIED POWER
CABLES FEEDING POWER TRANSFER
SWITCHES AND DLC CABINETS
MUST BE LOCATED


11
OLD HENRY RD
ASHLAND DR
ASHLAND CT
STATE HWY 362
RIVERBIRCH CT
F 9200 HAWLEY
FU CA
SPA
LC
LP
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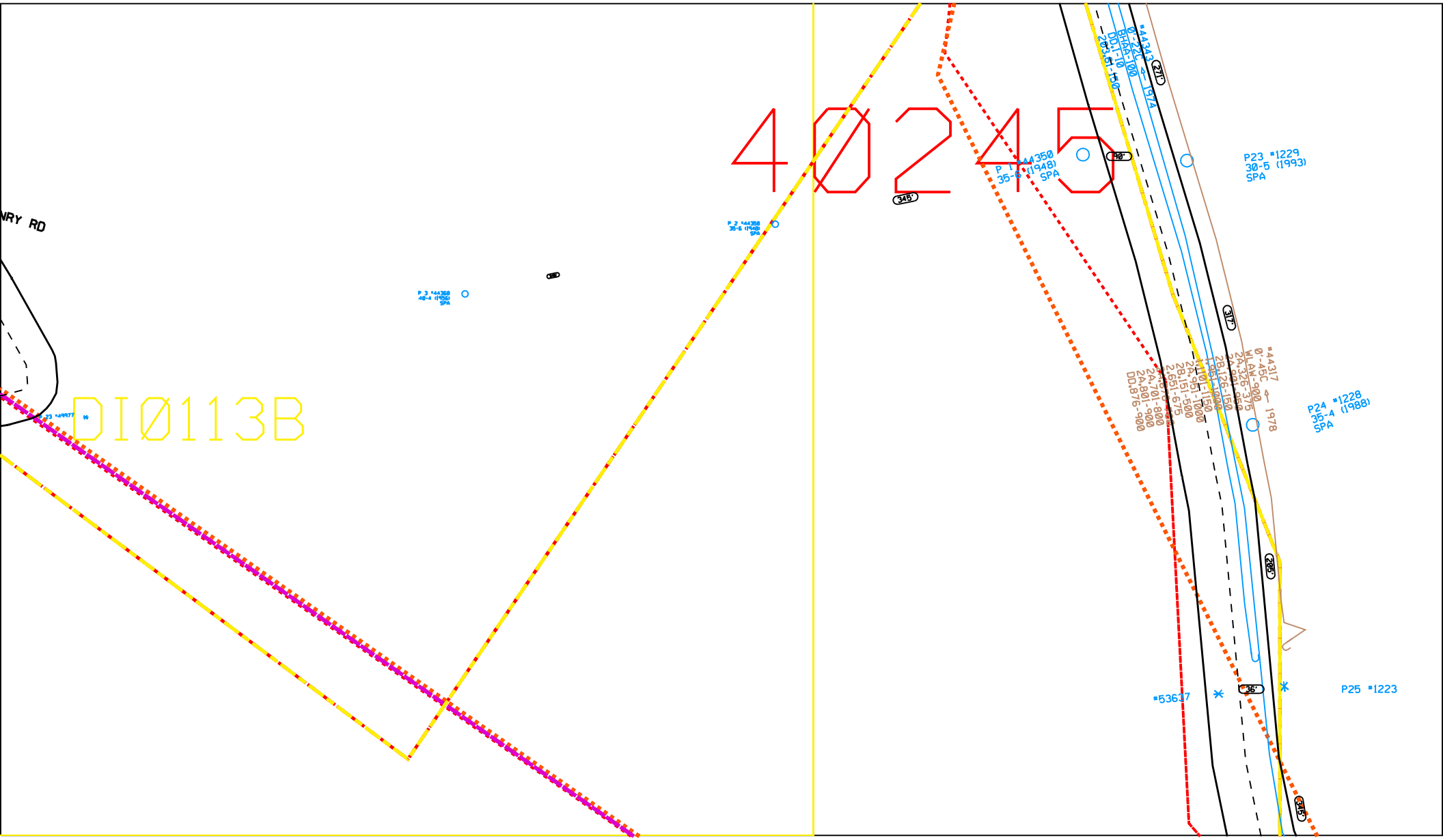

40245
DI0113B
NRY RD
P23 #1229
30-5 (1993)
SPA
P24 #1228
35-4 (1988)
SPA
P25 #1223
#53637

Appendix O2 – LG&E

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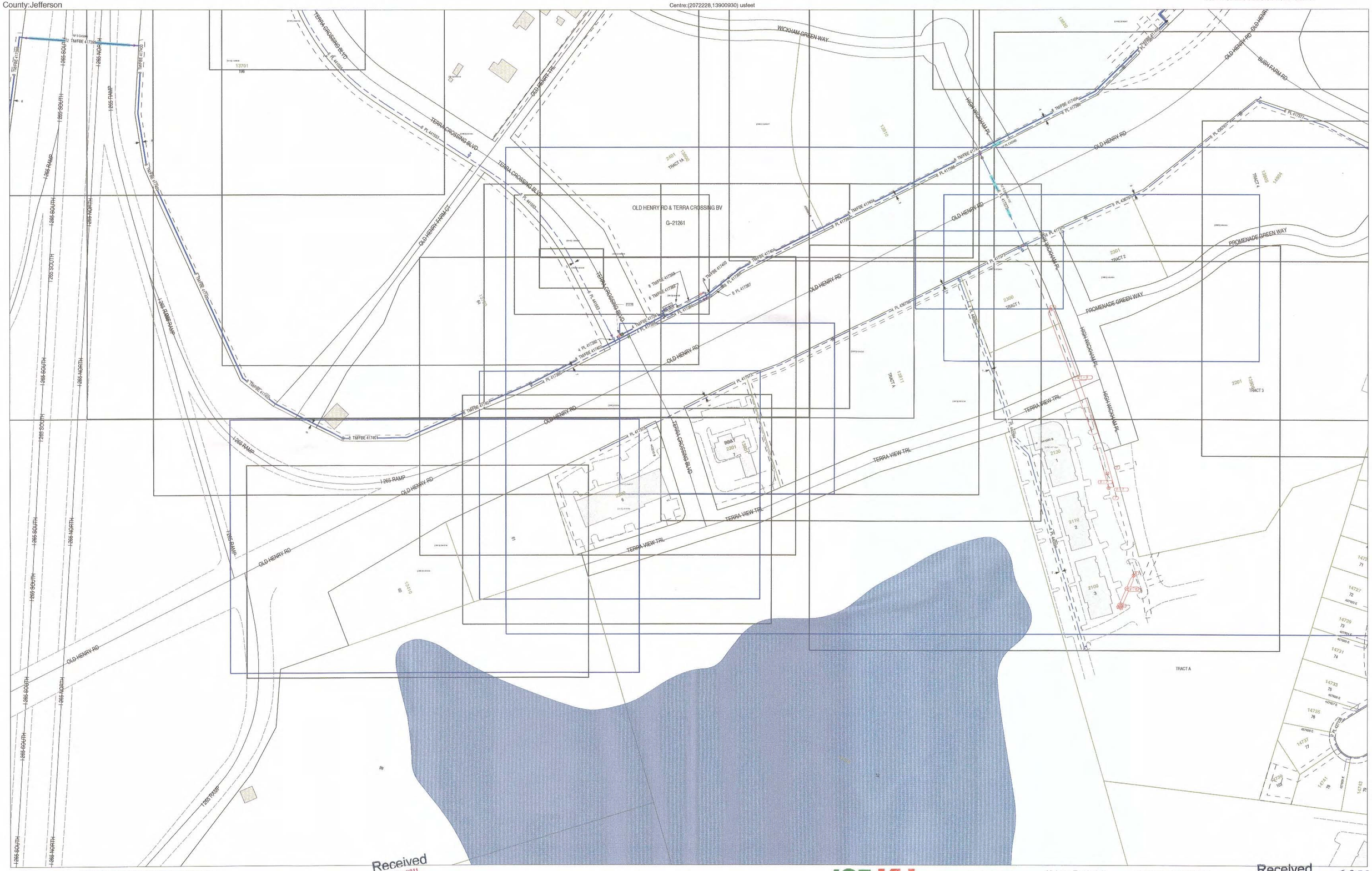
County:Jefferson

Centre:(2072228,13900930) usfeet

KY – CRESTWOOD SW 3 A C



Page: 1

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Received
MAY 20 2011
D-5R/W & Utilities

0feet 200feet 400feet 600feet 800feet

LG&E KU

Scale 1:1200

Keltee, Frederick

Plot Date: 05/19/2011

Received
MAY 20 2011
D-5R/W & Utilities

5-367.20
1 of 11

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County:Jefferson

Unless otherwise indicated, all locations are taken from office records and must be verified in the field

Centre:(2074141,13902637) usfeet

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KY – CRESTWOOD SW 3 A B

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0feet 200feet 400feet 600feet 800feet

Scale 1:1200 Keltee, Frederick Plot Date: 05/19/2011

Received
MAY 20 2011
D-SR/W & Utilities

5-367.20
2 of 11

TownLouisville

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County:Jefferson

Centre:(2075259,13904461) usfeet

KY – CRESTWOOD SW 3 A B

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0feet 200feet 400feet 600feet 800feet

Scale 1:1200

Keltee, Frederick

Plot Date: 05/19/2011

Received
MAY 20 2011
D-SR/WW & Utilities

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3 of 11

Page: 1

Town:Louisville

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County:Jefferson

Centre:(2076200,13906315) usfeet

KY – CRESTWOOD SW 1 D C

Town:Louisville

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0feet 200feet 400feet 600feet 800feet

Scale 1:1200 Keltee, Frederick Plot Date: 05/19/2011

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MAY 20 2011
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County:Oldham

Centre:(2077966,13907609) usfeet

KY – CRESTWOOD SW 1 D B

REAMERS RD
OLDHAM COUNTY
JEFFERSON COUNTY
PEWEE VALLEY
LOUISVILLE
WOODMONT RIDGE DR
WOODMONT PARK LN
WOODMONT PARK PL
OLD HENRY RD
BURIED
APPLE HILL RD
ASH LAND CT
DETENTION BASIN
ASH AVE
FOX BEND CT
TRACT 2
TRACT A

Town:Pewee Valley

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0feet 200feet 400feet 600feet 800feet

Scale 1:1200

Keltee, Frederick

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County:Oldham

Centre:(2079790,13908963) usfeet

KY – CRESTWOOD SW 2 C A

WILLOWRUN CT
WILLOWRUN LN
RIVERBIRCH DR
RIVERBIRCH CT
RAINTREE CT
ASHBROOKE DR
HAWLEY GIBSON RD
STATE HWY 362
HOLLY CREEK DR
HOLLY CREEK CT
ASH LAND DR
ASH LAND CT
ASH LAND ST
ASH AVE
DETENTION BASIN
TRACT A
OLDHAM COUNTY
SIMPSONVILLE
SHELBY COUNTY
Town Pewee Valley

0feet 200feet 400feet 600feet 800feet

Scale 1:1200 Keltee, Frederick Plot Date: 05/19/2011

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County:Jefferson

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Centre:(2071518,13900460) usfeet

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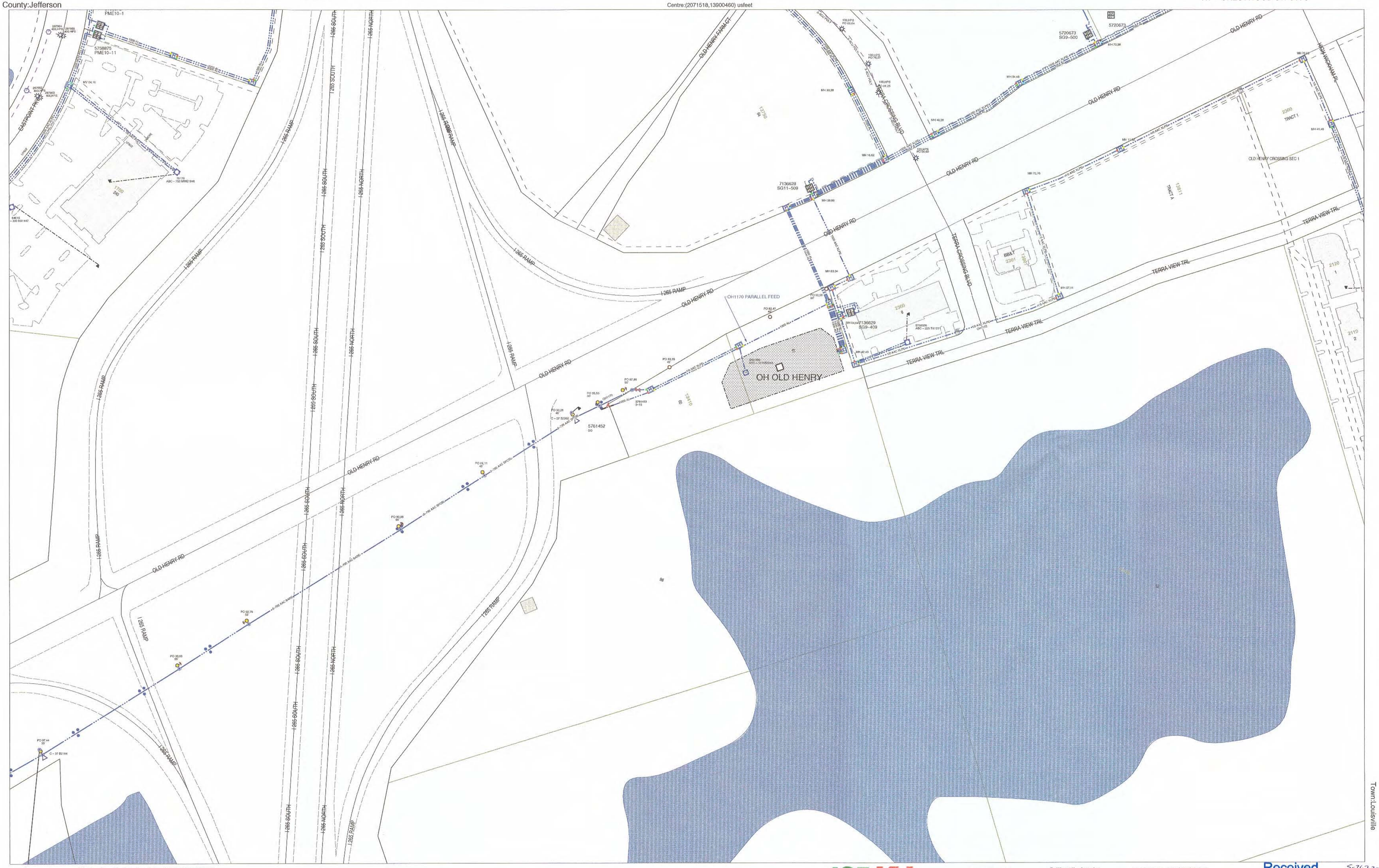
KY – CRESTWOOD SW 3 A C



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0feet 200feet 400feet 600feet 800feet

Scale 1:1200 Stillwell, Angie Plot Date: 05/19/2011

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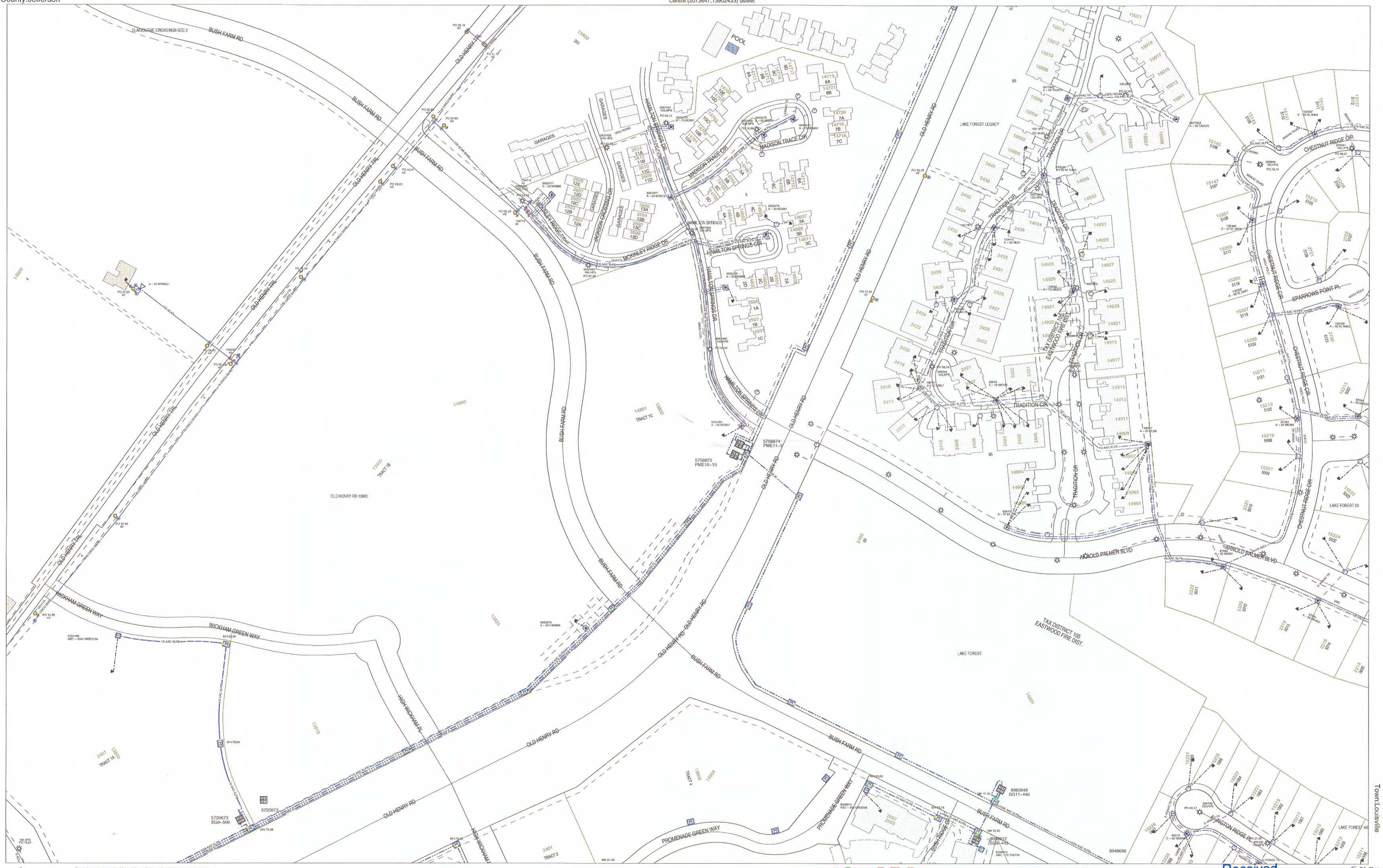
County:Jefferson

Centre:(2073647,13902433) usfeet

KY – CRESTWOOD SW 3 A B



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0feet 200feet 400feet 600feet 800feet

Scale 1:1200

Stillwell, Angie

Plot Date: 05/19/2011

Received
MAY 20 2011
D-SRVV & Utilities

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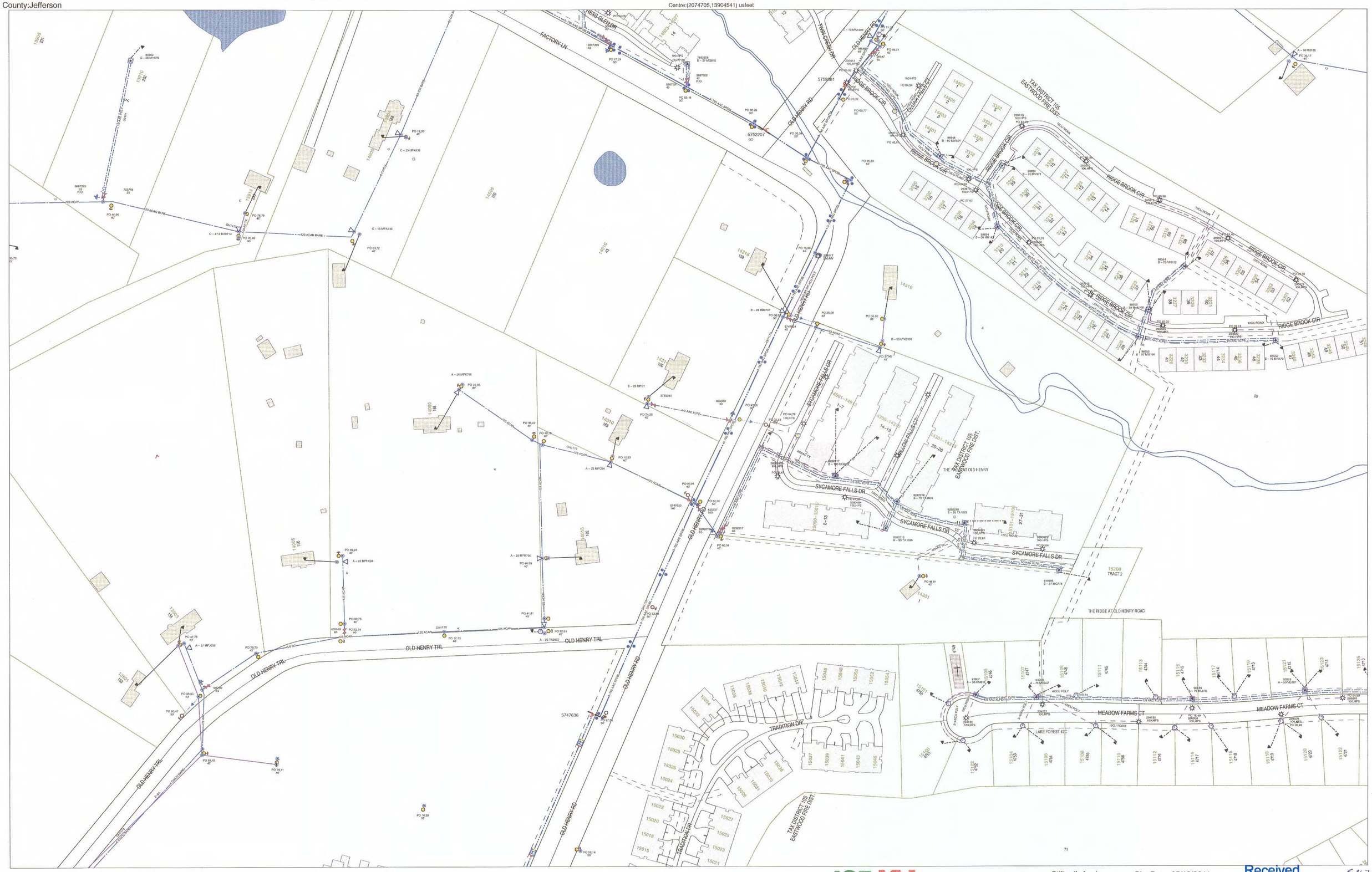
County:Jefferson

Centre:(2074705,13904541) usfeet

KY – CRESTWOOD SW 1 C D



Town:Louisville

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0feet 200feet 400feet 600feet 800feet

LG&E KU

Scale 1:1200

Stillwell, Angie

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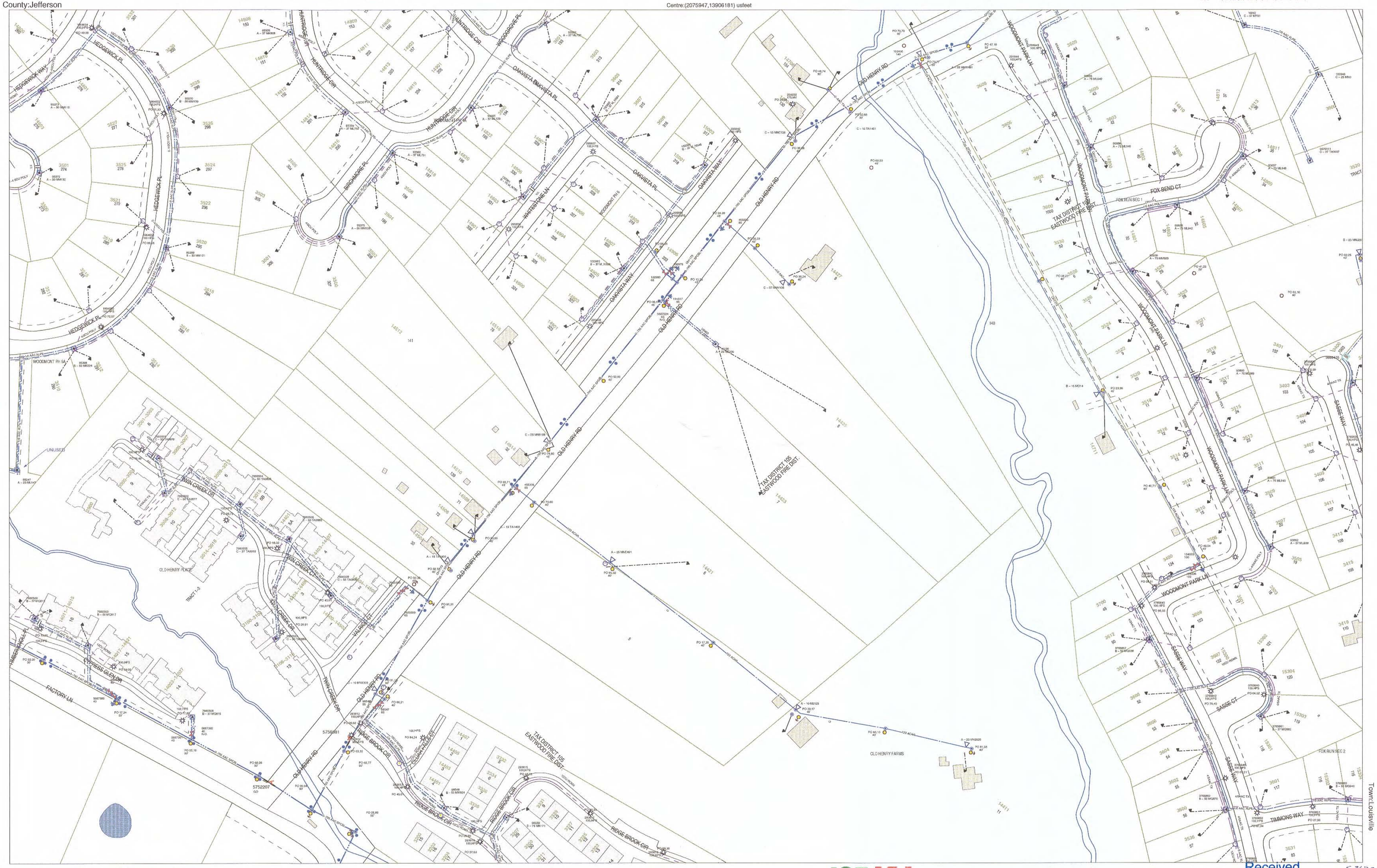
County:Jefferson

Centre:(2075947,13906181) usfeet

KY – CRESTWOOD SW 1 D C



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Page: 1

0feet 200feet 400feet 600feet 800feet

LG&E KU

Scale 1:1200

Stillwell, Angie

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County:Oldham

Centre:(2077856,13908161) usfeet

KY – CRESTWOOD SW 1 D B

Town:Pewee Valley

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0feet 200feet 400feet 600feet 800feet

Scale 1:1200

Stillwell, Angie

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MAY 20 2011
D-SK/VV & Utilities

5-367.20
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Geiser, Greg

From:	Cornish, Cathy (KYTC-D05) [Cathy.Cornish@ky.gov]
Sent:	Wednesday, May 18, 2011 3:30 PM
To:	Geiser, Greg; Daniel Tegene; Morgan Herndon (AT&T KY MH0831@ATT.com); Barbour, Deno; Brad SELCH; Steve Emly (MSD); don garr; Scott Logeman (ATT-Legacy); Turner, Tim; jaerwin@marathonoil.com; Barber, Mary R.; iucjrogers@portative.net; Thomas, Joe J [Ericsson Contractor for Sprint]; CALFEE, RICHARD T; Webster, Kevin; Lowrey, Bo C; WCI.maintenance.south@windstream.com; Cornell, Jeremy; Gerald.Long@twtelecom.com; hcompton@taylorsvillewater.org; McElvain, George; Jason; Anderson, Bernie; Phillip Ward (Old Co Water); John Bennett; kevin.gibson@veoliawaterna.com
Cc:	Jenkins, Carl; Davis, Paul (KYTC-D05); Hickerson, Judi (KYTC-D05); Barker, Richard (KYTC-D05)
Subject:	5-367.20 Old Henry Rd - Facility Request
Attachments:	Location map KY3084 5-18-11.JPG; 5 367 20 Overall Location Map 5-18-11.pdf

Utility Representatives,

Please look at the attached maps.

Please let us know if you do OR do not have facilities in the area.

This project has been fast tracked and we really need this information as quickly as possible.

Thanks for your help.

Cathy L. Cornish
KentuckyTransportation Cabinet, District 5
Utility Relocations
8310 Westport Road
Louisville, KY 40242-3042
Office: (502) 210-5476
Fax: 502-210-5498
Cathy.Cornish@ky.gov

Received
MAY 20 2011
D-5R/W & Utilities

ELECTRIC STYLES - LEGEND

 ---------- Anchor (Install Dist Location)

 ----------Anchor (Exist Dist Location)

 ----------Anchor (Remove Dist Location)

 ----------Cutout Bank – 2 (Exist Dist Location)

 ----------Cutout Bank – 2 (Remove Dist Location)

 ----------Cutout Bank – 2 (Install Dist Location)

 ----------Deadend (Exist Second Location)

 ----------Deadend (Install Service Location)

 ----------Deadend (Remove Second Location)

 ----------Electric Service Point (Exist Standard Location)

 ----------Electric Service Point (Install Critical Location)



----------Junction Box (Exist Pullbox Location)



----------Junction Box (Install Pedestal Location)



----------Junction Box (Exist Pedestal Location)



----------Junction Box (Install Pullbox Location)

 ----------Light (Exist Location)

 ----------Light (Install Location)

 ----------Light (Remove Location)



----------Open Point (Install Dist Location)

ELECTRIC STYLES - LEGEND



----------Open Point (Exist Dist Location)



----------Open Point (Remove Dist Location)


----------Pad (Install Dist Location)


----------Pad (Exist Dist Location)


----------Pad (Remove Dist Location)

----------Pad (Connector Location)


----------Pole -2 (Install Dist Location)


----------Pole -1 (Install Dist Location)


----------Pole -2 (Exist Dist Location)


----------Pole -1 (Exist Dist Location)


----------Pole -2 (Remove Dist Location)


----------Pole -1 (Remove Dist Location)


----------Street Light Pole (Remove Location)


----------Street Light Pole (Install Location)


----------Street Light Pole (Exist Location)


----------Transformer OH Bank (Exist Location)


----------Transformer OH Bank (Install Location)


----------Transformer OH Bank (Remove Location)


----------Transformer OH Bank (Secondary Location)

ELECTRIC STYLES - LEGEND

 ----------Transformer UG Bank – 3 (Exist Location)

 ----------Transformer UG Bank – 1 (Exist Location)

 ----------Transformer UG Bank – 3 (Install Location)

 ----------Transformer UG Bank – 1 (Install Location)

 ----------Transformer UG Bank – 3 (Remove Location)

 ----------Transformer UG Bank – 1 (Remove Location)

 ----------Arrester (Exist Dist Location)

 ----------Arrester (Remove Dist Location)

 ----------Arrester (Install Dist Location)

 ----------Capacitor Bank (Exist Dist Location)

 ----------Capacitor Bank (Remove Dist Location)

 ----------Capacitor Bank (Install Dist Location)

 ----------Circuit Breaker (Install Sec Location)

 ----------Circuit Breaker (Exist Sec Location)

 ----------Circuit Breaker (Remove Sec Location)

 ----------Network Protector (Exist Dist Location)

 ----------Primary meter (Exist Dist Location)

 ----------Recloser Bank (Exist Dist Location)

 ----------Recloser Bank (Remove Dist Location)

ELECTRIC STYLES - LEGEND

 ----------Recloser Bank (Install Dist Location)

 ----------Switch Bank – 4 (Exist Location)

 ----------Switch Bank - 4 (Install Location)

 ----------Switch Bank – 4 (Remove Location)

 ----------Transformer Stepdown Bank(Exist Dist Location)

 ----------Voltage Regulator Bank (Exist Dist Location)

 ----------Manhole (Install Dist Location)

 ----------Manhole (Exist Dist Location)

 ----------Substation (Exist Location)

 ----------Tower (Exist Dist Location)

 ----------Vault (Exist Dist Location)

 -----Head Guy (Exist Dist Route)

 -----Head Guy (Install Dist Route)

 -----Primary OH Segment (Aband Route)

 -----Primary OH Segment (Exist 1 Phase Route)

 -----Primary OH Segment (Exist 2 Phase Route)

 -----Primary OH Segment (Exist 3 Phase Route)

 ----Primary OH Segment (Exist Unk Phase Route)

 ----Primary OH Segment (Install 1 Phase Route)

 -----Primary OH Segment (Install 2 Phase Rotue)

ELECTRIC STYLES - LEGEND

 ----Primary OH Segment (Install 3 Phase Route)

 -----Primary OH Segment (Install Unk Phase Route)

 ----Primary OH Segment (Remove 1 Phase Route)

 ----Primary OH Segment (Remove 2 Phase Route)

 ----Primary OH Segment (Remove 3 Phase Route)

 -----Primary OH Segment (Remove Unk Phase Route)

 ----Primary UG Segment (Aband Route)

 ----Primary UG Segment (Exist 1 Phase Route)

 ----Primary UG Segment (Exist 2 Phase Route)

 ----Primary UG Segment (Exist 3 Phase Route)

 ----Primary UG Segment (Exist Unk Phase Route)

 ----Primary UG Segment (Install 1 Phase Route)

 ----Primary UG Segment (Install 2 Phase Route)

 ----Primary UG Segment (Install 3 Phase Route)

 ----Primary UG Segment (Install Unk Phase Route)

 ----Primary UG Segment (Remove 1 Phase Route)

 ----Primary UG Segment (Remove 2 Phase Route)

 ----Primary UG Segment (Remove 3 Phase Route)

 ----Primary UG Segment (Remove Unk Phase Route)

 ----Secondary OH Segment (Remove Second Route)

 ----Secondary OH Segment (Exist Second Route)

 ----Secondary OH Segment (Install Second Route)

 ----Secondary UG Segment (Remove Second Route)

ELECTRIC STYLES - LEGEND

 ----Secondary UG Segment (Install Service Route)

 ---Secondary UG Segment (Exist Second Route)

 ---Secondary UG Segment (Install Second Route)

GAS STYLES - LEGEND

 ----------Callout Box

 ----------Compressor (Exist Location)

 ----------Drip Siphon (Exist Location)

 ----------Farm Tap (Exist Location)

 ----------Fitting - Coupling (Exist Location)

 ----------Fitting - Cross (Exist Location)

 ----------Fitting – End Cap (Exist Location)

 ----------Fitting – Reducer (Exist Location)

 ----------Fitting - Tee (Exist Location)

 ----------Fitting – Transition (Exist Location)

 ----------Flange (Exist Sta Location)

 ----------Gas Generator

 ----------Gas Light (Exist Location)

 ----------Gas Service Point (Exist Standard Location)

 ----------Leak (Active Location)

 ----------Leak (Inactive Location)

 ----------Main Maintenance

 ----------Regulator (Exist Location)

GAS STYLES - LEGEND


----------Tapping Fitting – Line Stopper (Mueller) (Exist Location)


----------Tapping Fitting – Line Stopper Shortstop (TDW) Reduced


----------Tapping Fitting – 3 Way Tee (Exist Location)


----------Valve (Exist Key Location)


----------Valve (Exist Location)

-----Casing (Exist Location)

-----Foreign Pipeline

-----Main (Install HP Route)

-----Main (Install EP Route)

-----Main (Install MP Route)

-----Main (Aband Route)

-----Main (Exist HP Route)

-----Main (Install LP Route)

-----Main (Exist MP Route)

-----Main (Exist LP Route)

-----Main (Exist EP Route)

-----Main (Install EP Route)

-----Service Lateral (Exist Route)

Appendix O3 – Louisville Water Company (LWC)

Old Henry Road Area

LOUISVILLE WATER since 1854

LOJIC™ Louisville/Jefferson County Information Consortium

Scale: 1" = 400'

0 200 400 800 Feet

May 19, 2011
Map Compilation: eschmidt
File Location: z:\ArcMAP\daniel\old henry study.mxd

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Appendix O4 – Metropolitan Sewer District (MSD)

CONSTRUCTION PLANS FOR
FOX RUN SUBDIVISION
PRIVATE SANITARY SEWERS

Sheet Index	
Sht. No.	Description
1	COVER SHEET
2	PLAN SHEET
3	PROFILE SHEET
4	P.S.C. INLET SHEET

NOTES

1. CONSTRUCT PROPERTY SERVICE CONNECTIONS TO BACK OF ELECTRIC AND TELEPHONE EASEMENTS OR TO THE EDGE OF SANITARY SEWER & DRAINAGE EASEMENTS.
2. WHERE THE TOP OF THE MANHOLE IS THE SAME AS THE PROPOSED STREET GRADE, REFER TO THE CONSTRUCTION PLANS FOR EXACT STREET ELEVATION.
3. ROCK IS TO BE SHATTERED TO 6' BEYOND THE END OF THE P.S.C.
4. M.S.D. STANDARD SPECIFICATIONS ARE TO APPLY.
5. PROPERTY SERVICE CONNECTIONS ARE AT 2% SLOPE UNLESS OTHERWISE NOTED.
6. ALL MANHOLE RIMS SHALL BE AT OR ABOVE FINISHED GRADE, AS SHOWN ON THE DRAWINGS, TO PREVENT INFLOW OF STORM WATER.
7. ALL PIPE SHALL BE PVC SDR 35 PER M.S.D. STANDARD SPECS.
8. SEWAGE TO BE TREATED AT THE ASH AVENUE SANITARY COMPANY WASTEWATER TREATMENT PLANT.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING HIS OWN CONSTRUCTION STAKES. THE ENGINEER WILL PROVIDE THE INITIAL BASELINES AND BENCHMARKS.
10. NO PORTION OF THIS PROJECT IS IN THE 100 YEAR FLOOD PLAIN PER F.E.M.A. MAP #2111C0780 D.
11. VERTICAL DATUM IS REFERENCED TO (1929) NATIONAL GEODETIC VERTICAL DATUM.
12. MSD SHALL INSPECT ALL SEWER CONSTRUCTION.
13. 4" PROPERTY SERVICE CONNECTION TO BE CONSTRUCTED FROM STACK AT SEWER TO EASEMENT LINE TO A DEPTH OF 5' BELOW GROUND SURFACE.
13. LOT CORNERS AS SHOWN WILL BE STAKED WHEN THE RECORD PLAT IS RECORDED.
14. EPSC PLAN WILL ACCOMPANY CONSTRUCTION PLANS.

MSD DOES NOT WARRANT THE DESIGN OR COMPUTATIONS CONTAINED IN THIS PLAN. THE CORRECTNESS OR ACCURACY OF ALL ENGINEERING COMPUTATIONS REMAINS THE SOLE RESPONSIBILITY OF THE APPLICANT'S DESIGN PROFESSIONAL. MSD'S APPROVAL TO PROCEED WITH CONSTRUCTION IS BASED SOLELY ON THAT DESIGN PROFESSIONAL'S SEAL AND SIGNATURE.

FOR THE PURPOSE OF SUPPLYING RECORD DRAWING INFORMATION, SHEETS 1-4 OF THE RECORD DRAWINGS REPLACES THE APPROVED SHEETS 1-4 OF THE ORIGINAL DRAWINGS. THE MSD DIRECTOR OF ENGINEERING APPROVED THE ORIGINAL DRAWINGS FOR CONSTRUCTION ON 10/1. SHEETS 1-4 OF THE ORIGINAL DRAWINGS HAVE BEEN ARCHIVED.

DAVID WINKLER

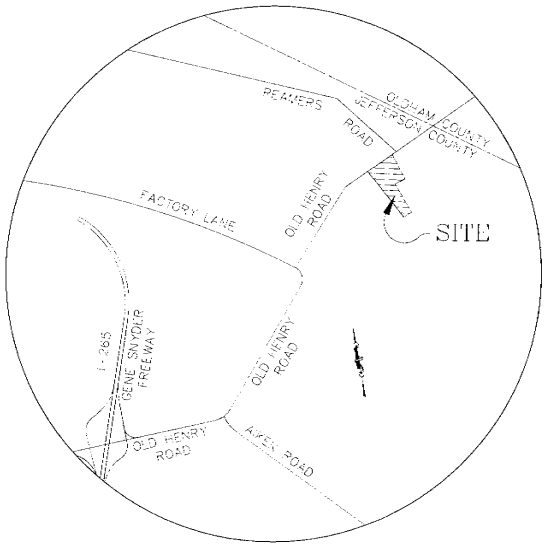
THE FINAL RECORD INFORMATION ON THIS DRAWING WAS PROVIDED BY THE PROFESSIONAL LAND SURVEYOR ~~SCOTT SHUTTLEWORTH~~ ON 8-12-02. THE PROPERTY SERVICE CONNECTION INFORMATION WAS COLLECTED BY THE GENERAL CONTRACTOR KELSEY CONSTRUCTION INC. WITH NO FIELD VERIFICATION BY THE PROFESSIONAL LAND SURVEYOR. THE FINAL RECORD DATA AND PROPERTY SERVICE CONNECTION INFORMATION HAS BEEN ACCEPTED BY MSD INSPECTOR
CHRIS BAKER CB Baker ON 11-11-02.

BACKFILL

TYPE 1 - SAND, FLUSHED AND JETTED
TYPE 2 - EXCAVATED MATERIALS, FLUSHED AND JETTED
(USE TYPE 2 BACKFILL UNLESS OTHERWISE NOTED)

LEGEND

- MANHOLE & SEWER LINE - SIZE AS INDICATED
- ST. DROP INLET
- EXIST. MANHOLE & SEWER LINE - SIZE AS INDICATED
- STORM DRAIN WITH SIZE AND CURB INLET
- GAS MAIN (PROPOSED)
- WATER MAIN (PROPOSED)
- F.H. FIRE HYDRANT
- R.S. ROCK SOUNDING
- NO ROCK (ALL ROCK SOUNDINGS ARE TAKEN EITHER IN THE CENTER OF THE ROAD OR THE CENTER OF THE SEWER LINE.)
- 4" PROPERTY SERVICE CONNECTION
- BENCH MARKS



LOCATION MAP
N.O.T. TO SCALE

BENCHMARK DESCRIPTIONS

T.B.M. #1 : PK SPIKE SET IN UTILITY POLE 1.0' EAST OF ENTRANCE OF WOODMONT SUBDIVISION ON OLD HENRY ROAD
ELEV. 678.86 (NGVD '929)

STANDARD DRAWINGS:	
P.V.C. VERTICAL DROP INLET	SD-01-02
PROPERTY SERVICE CONNECTION	SP-01-03
PRECAST MANHOLE - TYPE 1	SW-01-02
MANHOLE CHANNELIZATION	SW-04-02
STANDARD MANHOLE FRAME AND LID	SM-05-01
PRECAST CONCRETE COLLAR	SM-01-00
CRUSHED STONE ENCASEMENT	CC-02-00
CONCRETE CAP	CC-03-00

800-752-6007
KENTUCKY UNDERGROUND PROTECTION
CALL 2 WORKING DAYS BEFORE YOU DIG

UTILITY NOTE: ALL UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. INDIVIDUAL SERVICE LINES ARE NOT SHOWN. PRIOR TO ANY EXCAVATION, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE UTILITY PROTECTION CENTER, BLUE PHONE 1 800 752-6007 (THIS IS A NEW TOLL FREE NUMBER) WHICH WAS ESTABLISHED TO PROVIDE ACCURATE LOCATIONS OF BELOW GROUND UTILITIES, I.E. CABLES, ELECTRIC WIRES, AND GAS AND WATER LINES. THE CONTRACTOR OR SUBCONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER 48 HOURS IN ADVANCE OF ANY CONSTRUCTION ON THIS PROJECT.

EROSION PREVENTION AND SEDIMENT CONTROL NOTES:

The approved erosion prevention and sediment control (EPSC) plan shall be implemented prior to any land disturbing activity or the construction site. Any modifications to the approved EPSC plan must be reviewed and approved by MSD's Private Development Review office. EPSC BMP's shall be noted as per the plan and MSD Standards.

Detention basins, if applicable, shall be constructed first and shall perform as sediment basins during construction until the contributing drainage areas are seeded and stabilized.

Actions must be taken to minimize the tracking of mud and dirt from construction areas onto public roadways. So tracked onto the roadway shall be removed daily.

Soil stockpiles shall be located away from streams, ponds, swales, and catch basins. Soil stockpiles shall be seeded, mulched, and adequately contained through use of silt fence.

A stream crossings must utilize low crossing structures per MSD Standard Drawing ER-02.

Where construction or land disturbance activity will or has temporarily ceased on any portion of a site, temporary site stabilization measures shall be required as soon as practicable, but no later than 14 calendar days after the activity has ceased.

Sediment laden ground water encountered during the trenching, boring, or other excavation activities shall be pumped to a sediment trapping device prior to being discharged into a stream, pond, swale and or catch basin.

LOUISVILLE & JEFFERSON COUNTY
METROPOLITAN SEWER DISTRICT

DESIGN APPROVED: [signature] 11-13-02

APPROVED FOR CONSTRUCTION: [signature] DIRECTOR OF ENGINEERING 11/15/02 DATE

DRAWN BY	NEC	08/06
CHECKED BY	JSG	08/06
AS BUILTS	RBP	08/14

KENTUCKY LICENSED DAVID B. WINKLER 3492 LICENSED PROFESSIONAL LAND SURVEYOR

As-Built
THIS SET OF "AS-BUILT" SANITARY SEWER PLANS REPLACES THE SET WHICH WAS APPROVED FOR CONSTRUCTION.

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE SURVEY FOR THIS PLAN WAS MADE UNDER MY DIRECT SUPERVISION AND THE BEARING AND DISTANCE MEASUREMENTS SHOWN HEREON ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS SURVEY WAS MADE BY METHOD OF RANDOM TRAVERSE. THE BEARINGS AND DISTANCES SHOWN HEREON HAVE BEEN ADJUSTED FOR CLOSURE. THIS SURVEY AND PLAN MEETS OR EXCEEDS THE MINIMUM STANDARDS OF GOVERNING AUTHORITIES.

David Winkler # 3492 11-11-02
SIGNATURE LS No. DATE

NO.	DATE	REVISION	D+D APPR'S	DATE MSD APPROVALS
3	8/14/02	AS-BUILT REVISIONS		
2	9/25/01	MSD COMMENTS		
1	9/04/01	MSD COMMENTS		

11-11-02
David Winkler
Land Surveyor's Seal

11-11-02
STATE OF KENTUCKY JAMES S GONDA 20707 LICENSED PROFESSIONAL ENGINEER
Signature P.E.# 20707
Professional Engineer's Seal

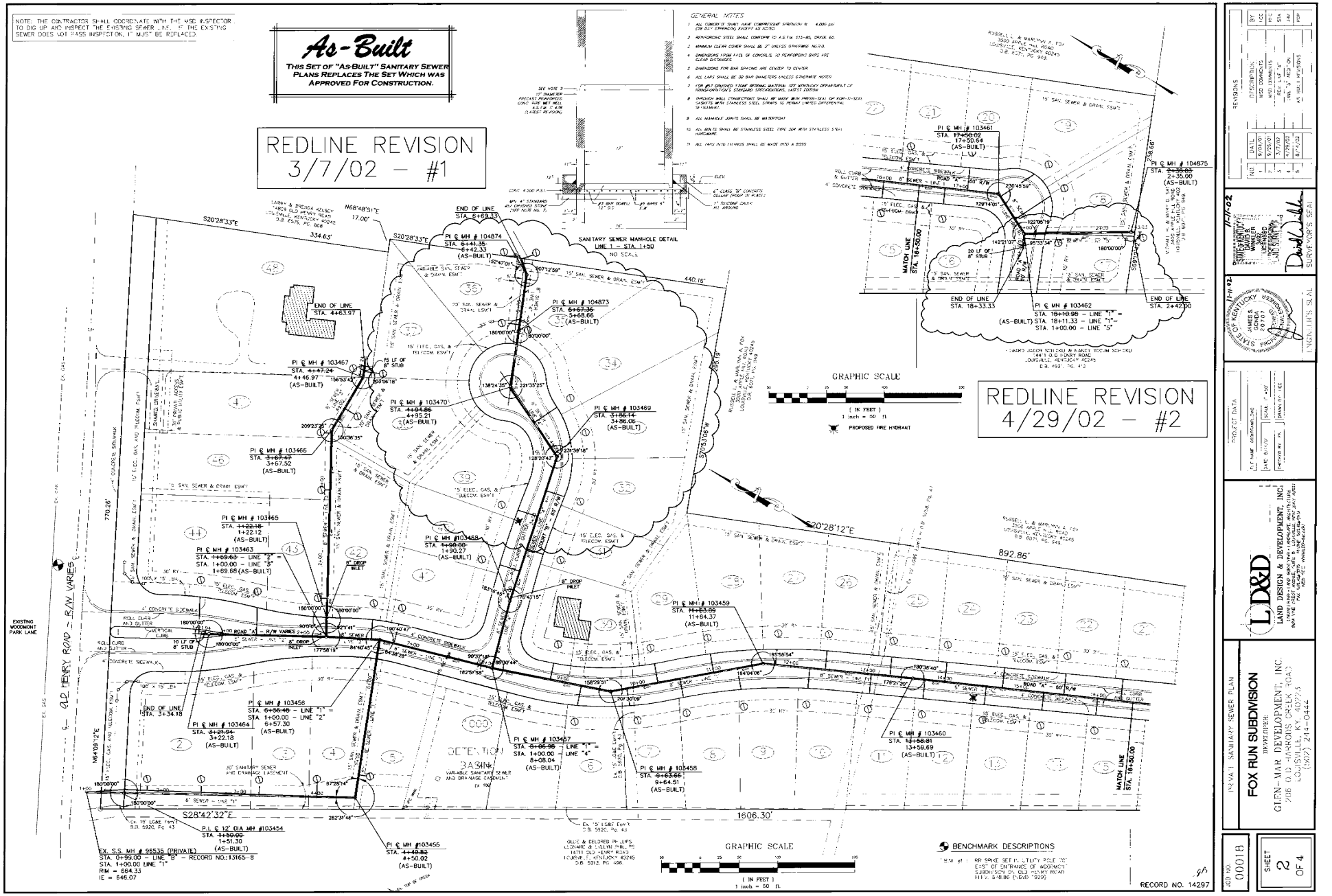
PLANS PREPARED AND SURVEYED BY:
L D&D
LAND DESIGN & DEVELOPMENT, INC.
ENGINEERING • LAND SURVEYING • LANDSCAPE ARCHITECTURE
Design Consultant

OWNER/DEVELOPER:
GLEN-MAR DEVELOPMENT, INC.
206 OLD HARRODS CREEK ROAD
LOUISVILLE, KENTUCKY 40223
(502) 244-0444

FOX RUN SUBDIVISION
PRIVATE SANITARY SEWERS
COVER SHEET

SCALE: NO SCALE DATE: AUGUST 14, 2001

RECORD NO. 14297 SHEET 1 OF 4



NO.	DATE	DESCRIPTION	BY
1	6/28/01	MSD COMMENTS	STA
2	9/25/01	MSD COMMENTS	STA
3	3/7/02	INCL. LOT 4	STA
4	4/29/02	FINAL "AS BUILT" SEWER LAYOUT	STA
5	8/14/02	AS BUILT REVISIONS	JRM

REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IS TRUE AND CORRECT. I FURTHER CERTIFY THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE COMMONWEALTH OF KENTUCKY.
DAVID L. WILLEN
LICENSED PROFESSIONAL ENGINEER
No. 19193
STATE OF KENTUCKY
11-14-02

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF IS TRUE AND CORRECT. I FURTHER CERTIFY THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE COMMONWEALTH OF KENTUCKY.
JAMES S. GONDA
No. 2707
STATE OF KENTUCKY
LICENSED PROFESSIONAL LAND SURVEYOR
11-14-02

PROJECT DATA
F.F. MAP: 009DM13NG
SCALE: 1"=50'
DATE: 8/17/01
DRAWN BY: MEC
CHECKED BY: PS

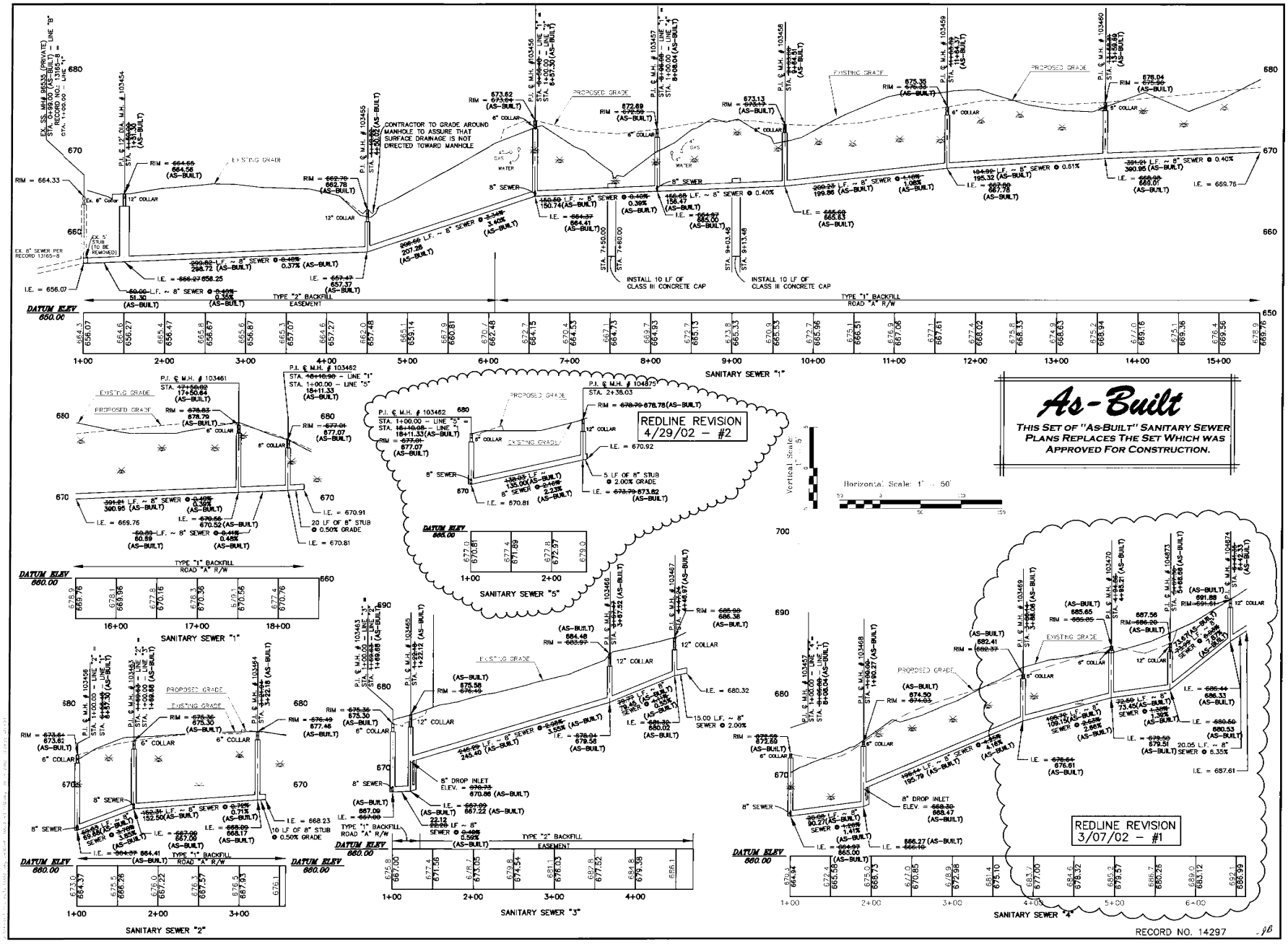
LD&D
LAND DESIGN & DEVELOPMENT, INC.
ENGINEERS • PLANNERS • LANDSCAPE ARCHITECTS
ONE VALLEY PLACE • SUITE 3000 • 401 SOUTH FIRST STREET • LOUISVILLE, KENTUCKY 40202
(502) 584-1311 • FAX (502) 584-1411 • WWW.LDDINC.COM

PROJECT
FOX RUN SUBDIVISION
DEVELOPER:
GLEN-MAR DEVELOPMENT, INC.
208 OLD HARRODS CREEK ROAD
LOUISVILLE, KY 40223
(502) 244-0442

PRIVATE SANITARY SEWER PLAN

JOB NO: 00018

SHEET 2 OF 4



As-Built

THIS SET OF "AS-BUILT" SANITARY SEWER PLANS REPLACES THE SET WHICH WAS APPROVED FOR CONSTRUCTION.

RECORD NO. 14297

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	9/24/01	MISC COMMENTS	MSC
2	9/27/01	MISC COMMENTS	MSC
3	1/10/02	REV. LINE "4"	STK
4	2/19/02	ADD "A" ALIGNMENT	JBM
5	3/7/02	ADD REDLINE REVISION	PDP

11-11-02

KENTUCKY LICENSED PROFESSIONAL ENGINEER DAVID B. WALKER 19681 ENGINEER'S SEAL

11-11-02

COMMONWEALTH OF KENTUCKY JAMES R. CHAMBERS 20707 STATE PROFESSIONAL ENGINEER

SURVEYOR'S SEAL

PROJECT DATA

FILE NAME: 1001BAN-PROFILE
DATE: 8/14/01
SCALE: AS SHOWN
DESIGNED BY: JBC
DRAWN BY: MSC

L D&D

LAND DESIGN & DEVELOPMENT, INC.
503 EXECUTIVE CENTER DRIVE, SUITE 3, LOUISVILLE, KENTUCKY 40223
PHONE: (502) 244-0444 FAX: (502) 244-0499
WEB SITE: WWW.LDNDINC.COM

PRIVATE SANITARY SEWER PROFILES

FOX RUN SUBDIVISION

DEVELOPER

GLENN-MAR DEVELOPMENT, INC.
206 OLD HARRODS CREEK ROAD
LOUISVILLE, KENTUCKY 40223
(502) 244-0444

JOB NO. 00018

SHEET 3 OF 4

MSD — LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: Fox Run Subdivision — Assm't __ Int __ Lat Ext X Rec No. 14,297 Sht No. 1 of 5 Available Date 11-11-02
Line: 1 Inspector: Chris Banks — Date 11-11-02 Accepted by MSD Inspector C.J. Banks Date 11-11-02
Engineer: James Gonda, PE — Phone No. (502)426-9374 Contractor KELSEY CONSTRUCTION Phone No. (502) 955-1410

** To Complete the "Location of PSC on lot": RW – Right of Way (Front); Em – Esm't in Open Area; EMF – Esm't Front; EMS – Esm't Side; EMR – Esm't Rear; CU – Cul de sac; AL – Alley Rear; ALS – Alley Side

LINE "1"

Tap Station on Sewer / Tap Station on P/L	Size / Location of PSC on Lot **	Side / Elevation	Length / Depth at End	Tax Block/Lot No. / House No.	Street Name	Tap Location – Distance & Direction from MH / End Location – Distance & Direction from PL Corner	MH Number / Upstream/Downstream Node (By MSD)	Description of Location of MH (By MSD) / Line Segment Numbers FROM–TO (By MSD)	Remarks
T 1+80.00	4"	L	6'		ROAD–A	MH 29' S	103,454		
P/L 1+80.00	EMR	656.59	8'	LOT 2		P/L 59'S of N P/L			LAID 10'
T 2+50.00	4"	L	8'		ROAD–A	MH 99' S	103,454		
P/L 2+50.00	EMR	656.87	8'	LOT 2		P/L 11'S of N P/L			LAID 12'
T 3+25.00	4"	L	11'		ROAD–A	MH 125' N	103,455		
P/L 3+25.00	EMR	657.15	8'	LOT 3		P/L 10'S of N P/L			LAID 14'
T 4+00.00	4"	L	18'		ROAD–A	MH 50' N	103,455		
P/L 4+00.00	EMR	657.47	7'	LOT 4		P/L 13'S of N P/L			LAID 18'
T 4+80.00	4"	R	10'		ROAD–A	MH 30' E	103,455		
P/L 4+80.00	EMS	658.70	5'	LOT 5		P/L 45'E of W P/L			LAID 10'
T 9+25.00	4"	R	26'		ROAD–A	MH 39' N	103,458		
P/L 9+25.00	RW	666.60	6'	LOT 6		P/L 13'S of N P/L			LAID 42'
T 9+85.00	4"	R	23'		ROAD–A	MH 21' S	103,458		
P/L 9+85.00	RW	664.59	5'	LOT 7		P/L 10'S of N P/L			LAID 40'
T 10+55.00	4"	R	24'		ROAD–A	MH 91' S	103,458		
P/L 10+55.00	RW	667.69	6'	LOT 8		P/L 6'S of N P/L			LAID 40'
T 11+30.00	4"	R	28'		ROAD–A	MH 34' N	103,459		
P/L 11+30.00	RW	668.62	6.5'	LOT 9		P/L 3'S of N P/L			LAID 45'
T 12+25.00	4"	R	26'		ROAD–A	MH 62' S	103,459		
P/L 12+25.00	RW	669.11	6.5'	LOT 10		P/L 13'S of N P/L			LAID 42'

MSD — LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: Fox Run Subdivision — Assm't __ Int __ Lat Ext X Rec No. 14,297 Sht No. 2 of 5 Available Date 11-11-02
Line: 1 Inspector: Chris Banks — Date 11-11-02 Accepted by MSD Inspector C.J. Banks Date 11-11-02
Engineer: James Gonda, PE — Phone No. (502)426-9374 Contractor KELSEY CONSTRUCTION Phone No. (502) 955-1410

LINE "1"

Tap Station on Sewer / Tap Station on P/L	Size / Location of PSC on Lot **	Side / Elevation	Length / Depth at End	Tax Block/Lot No. / House No.	Street Name	Tap Location – Distance & Direction from MH / End Location – Distance & Direction from PL Corner	MH Number / Upstream/Downstream Node (By MSD)	Description of Location of MH (By MSD) / Line Segment Numbers FROM–TO (By MSD)	Remarks
T 13+05.00	4"	R	25'		ROAD–A	MH 54' N	103,460		
P/L 13+05.00	RW	669.59	6.5'	LOT 11		P/L 16'S of N P/L			LAID 40'
T 13+75.00	4"	R	25'		ROAD–A	MH 16' S	103,460		
P/L 13+75.00	RW	670.02	6.5'	LOT 12		P/L 10'S of N P/L			LAID 40'
T 14+55.00	4"	R	24'		ROAD–A	MH 96' S	103,460		
P/L 14+55.00	RW	670.32	6.5'	LOT 13		P/L 15'S of N P/L			LAID 38'
T 15+30.00	4"	R	23'		ROAD–A	MH 171' S	103,460		
P/L 15+30.00	RW	670.61	6.5'	LOT 14		P/L 15'S of N P/L			LAID 38'
T 16+00.00	4"	R	22'		ROAD–A	MH 150' N	103,461		
P/L 16+00.00	RW	670.92	6.5'	LOT 15		P/L 10'S of N P/L			LAID 36'
T 16+80.00	4"	R	21'		ROAD–A	MH 70' N	103,461		
P/L 16+80.00	RW	671.22	6.5'	LOT 16		P/L 15'S of N P/L			LAID 35'
T 18+18.00	4"	L	26'		ROAD–A	MH 7' W	103,462		
P/L 18+18.00	RW	671.66	5'	LOT 17		P/L 10'W of E P/L			LAID 40'
T 17+90.00	4"	L	55'		ROAD–A	MH 21' N	103,462		
P/L 17+90.00	RW	672.43	5'	LOT 18		P/L 12'S of N P/L			LAID 70'
T 17+55.00	4"	L	53'		ROAD–A	MH 4' S	103,461		
P/L 17+55.00	RW	670.97	6'	LOT 19		P/L 21'S of N P/L			LAID 70'
T 17+10.00	4"	L	29'		ROAD–A	MH 41' N	103,461		
P/L 17+10.00	RW	671.34	6.5'	LOT 20		P/L 12'S of N P/L			LAID 45'

MSD — LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: Fox Run Subdivision — Assm't __ Int __ Lat Ext X Rec No. 14,297 Sht No. 3 of 5 Available Date 11-11-02
Line: 1 Inspector: Chris Banks — Date 11-11-02 Accepted by MSD Inspector C.J. Banks Date 11-11-02
Engineer: James Gonda, PE — Phone No. (502)426-9374 Contractor KELSEY CONSTRUCTION Phone No. (502) 955-1410

LINE "1"

Tap Station on Sewer / Tap Station on P/L	Size / Location of PSC on Lot **	Side / Elevation	Length / Depth at End	Tax Block/Lot No. / House No.	Street Name	Tap Location – Distance & Direction from MH / End Location – Distance & Direction from PL Corner	MH Number / Upstream/Downstream Node (By MSD)	Description of Location of MH (By MSD) / Line Segment Numbers FROM–TO (By MSD)	Remarks
T 16+30.00	4"	L	29'		ROAD–A	MH 120' N	103,461		
P/L 16+30.00	RW	671.03	6.5'	LOT 21		P/L 10'S of N P/L			LAID 44'
T 15+55.00	4"	L	27'		ROAD–A	MH 197' S	103,460		
P/L 15+55.00	RW	670.72	6.5'	LOT 22		P/L 13'S of N P/L			LAID 44'
T 14+75.00	4"	L	26'		ROAD–A	MH 117' S	103,460		
P/L 14+75.00	RW	670.41	6.5'	LOT 23		P/L 10'S of N P/L			LAID 42'
T 14+00.00	4"	L	25'		ROAD–A	MH 42' S	103,460		
P/L 14+00.00	RW	670.11	6.5'	LOT 24		P/L 12'S of N P/L			LAID 42'
T 13+30.00	4"	L	25'		ROAD–A	MH 30' N	103,460		
P/L 13+30.00	RW	669.71	6.5'	LOT 25		P/L 17'S of N P/L			LAID 40'
T 12+45.00	4"	L	24'		ROAD–A	MH 82' S	103,459		
P/L 12+45.00	RW	669.24	6.5'	LOT 26		P/L 9'S of N P/L			LAID 40'
T 11+80.00	4"	L	20'		ROAD–A	MH 17' S	103,459		
P/L 11+80.00	RW	668.62	6.5'	LOT 27		P/L 18'S of N P/L			LAID 35'
T 11+00.00	4"	L	24'		ROAD–A	MH 64' N	103,459		
P/L 11+00.00	RW	668.21	6'	LOT 28		P/L 7'S of N P/L			LAID 40'
T 10+25.00	4"	L	25'		ROAD–A	MH 62' S	103,458		
P/L 10+25.00	RW	667.37	6'	LOT 29		P/L 20'S of N P/L			LAID 40'
T 8+85.00	4"	L	21'	LOT 30	ROAD–A	MH 80' N	103,458		
P/L 8+85.00	RW	666.18	6'	14801		P/L 11'N of S P/L			LAID 40'

MSD — LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: Fox Run Subdivision — Assm't __ Int __ Lat Ext X Rec No. 14,297 Sht No. 4 of 5 Available Date 11-11-02
Line: __ Inspector: Chris Banks — Date 11-11-02 Accepted by MSD Inspector C.J. Banks Date 11-11-02
Engineer: James Gonda, PE — Phone No. (502)426-9374 Contractor KELSEY CONSTRUCTION Phone No. (502) 955-1410

LINE "1" / LINE "2" / LINE "3"

Tap Station on Sewer / Tap Station on P/L	Size / Location of PSC on Lot **	Side / Elevation	Length / Depth at End	Tax Block/Lot No. / House No.	Street Name	Tap Location – Distance & Direction from MH / End Location – Distance & Direction from PL Corner	MH Number / Upstream/Downstream Node (By MSD)	Description of Location of MH (By MSD) / Line Segment Numbers FROM–TO (By MSD)	Remarks
T 6+75.00	4"	L	26'		ROAD–A	MH 19' S	103,456		
P/L 6+75.00	RW	664.40	9'	LOT 41		P/L 17'S of N P/L			LAID 42'
~~T 12+45.00~~	~~4"~~	~~L~~	~~24'~~		~~ROAD–A~~	~~MH 82' S~~	~~103,459~~		
~~P/L 12+45.00~~			~~6.5'~~	~~LOT 26~~		~~P/L 9'S of N P/L~~			~~LAID 40'~~
T 1+10.00	4"	R	26'		ROAD–A	MH 11' N	103,456		
P/L 1+10.00	RW	667.15	9'	LOT 42		P/L 18'N of S P/L			LAID 42'
T 2+60.00	4"	R	36'		ROAD–A	MH 62' S	103,464		
P/L 2+60.00	RW	668.64	6'	LOT 44		P/L 12'N of S P/L			LAID 52'
T 3+35.00	4"	R	48'		ROAD–A	MH 13' N	103,464		
P/L 3+35.00	RW	669.80	6'	LOT 44		P/L 13'N of S P/L			LAID 65'
T 1+50.00	4"	L	7'		ROAD–A	MH 28' E	103,465		
P/L 1+50.00	RW	667.71	4.5'	LOT 43		P/L 25'E of W P/L			LAID 7'
T 4+55.00	4"	R	20'		COURT–B	MH 7' E	103,467		
P/L 4+55.00	EMR	681.92	5'	LOT 37		P/L 6'E of W P/L			LAID 20'
T 4+00.00	4"	R	15'		COURT–B	MH 33' E	103,466		
P/L 4+00.00	EMR	679.75	5'	LOT 38		P/L 42'E of W P/L			LAID 15'
T 2+90.00	4"	L	7'		OLD HENRY	MH 78' W	103,466		
P/L 2+90.00	EMR	677.21	4.5'	LOT 46	ROAD	P/L 13'E of W P/L			LAID 7'
T 3+64.00	4"	L	8'		OLD HENRY	MH 4' W	103,466		
P/L 3+64.00	EMR	679.51	4.5'	LOT 47	ROAD	P/L 7'E of W P/L			LAID 13'
T 4+57.00	4"	L	4'		OLD HENRY	MH 9' E	103,467		
P/L 4+57.00	EMR	681.82	5'	LOT 48	ROAD	P/L 8'E of W P/L			LAID 10'

MSD — LOUISVILLE AND JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: Fox Run Subdivision — Assm't __ Int __ Lat Ext X Rec No. 14,297 Sht No. 5 of 5 Available Date 11-11-02
Line: 4 Inspector: Chris Banks — Date 11-11-02 Accepted by MSD Inspector C.J. Banks Date 11-11-02
Engineer: James Gonda, PE — Phone No. (502)426-9374 Contractor KELSEY CONSTRUCTION Phone No. (502) 955-1410

LINE "4" / LINE "5"

Tap Station on Sewer / Tap Station on P/L	Size / Location of PSC on Lot **	Side / Elevation	Length / Depth at End	Tax Block/Lot No. / House No.	Street Name	Tap Location – Distance & Direction from MH / End Location – Distance & Direction from PL Corner	MH Number / Upstream/Downstream Node (By MSD)	Description of Location of MH (By MSD) / Line Segment Numbers FROM–TO (By MSD)	Remarks
T 2+60.00	4"	R	22'		COURT–B	MH 70' E	103,468		
P/L 2+60.00	RW	671.06	5'	LOT 31		P/L 13'E of W P/L			LAID 40'
T 3+40.00	4"	R	25'		COURT–B	MH 46' W	103,469		
P/L 3+40.00	RW	674.46	5.5	LOT 32		P/L 12'E of W P/L			LAID 41'
T 3+92.00	4"	R	25		COURT–B	MH 6' N	103,469		
P/L 3+92.00	RW	675.68	5'	LOT 33		P/L 21'E of W P/L			LAID 42'
T 4+40.00	4"	R	37'		COURT–B	MH 54' N	103,469		
P/L 4+40.00	RW	677.13	5'	LOT 34		P/L 11'N of S P/L			LAID 50'
T 5+70.00	4"	R	5'		COURT–B	MH 4' E	104,873		
P/L 5+70.00	RW	677.73	5'	LOT 35		P/L 20'E of W P/L			LAID 6'
T 5+75.00	4"	L	15'		COURT–B	MH 9' E	104,873		
P/L 5+75.00	RW	678.15	5'	LOT 36		P/L 25'E of W P/L			LAID 17'
T 3+05.00	4"	L	27'		COURT–B	MH 81' W	103,469		
P/L 3+05.00	RW	672.98	5'	LOT 39		P/L 13'E of W P/L			LAID 43'
T 2+30.00	4"	L	27'		COURT–B	MH 40' E	103,468		
P/L 2+30.00	RW	669.79	5.5'	LOT 40		P/L 12'E of W P/L			LAID 45'
T 6+67.00	4"	L	14'		OLD HENRY RD	MH 25' E	104,874		
P/L 6+67.00			5'	14809		P/L			
T 6+62.00	4"	R	18'		OLD HENRY RD	MH 20' E	104,874		
P/L 6+62.00			5'	14809		P/L			
T 2+40.00	4"	L	5'		APPLE HILL RD	MH 5' S	104,876		REDUCER 8" – 4"
P/L 2+40.00			6'	3500		P/L 3'N of S P/L			LAID 5'

As-Built

THIS SET OF "AS-BUILT" SANITARY SEWER PLANS REPLACES THE SET WHICH WAS APPROVED FOR CONSTRUCTION.

CJB RECORD NO. 14297

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	8/04/01	MSD COMMENTS	HEC
2	8/23/02	AS-BUILT REVISIONS	PDP

11-11-02 STATE OF KENTUCKY DAVID B. WINKLER 3492 LICENSED PROFESSIONAL LAND SURVEYOR — SURVEYOR'S SEAL

11-11-02 STATE OF KENTUCKY JAMES S. GONDA 20707 LICENSED PROFESSIONAL ENGINEER — ENGINEER'S SEAL

PROJECT DATA: FILE NAME: 00018PSC.DWG; DATE: 08/14/01; SCALE: NONE; CHECKED BY; DRAWN BY: HY

LD&D LAND DESIGN & DEVELOPMENT, INC. — ENGINEERING • LAND SURVEYING • LANDSCAPE ARCHITECTURE, 503 VINE CREST AVENUE, SUITE B, LOUISVILLE, KENTUCKY 40222

PROPERTY SERVICE CONNECTIONS

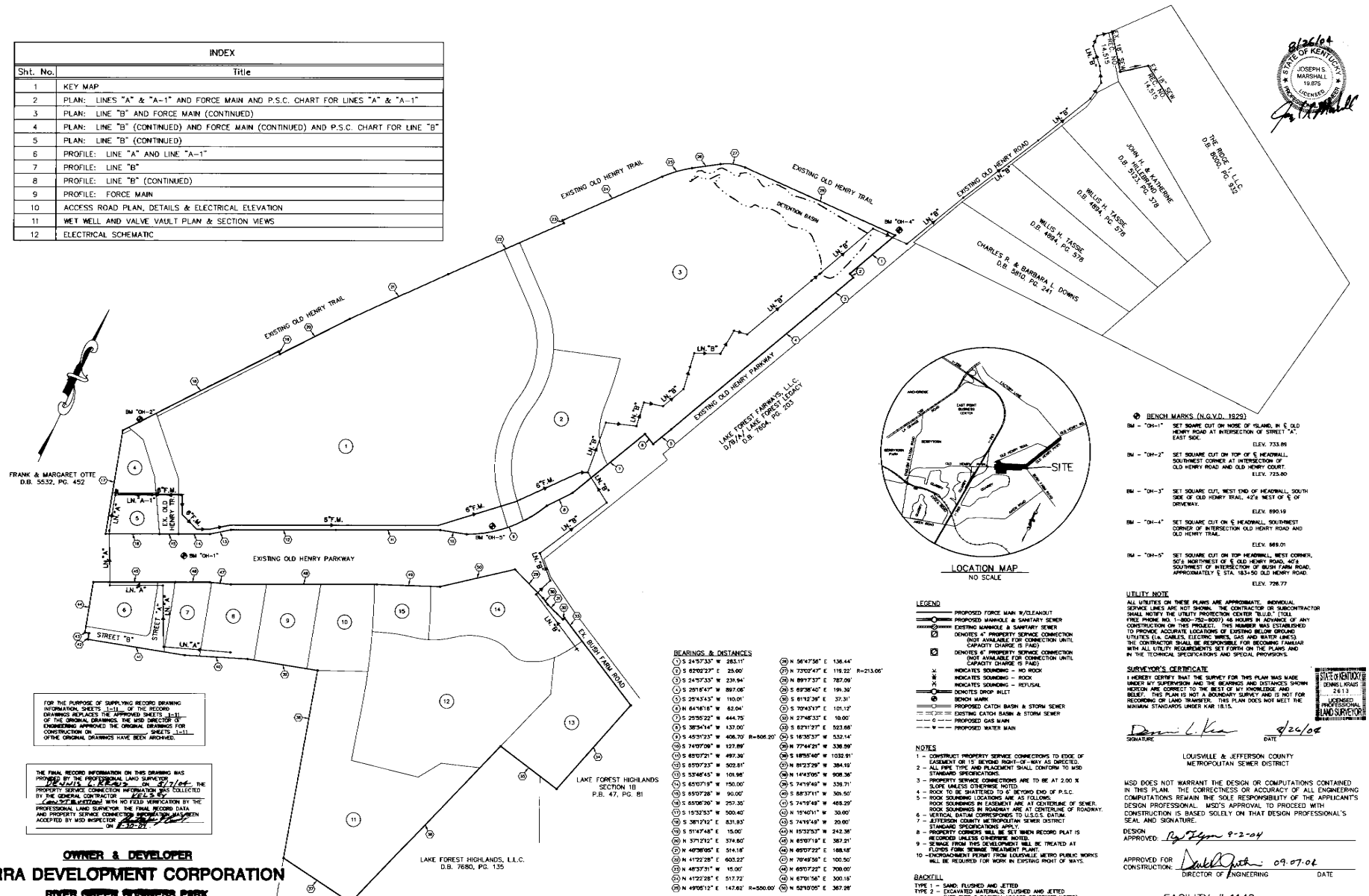
FOX RUN SUBDIVISION

DEVELOPER: GLEN-MAR DEVELOPMENT, INC. 206 OLD HARRODS CREEK ROAD LOUISVILLE, KENTUCKY 40223 (502) 244-0444

JOB NO. 00018

SHEET 4 OF 4

INDEX	
Sht. No.	Title
1	KEY MAP
2	PLAN: LINES "A" & "A-1" AND FORCE MAIN AND P.S.C. CHART FOR LINES "A" & "A-1"
3	PLAN: LINE "B" AND FORCE MAIN (CONTINUED)
4	PLAN: LINE "B" (CONTINUED) AND FORCE MAIN (CONTINUED) AND P.S.C. CHART FOR LINE "B"
5	PLAN: LINE "B" (CONTINUED)
6	PROFILE: LINE "A" AND LINE "A-1"
7	PROFILE: LINE "B"
8	PROFILE: LINE "B" (CONTINUED)
9	PROFILE: FORCE MAIN
10	ACCESS ROAD PLAN, DETAILS & ELECTRICAL ELEVATION
11	WET WELL AND VALVE VAULT PLAN & SECTION VIEWS
12	ELECTRICAL SCHEMATIC



LOCATION MAP
NO SCALE

FOR THE PURPOSE OF SUPPLYING RECORD DRAWING INFORMATION, SHEETS 1-11 OF THE RECORD DRAWINGS REPLACES THE APPROVED SHEETS 1-11 OF THE ORIGINAL DRAWINGS. THE MSD DIRECTOR OF ENGINEERING APPROVED THE ORIGINAL DRAWINGS FOR CONSTRUCTION ON _____. SHEETS 1-11 OF THE ORIGINAL DRAWINGS HAVE BEEN ARCHIVED.

THE FINAL RECORD INFORMATION ON THIS DRAWING WAS PROVIDED BY THE PROFESSIONAL LAND SURVEYOR DENNIS L. KRAUS ON 8/26/04. THE PROPERTY SERVICE CONNECTION INFORMATION WAS COLLECTED BY THE GENERAL CONTRACTOR KELLEY CONSTRUCTION WITH NO FIELD VERIFICATION BY THE PROFESSIONAL LAND SURVEYOR. THE FINAL RECORD DATA AND PROPERTY SERVICE CONNECTION INFORMATION WAS SEEN ACCEPTED BY MSD INSPECTOR _____ ON 8-30-04

OWNER & DEVELOPER

TERRA DEVELOPMENT CORPORATION
RIVER GREEN BUSINESS PARK
2711 RIVER GREEN CIRCLE
LOUISVILLE, KENTUCKY 40206
TELEPHONE NO. (502) 897-7091

BEARINGS & DISTANCES

(1)	S 24°57'33" W 283.11'	(28)	N 56°47'56" E 136.44'
(2)	S 82°02'27" E 25.00'	(27)	N 73°03'47" E 119.22' R=213.06'
(3)	S 24°57'33" W 239.94'	(26)	N 89°17'37" E 787.09'
(4)	S 29°16'47" W 897.06'	(25)	S 89°38'40" E 199.39'
(5)	S 25°43'43" W 110.01'	(24)	S 81°12'39" E 37.31'
(6)	N 64°16'18" W 62.04'	(23)	S 70°43'17" E 101.12'
(7)	S 25°35'22" W 444.75'	(22)	N 27°48'33" E 19.00'
(8)	S 38°34'14" W 137.00'	(21)	S 62°11'27" E 523.68'
(9)	S 45°31'23" W 408.70' R=606.20'	(20)	S 16°35'37" W 532.14'
(10)	S 74°07'09" W 127.89'	(19)	N 77°44'21" W 338.59'
(11)	S 65°07'21" W 497.36'	(18)	S 18°55'40" W 1032.91'
(12)	S 85°07'23" W 502.81'	(17)	N 81°23'29" W 384.19'
(13)	S 53°48'45" W 101.98'	(16)	N 14°43'05" W 908.36'
(14)	S 65°07'19" W 150.00'	(15)	S 74°19'49" W 339.71'
(15)	S 65°07'28" W 90.00'	(14)	S 88°32'11" W 305.50'
(16)	S 65°06'29" W 257.35'	(13)	S 74°19'49" W 468.29'
(17)	S 15°52'53" W 500.40'	(12)	N 15°40'11" W 30.00'
(18)	S 38°12'12" E 831.93'	(11)	S 74°19'49" W 20.00'
(19)	S 51°47'48" E 15.00'	(10)	N 15°32'53" W 242.35'
(20)	N 37°12'12" E 574.80'	(9)	N 65°07'19" E 387.21'
(21)	N 48°36'05" E 514.18'	(8)	N 65°07'22" E 188.48'
(22)	N 41°22'28" E 603.22'	(7)	N 79°49'56" E 100.50'
(23)	N 48°37'31" W 15.00'	(6)	N 65°07'22" E 700.00'
(24)	N 41°22'28" E 517.72'	(5)	N 67°01'56" E 300.18'
(25)	N 49°05'12" E 147.62' R=550.00'	(4)	N 52°10'05" E 367.28'

NOTES
1 - CONSTRUCT PROPERTY SERVICE CONNECTIONS TO EDGE OF EASEMENT OR 15' BEYOND RIGHT-OF-WAY AS DIRECTED.
2 - ALL PIPE TYPE AND PLACEMENT SHALL CONFORM TO MSD STANDARD SPECIFICATIONS.
3 - PROPERTY SERVICE CONNECTIONS ARE TO BE AT 2.00 % SLOPE UNLESS OTHERWISE NOTED.
4 - ROCK TO BE SHATTERED TO 6' BEYOND END OF P.S.C.
5 - ROCK SOUNDING LOCATIONS ARE AS FOLLOWS:
ROCK SOUNDINGS IN EASEMENT ARE AT CENTERLINE OF SEWER.
ROCK SOUNDINGS IN ROADWAY ARE AT CENTERLINE OF ROADWAY.
6 - VERTICAL DATUM CORRESPONDS TO U.S.G.S. DATUM.
7 - JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT STANDARD SPECIFICATIONS APPLY.
8 - PROPERTY CORNERS WILL BE SET WHEN RECORD PLAT IS RECORDED UNLESS OTHERWISE NOTED.
9 - SEWAGE FROM THIS DEVELOPMENT WILL BE TREATED AT FLOYDS FORK SEWAGE TREATMENT PLANT.
10 - ENCROACHMENT PERMIT FROM LOUISVILLE METRO PUBLIC WORKS WILL BE REQUIRED FOR WORK IN EXISTING RIGHT OF WAYS.

BACKFILL
TYPE 1 - SAND, FLUSHED AND JETTED
TYPE 2 - EXCAVATED MATERIALS, FLUSHED AND JETTED
(USE TYPE 2 BACKFILL UNLESS OTHERWISE NOTED)

LEGEND
- PROPOSED FORCE MAIN W/CLEANOUT
- PROPOSED MANHOLE & SANITARY SEWER
- EXISTING MANHOLE & SANITARY SEWER
- DENOTES 4" PROPERTY SERVICE CONNECTION (NOT AVAILABLE FOR CONNECTION UNTIL CAPACITY CHARGE IS PAID)
- DENOTES 6" PROPERTY SERVICE CONNECTION (NOT AVAILABLE FOR CONNECTION UNTIL CAPACITY CHARGE IS PAID)
- INDICATES SOUNDING - NO ROCK
- INDICATES SOUNDING - ROCK
- INDICATES SOUNDING - REFUSAL
- DENOTES DROP INLET
- BENCH MARK
- PROPOSED CATCH BASIN & STORM SEWER
- EXISTING CATCH BASIN & STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED WATER MAIN

BENCH MARKS (N.G.V.D. 1929)

BM - "OH-1" SET SQUARE CUT ON NOSE OF ISLAND, IN ℄ OLD HENRY ROAD AT INTERSECTION OF STREET "A". EAST SIDE.
ELEV. 733.86

BM - "OH-2" SET SQUARE CUT ON TOP OF ℄ HEADWALL, SOUTHWEST CORNER AT INTERSECTION OF OLD HENRY ROAD AND OLD HENRY COURT.
ELEV. 723.80

BM - "OH-3" SET SQUARE CUT, WEST END OF HEADWALL, SOUTH SIDE OF OLD HENRY TRAIL, 42'± WEST OF ℄ OF DRIVEWAY.
ELEV. 690.19

BM - "OH-4" SET SQUARE CUT ON ℄ HEADWALL, SOUTHWEST CORNER OF INTERSECTION OLD HENRY ROAD AND OLD HENRY TRAIL.
ELEV. 669.01

BM - "OH-5" SET SQUARE CUT ON TOP HEADWALL, WEST CORNER, 50'± NORTHWEST OF ℄ OLD HENRY ROAD, 40'± SOUTHWEST OF INTERSECTION OF BUSH FARM ROAD, APPROXIMATELY ℄ STA. 183+50 OLD HENRY ROAD.
ELEV. 726.77

UTILITY NOTE
ALL UTILITIES ON THESE PLANS ARE APPROXIMATE. INDIVIDUAL SERVICE LINES ARE NOT SHOWN. THE CONTRACTOR OR SUBCONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER "BLUE" TOLL FREE PHONE NO. 1-800-752-8007) 48 HOURS IN ADVANCE OF ANY CONSTRUCTION ON THIS PROJECT. THIS NUMBER WAS ESTABLISHED TO PROVIDE ACCURATE LOCATIONS OF EXISTING BELOW GROUND UTILITIES (i.e. CABLES, ELECTRIC WIRES, GAS AND WATER LINES). THE CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING FAMILIAR WITH ALL UTILITY REQUIREMENTS SET FORTH ON THE PLANS AND IN THE TECHNICAL SPECIFICATIONS AND SPECIAL PROVISIONS.

SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT THE SURVEY FOR THIS PLAN WAS MADE UNDER MY SUPERVISION AND THE BEARINGS AND DISTANCES SHOWN HEREON ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS PLAN IS NOT A BOUNDARY SURVEY AND IS NOT FOR RECORDING OR LAND TRANSFER. THIS PLAN DOES NOT MEET THE MINIMUM STANDARDS UNDER KAR 18:15.

STATE OF KENTUCKY
DENNIS L. KRAUS
2613
LICENSED PROFESSIONAL LAND SURVEYOR

Dennis L. Kraus 8/26/04
SIGNATURE DATE

LOUISVILLE & JEFFERSON COUNTY
METROPOLITAN SEWER DISTRICT

MSD DOES NOT WARRANT THE DESIGN OR COMPUTATIONS CONTAINED IN THIS PLAN. THE CORRECTNESS OR ACCURACY OF ALL ENGINEERING COMPUTATIONS REMAIN THE SOLE RESPONSIBILITY OF THE APPLICANT'S DESIGN PROFESSIONAL. MSD'S APPROVAL TO PROCEED WITH CONSTRUCTION IS BASED SOLELY ON THAT DESIGN PROFESSIONAL'S SEAL AND SIGNATURE.

DESIGN APPROVED: _____ 9-2-04

APPROVED FOR CONSTRUCTION: _____ 09.07.04
DIRECTOR OF ENGINEERING DATE

GRAPHIC SCALE
0 25 50 100 200

BUD
Before 'U' Dig
CALL TOLL FREE
1-800-752-6007
For Buried Line/Cable Locations

SABAK, WILSON & LINGO, INC.
ENGINEERS, LANDSCAPE ARCHITECTS & PLANNERS
375 WEST MARKET STREET, LOUISVILLE, KENTUCKY 40202 (502) 584 - 6271

Scale: 1"=200'
Date: 1/17/03
Rev: 4/10/03
Rev: 5/23/03
Rev: 5/29/03
Rev: 7/9/03
Rev: 9/3/03 (SHT. 5 DETAIL)

FACILITY # 1149
OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
KEY MAP
RECORD NO. 14,640

1262-1
1
Sheets in Set: 12

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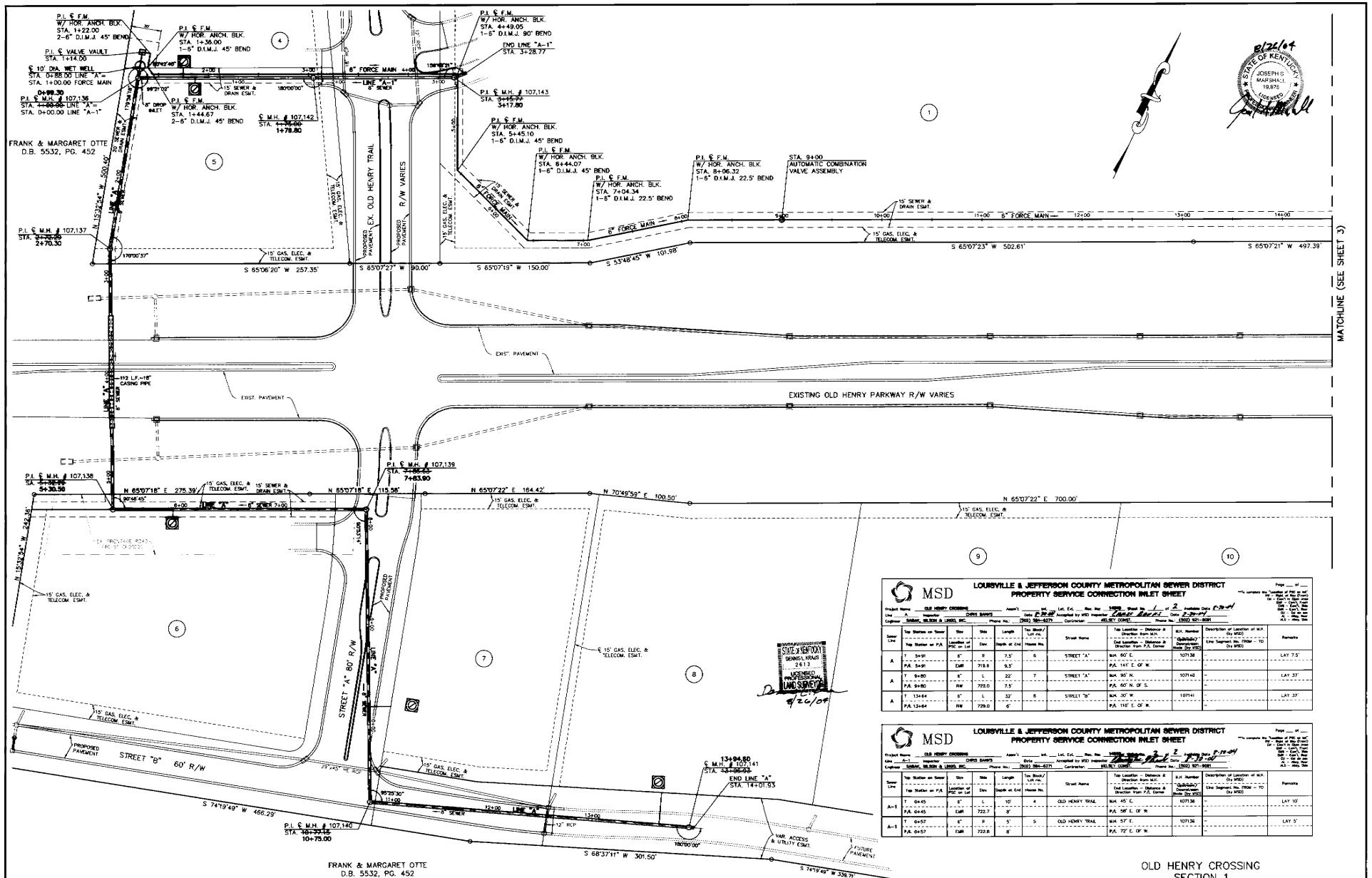

MSD

LOUISVILLE & JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: OLD HENRY CROSSING — Asm't: — Lot, Ext. — Rec. No. — Sheet No. 1 of 2 — Location Date 5-19-04
Line: A — Inspector: CHRIS BARNES — Date: 6-28-04 — Accepted by MSD Inspector: Chris Barnes — Date: 7-26-04
Engineer: SABAK, WILSON & LINGO, INC. — Phone No.: (502) 584-6271 — Contractor: ASHLEY CONST. — Phone No.: (502) 921-8081

Sewer Line	Top Station on Sewer / Top Station on P.A.	Size / Location of PSC on Lot	Slope / Dev.	Length / Depth at End	Tax Block / Lot no. / House No.	Street Name	Top Location – Distance & Direction from M.H. / End Location – Distance & Direction from P.A. Corner	M.H. Number / Date/Time Completed Made (by MSD)	Description of Location of M.H. (by MSD) / Line Segment No. FROM – TO (by MSD)	Remarks
A	T 5+91 / P.A. 5+91	6" / CMP	8 / 719.6	7.5' / 9.5'	6	STREET "A"	M.H. 60' E. / P.A. 141' E. OF W.	107136	–	LAY 7.5'
A	T 6+80 / P.A. 6+80	6" / RW	L / 722.0	22' / 7.5'	7	STREET "A"	M.H. 90' N. / P.A. 80' N. OF S.	107142	–	LAY 22'
A	T 13+64 / P.A. 13+64	6" / RW	L / 729.0	32' / 6'	8	STREET "B"	M.H. 20' W. / P.A. 116' E. OF W.	107141	–	LAY 32'

MSD

LOUISVILLE & JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: OLD HENRY CROSSING — Asm't: — Lot, Ext. — Rec. No. — Sheet No. 2 of 2 — Location Date 5-19-04
Line: A-1 — Inspector: CHRIS BARNES — Date: 6-28-04 — Accepted by MSD Inspector: Chris Barnes — Date: 7-26-04
Engineer: SABAK, WILSON & LINGO, INC. — Phone No.: (502) 584-6271 — Contractor: BRUNS, CLINT — Phone No.: (502) 921-8081

Sewer Line	Top Station on Sewer / Top Station on P.A.	Size / Location of PSC on Lot	Slope / Dev.	Length / Depth at End	Tax Block / Lot no. / House No.	Street Name	Top Location – Distance & Direction from M.H. / End Location – Distance & Direction from P.A. Corner	M.H. Number / Date/Time Completed Made (by MSD)	Description of Location of M.H. (by MSD) / Line Segment No. FROM – TO (by MSD)	Remarks
A-1	T 0+45 / P.A. 0+45	6" / CMP	L / 722.7	10' / 8'	4	OLD HENRY TRAIL	M.H. 45' E. / P.A. 58' E. OF W.	107136	–	LAY 10'
A-1	T 0+57 / P.A. 0+57	6" / CMP	R / 722.8	5' / 8'	5	OLD HENRY TRAIL	M.H. 57' E. / P.A. 72' E. OF W.	107136	–	LAY 5'

STATE OF KENTUCKY — JOSEPH S. MARSHALL — 19,875 — LICENSED PROFESSIONAL ENGINEER — 8/26/04

STATE OF KENTUCKY — DENNIS L. KRAUS — 2613 — LICENSED PROFESSIONAL LAND SURVEYOR — 8/26/04

BUD Before 'U' Dig CALL TOLL FREE 1-800-752-6007 For Buried Line/Cable Locations

SABAK, WILSON & LINGO, INC.
ENGINEERS, LANDSCAPE ARCHITECTS & PLANNERS
315 WEST MARKET STREET, LOUISVILLE, KENTUCKY 40202 (502) 584 - 6271

Scale: 1"=40'
Date: 3/17/03
Rev. 5/22/03
Rev. 4/7/04

OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
PLAN: LINES "A" & "A-1" AND FORCE MAIN
AND P.S.C. CHART FOR LINES "A" AND "A-1"
RECORD NO. 14,640

File: 1282-1
2
Sheets in Set: 12

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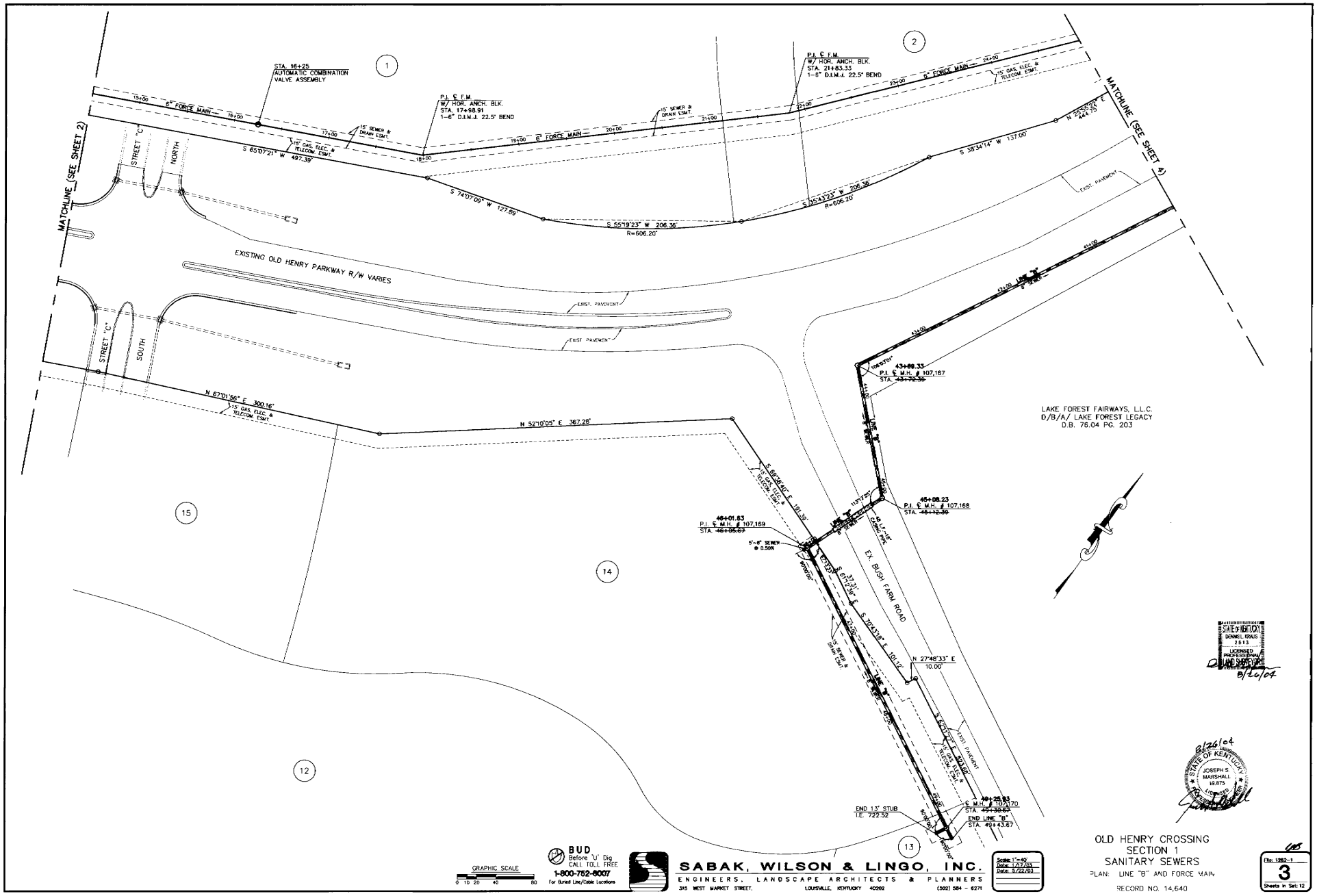
STA. 16+25
AUTOMATIC COMBINATION VALVE ASSEMBLY
P.I. ℄ F.M.
W/ HOR. ANCH. BLK.
STA. 17+98.91
1-6" D.I.M.J. 22.5° BEND
P.I. ℄ F.M.
W/ HOR. ANCH. BLK.
STA. 21+83.33
1-8" D.I.M.J. 22.5° BEND
6" FORCE MAIN
15' GAS, ELEC. & TELECOM. ESMT.
15' SEWER & DRAIN ESMT.
MATCHLINE (SEE SHEET 2)
MATCHLINE (SEE SHEET 4)
STREET "C"
NORTH
SOUTH
S 65°07'21" W 497.39'
S 74°07'09" W 127.89'
S 55°19'23" W 206.36'
R=606.20'
S 35°43'23" W 206.36'
R=606.20'
S 38°34'14" W 137.00'
N 25°52'37" W 444.75'
EXISTING OLD HENRY PARKWAY R/W VARIES
EXIST. PAVEMENT
N 67°01'56" E 300.16'
N 52°10'05" E 367.28'
S 89°28'40" E 191.39'
106°53'01"
43+89.33
P.I. ℄ M.H. # 107,167
STA. 43+72.36
45+08.23
P.I. ℄ M.H. # 107,168
STA. 45+12.30
46+01.83
P.I. ℄ M.H. # 107,169
STA. 46+05.67
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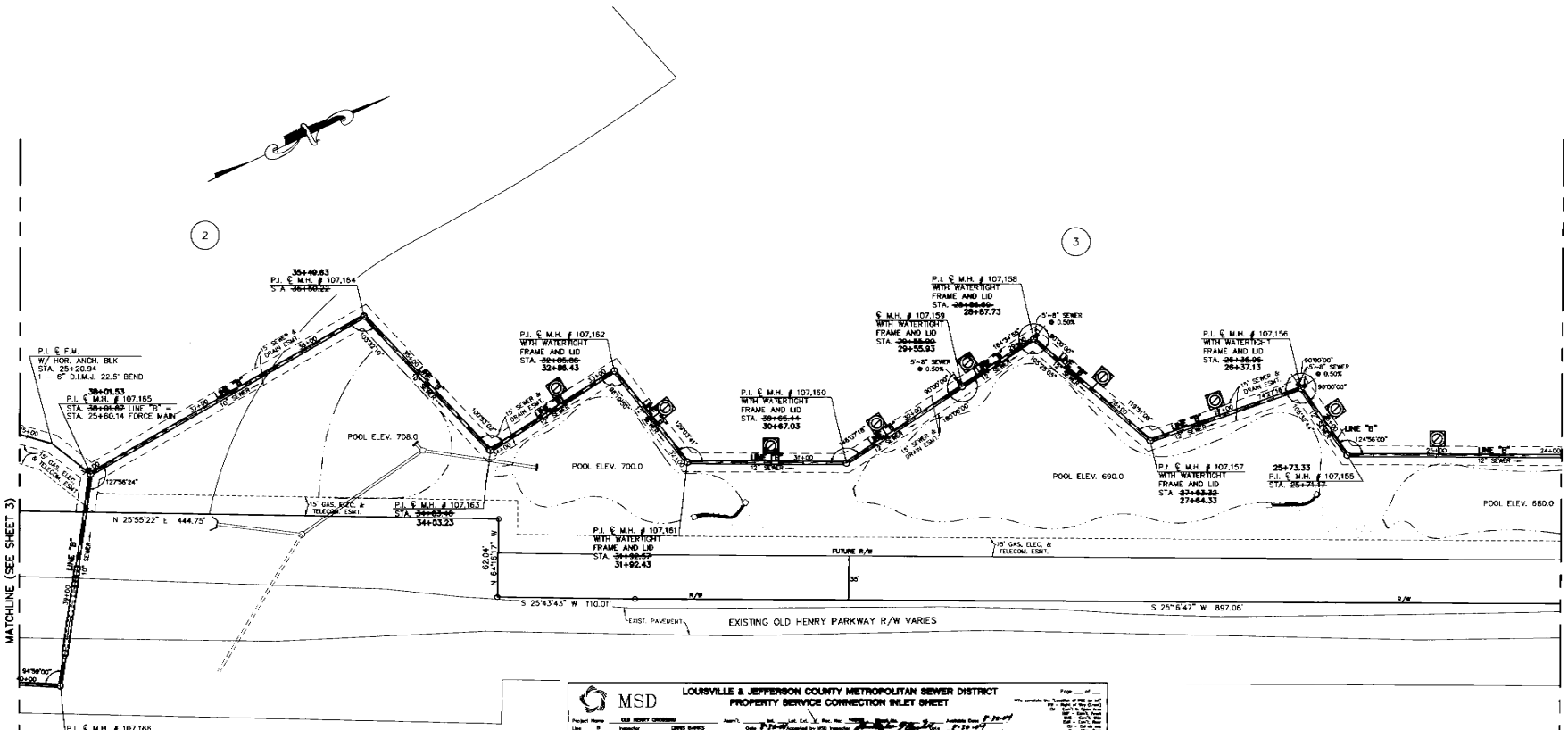

MSD

LOUISVILLE & JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: OLD HENRY CROSSING — Asset's: — Lat. Ext. — Rec. No. — Application Date: 5-19-04
Line: B — Inspector: JAMES BANKS — Date: 7-19-04 — Accepted by MSD Inspector: [signature] — Date: 7-29-04
Engineer: SABAK, WILSON & LINGO, INC. — Phone No.: (502) 584-6271 — Contractor: KELSEY CORBET — Phone No.: (502) 921-9091

Sewer Line	Top Station on Sewer / Top Station on P.A.	Size / Location of PSC on Lot	Slope / Dim.	Length / Depth at End	Tax Block/ Lot no. / House No.	Street Name	Top Location - Distance & Direction from N.H. / Lot Location - Distance & Direction from P.A. Corner	M.H. Number / Description from Inside (by MSD)	Description of Location of M.H. (by MSD) / Line Segment No. (FROM - TO) (by MSD)	Remarks
B	T 5+13	4"	L	13'	1899 / 4	OLD HENRY ROAD	N.A. 17' S.	107148	–	LAY 15°
	P.A. 5+13	RW	658.6	6'			P.A. –	–	–	
B	T 21+85	8"	R	7.5'	3	OLD HENRY ROAD	N.A. 92' S.	107154	–	LAY 7.5°
	P.A. 21+85	EMF	675.2	6.5'			P.A. –	–	–	
B	T 23+60	6"	R	7.5'	3	OLD HENRY ROAD	N.A. 187' S.	107154	–	LAY 7.5°
	P.A. 23+60	EMF	675.8	6'			P.A. –	–	–	
B	T 25+00	6"	R	7.5'	3	OLD HENRY ROAD	N.A. 73' N.	107155	–	LAY 7.5°
	P.A. 25+00	EMF	675.8	5.5'			P.A. –	–	–	
B	T 26+06	6"	R	7.5'	3	OLD HENRY ROAD	N.A. 31' E.	107156	–	LAY 7.5°
	P.A. 26+06	EMF	681.0	11.5'			P.A. –	–	–	
B	T 27+05	6"	R	7.5'	3	OLD HENRY ROAD	N.A. 58' N.	107157	–	LAY 7.5°
	P.A. 27+05	EMF	685.4	6'			P.A. –	–	–	
B	T 28+26	6"	R	7.5'	3	OLD HENRY ROAD	N.A. 61' E.	107158	–	LAY 7.5°
	P.A. 28+26	EMF	685.7	6'			P.A. –	–	–	
B	T 29+41	6"	R	7.5'	3	OLD HENRY ROAD	N.A. 15' N.	107159	–	LAY 7.5°
	P.A. 29+41	EMF	685.9	5.5'			P.A. –	–	–	
B	T 30+28	6"	R	7.5'	3	OLD HENRY ROAD	N.A. 39' N.	107160	–	LAY 7.5°
	P.A. 30+28	EMF	686.1	5'			P.A. –	–	–	
B	T 31+27	6"	R	7.5'	3	OLD HENRY ROAD	N.A. 80' S.	107160	–	LAY 7.5°
	P.A. 31+27	EMF	690.9	7'			P.A. –	–	–	
B	T 32+37	8"	R	7.5'	3	OLD HENRY ROAD	N.A. 45' W.	107161	–	LAY 7.5°
	P.A. 32+37	EMF	690.8	5.5'			P.A. –	–	–	
B	T 33+33	8"	R	7.5'	3	OLD HENRY ROAD	N.A. 47' S.	107162	–	LAY 7.5°
	P.A. 33+33	EMF	696.1	5.5'			P.A. –	–	–	

STATE OF KENTUCKY
DUANE L. NOLLE
26113
LICENSED PROFESSIONAL LAND SURVEYOR
9/26/04

9/26/04
STATE OF KENTUCKY
JOSEPH S. MARSHALL
19875
LICENSED

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For Buried Line/Cable Locations

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SABAK, WILSON & LINGO, INC.
ENGINEERS, LANDSCAPE ARCHITECTS & PLANNERS
315 WEST MARKET STREET, LOUISVILLE, KENTUCKY 40202 (502) 584 - 6271

Scale: 1"=40'
Date: 1/17/03
Rev: 7/22/03
Rev: 7/8/03

OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
PLAN: LINE "B"
AND P.S.C. CHART FOR LINE "B"
RECORD NO. 14,640

File: 1282-1
4
Sheets in Set: 12

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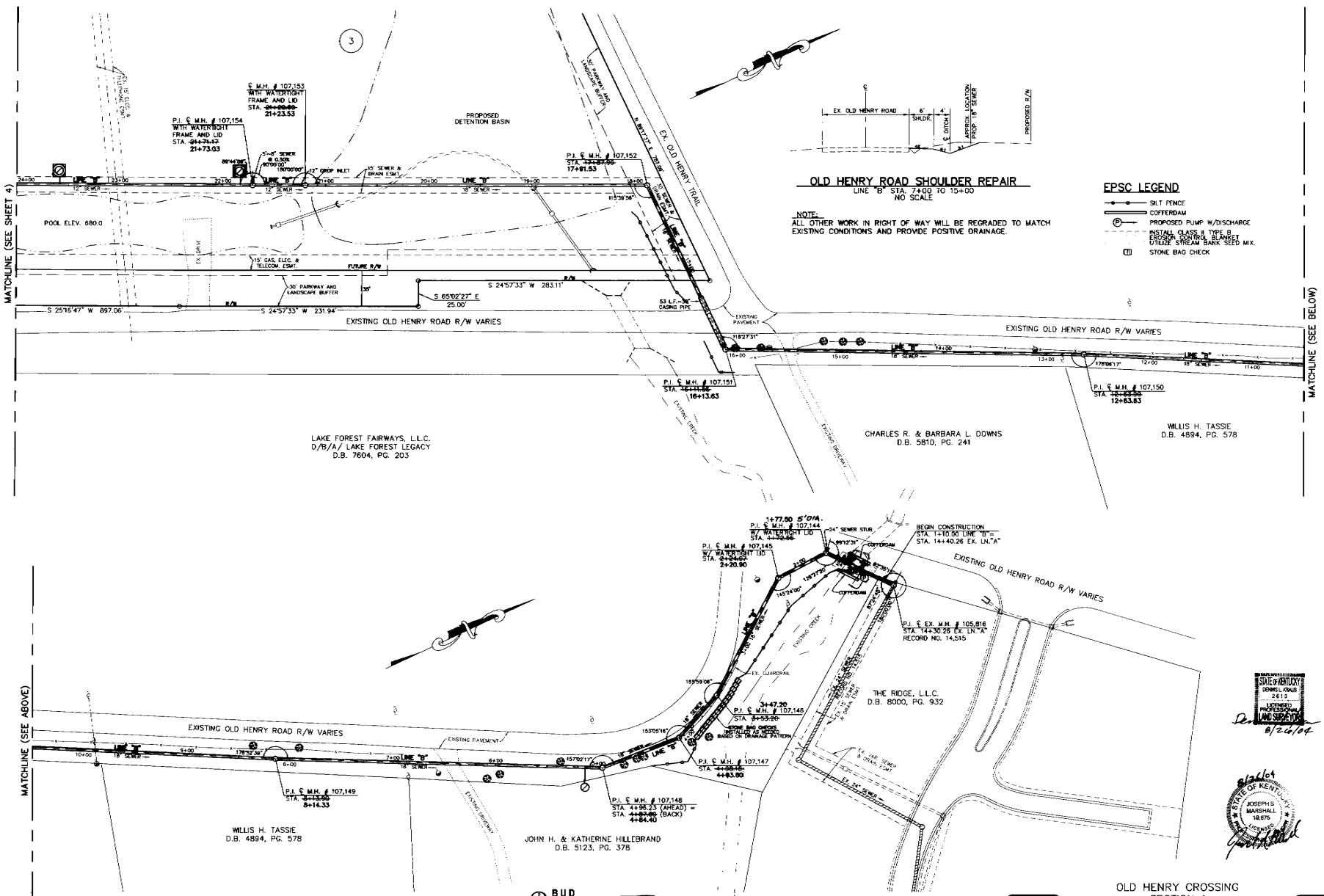

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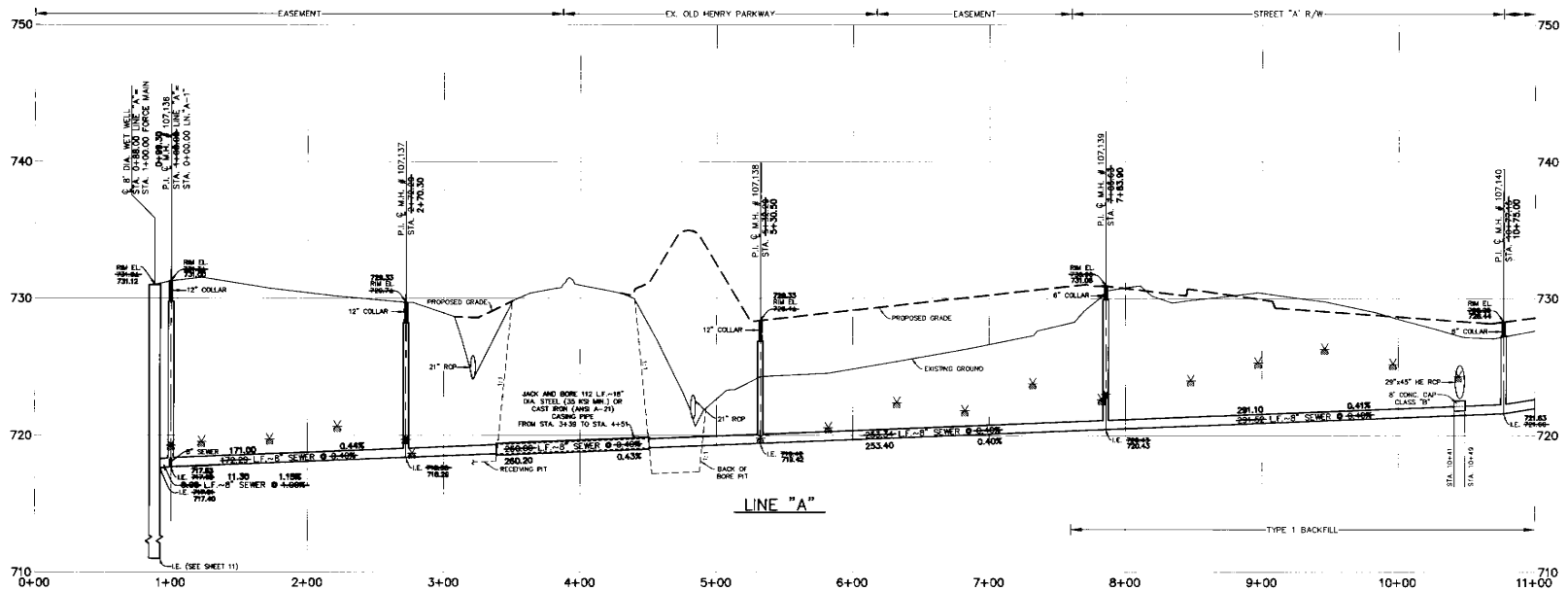
Scale: 1"=40'
Date: 1/17/03
Rev. 4/10/03
Rev. 5/22/03
Rev. 7/8/03
Rev. 9/3/03
Rev. 10/9/03
Rev. 2/3/04 EPSC
DETAIL

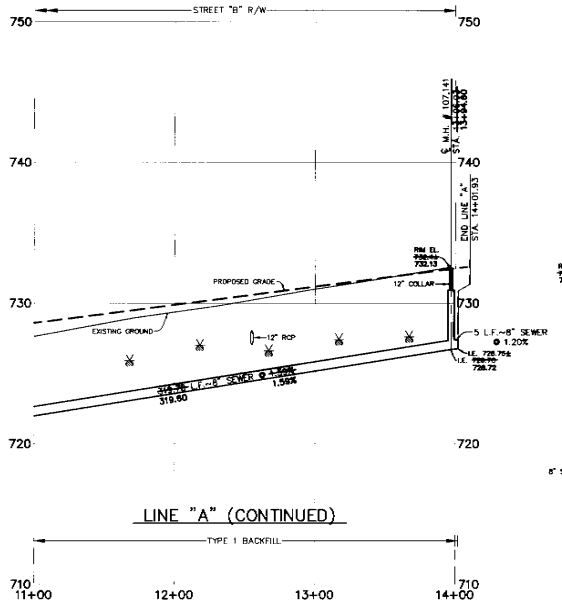
OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
PLAN: LINE "B"
RECORD NO. 14,640

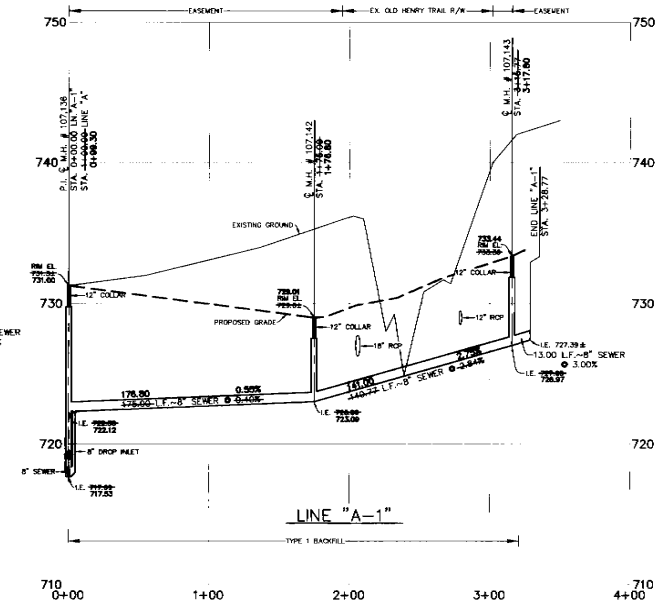
File: 1262-1
5
Sheets in Set: 12

STATE OF KENTUCKY
DENNIS L. KRAUS
2613
LICENSED PROFESSIONAL LAND SURVEYOR
8/26/04

STATE OF KENTUCKY
JOSEPH S. MARSHALL
19,875
LICENSED
8/26/04







STATE OF KENTUCKY
DENNIS L. KRAUS
2613
LICENSED PROFESSIONAL LAND SURVEYOR
8/26/04

8/26/04
STATE OF KENTUCKY
JOSEPH S. MARSHALL
19,875
LICENSED PROFESSIONAL ENGINEER

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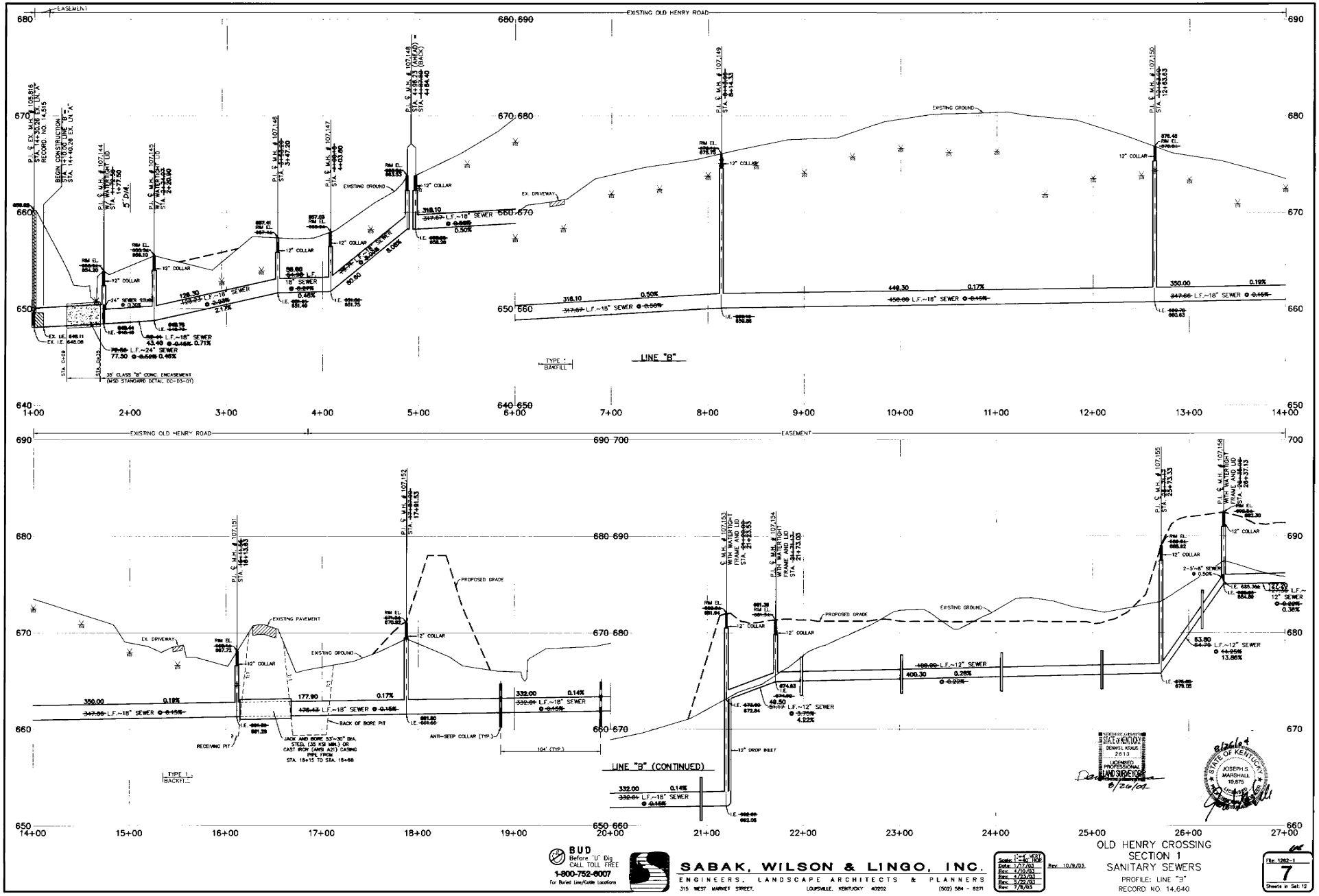
Rev.	4/23/03
Rev.	5/22/03
Rev.	7/8/03

OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
PROFILE: LINE "A" AND LINE "A-1"
RECORD NO. 14,640

File: 1283-1
6
Sheets in Set: 12



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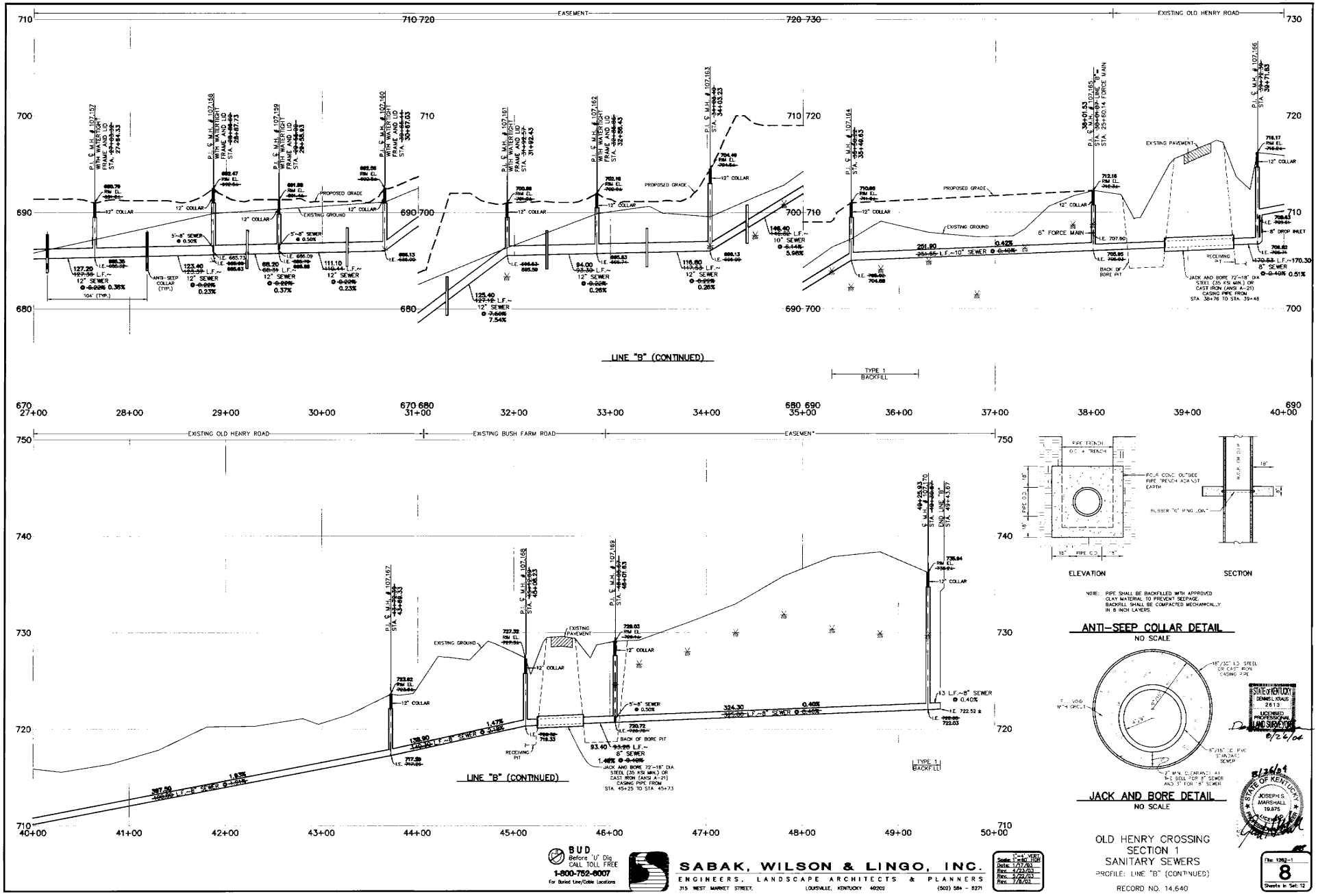
OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
PROFILE: LINE "B"
RECORD NO. 14,640

File: 1262-1
7
Sheets in Set: 12



NOTE: PIPE SHALL BE BACKFILLED WITH APPROVED CLAY MATERIAL TO PREVENT SEEPAGE. BACKFILL SHALL BE COMPACTED MECHANICALLY IN 8 INCH LAYERS.

ANTI-SEEP COLLAR DETAIL

NO SCALE

JACK AND BORE DETAIL

NO SCALE

STATE OF KENTUCKY
DENNIS L. KRAUS
21613
LICENSED PROFESSIONAL LAND SURVEYOR
8/26/04

STATE OF KENTUCKY
JOSEPH S. MARSHALL
19,875
LICENSED PROFESSIONAL ENGINEER
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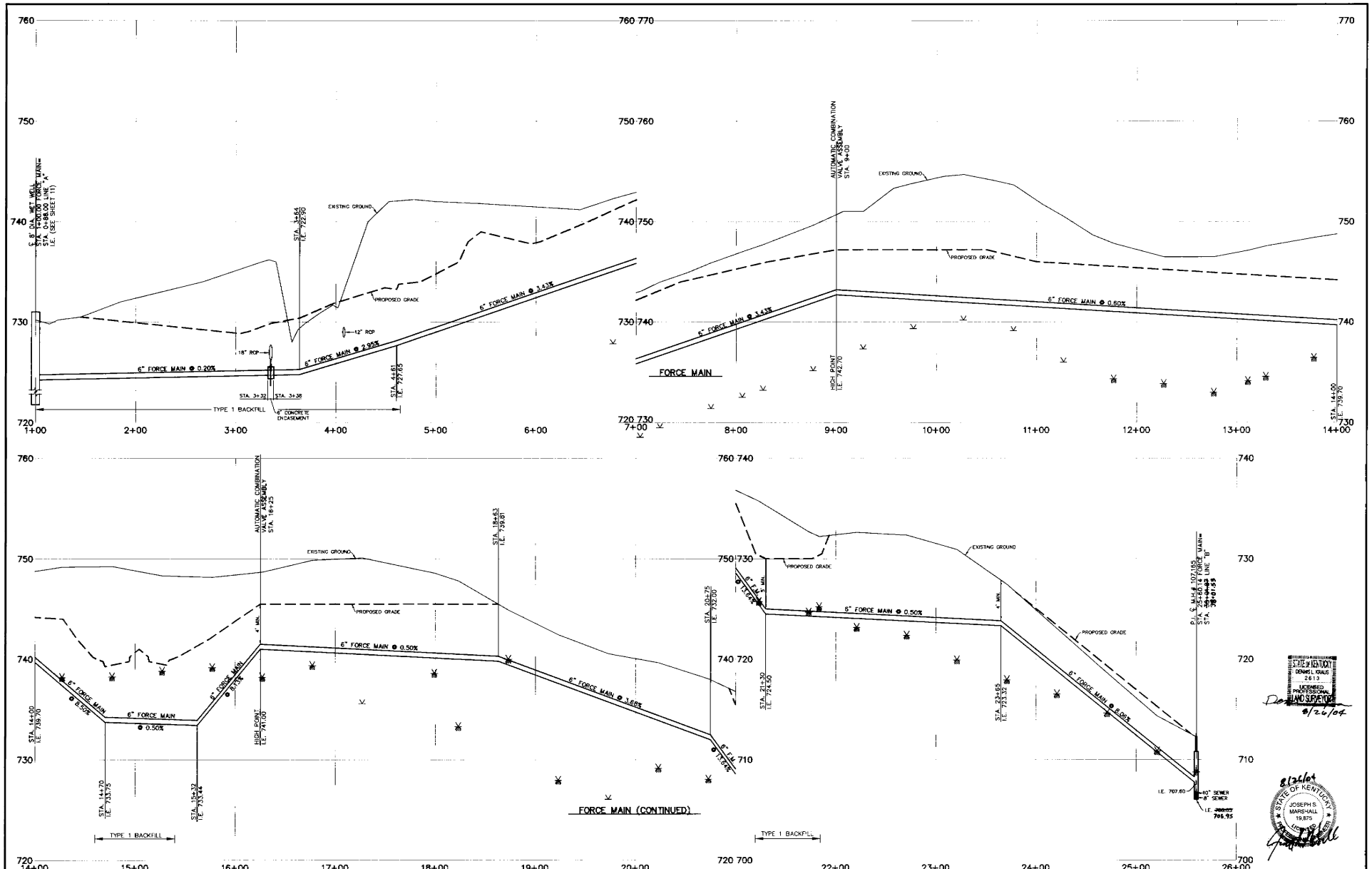
OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
PROFILE: LINE "B" (CONTINUED)

RECORD NO. 14,640

File: 1262-1
Sheet 8
Sheets in Set: 12



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OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
PROFILE: FORCE MAIN
RECORD NO. 14,640

STATE OF KENTUCKY
DENNIS L. KRAUS
2613
LICENSED PROFESSIONAL LAND SURVEYOR
8/26/04

8/26/04
STATE OF KENTUCKY
JOSEPH S. MARSHALL
19,875
LICENSED PROFESSIONAL ENGINEER

File: 1282-1
9
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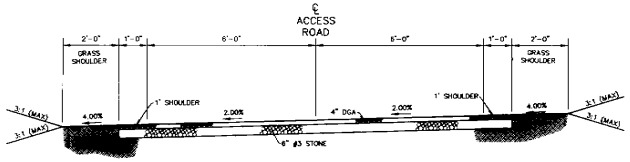
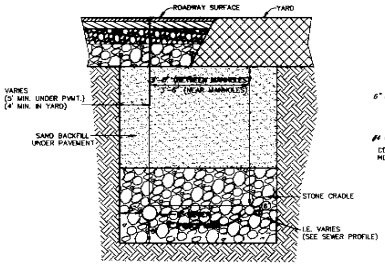
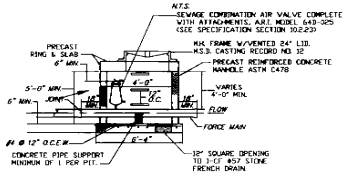


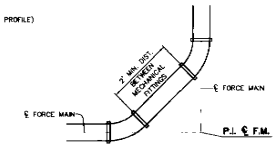
TEMPORARY ACCESS ROAD TYPICAL SECTION
SCALE: 1"=2'



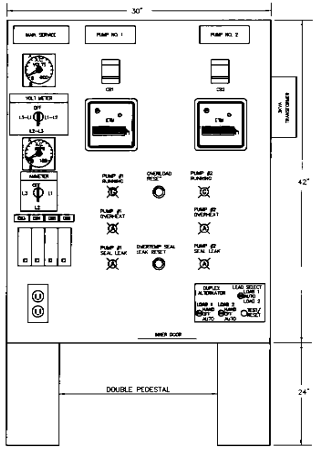
JOINT TRENCH DETAIL
NO SCALE



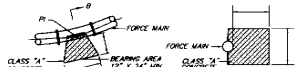
AIR RELEASE VALVE PIT
NO SCALE



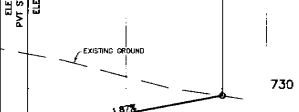
BACK TO BACK MECHANICAL BENDS
NO SCALE
(TYP. FOR 90° BENDS)



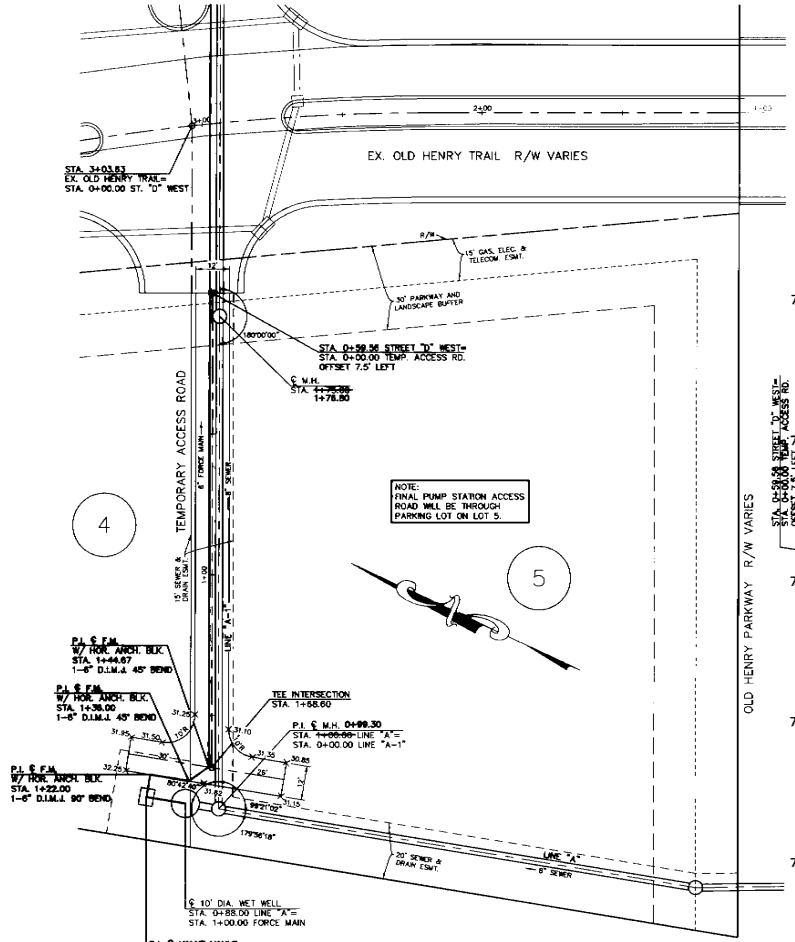
MAIN ENCLOSURE
CONTROL PANEL



HORIZONTAL ANCHOR BLOCK
NO SCALE

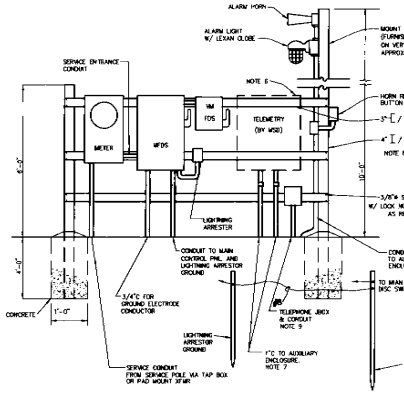


PRESSURE GUAGE TAP
NO SCALE
NOTE: A STANDARD IN-LINE TEE SHALL BE USED INSTEAD OF A TAP ON PIPE 4 INCHES AND SMALLER. (USE BUSHINGS AND REDUCERS AS REQUIRED)



TEMPORARY ACCESS ROAD PLAN
SCALE: 1"=20'

TEMPORARY ACCESS ROAD PROFILE
SCALE: 1"=4' VERT.
1"=40' HOR.



SERVICE SWITCH RACK ARRANGEMENT
NO SCALE

NOTES

1. HORIZONTAL RUN OF CONDUIT UNDERGROUND SHALL HAVE A MINIMUM OF 24" COVER.
2. GRIND SMOOTH THE CUT EDGES OF THE ALUMINUM STRUCTURAL MEMBERS. ALL MOUNTING HARDWARE SHALL BE ALUMINUM OR STAINLESS STEEL.
3. ALL EQUIPMENT TO BE BOLTED TO RACK WITH 1/4" DIA. S.S. BOLTS WITH S.S. LOCK WASHERS. DAMAGE THREADS SO NUTS CANNOT BE REMOVED.
4. MOUNT SERVICE RACK NEAR SERVICE POLE. INSTALL WEATHERHEAD NEAR TOP OF SERVICE POLE.
5. PROVIDE SPACE ON RACK FOR MOUNTING TELEMETRY ENCLOSURE BY MSD. ENCLOSURE DIMENSIONS ARE 24"W×36"H×10"D.
6. TRANSITION FROM BELOW GRADE PVC TO ALUMINUM ABOVE GRADE STUB AND CAP ABOVE GRADE. STRAP TO BOTTOM HORIZONTAL MEMBER OF RACK. ONE CONDUIT FOR 120 VAC SIGNALS, ONE FOR INTRINSICALLY SAFE CIRCUITS.
7. FOR OVERHEAD ELECTRICAL SERVICE, A SERVICE POLE MAY BE SUBSTITUTED FOR THE ALUMINUM I-BEAM.
8. FUTURE CONNECTION TO INCOMING TELEPHONE SERVICE BY MSD.
9. IF LG & E CAN PROVIDE A TAP BOX, A POLE WILL NOT BE REQUIRED.

STATE OF KENTUCKY
BENGIL KRAUS
2813
LICENSED PROFESSIONAL LAND SURVEYOR
8/26/04

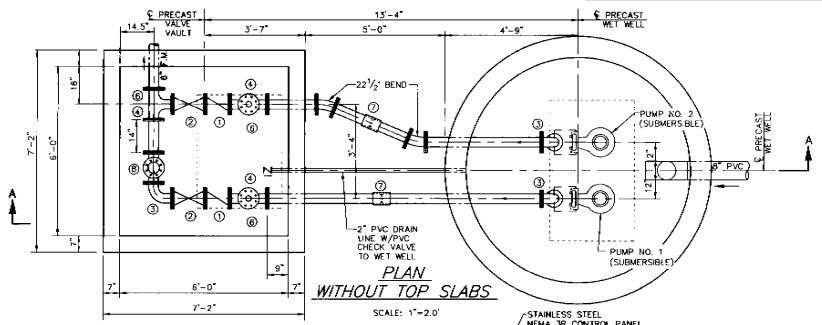
STATE OF KENTUCKY
MICHAEL J. MEYER
17996
LICENSED PROFESSIONAL ENGINEER
8-26-04

SABAK, WILSON & LINGO, INC.
ENGINEERS, LANDSCAPE ARCHITECTS & PLANNERS
315 WEST MARKET STREET, LOUISVILLE, KENTUCKY 40202 (502) 584 - 8271

Scale: N/A
Date: 1/17/03

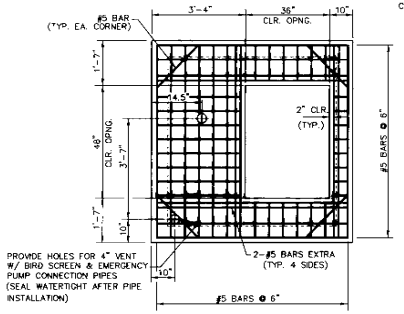
OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
PUMP STATION AND FORCE MAIN
ACCESS ROAD PLAN, DETAILS, AND ELECTRIC ELEVATION
RECORD NO. 14,640

File: 1262-1
10
Sheets in Set: 12



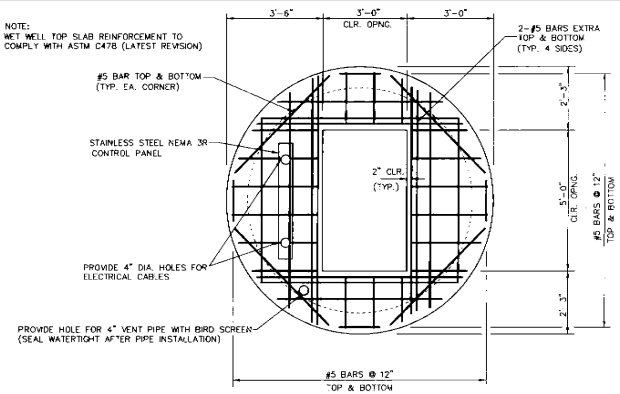
PLAN WITHOUT TOP SLABS

SCALE: 1"=2.0'



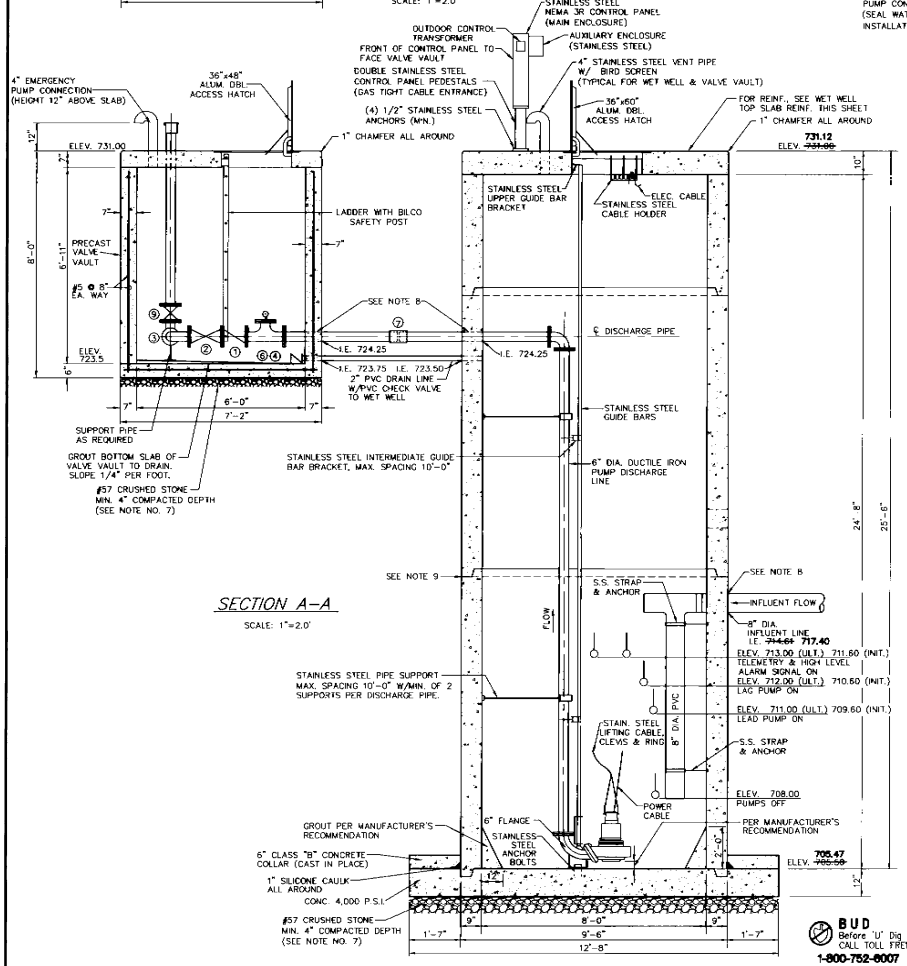
VALVE VAULT TOP SLAB REINFORCING

SCALE: 1"=2.0'



WET WELL TOP SLAB REINFORCING

SCALE: 1"=2.0'



SECTION A-A

SCALE: 1"=2.0'

GENERAL NOTES

1. ALL CONCRETE SHALL HAVE COMPRESSIVE STRENGTH FC = 4,000 PSI (28 DAY STRENGTH) EXCEPT AS NOTED.
2. REINFORCING STEEL SHALL CONFORM TO A.S.T.M. 615-80, GRADE 60.
3. MINIMUM CLEAR COVER SHALL BE 2" UNLESS OTHERWISE NOTED.
4. DIMENSIONS FROM FACE OF CONCRETE TO REINFORCING BARS ARE CLEAR DISTANCES.
5. DIMENSIONS FOR BAR SPACING ARE CENTER TO CENTER.
6. ALL LAPS SHALL BE 30 BAR DIAMETERS UNLESS OTHERWISE NOTED.
7. FOR #57 CRUSHED STONE BEDDING MATERIAL SEE KENTUCKY DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS, LATEST EDITION.
8. THROUGH WALL CONNECTIONS SHALL BE MADE WITH PRESS-SEAL OR KOR-N-SEAL GASKETS WITH STAINLESS STEEL STRAPS TO PERMIT LIMITED DIFFERENTIAL SETTLEMENT.
9. ALL WET WELL JOINTS SHALL BE WATERTIGHT.
10. ALL BOLTS SHALL BE STAINLESS STEEL TYPE 304L WITH STAINLESS STEEL HARDWARE.
11. ALL TAPS INTO FITTINGS SHALL BE MADE INTO A BOSS.
12. VALVE VAULT SHALL BE LOCATED FIVE (5) FEET FROM THE WET WELL. IF VALVE VAULT IS PLACED ON EXCAVATED MATERIALS, BACKFILL SHALL BE COMPACTED IN 8" LOOSE LIFTS TO 95% STANDARD PROCTOR DENSITY.
13. BACKFILL SHALL BE DONE IN ACCORDANCE WITH MSD'S STANDARD SPECIFICATION 3.3.6.2.

NOTES

THE ACTUAL CLEAR OPENING OF THE WET WELL ACCESS HATCH FRAME SHALL PROVIDE A MINIMUM OF 3 1/2 INCHES CLEARANCE BEHIND THE PUMP OPPOSITE THE DISCHARGE AND A MINIMUM OF 2 1/2 INCHES CLEARANCE ON THE SIDE OF THE PUMP.

EQUIPMENT REFERENCE

1. 6" SWING CHECK VALVE WITH LEVER AND WEIGHT LOCATED INWARD
2. 6" GATE VALVE (RESILIENT SEAT, RISING STEM)
3. 6" 90° ELBOW
4. 6" TEE
5. 2" SEWAGE COMBINATION AIR VALVE COMPLETE W/ATTACHMENTS, A.R.I. MODEL 640-025 (SEE SPECIFICATION SECTION 10.2.23)
6. SEE PRESSURE GAUGE TAP DETAIL (MIN. 6" CLEARANCE BETWEEN TAP AND EDGE OF WALL)
7. 6" COATED MECHANICAL COUPLING (DRESSER STYLE 38 OR 138 OR APPROVED EQUAL)
8. 4"x6" TEE (FOR EMERGENCY PUMP CONNECTION. SIZE EQUIVALENT TO DISCHARGE PIPE.)
9. 4" GATE VALVE (RESILIENT SEAT, RISING STEM FOR EMERGENCY PUMP CONNECTION. SIZE EQUIVALENT TO DISCHARGE PIPE.)
10. 4" STAINLESS STEEL CAM-LOCK NC ADAPTER WITH STAINLESS STEEL LOCKING DUST CAP (SEE SPECIFICATION SECTION 10.2.21)

INITIAL PUMP STATION DESIGN DATA

AVG. DAILY SEWAGE FLOW: 143.3 EQUIV. LOTS x 400 G.P.D.	= 57,322 G.P.D.
AVG. FLOW: 57,322 G.P.D./1,440	= 39.8 G.P.M.
PEAK DESIGN FLOW: 3.94 P.F. x 39.8 G.P.M. (BASED ON POPULATION)	= 157.0 G.P.M.
MIN. PUMPING RATE PER PUMP: 3.2 F.P.S. x 0.202 S.F. x 448.8 G.P.M. (BASED ON FORCE MAIN SCOUR VELOCITY)	= 290.1 G.P.M.
STORAGE CAPACITY: 3.75 MIN. x 157.0 G.P.M.	= 588.6 GALLONS
TWO HRS. EMERGENCY STORAGE: 120 MIN. x 39.8 G.P.M.	= 4,776 GALLONS
STATIC HEAD	= 33 FEET
FORCE MAIN SIZE: 6" ; MATERIAL: PVC (C=120)	
DYNAMIC HEADLOSS @ 18" / G.P.M. (PUMPING RATE)	= 6.3 FEET
TOTAL DYNAMIC HEAD (T.D.H.)	= 39.3 FEET

ULTIMATE PUMP STATION DESIGN DATA

AVG. DAILY SEWAGE FLOW: 279.3 EQUIV. LOTS x 400 G.P.D.	= 111,722 G.P.C.
AVG. FLOW: 111,722 G.P.D./1,440	= 77.6 G.P.M.
PEAK DESIGN FLOW: 3.77 P.F. x 77.6 G.P.M. (BASED ON POPULATION)	= 292.5 G.P.M.
MIN. PUMPING RATE PER PUMP: 3.2 F.P.S. x 0.202 S.F. x 448.8 G.P.M. (BASED ON FORCE MAIN SCOUR VELOCITY)	= 290.1 G.P.M.
STORAGE CAPACITY: 3.75 MIN. x 292.5 G.P.M.	= 1,096.9 GALLONS
TWO HRS. EMERGENCY STORAGE: 120 MIN. x 77.6 G.P.M.	= 9,312 GALLONS
STATIC HEAD	= 33 FEET
FORCE MAIN SIZE: 6" ; MATERIAL: PVC (C=120)	
DYNAMIC HEADLOSS @ 29 G.P.M. (PUMPING RATE)	= 15.3 FEET
TOTAL DYNAMIC HEAD (T.D.H.)	= 48.3 FEET

PUMP STATION EQUIPMENT DATA

- TWO (2) 10.0 HP (MIN.) PUMPS
- CAPACITY (OPERATING POINT): 292.4 G.P.M. @ 48.3' T.D.H.
- PUMP TYPE & MANUFACTURER: MYERS 4VHX10DM4-43
- DISCHARGE SIZE: 6" (INCREASE FROM 4")
- PUMP CONTROL: AUTOMATIC
- SOLIDS PASSING SIZE: 3"
- FORCE MAIN PRESSURE RATING & TYPE: 160 PSI, SDR26
- CYCLE TIME: 19.8 MIN.
- ODOR CONTROL: N/A
- IMPELLER: 7.875 INCHES

EMERGENCY STORAGE

- EMERGENCY STORAGE CONTROL ELEVATION = 726.0

STATE OF KENTUCKY
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2613
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9/26/04

STATE OF KENTUCKY
MICHAEL J. MEYER
9/26/04

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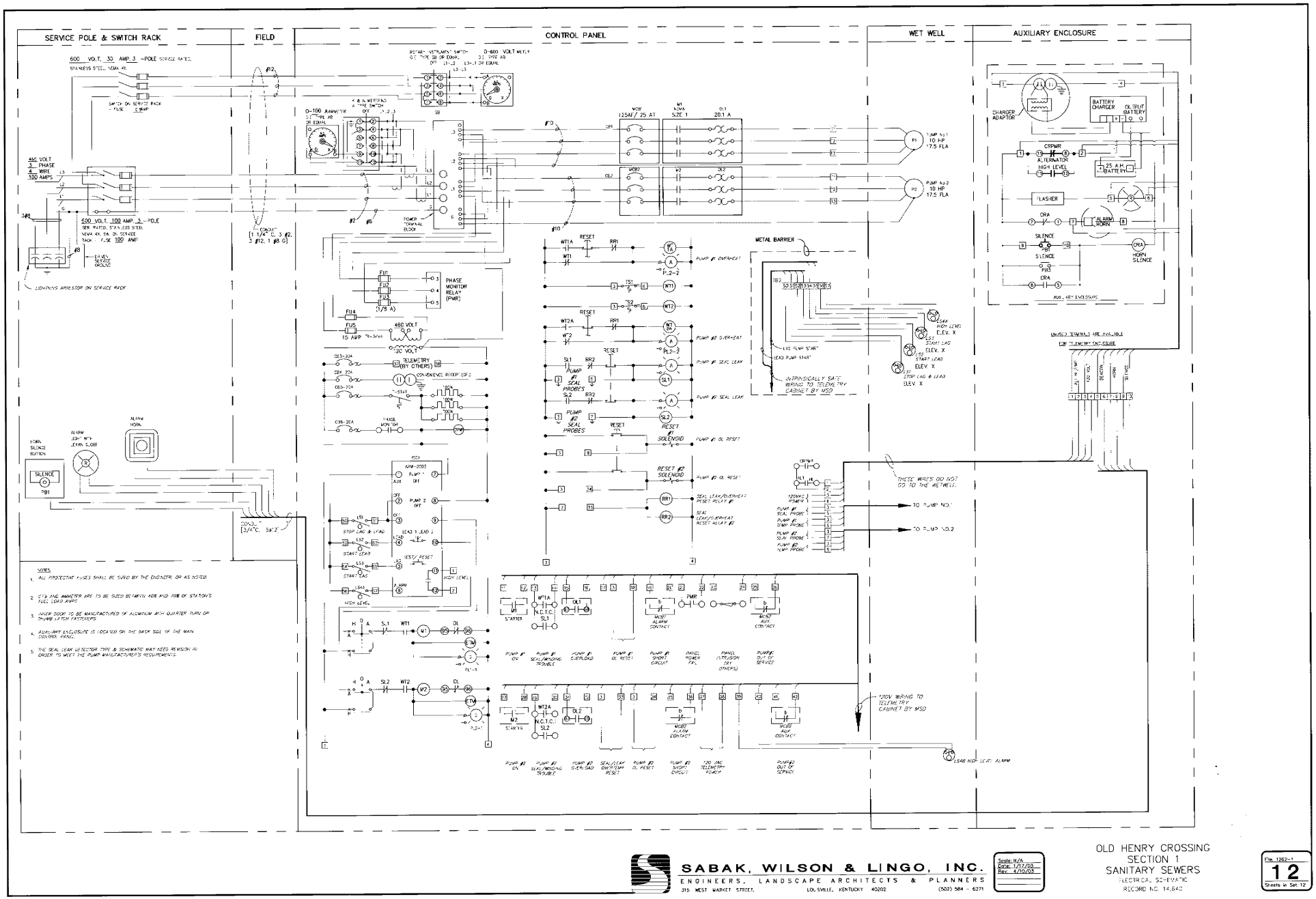
OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
PUMP STATION AND FORCE MAIN
WET WELL AND VALVE VAULT PLAN AND SECTION VIEWS
RECORD NO. 14,640

File: 1262-1
Sheet 11
Sheets in Set: 12



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OLD HENRY CROSSING
SECTION 1
SANITARY SEWERS
ELECTRICAL SCHEMATIC
RECORD NO. 14,640

File: 1262-1
12
Sheets in Set: 12

EROSION PREVENTION AND SEDIMENT CONTROL NOTE:

THE APPROVED EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) PLAN SHALL BE IMPLEMENTED PRIOR TO ANY LAND– DISTURBING ACTIVITY ON THE CONSTRUCTION SITE. ANY MODIFICATIONS TO THE APPROVED EPSC PLAN MUST BE REVIEWED AND APPROVED BY MSD'S PRIVATE DEVELOPMENT REVIEW OFFICE. EPSC BMP'S (BEST MANAGEMENT PRACTICES) SHALL BE INSTALLED PER THE PLAN AND MSD STANDARDS.

DETENTION BASINS, IF APPLICABLE, SHALL BE CONSTRUCTED FIRST AND SHALL PERFORM AS SEDIMENT BASINS DURING CONSTRUCTION UNTIL THE CONTRIBUTING DRAINAGE AREAS ARE SEEDED AND STABILIZED.

ACTIONS MUST BE TAKEN TO MINIMIZE THE TRACKING OF MUD AND SOIL FROM CONSTRUCTION AREAS ONTO PUBLIC ROADWAYS. SOIL TRACKED ONTO THE ROADWAY SHALL BE REMOVED DAILY.

SOIL STOCKPILES SHALL BE LOCATED AWAY FROM STREAMS, PONDS, SWALES, AND CATCH BASINS. STOCKPILES SHALL BE SEEDED, MULCHED, AND ADEQUATELY CONTAINED THROUGH THE USE OF SILT FENCE.

ALL STREAM CROSSINGS MUST UTILIZE LOW–WATER CROSSING STRUCTURES PER MSD STANDARD DRAWING ER–02.

SEDIMENT–LADEN GROUNDWATER ENCOUNTERED DURING TRENCHING, BORING OR OTHER EXCAVATION ACTIVITIES SHALL BE PUMPED TO A SEDIMENT TRAPPING DEVICE PRIOR TO BEING DISCHARGED INTO A STREAM, POND, SWALE, OR CATCH BASIN.

WHERE CONSTRUCTION OR LAND DISTURBING ACTIVITY WILL OR HAS TEMPORARILY CEASED ON ANY PORTION OF A SITE, TEMPORARY SITE STABILIZATION MEASURES SHALL BE REQUIRED AS SOON AS PRACTICABLE, BUT NO LATER THAN 14 DAYS AFTER THE ACTIVITY HAS CEASED.

UTILITY NOTE

ALL UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. INDIVIDUAL SERVICE LINES ARE NOT SHOWN. THE CONTRACTOR OR SUBCONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER "B.U.D." (TOLL FREE PHONE NO. 1–800–752–6007) FORTY EIGHT HOURS IN ADVANCE OF ANY CONSTRUCTION ON THIS PROJECT. THIS NUMBER WAS ESTABLISHED TO PROVIDE ACCURATE LOCATIONS OF EXISTING BELOW GROUND UTILITIES (I.E. CABLES, ELECTRIC WIRES, GAS, AND WATERLINES). WHEN CONTACTING THE "B.U.D." CALL CENTER, PLEASE STATE THAT THE WORK TO BE DONE IS FOR A PROPOSED MSD SEWER OR DRAINAGE FACILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING FAMILIAR WITH ALL UTILITY REQUIREMENTS SET FORTH ON THE PLANS IN THE TECHNICAL SPECIFICATIONS AND SPECIAL PROVISIONS.

ALL UTILITY RELOCATIONS & ADJUSTMENTS ARE THE RESPONSIBILITY OF THE DEVELOPER.

THE FINAL RECORD INFORMATION ON THIS DRAWING WAS PROVIDED BY THE PROFESSIONAL LAND SURVEYOR__________ON __________.
THE PROPERTY SERVICE CONNECTION INFORMATION WAS COLLECTED BY THE GENERAL CONTRACTOR__________
WITH NO FIELD VERIFICATION BY THE PROFESSIONAL LAND SURVEYOR.
THE FINAL RECORD DATA AND PROPERTY SERVICE CONNECTION INFORMATION HAS BEEN ACCEPTED BY MSD INSPECTOR__________ON__________

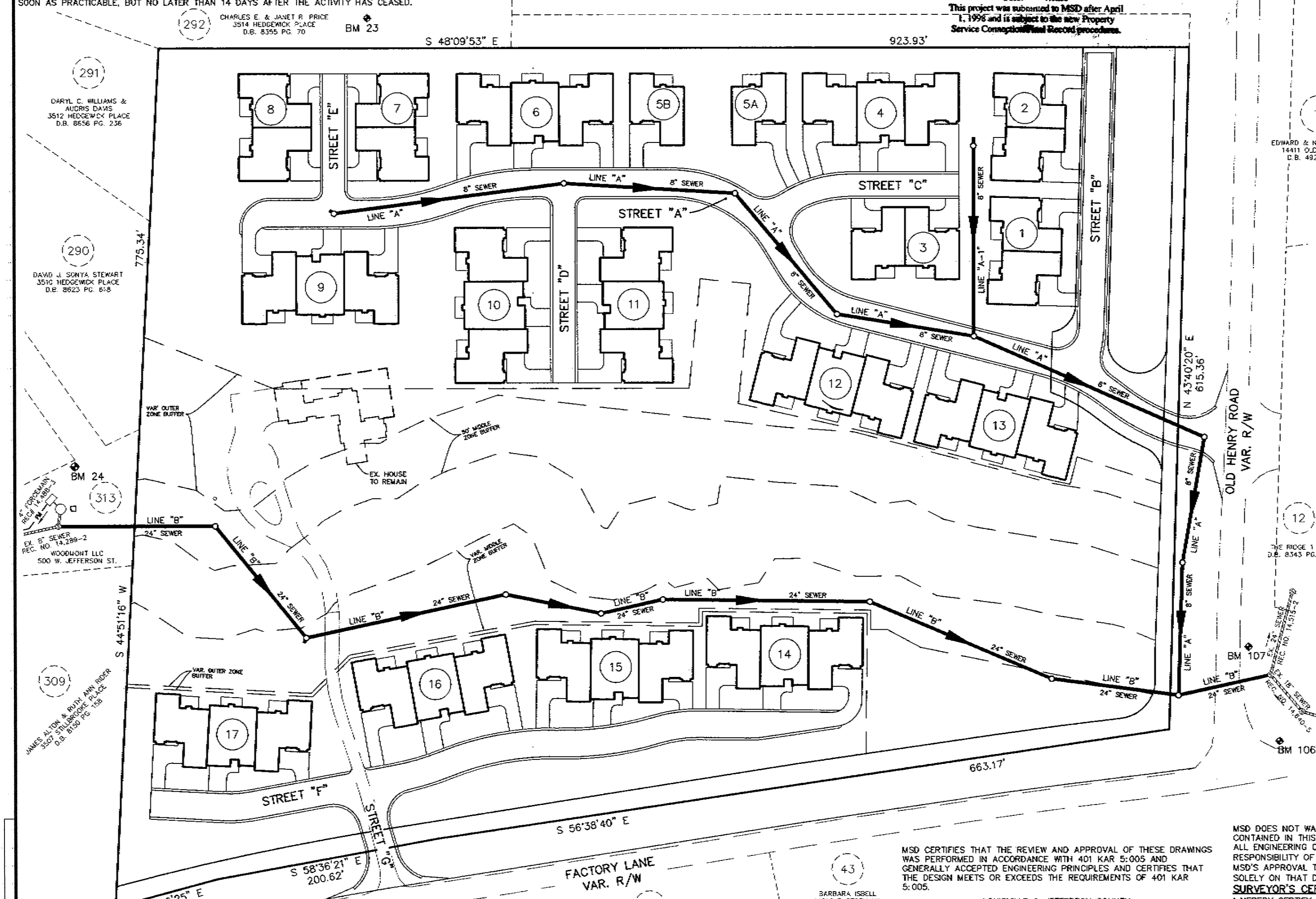
FOR THE PURPOSE OF SUPPLYING RECORD DRAWING INFORMATION, SHEETS __________OF ORIGINAL DRAWINGS REPLACES THE APPROVED SHEETS __________OF CONSTRUCTION DRAWINGS. DRAWINGS HAD BEEN DESIGN APPROVED BY__________ON__________AND APPROVED FOR CONSTRUCTION BY__________ON__________.
THE ORIGINAL DRAWINGS HAVE BEEN ARCHIVED.

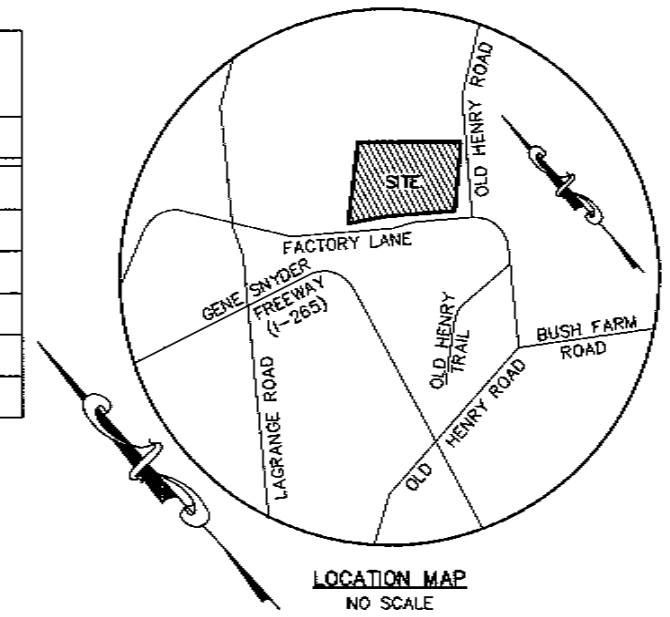
INDEX

SHT. NO.	DESCRIPTION
1	COVER SHEET
2	SANITARY SEWER PLAN; LINE "A, "A–1" & "B"
3	SANITARY SEWER PROFILES; LINE "A" & "A–1"
4	SANITARY SEWER PROFILE; LINE "B"
5	STANDARD DETAILS & P.S.C INLET CHART
6	SERVICE AREA MAP

MSD

Approved Final Record Drawings Required Prior [illegible] Release
This project was submitted to MSD after April 1, 1998 and is subject to the new Property Service Connection/Final Record procedures.





LOCATION MAP
NO SCALE

LEGEND

- PROPOSED MANHOLE & SANITARY SEWER
- EXISTING MANHOLE & SANITARY SEWER
- DROP INLET
- DENOTES 6" PROPERTY SERVICE CONNECTION (SEE NOTES)
- DENOTES 6" PROPERTY SERVICE CONNECTION W/ STACK (SEE NOTE 5)
- DENOTES 6" "Y" BRANCH W/STOPPER FOR FUTURE PROPERTY SERVICE CONNECTION
- DENOTES 6" SIAMESE CONNECTION
- DENOTES 6" PROPERTY SERVICE CONNECTION TO BE CONSTRUCTED (SEE NOTE 6)
- INDICATES SOUNDINGS – ROCK
- INDICATES SOUNDINGS – NO ROCK
- BENCH MARK
- EXISTING STORM SEWER (W/SIZE) & CATCH BASIN
- EXISTING GAS MAIN (W/SIZE)
- EXISTING WATER MAIN (W/SIZE)
- PROPOSED STORM SEWER (W/SIZE) & CATCH BASIN
- PROPOSED GAS MAIN (W/SIZE)
- PROPOSED WATER MAIN (W/SIZE)

NOTES

1 – SEWAGE FROM THIS DEVELOPMENT SHALL BE TREATED AT THE FLOYD'S FORK SEWAGE TREATMENT PLANT.
2 – ALL PIPE TO BE P.V.C. D–3034, OR P.V.C. CORRUGATED PIPE, ASTM F–949. CONSTRUCT
3 – PROPERTY SERVICE CONNECTIONS TO EDGE OF EASEMENT OR 15' BEYOND RIGHT–OF–WAY AS DIRECTED.
4 – PROPERTY SERVICE CONNECTIONS ARE TO BE 1.00% SLOPE UNLESS OTHERWISE NOTED.
5 – PROPERTY SERVICE CONNECTION TO BE CONSTRUCTED FROM STACK AT SEWER TO PROPERTY OR EASEMENT LINE AS DIRECTED. ALL STACKS TO BE CONSTRUCTED TO A POINT 12 FEET BELOW THE GROUND SURFACE UNLESS OTHERWISE DIRECTED. PROPERTY SERVICE CONNECTION IS NOT AVAILABLE FOR CONNECTION UNTIL RECORD PLAT FOR THE LOTS SERVED IS RECORDED AND THE CAPACITY CHARGE FEES APPLICABLE AT THAT TIME ARE PAID.
6 – ROCK TO BE SHATTERED TO 6' BEYOND END OF P.S.C. ROCK SOUNDING LOCATIONS ARE AS FOLLOWS:
7 – ROCK SOUNDINGS IN EASEMENT ARE AT CENTERLINE OF SEWER.
8 – ROCK SOUNDINGS IN ROADWAY ARE AT CENTERLINE OF R.O.W.
9 – VERTICAL DATUM CORRESPONDS TO NAVD 88 DATUM
10 – JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT STANDARD SPECIFICATIONS ARE TO APPLY.
11 – PROPERTY CORNERS WILL BE SET WHEN RECORD PLAT IS RECORDED UNLESS OTHERWISE NOTED.
12 – EPSC PLAN WILL BE SUBMITTED WITH STORM CONSTRUCTION PLANS.
13 – MSD SHALL INSPECT ALL SANITARY SEWER CONSTRUCTION.
14 – ALL MANHOLES MUST INCLUDE CHIMNEY SEALS. THE MANHOLE CHIMNEY SECTION SHALL BE SEALED AND MADE WATERTIGHT USING EITHER A MECHANICALLY LOCKING INTERNAL BUTYL RUBBER CHIMNEY SEAL OF A CHEMICALLY BONDING CHIMNEY SEAL AS IDENTIFIED ON THE PLANS. INSTALLATION OF THE CHIMNEY SEAL SHALL BE PERFORMED BY MANUFACTURER CERTIFIED PERSONNEL. THE CHIMNEY–SEALING PRODUCT SHALL BE ON THE MSD PRE–APPROVED PRODUCT LIST AND THE PRODUCT USED SHALL BE IDENTIFIED ON AS–BUILT DRAWINGS.
15 – A REQUEST FOR SANITARY SEWER CAPACITY WILL BE SUBMITTED AND APPROVED BY METROPOLITAN SEWER DISTRICT.
16 – CONTRACTOR SHOULD VERIFY EXISTING ELEVATIONS BEFORE CONSTRUCTION AND NOTIFY ENGINEER WITH ANY DISCREPENCIES.
17 – PUMP–AROUND FLOW DIVERSION TO BE USED WHEN CROSSING ANY BLUE LINE STREAM.

BACKFILL

TYPE 1 – SAND; FLUSHED AND JETTED.
TYPE 2 – EXCAVATED MATERIALS; FLUSHED AND JETTED.
(USE TYPE 2 BACKFILL UNLESS OTHERWISE NOTED)

BENCHMARKS (NAVD 88 DATUM)

SOURCE BENCHMARK GPS–#47–AZ NAVD 88 ELEV.= 744.84'
DISK SET IN CONCRETE 57' NORTH OF THE EDGE OF THE SHOULDER OF THE GENE SNYDER FREEWAY. STATION IS 0.8 MILES SOUTHEAST OF THE GENE SNYDER FREEWAY / LAGRANGE ROAD INTERCHANGE. STATION IS ADJACENT TO THE NORTHERN EDGE OF THE GREEN OF HOLE # 3 OF A PAR THREE GOLF COURSE.

BM 23 NAVD88 ELEV.=691.80'
RAILROAD SPIKE IN A 12" TREE, 27 FEET NORTH OF THE SUBJECT PROPERTY LINE, APPROXIMATELY 790 FEET WEST OF THE CENTERLINE OF OLD HENRY ROAD.

BM #24 NAVD88 ELEV.=670.38'
CHISELED SQUARE CUT ON THE SOUTHWEST CORNER OF A SIDEWALK NEAR A PUMP STATION, APPROXIMATELY 441 FEET NORTH OF THE CENTERLINE OF FACTORY LANE.

BM #106 NAVD88 ELEV.=657.61'
SQUARE CUT ON CONCRETE HEADWALL CONTAINING 18" PIPE, APPROXIMATELY 45' NORTHEAST OF THE INTERSECTION OF FACTORY LANE AND OLD HENRY ROAD

BM #107 NAVD88 ELEV.=660.03'
SQUARE CUT ON CONCRETE HEADWALL ON EAST SIDE OF 5' X 10' BOX CULVERT, LOCATED APPROXIMATELY 110' NORTHEAST OF THE INTERSECTION OF FACTORY LANE AND OLD HENRY ROAD.

MSD CERTIFIES THAT THE REVIEW AND APPROVAL OF THESE DRAWINGS WAS PERFORMED IN ACCORDANCE WITH 401 KAR 5:005 AND GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND CERTIFIES THAT THE DESIGN MEETS OR EXCEEDS THE REQUIREMENTS OF 401 KAR 5:005.

LOUISVILLE & JEFFERSON COUNTY
METROPOLITAN SEWER DISTRICT

DESIGN APPROVED: [signature] 5-16-06 [signature] 5/17/06
APPROVED FOR CONSTRUCTION: [signature] 05.17.06
DIRECTOR OF ENGINEERING DATE

GRAPHIC SCALE 1"=50'
0 25 50 100

MSD DOES NOT WARRANT THE DESIGN OR COMPUTATIONS CONTAINED IN THIS PLAN. THE CORRECTNESS OR ACCURACY OF ALL ENGINEERING COMPUTATIONS REMAIN THE SOLE RESPONSIBILITY OF THE APPLICANT'S DESIGN PROFESSIONAL. MSD'S APPROVAL TO PROCEED WITH CONSTRUCTION IS BASED SOLELY ON THAT DESIGN PROFESSIONAL'S SEAL AND SIGNATURE.

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE SURVEY FOR THIS PLAN WAS MADE UNDER MY SUPERVISION AND THE BEARINGS AND DISTANCE MEASUREMENTS SHOWN HEREON ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

[signature] 5/2/06
TRAVIS K. BENTLEY, PLS NO. 3,697 DATE

RECORD NO. 15,197

B.U.D BEFORE "U" DIG — FOR BURIED LINES & CABLE LOCATIONS — CALL TOLL FREE 1–800–752–6007

STATE OF KENTUCKY — TRAVIS K. BENTLEY 3697 — LICENSED PROFESSIONAL LAND SURVEYOR — 5-2-06
LAND SURVEYOR'S SEAL

STATE OF KENTUCKY — MARK A. SITES 15339 — LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER'S SEAL

ENGINEER: BOBBY RAIA

Mindel, Scott & Associates, Inc.
Planning · Engineering · Surveying · Landscape Architecture
Utility Consulting · Property Management
4545 Bishop Lane, Suite 200, Louisville, KY 40218
Phone: (502) 485-1508 · Fax (502) 485-1606 · EMail: msa@mindelscott.com

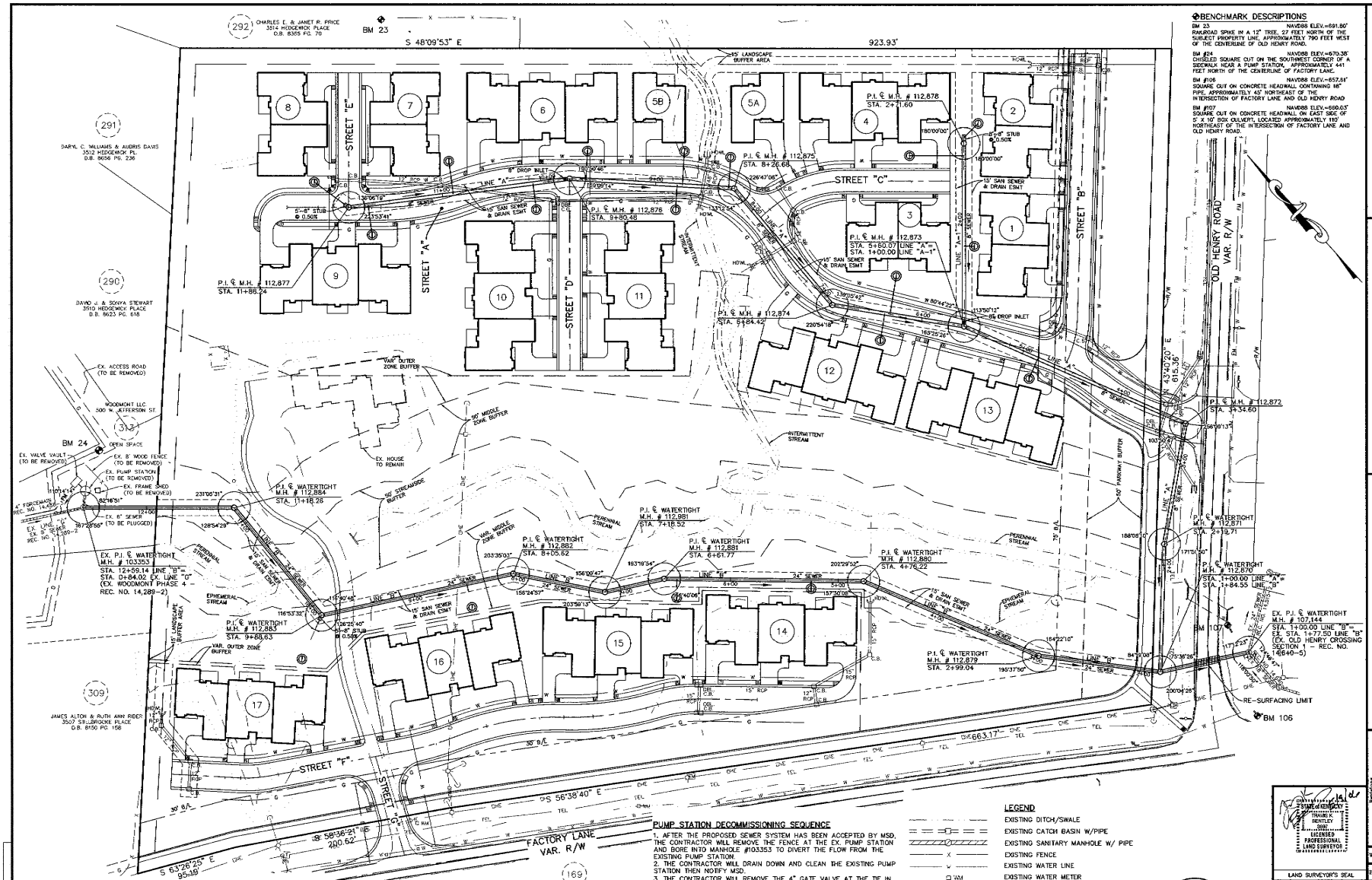
OWNER/DEVELOPER
LV CAPITAL, LLC
239 S. FIFTH STREET
SUITE 1700
LOUISVILLE, KY. 40202
(502) 569–7527

SANITARY SEWER PLANS
OLD HENRY PLACE
COVER SHEET

Revisions: 03/16/06 REVISED PER MSD

Vertical Scale: N/A
Horizontal Scale: 1"=50'
Date: 1/27/06
Job Number: 2337–S01

Sheet 1 of 6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CHARLES E. & JANET R. PRICE 3514 HEDGEWICK PLACE D.B. 8365 PG. 79
DARYL C. WILLIAMS & AUDRIS DAVIS 3512 HEDGEWICK PL. D.B. 8656 PG. 236
DAVID J. & SONYA STEWART 3510 HEDGEWICK PLACE D.B. 8623 PG. 618
WOODMONT LLC 500 W. JEFFERSON ST.
JAMES ALTON & RUTH ANN RIDER 3507 SILLSBROOKE PLACE D.B. 8150 PG. 168
BARBARA ISBELL 14006 FACTORY LN D.B. 8640 PG. 581
S 48°09'53" E
923.93'
S 56°38'40" E
200.62'
S 63°26'25" E
95.18'
663.17'
FACTORY LANE VAR. R/W
OLD HENRY ROAD VAR. R/W
STREET "A"
STREET "B"
STREET "C"
STREET "D"
STREET "E"
STREET "F"
STREET "G"
P.I. & M.H. # 112,877 STA. 11+86.24
P.I. & M.H. # 112,876 STA. 9+80.48
P.I. & M.H. # 112,875 STA. 8+26.68
P.I. & M.H. # 112,878 STA. 2+21.60
P.I. & M.H. # 112,873 STA. 5+60.07 LINE "A" = STA. 1+00.00 LINE "A-1"
P.I. & M.H. # 112,874 STA. 6+84.42
P.I. & M.H. # 112,872 STA. 4+34.60
P.I. & M.H. # 112,871 STA. 2+19.71
P.I. & M.H. # 112,870 STA. 1+00.00 LINE "A" STA. 1+84.55 LINE "B"
P.I. & M.H. # 107,144 STA. 1+00.00 LINE "B" = STA. 1+77.50 LINE "B" (EX. OLD HENRY CROSSING SECTION 1 - REC. NO. 14540-5)
P.I. & WATERTIGHT M.H. # 112,884 STA. 11+18.28
P.I. & WATERTIGHT M.H. # 112,883 STA. 9+88.63
P.I. & WATERTIGHT M.H. # 112,882 STA. 8+05.62
P.I. & WATERTIGHT M.H. # 112,881 STA. 6+61.77
P.I. & WATERTIGHT M.H. # 112,880 STA. 4+76.22
P.I. & WATERTIGHT M.H. # 112,879 STA. 2+99.04
P.I. & WATERTIGHT M.H. # 112,981 STA. 7+18.52
EX. P.I. & WATERTIGHT M.H. # 103353 STA. 12+59.14 LINE "B" = STA. 0+84.02 EX. LINE "G" (EX. WOODMONT PHASE 4 - REC. NO. 14,289-2)
EX. P.I. & WATERTIGHT STA. 14+00.00 LINE "B" = STA. 1+77.50 LINE "B" (EX. OLD HENRY CROSSING SECTION 1 - REC. NO. 14540-5)
BM 24
BM 107
BM 106
RE-SURFACING LIMIT
OPEN SPACE
EX. ACCESS ROAD (TO BE REMOVED)
EX. VALVE VAULT (TO BE REMOVED)
EX. 8' WOOD FENCE (TO BE REMOVED)
EX. PUMP STATION (TO BE REMOVED)
EX. FRAME SHED (TO BE REMOVED)
EX. 8" SEWER (TO BE PLUGGED)
EX. HOUSE TO REMAIN
VAR. OUTER ZONE BUFFER
50' MIDDLE ZONE BUFFER
50' STREAMSIDE BUFFER
INTERMITTENT STREAM
PERENNIAL STREAM
EPHEMERAL STREAM
100' PARKWAY BUFFER
15' LANDSCAPE BUFFER AREA
45' LANDSCAPE BUFFER AREA
15" SAN SEWER & DRAIN ESMT
8" DROP INLET
5'-8" STUB @ 0.50%
24" SEWER
LINE "A"
LINE "A-1"
LINE "B"
LINE "G"
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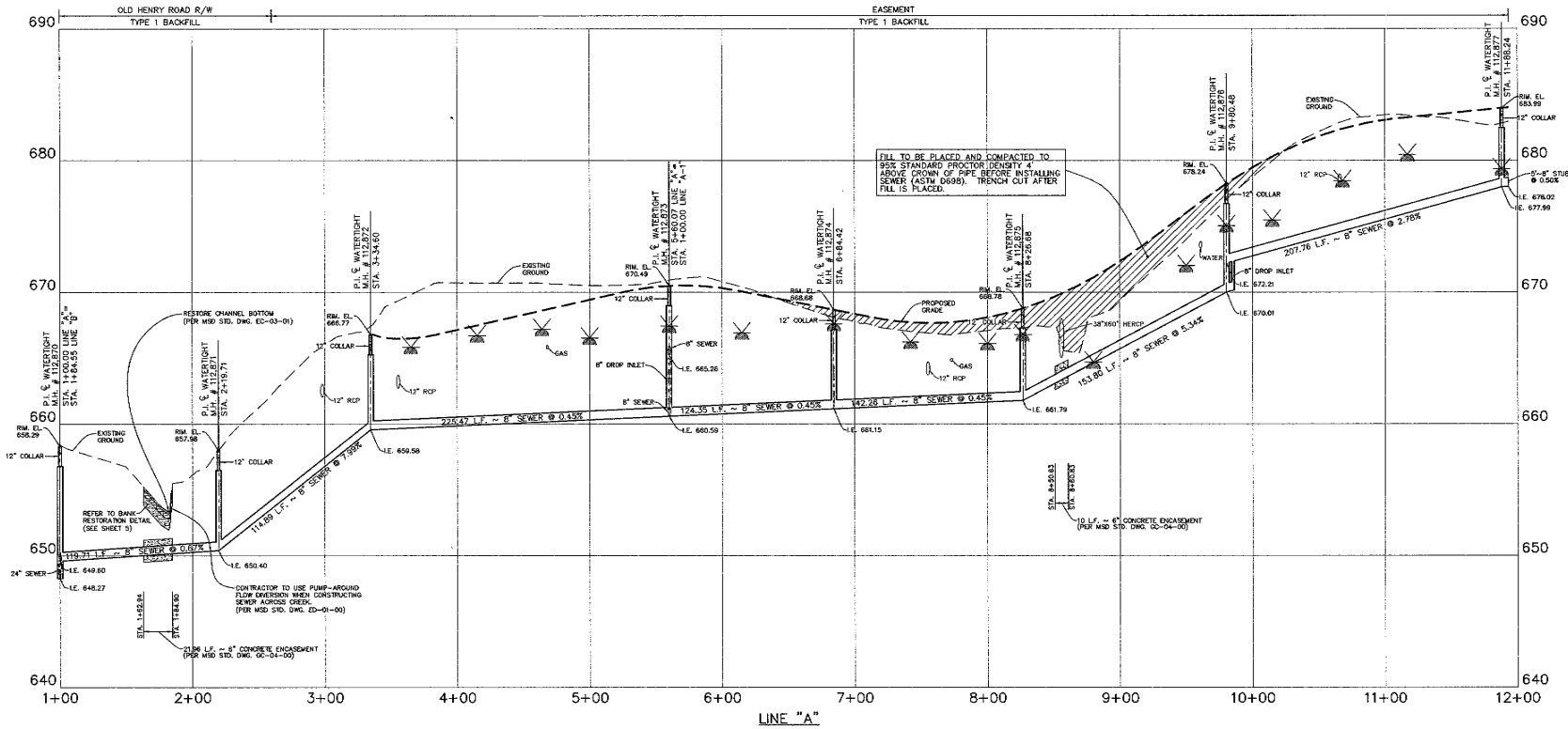

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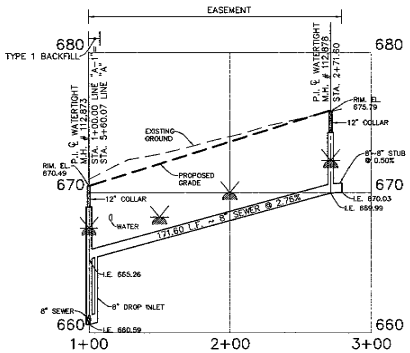

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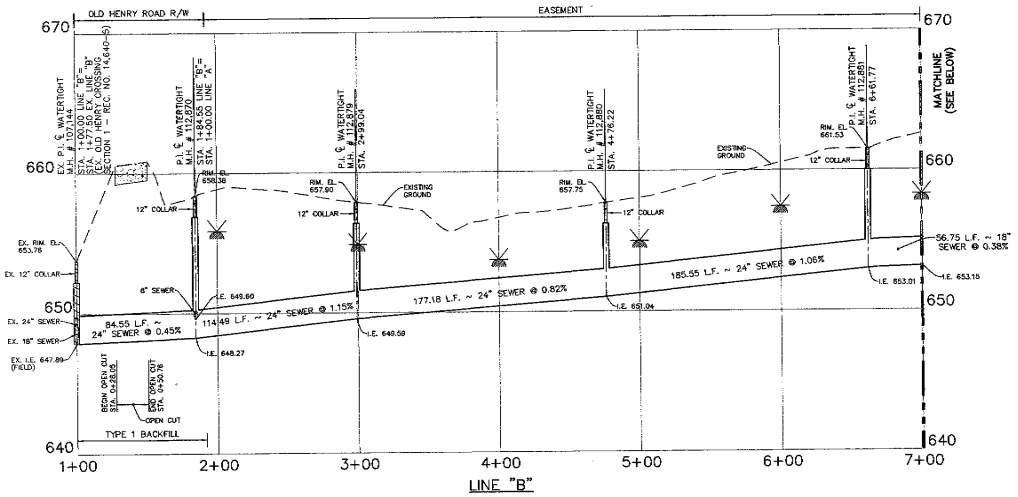
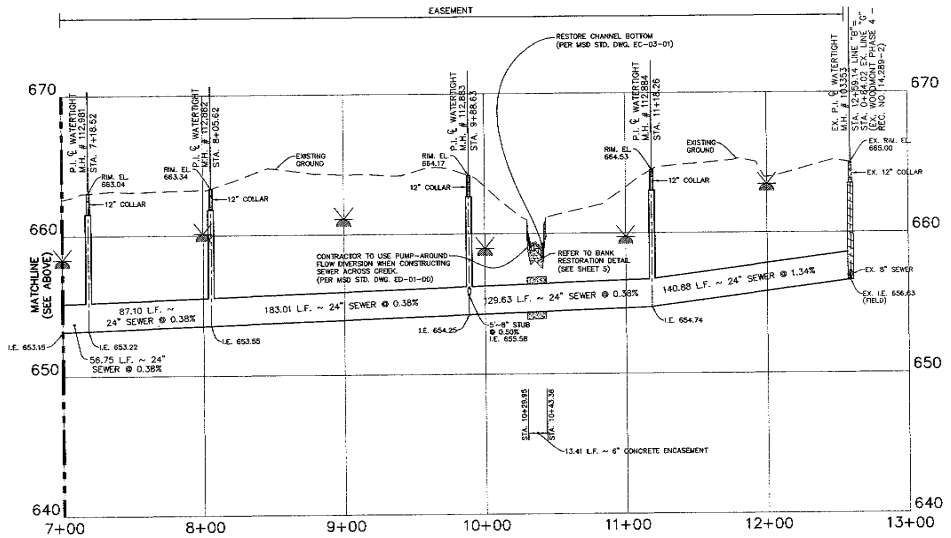


LINE "B"



LINE "B" (CONT'D)

B.U.D. BEFORE "U" DIG FOR BURIED LINES & CABLE LOCATIONS CALL TOLL FREE 1-800-752-6007

RECORD NO. 15,197

STATE OF KENTUCKY MARK A. SITES 15338 LICENSED PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER'S SEAL

Mindel, Scott & Associates, Inc.
Planning · Engineering · Surveying · Landscape Architecture
Utility Consulting · Property Management
4914 Baker Lane, Suite 200, Louisville, KY 40218
Phone: (502) 491-1500 Fax: (502) 491-1604 E-Mail: info@mindelscott.com

OWNER/DEVELOPER
LV CAPITAL, LLC
239 S. FIFTH STREET
SUITE 1700
LOUISVILLE, KY. 40202
(502) 569-7527

SANITARY SEWER PLANS
OLD HENRY PLACE
PROFILE;
LINE "B"

Revisions
02/16/06 REVISED PER MSD

Vertical Scale: 1"=4'
Horizontal Scale: 1"=40'
Date: 1/27/06
Job Number: 2337-S04

Sheet
4
of 6

ENGINEER: BOBBY RAIA

LOUISVILLE & JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: OLD HENRY PLACE — Asson't. No.: — Lot Ext.: — Rec No.: — Sht. No.: 1 of 1 — Available Data: —
Line: A — Inspector: — — Date: — — Accepted by MSD Inspector: — — Date: —
Engineer: MINDEL, SCOTT & ASSOC. — Phone No.: 485-1508 — Contractor: — — Phone No.: —

Top Station on Sewer	Size / Location of PSC on Lot	Slope	Length	Top Block / Lot No.	Street Name	Top Location – Distance & Direction from MH / End Location – Distance & Direction from PL Corner	MH Number / Upstream / Downstream Node (By MSD)	Description of Location of MH (By MSD) / Line Segment Numbers FROM – TO (By MSD)	Remarks
Top Station on P/L	Location of PSC on Lot	Elev.	Depth at End	House No.					
T 4+85	6"	L	7.5'	13	STREET "A"	MH			TOTAL LENGTH 29'
P/L 4+85	EMF	660.48	–	–	–	P/L			
T 6+30	6"	R	7.5'	3	STREET "A"	MH			TOTAL LENGTH 37'
P/L 6+30	EMR	661.13	–	–	–	P/L			
T 6+35	6"	L	7.5'	12	STREET "A"	MH			TOTAL LENGTH 28'
P/L 6+35	EMF	661.16	–	–	–	P/L			
T 8+32	6"	R	7.5'	5A	STREET "A"	MH			TOTAL LENGTH 29'
P/L 8+32	EMF	662.30	–	–	–	P/L			
T 8+75	6"	R	7.5'	5B	STREET "A"	MH			TOTAL LENGTH 32'
P/L 8+75	EMF	664.60	–	–	–	P/L			
T 8+80	6"	L	7.5'	11	STREET "A"	MH			TOTAL LENGTH 23'
P/L 8+80	EMS	664.87	–	–	–	P/L			
T 9+65	8"	R	7.5'	6	STREET "A"	MH			TOTAL LENGTH 27'
P/L 9+65	EMF	669.41	–	–	–	P/L			
T 10+15	6"	L	7.5'	10	STREET "A"	MH			TOTAL LENGTH 25'
P/L 10+15	EMS	673.40	–	–	–	P/L			
T 10+99	6"	R	7.5'	7	STREET "A"	MH			TOTAL LENGTH 31'
P/L 10+99	EMR	675.74	–	–	–	P/L			
T 11+70	8"	L	7.5'	9	STREET "A"	MH			TOTAL LENGTH 28'
P/L 11+70	EMF	677.71	–	–	–	P/L			
T 12+28	6"	R	7.5'	8	STREET "A"	MH			TOTAL LENGTH 35'
P/L 12+28	EMS	678.46	–	–	–	P/L			REDUCER

LOUISVILLE & JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: OLD HENRY PLACE — Asson't. No.: — Lot Ext.: X — Rec No.: — Sht. No.: 1 of 1 — Available Data: —
Line: A-1 — Inspector: — — Date: — — Accepted by MSD Inspector: — — Date: —
Engineer: MINDEL, SCOTT & ASSOC. — Phone No.: 485-1508 — Contractor: — — Phone No.: —

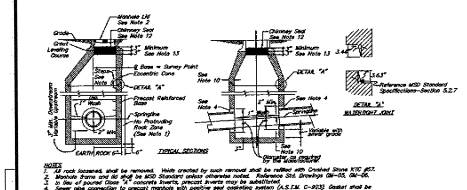
Top Station on Sewer	Size / Location of PSC on Lot	Slope	Length	Top Block / Lot No.	Street Name	Top Location – Distance & Direction from MH / End Location – Distance & Direction from PL Corner	MH Number / Upstream / Downstream Node (By MSD)	Description of Location of MH (By MSD) / Line Segment Numbers FROM – TO (By MSD)	Remarks
Top Station on P/L	Location of PSC on Lot	Elev.	Depth at End	House No.					
T 1+75	6"	R	7.5'	1	–	MH			TOTAL LENGTH 10'
P/L 1+75	EMR	667.56	–	–	–	P/L			
T 2+50	6"	R	7.5'	4	–	MH			TOTAL LENGTH 51'
P/L 2+50	EMF	669.90	–	–	–	P/L			
T 2+91	6"	L	7.0'	2	–	MH			TOTAL LENGTH 19'
P/L 2+91	EMR	670.32	–	–	–	P/L			WYE

LOUISVILLE & JEFFERSON COUNTY METROPOLITAN SEWER DISTRICT
PROPERTY SERVICE CONNECTION INLET SHEET

Project Name: OLD HENRY PLACE — Asson't. No.: — Lot Ext.: X — Rec No.: — Sht. No.: 1 of 1 — Available Data: —
Line: B — Inspector: — — Date: — — Accepted by MSD Inspector: — — Date: —
Engineer: MINDEL, SCOTT & ASSOC. — Phone No.: 485-1508 — Contractor: — — Phone No.: —

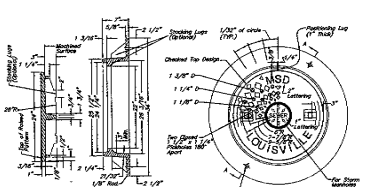
Top Station on Sewer	Size / Location of PSC on Lot	Slope	Length	Top Block / Lot No.	Street Name	Top Location – Distance & Direction from MH / End Location – Distance & Direction from PL Corner	MH Number / Upstream / Downstream Node (By MSD)	Description of Location of MH (By MSD) / Line Segment Numbers FROM – TO (By MSD)	Remarks
Top Station on P/L	Location of PSC on Lot	Elev.	Depth at End	House No.					
T 5+25	6"	L	7.5'	14	–	MH			TOTAL LENGTH 12'
P/L 5+25	EMR	652.81	–	–	–	P/L			
T 6+50	6"	L	7.5'	15	–	MH			TOTAL LENGTH 25'
P/L 6+50	EMF	654.13	–	–	–	P/L			
T 8+50	6"	L	7.5'	16	–	MH			TOTAL LENGTH 25'
P/L 8+50	EMR	655.81	–	–	–	P/L			
T 0+05	6"	L	40'	17	–	MH			TOTAL LENGTH 40'
P/L 0+05	EMR	656.58	–	–	–	P/L			REDUCER

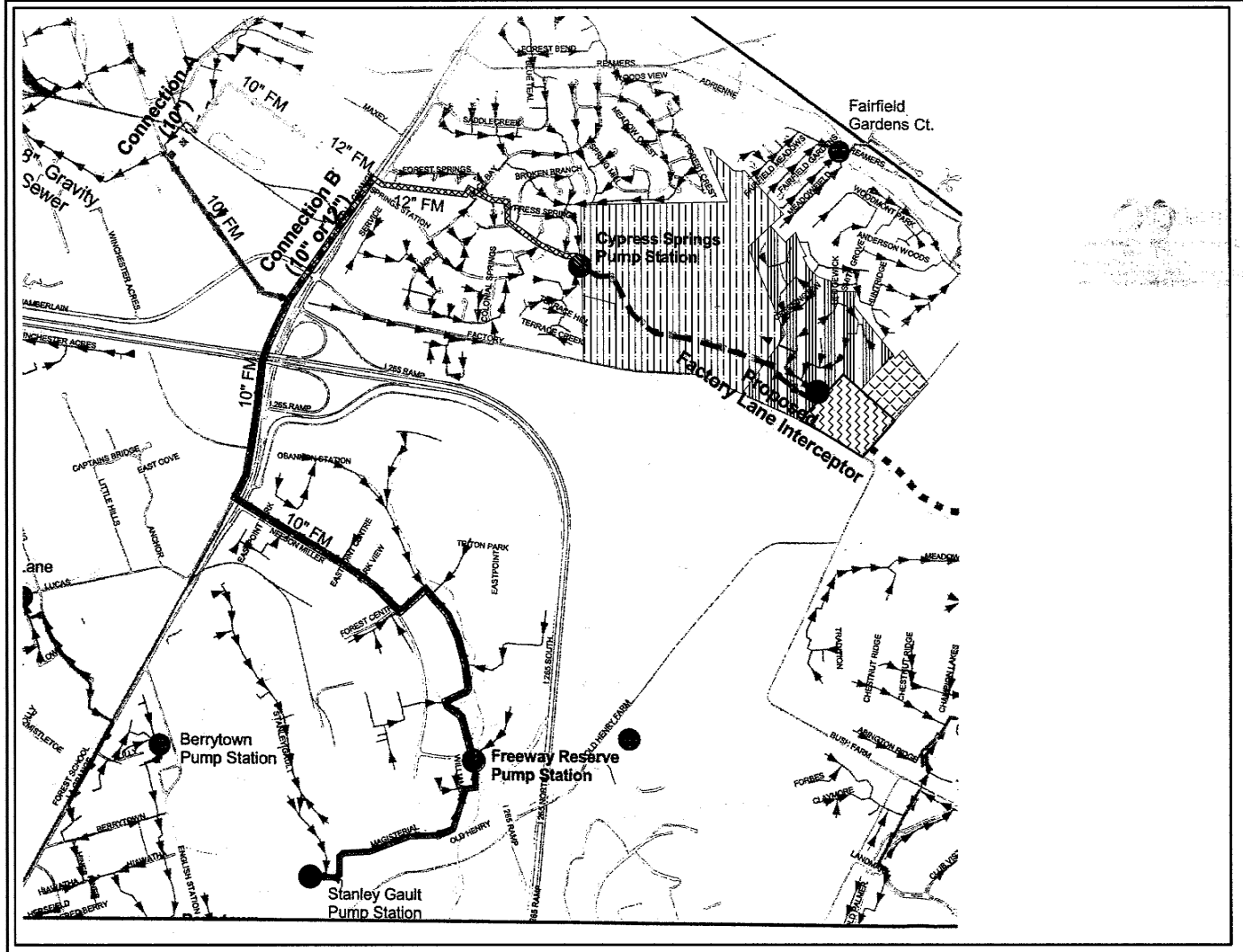
STA. 0+00.63 = STA. 10+85.63

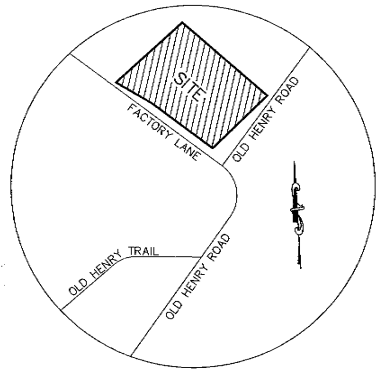


NOTES:
1. All rock loosened shall be removed. Voids created by rock removal shall be refilled with Crushed Stone K1C #57.
2. Reference MSD Standard Specifications–Section 5.2.6. Pipe shall not be placed above pipe larger than 18" diameter.
3. Sewer pipe connection to precast manholes with sanitree seal (sealing system) (A.S.T.M. C-923). Gasket shall be as manufactured by the Press Seal Gasket Co., A-lok, Inc.—A-Seal or equal with stainless steel banded manhole pipe connectors for sanitary sewers.
4. Reference MSD Standard Specifications–Section 5.2.6. Pipe shall not be placed above pipe larger than 18" diameter.
5. No rock fragments will be allowed within 6" of concrete.
6. Manhole shall be in accordance with A.S.T.M. C478, Gr.I.S.
7. Steps shall be in accordance with MSD standard specifications.
8. Steps shall be in accordance with MSD standard specifications.
9. Total height of all cones shall not exceed 12 inches.
10. 2' for 48" diameter, 3' for 60" diameter and 3' for 72" diameter.
11. Manhole inverts in pipe shall have a constant grade of 0.40ft through the structure unless any the exceeds 10%, at which time the grade shall be 0.80ft through the structure.
12. Casting shall, either internally maintained or chiseled, will be required on all new MSD manholes. At a minimum, the seal will extend from a point 3 inches above the base of the manhole frame, to a point 3 inches below the top of the concrete cone or top slab. If grade adjustments rollers are used, the seal height will increase proportionally to the roller height. All materials and installation procedures for mechanical seal will conform to section 5 of MSD's Standard Specifications.
13. The top of the concrete cone of top slab must have a minimum 3 inch vertical surface that is smooth and free of any form offsets or excessive honeycombing.

PRECAST MANHOLE–TYPE 1
GM-01-03


Modified Surface
Trowel Finish
Tracking Loops (Typical)
1/2" Dia. Lifting Hole (Typical)
Chiseled Top Design
1 3/8" D
1 1/4" D
1 1/8" D
Two Symbol Lettering 1 1/4" & 1 1/8" Optional
Two 1" Dia. cored and/or Slot Openings spaced on a 36" (3'-0") Dia. Bolt Circle
Two 1" Dia. cored and/or Slot Openings spaced on a 36" (3'-0") Dia. Bolt Circle
Pentacle Lug (1" thick)
1/2" Dia. Lifting Hole
Top Slab Thickness
Wall Thickness
Bench Height
Invert Elevation
Flow Line
Pipe Diameter
Pipe Invert
Pipe Crown
Pipe Springline
Pipe Haunch
Pipe Haunch
Pipe Springline
Pipe Crown
Pipe Invert
Flow Line
Invert Elevation
Bench Height
Wall Thickness
Top Slab Thickness





LOCATION MAP
NO SCALE

SANITARY SEWER DRAINAGE AREA CHART

DRAINAGE AREA	COLOR DESIGNATION	AREA/LOTS (ACRES/LOTS)	USE/ZONING	EQUIVALENT POPULATION	TOTAL FLOW (GPD)
OLD HENRY PLACE		45	R-5A	135	13,500
CYPRESS SPRINGS P.S.		1,513*	VAR.	6,052*	206,088**
FREEWAY RESERVE P.S.		SEE REPORT	VAR.	SEE REPORT	1,050,971**
STANLEY GAULT P.S.		SEE REPORT	VAR.	SEE REPORT	431,637**
WOODMONT, P-4 P.S.		104	R-5	416	41,600
DA-1		9.50 / 36	R-4	143	14,300
DA-2		126.18 / 473	R-4	1,892	189,200

* FROM SABAK, WILSON, & LINGO STUDY (FLOYDS FORK AREA-REC.NO. 14,612)
** FROM TETRA TECH STUDY (FACTORY LANE SOUTH AND FREEWAY RESERVE P.S.)

GRAPHIC SCALE 1"=200'
0 100 200 400

B.U.D. BEFORE "I" DIG FOR BURIED LINES & CABLE LOCATIONS CALL TOLL FREE 1-800-752-6007

RECORD NO. 15,197

STATE OF KENTUCKY MARK A. SITES 15539 LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER'S SEAL

Mindel, Scott & Associates, Inc.
Planning • Engineering • Surveying • Landscape Architecture
5151 Jaycee Ave., Suite 200, Louisville, KY 40213
Phone (502) 426-9571 Fax (502) 426-9666 E-Mail: msa@msakentucky.com

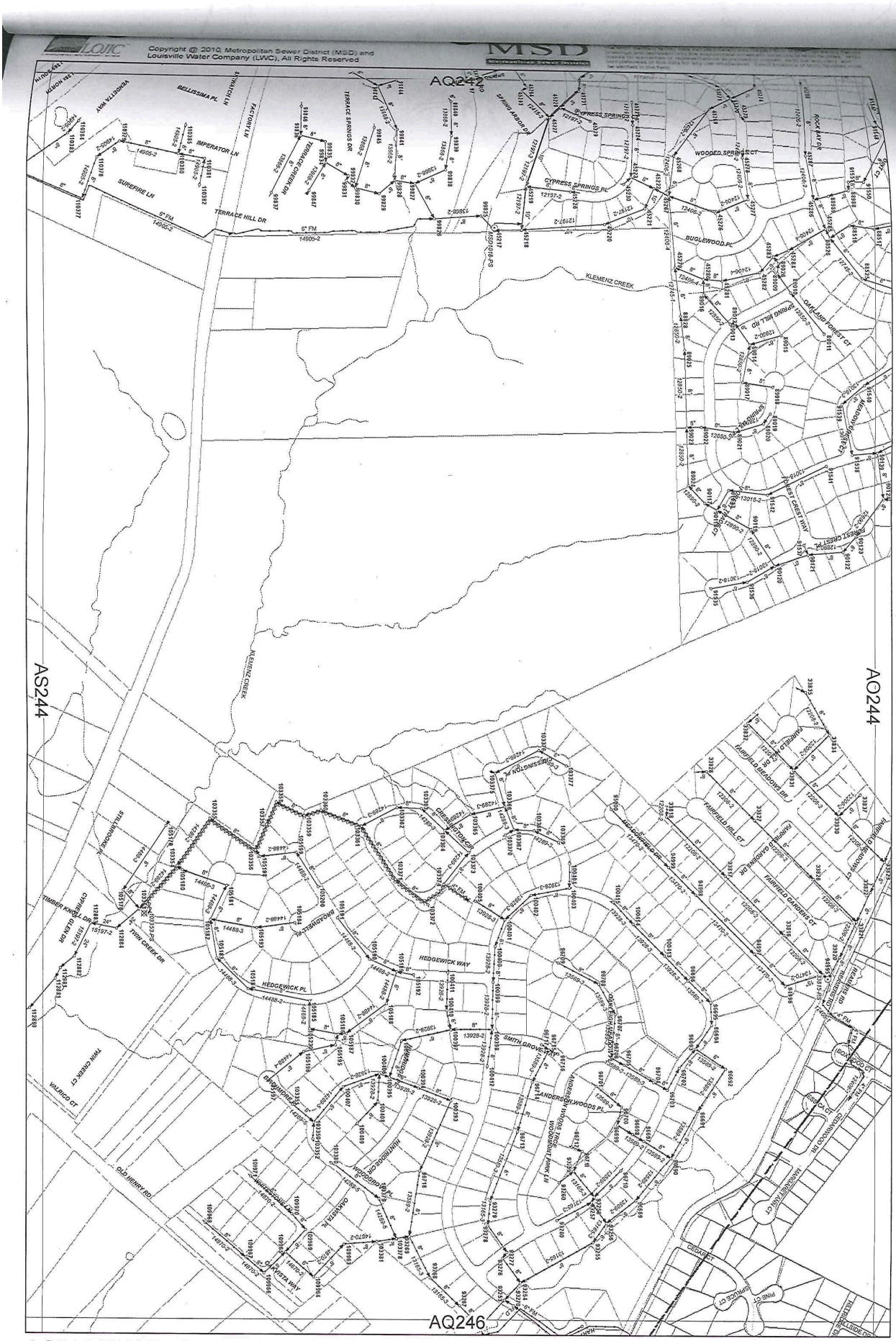
OWNER/DEVELOPER
LV CAPITAL, LLC
239 S. FIFTH STREET
SUITE 1700
LOUISVILLE, KY. 40202
(502) 569-7527

SANITARY SEWER PLANS
OLD HENRY PLACE
SERVICE AREA MAP

Revisions	
02/06/06	INCREASED PIPE SIZES

Vertical Scale: N/A
Horizontal Scale: 1"=200'
Date: 1/27/06
Job Number: 2337-S06

Sheet
6
of 6



AQ244 (MAK25C) Printed: 11/17/2010 Scale: 1" = 400' 0 400' Feet

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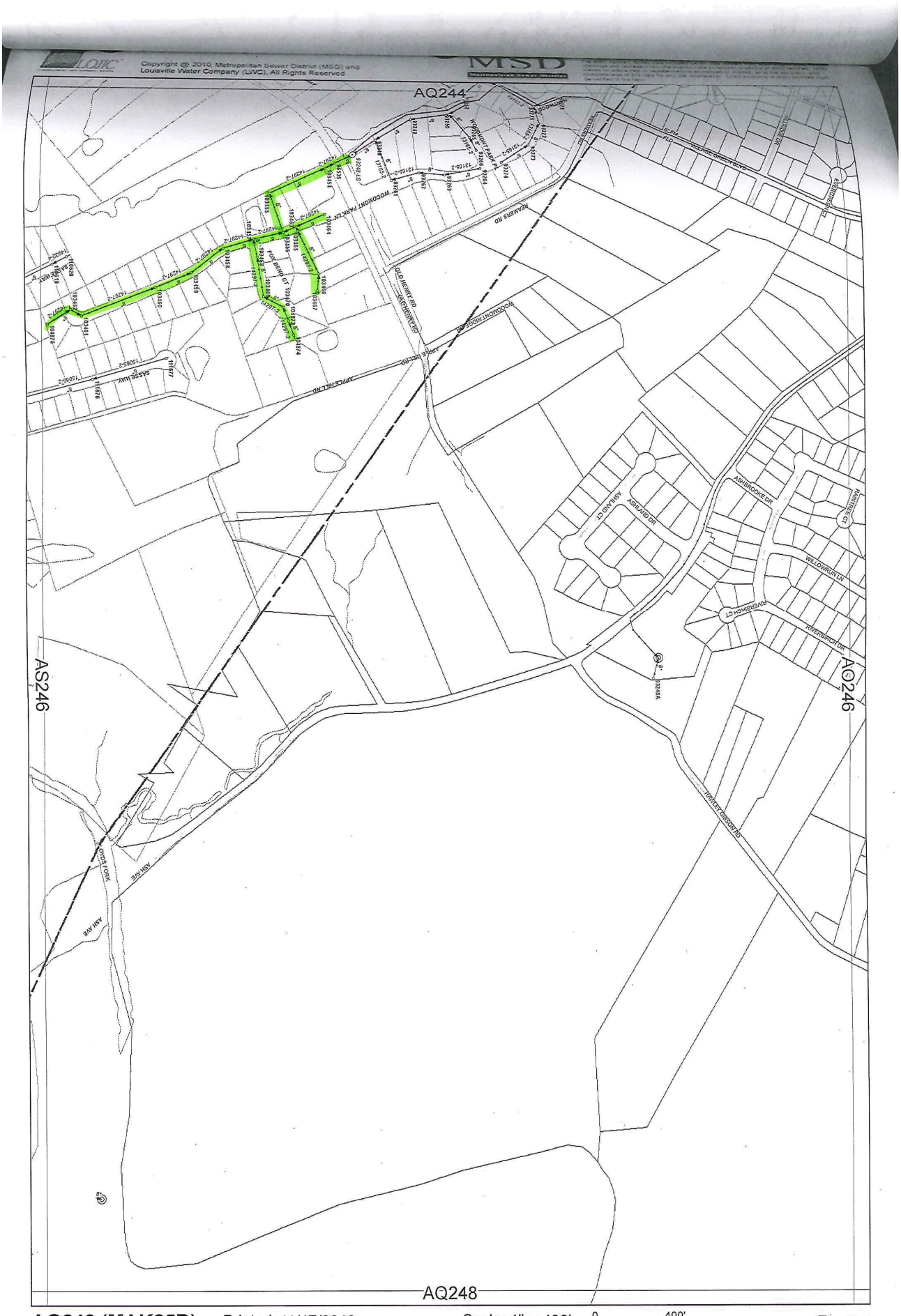
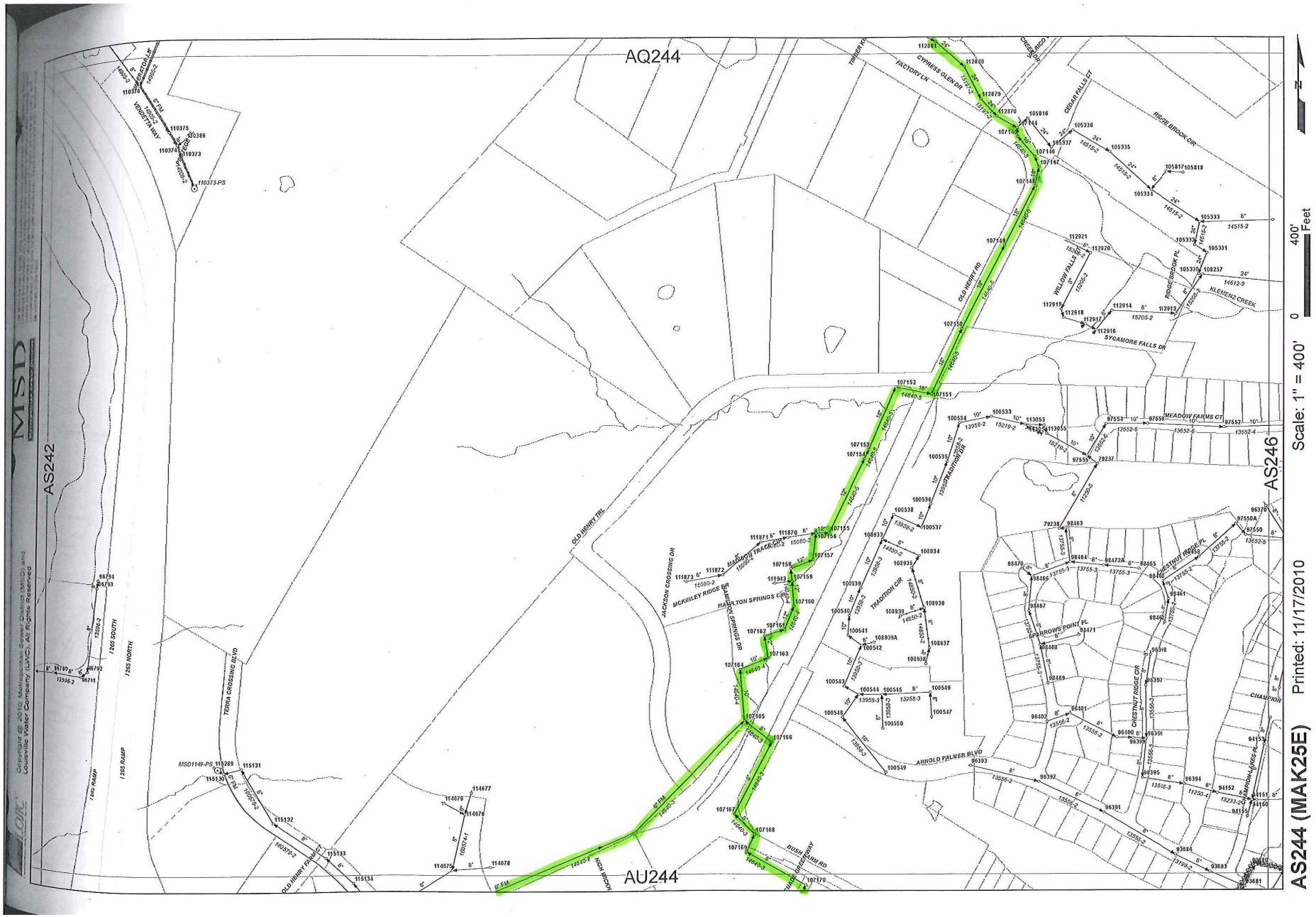


AQ246 (MAK25D) Printed: 11/17/2010 Scale: 1" = 400' 0 400' Feet


AQ244
AS242
AS246
AU244
MSD
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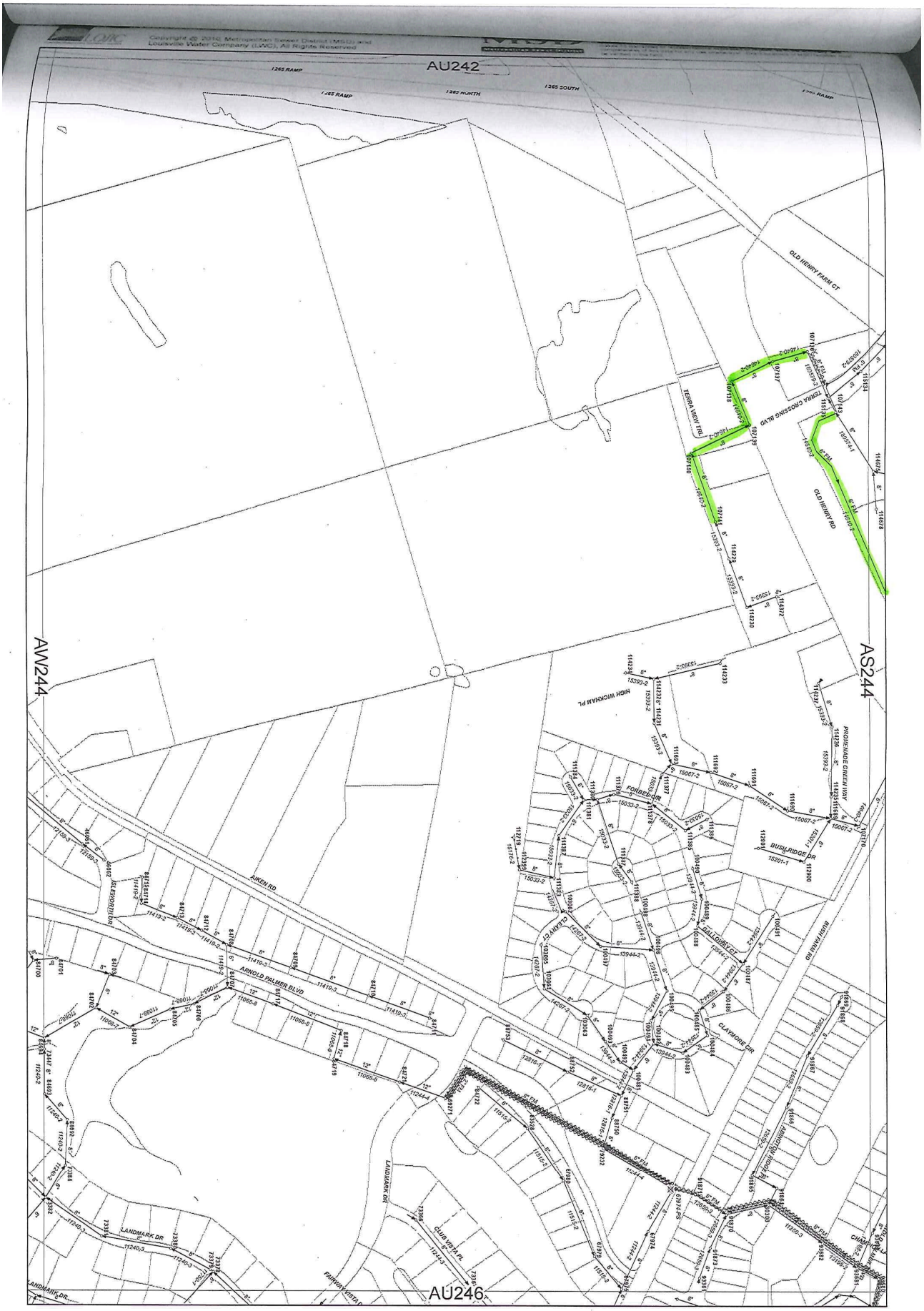
VENDETTA WAY
TERRA CROSSING BLVD
OLD HENRY TRL
OLD HENRY RD
JACKSON CROSSING DR
MCKINLEY RIDGE DR
HAMILTON SPRINGS DR
TRADITION CIR
ARNOLD PALMER BLVD
BUSH FARM RD
CYPRESS GLEN DR
FACTORY LN
CEDAR FALLS CT
RIDGE BROOK CIR
WILLOW FALLS
SYCAMORE FALLS DR
KLEMENZ CREEK
MEADOW FARMS CT
CHESTNUT RIDGE PL
CHESTNUT RIDGE CIR
CHAMPION
1265 SOUTH
1265 NORTH
1265 RAMP
MSD1149-PS
Scale: 1" = 400'
0
400'
Feet
Printed: 11/17/2010
AS244 (MAK25E)



AU244 (MAK25G) Printed: 11/17/2010 Scale: 1" = 400' 0 400' Feet

Appendix P – Meeting Minutes

MINUTES
Phase 1 Design Kick-off Meeting
ITEM NO. 5-367.20
Old Henry Road (KY 3084)
JEFFERSON / OLDHAM COUNTIES
February 04, 2011

A Project Team Kick-off Meeting for Old Henry Road Phase 1 Design took place at the KYTC District #5 Office in Louisville, Kentucky. A list of those attending is presented below:

Members Attending:

Paul Davis	KYTC, District 5, Design Section
Brian Meade (via speaker phone)	KYTC, District 5, Project Development
Carl Jenkins	KYTC, District 5, Utilities
Robert Farley	KYTC, Central Office, Development
Tala Quinio	KYTC, District 5, Design
Ron Geveden	KYTC, District 5, ROW
Bob Bauer	KYTC, District 5, ROW
Tom Hall	KYTC, District 5, Planning
Dane Blackburn	KYTC, District 5, Planning
Jeff Schaefer	KYTC, District 5, Environmental

Brian Meade began the meeting by explaining that $11,000,000 has been programmed in the 2010 Enacted Road Plan for combined R (2011 SB2) and U (2012 SB2) phases. The project will widen Old Henry Road (KY 3084) eastward in Jefferson County from I-265 and extend a new route to Ash Avenue (KY 362) in Oldham County. The Crestwood Connector portion to KY 22 is not feasible at the present time. Items discussed include the following:

1. Design Funds - Design funds have been authorized to cover both Phase 1 and Phase 2. The intent is for phase 1 design to be performed by D5 in-house before developing the procurement bulletin and selecting a consultant for Phase 2. We are beginning Phase 1 design for the 2.2-miles to Ash Avenue. The centerline will follow the 'preferred alignment' identified in the 2005 Environmental Assessment.
2. The EA was approved in 2005 under SP funding because it was assumed that the project would be federalized. The FONSI was never completed. There is no need to finish the NEPA work since it covers the whole alignment to KY 22 in Crestwood and there is no chance for federal funding.
3. Request all CADD (MicroStation & InRoads) files from previous Consultant.
4. This project is not presently in the TIP. It needs to be included in this April's Amendment cycle with the proposed 3-lane description.
5. First-Look Study –

a. Necessary information is being compiled by D5-Planning as we proceed toward Phase 2 design;
b. Some of this will become part of the advertisement (paragraphs or link to website .pdf);
c. Include all pertinent information from the 2005 Environmental Assessment;
d. Compiled information will help the phase 2 consultant such that there will be no question as to their role in developing the Final Plans;
e. Specific Typical Section and Stationing will define the alignment transitions;
f. The expectations of the PDT will be pin-pointed; and
g. The phase 2 design consultant will be provided with clearly defined design criterion.

6. Phase 1 (in-house) Design – The goal is to make all of the Phase 1 decisions before advertising for the 2nd phase. Available mapping from LOJIC will be used for Phase 1 design. After all project sponsor concerns are addressed and we have met with the Local Elected Officials (LEOs), the PDT will consider scheduling a public information meeting to inform the public before moving forward. A PL&G Inspection will be held and a DES will document the results of the Phase 1 effort, justifying the chosen alternative.
7. Phase 2 Design by Consultant – Knowing all the answers, the PDT will issue a procurement bulletin for Phase 2, making the phase 1 results (products) available. The project will be flown to obtain accurate mapping for Phase 2 design. The Selection Committee will choose a consultant to develop final plans through SB2 funding (not federalized). The selected consultant will be provided with typical sections and all of the necessary design criterion to develop final plans. There will not be any guesswork.
8. Traffic Forecasts (20-year) westward from Ash Avenue need to be requested by D5-Design through D5-Planning. Central Office will specify the count locations needed. Determine whether a traffic signal would be warranted at the Factory Lane intersection.
9. Aerial Photogrammetry-
    a. Obtain mapping from Kyle Cooper (2009 LOJIC) to be used for Phase 1 Design purposes;
    b. Consider having the project flown late in 2011 to obtain mapping suitable for Phase 2 Design and Final Plans; and
    c. Seek recommendations from Dan Farrell of Central Office.
10. A new Purpose and Need statement will be prepared to reflect the latest scope, addressing the 11-10-2009 letter from Oldham County Judge Executive Duane Murner and Louisville Metro Mayor Jerry Abramson to KYTC Secretary Mike Hancock. Neighborhood cut-throughs are being minimized (Village Green) and the P&N Statement will take on a new look. The Crestwood Connector concept and KY 146 impacts will be lessened.
11. Good estimates needed (R, U, & C)
    a. What is possible for $11M?
    b. Or how much would it take to build what is needed?

c. Reference R/W information already compiled by Bob Bauer. Adequate R/W may have already been dedicated. There are 50-ft buffers shown on plats in addition to the Old Henry Rd existing R/W;
d. For estimating purposes, assume 60-pavement, 2-ditches @ 18-ft, etc. Assume 150-ft R/W at the present time; and
e. Can we do more with $11M?

12. Public / Local Elected Officials (LEO) –
    a. The PDT already learned a few years ago what the public wants;
    b. Oldham County is on-board with this project. The PDT needs to get the LEO on-board;
    c. The typical section and horizontal/vertical alignments (yet to be determined) will be confirmed with Senator Julie Denton;
    d. The preferred alignment alternative is identified in the 2005 EA. The public and LEO just need to be informed about the revised typical section based upon new traffic information and the change in Scope, etc;
    e. Revisit the LEO & re-introduce the project;
    f. Avoid holding a public meeting if possible; and
    g. There is a slight possibility that a Public Informational (status) meeting by D5 could take place later in the process if needed. The PDT would take Phase 1 to the Public. The Public Information Meeting should be held after the PL&G Inspection and after the updated plans have been reviewed. We need everything defined before we go to the public. Again, it is for their information only and we would not be seeking their input for any design changes.
13. Noise Barriers were previously shown to be cost effective for 4 subdivisions in the revised project area affecting 136 residents. With the revised typical and traffic numbers, noise walls may no longer be warranted. The PDT will look at these again.
14. Alignment / Typical Section / Design Criterion –
    a. The preferred alignment alternative is identified in the 2005 EA;
    b. A partially-controlled access spacing of 600-ft would comply with an urban section. A 3-lane urban typical section is being considered to KY 362 with flush medians;
    c. An access Control of 1,200-ft would imply a rural section. Partial control would imply turn lanes and no need for a continuous 3-lane. Two-lane with grass median would be ok. A two-lane typical with flush turn lanes is being considered (55-mph design speed, 2-lane with turn lanes, and full shoulders). If the turn lanes become very lengthy then the third lane becomes typical;
    d. Subdivisions already have adequate access;
    e. Eastward from I-265, the existing 5-Lane typical ends at Bush Farm Rd and the existing 3-lane ends at the Arnold Palmer Blvd / Hamilton Springs Drive intersection;
    f. The Reamers Road existing alignment would not need to be relocated based on 5-lane and 45-mph. The EA preferred alternative shows that it needs to be relocated due to vertical alignment issues;

g. Old Henry Road is not a State route east of the Bush Farm Rd signal. Metro owns the asphalt section east of this traffic signal. KYTC owns the concrete portion west of the signal (over I-265);
h. Consider the need for sidewalks, bike paths, and shared-use paths;
i. An option is being considered to offset the alignment to provide a 4-way intersection for Hawley Gibson Rd – this would produce more traffic. Either way, there will be more traffic on Ash Avenue (KY 362);
j. Decide whether to plan for the ultimate design:
    i. Should R/W be purchased for 5-lane?
    ii. An urban section may be warranted in a few years;
    iii. D5-R will research and determine the amount of 5-lane already dedicated for Public use;
    iv. Consider building a 2-lane on one side of it; and
    v. Should Utilities be rearranged to accommodate the ultimate design?

15. Tentative Project Schedule (Phase 1 Design in-house) –

a.	PDT Phase 1 Kick-off Mtg	February 4th, 2011
b.	PDT Early Status Review Mtg	March 1st
c.	ALT Alignments Ready	April 1st
d.	Submit PL&G Plans	May 1st, 2011
e.	Develop R, U, & C Cost Est	May/June
f.	Hold PL&G Inspection	June 15th
g.	Determine exact LEO needs	July 1st
h.	Meet w/ Senator Julie Denton	July 15th
i.	Meet w/ LEO & Stakeholders	July 22nd
j.	Submit PL&G Report	August 1st
k.	PL&G Report Approval	August 15th
l.	Possible Public Info Mtg	September 1st
m.	Geotech X-Section Submittal	September 1st
n.	Submit DES	September 1st
o.	Submit First-Look Study	September 1st, 2011
p.	Electronic Plan Submittal	September 15th, 2011

16. Tentative Project Schedule (Phase 2 Design by Consultant) –

a.	Develop Procurement Bulletin	September/October, 2011
b.	Advertise 2nd Tuesday	October 11th
c.	Request Aerial Photogrammetry	October 18th
d.	Response Date	November 9th
e.	Selection Committee Mtg	December 7th
f.	Pre-Design Conference	December 14th, 2011
g.	Consultant Fee Proposal	January 15th, 2012
h.	Contract Negotiations	February 15th, 2012
i.	NTP Phase 2 Design	March 15th
j.	PDT Phase 2 Kick-off Mtg	May 1st
k.	Slope Recommendations rec'd	June 1st
l.	Submit R/W & Drainage Plans	August 1st
m.	Submit Prelim Drainage Folder	August 1st, 2012

n.	Hold R/W & Drainage Insp	September 1st
o.	Submit Adv Situation Folder	October 1st, 2012
p.	Submit Final R/W Plans	November 1st
q.	Request R/W funds	November 15th
r.	Request U funds	December 15th
s.	R/W Phase	Spring 2013
t.	U Phase	Summer/Fall/Winter 2013
u.	Final Constructability submittal	January 2014
v.	Final Constructability Mtg	February 2014
w.	Submit Check Prints	April 2014
x.	Submit Final Documents	June 2014
y.	Letting	August 2014
z.	Begin Construction	Late 2014 / Early 2015

17. Current cost comparison with the FY 2010-FY2012 Enacted Highway Plan:

		Current	Highway Plan
Design	(authorized January 2011)	$1,250,000	
Right of Way		$9,000,000	$ 8,000,000 SB2 2011
Utilities		$5,000,000	3,300,000 SB2 2012
Construction		$12,000,000	4,000,000 SP 2012
Total		$ 27,250,000	$ 15,300,000

MINUTES
Phase 1 Design Early Status Review Meeting
ITEM NO. 5-367.20
Old Henry Road (KY 3084)
JEFFERSON / OLDHAM COUNTIES
February 22, 2011

An Early Status Review Meeting for Old Henry Road Phase 1 Design took place at the KYTC District #5 Office in Louisville, Kentucky. A list of those attending is presented below:

Members Attending:

Brian Meade	KYTC, District 5, Project Development TEBM
Tala Quinio	KYTC, District 5, Design Section Supervisor
Ron Geveden	KYTC, District 5, ROW Section Supervisor
Tom Hall	KYTC, District 5, Planning Section Supervisor
Dane Blackburn	KYTC, District 5, Planning
Jeff Schaefer	KYTC, District 5, Environmental Coordinator
Paul Davis	KYTC, District 5, Design Section
Travis Thompson	KYTC, District 5, Design Section

This meeting was held to review the phase 1 Design progress made since the Project Team Kick-Off Meeting took place on 02-04-11. Items discussed include the following:

1. **Landscaping buffers** – Platted subdivisions show certain buffer areas as required by Metro Planning and Zoning. It is a 'parkway' established in previous years by Metro. In effect, they have established building set-back limits to accommodate the selected Old Henry Road alignment and typical section. These are existing, non-public areas to be shown on the Old Henry Road plans. The PDT will strive to keep the proposed R/W within this buffer zone;
2. **Data Needs Analysis (DNA)** – The 'first look study' will be developed by D5-Planning during the first Design phase;
3. All CADD files were requested from ENTRAN on 02-18-11;
4. **Typical Sections** were discussed. Approximate width is based on the following assumptions:
    a. 20-ft = 10' Utility strip both sides;
    b. 5-ft Sidewalk one side;
    c. 7-ft Shared-use path on other side;
    d. 4-ft = 2-ft outside of curbs;
    e. 24-ft = 12-ft driving lanes;
    f. 15-ft center lane;
    g. Adds up to 75-ft width for disturbed limits;
    h. Say 100-ft width needed for proposed R/W.

5. **The Traffic Forecast request** is needed ASAP (it has since been submitted to D5-Planning for review and approval);
6. **Mapping (2009)** is available from D5-Planning. Use 500-feet each side of centerline (1,000-ft strip);
7. Structures need to be called out in the plans (near Factory Lane and near Ash Avenue);
8. Preliminary Line and Grade plans need to be provided to the PDT ASAP for review and comment and for R, U, & C cost estimating purposes;
9. **For the Local Elected Officials (LEO), the following are needed quickly:**
    a. Good D, R, U, & C cost estimates;
        i. Use 100-ft corridor for proposed R/W;
    b. AGENDA
        i. Project History;
        ii. Current Status;
        iii. How we got to this point;
        iv. Meeting objectives / goals from phase 1 design;
        v. Plans presented (**here is what we want to build**);
        vi. Comment period;
        vii. Next steps – scheduled milestones
            1. (See last page of minutes)
    c. A Phase 1 Document for the Phase 2 advertisement (by D5 Design Section);
        i. Do the rough draft of the Final report product.
    d. Present what we are building at an informational meeting:
        i. 3-lane Urban typical section with sidewalk on one side & a shared-use path on the other;
        ii. Refer to the 2009 letter to Secretary Hancock from Judge Murner and Mayor Abramson and explain their requests;
        iii. We can build from point A to point B with $11-million;
        iv. It was a data-driven decision;
        v. Developments will be full within 10-years;
        vi. If sidewalks are not possible, for example, explain the reasoning;
        vii. Define the alignment according to the EA. It defines the preferred alignment / selected alternative and it was a 5-lane. However, do not provide a copy of the EA during the LEO meeting or when advertising for Phase 2 design. It was a different project. Our D5 Environmental coordinator will provide a new Environmental document.
        viii. Two options for the tie-in at Hawley Gibson;
            1. Same east-end alignment as shown (Old Henry Rd crosses the Ash Avenue (KY 362) realignment and is extended a few hundred feet. Hawley Gibson tees into both Ash Avenue and Old Henry Rd at two separate locations);
            2. End Old Henry Rd with an S-curve from the new 4-legged Ash Avenue intersection to existing Hawley Gibson;
            3. A traffic signal will probably be warranted at the Ash Avenue intersection depending upon the results of the upcoming forecast;

ix. Options for Reamers Road tie-in. The realignment may not be needed;
x. The Factory lane traffic volumes will be counted. This intersection may also meet signal warrants;
xi. Show the LEO what we want to build and let them provide comments;
xii. Listen;
xiii. If the budget will not allow, then it won't get built; and
xiv. Very little opposition is anticipated.

e. PowerPoint Presentation;
f. Invite Judge Black, Ernie Harris, Pewee Valley representatives, etc.;
g. Don't take anything we can't deliver;
h. Discuss the FEMA grant scenario and the low area at Ash Avenue. The Oldham County engineer, Beth Stuber hired DLZ. The Oldham County planner familiar with the current FEMA status is Belinda Dimas.

10. Tentative Project Schedule (Phase 1 Design in-house) –

a.	PDT Phase 1 Kick-off Mtg	February 4th, 2011
~~b.~~	PDT Early Status Review Mtg	~~March 1st~~ February 22nd
c.	ALT Alignments Ready	April 1st
d.	Submit PL&G Plans	May 1st, 2011
e.	Develop R, U, & C Cost Est	May/June
f.	Hold PL&G Inspection	June 15th
g.	Determine exact LEO needs	July 1st
h.	Meet w/ Senator Julie Denton	July 15th
i.	Meet w/ LEO & Stakeholders	July 22nd
j.	Submit PL&G Report	August 1st
k.	PL&G Report Approval	August 15th
l.	Possible Public Info Mtg	September 1st
m.	Geotech X-Section Submittal	September 1st
n.	Submit DES	September 1st
o.	Submit First-Look Study	September 1st, 2011
p.	Electronic Plan Submittal	September 15th, 2011

11. Tentative Project Schedule (Phase 2 Design by Consultant) –

a.	Develop Procurement Bulletin	September/October, 2011
b.	Advertise 2nd Tuesday	October 11th
c.	Request Aerial Photogrammetry	October 18th
d.	Response Date	November 9th
e.	Selection Committee Mtg	December 7th
f.	Pre-Design Conference	December 14th, 2011
g.	Consultant Fee Proposal	January 15th, 2012
h.	Contract Negotiations	February 15th, 2012
i.	NTP Phase 2 Design	March 15th
j.	PDT Phase 2 Kick-off Mtg	May 1st
k.	Slope Recommendations rec'd	June 1st
l.	Submit R/W & Drainage Plans	August 1st
m.	Submit Prelim Drainage Folder	August 1st, 2012
n.	Hold R/W & Drainage Insp	September 1st

o.	Submit Adv Situation Folder	October 1st, 2012
p.	Submit Final R/W Plans	November 1st
q.	Request R/W funds	November 15th
r.	Request U funds	December 15th
s.	R/W Phase	Spring 2013
t.	U Phase	Summer/Fall/Winter 2013
u.	Final Constructability submittal	January 2014
v.	Final Constructability Mtg	February 2014
w.	Submit Check Prints	April 2014
x.	Submit Final Documents	June 2014
y.	Letting	August 2014
z.	Begin Construction	Late 2014 / Early 2015

12. Current cost comparison with the FY 2010-FY2012 Enacted Highway Plan:

		Current	Highway Plan
Design	(authorized January 2011)	$1,250,000	
Right of Way		$9,000,000	$ 8,000,000 SB2 2011
Utilities		$5,000,000	3,300,000 SB2 2012
Construction		$12,000,000	4,000,000 SP 2012
Total		$ 27,250,000	$ 15,300,000

MINUTES
Preliminary Line and Grade Inspection Meeting
ITEM NO. 5-367.20
Old Henry Road (KY 3084)
JEFFERSON / OLDHAM COUNTIES
June 8, 2011

A Preliminary Line and Grade Inspection Meeting for Old Henry Road Phase 1 Design took place at the KYTC District #5 Office in Louisville, Kentucky. A list of those attending is presented below:

Members Attending:

Andy Rush	KIPDA
Robert Farley	KYTC, Central Office, Developmental
Lynn Soporowski	KYTC, Central Office, Planning
Daniel Hulker	KYTC, Central Office, Planning
Matt Bullock	KYTC, District 5, CDE
Mohamad Abdol	KYTC, District 5, Engineering Support TEBM
Brian Meade	KYTC, District 5, Project Development TEBM
Kevin Bailey	KYTC, District 5, Construction
Tala Quinio	KYTC, District 5, Design Section Supervisor
Ron Geveden	KYTC, District 5, ROW Section Supervisor
Tom Hall	KYTC, District 5, Planning Section Supervisor
Dane Blackburn	KYTC, District 5, Planning
Jeff Schaefer	KYTC, District 5, Environmental Coordinator
Cathy Cornish	KYTC, District 5, Utilities Section
Paul Davis	KYTC, District 5, Design Section
Travis Thompson	KYTC, District 5, Design Section

Following a brief history of the project by Brian Meade and Paul Davis, the following items were discussed:

1. Location, existing conditions, traffic, design criterion, preliminary cost estimates, and the preliminary design were presented. The preferred horizontal and vertical alignments were approved as presented.
2. The draft version of the Design Executive Summary was reviewed.
3. The traffic count locations were decided on March 29th, 2011. KIPDA provided the traffic forecasts by June 1st, 2011. Andy Rush addressed any questions. Lynn Soporowski requested that Old Henry be modeled as a collector instead of an arterial. The forecast was revised accordingly and re-submitted by mid-June.
4. Cost estimates are in-progress. The right-of-way is estimated at $2-M. Utilities is expected to be over $3-M. Construction has been estimated at $8.8-M by Entran;
5. The profile for Ash Avenue was discussed.

6. Other alignment alternatives to Hawley Gibson were discussed. During phase 2 design, the PDT may consider realigning Ash Avenue such that only (1)-bridge is needed instead of two. In addition, the PDT may consider extending the tangent from Hawley Gibson from the curve to the mainline.
7. Plan on buying right-of-way only for the 3-lane section. The KYTC will only build what we now need.

Minutes issued by: Paul Davis, P.E.
Date issued: 8-09-11

MINUTES
Local Elected Officials Meeting
ITEM NO. 5-367.20
Old Henry Road (KY 3084)
JEFFERSON / OLDHAM COUNTIES
August 10, 2011

The phase 1 design results for Old Henry Road were presented to the Local Elected Officials (LEO) at the KYTC District #5 Office in Louisville, Kentucky. The following persons attended the meeting:

Julie Denton	Kentucky Senate, D36
David Voegele	Oldham County, Judge-Executive
John Black	Oldham County, Deputy Judge-Executive
Beth Stuber	Oldham County, County Engineer
Jim Urban	Oldham County, Planning & Development, Director
J.D. Sparks	Oldham County, Magistrate, D5
Michael Logsdon	Oldham County, Magistrate, D8
Dennis Deibel	City of Crestwood, Mayor
Bob Rogers	City of Pewee Valley, Mayor
Andy Rush	KIPDA, Transportation Planner
Larry Chaney	KIPDA, Director of Transportation
Jerry Miller	Louisville Metro, Council, D19
Ted Pullen	Louisville Metro, Public Works & Assets, Director
Jeremy Raney	Louisville Metro, Public Works & Assets
Robert Farley	KYTC, Central Office, Developmental
Brian Meade	KYTC, District 5, Project Development TEBM
Tala Quinio	KYTC, District 5, Design Section Supervisor
Paul Davis	KYTC, District 5, Design
Chris Allen	KYTC, District 5, Planning
Richard Barker	KYTC, District 5, Utilities
Jeff Schaefer	KYTC, District 5, Environmental Coordinator

Brian Meade thanked everyone for attending and proceeded to present the phase 1 design results to the elected officials. The aerial plan showing the horizontal alignment from the June 8th 2011 Preliminary Line and Grade Inspection was on display along with the typical section. Items from the attached agenda were explained and discussed.

The results of the meeting are summarized as follows:

1. The consensus from both Jefferson and Oldham County representatives is to proceed as planned (i.e., advertise for the phase 2 design consultant as soon as possible this year and hold a Public Information meeting as soon as possible this year).

2. The main goal for Oldham County is to get connected with I-265. Vehicles currently traveling on Village Green Boulevard need a direct route to I-265. Jefferson County residents are happy with the road as a 3-lane collector that will carry less traffic. The 3-lane collector is a compromise between the 2-counties. It is important that the whole project from I-265 to Ash Avenue is built. The extension is needed for Oldham County and the existing roadway needs improvement within Jefferson County.
3. The Factory Lane curve is a very high safety priority and should be improved with this project.
4. Cost estimates will assume minimum right-of-way requirements for this 3-lane project (i.e., do not acquire right-of-way at the present time for a future 5-lane section). However, widening to 5-lanes remains a possibility for the future. The section west of Factory Lane may be a good future candidate for 5-lanes.
5. The alignment presented to the LEO is compatible with the future extension to Crestwood since the proposed Ash Avenue intersection lines up with the preferred alignment chosen in 2004 as documented in the 2005 approved EA.
6. Both alignment alternatives to Hawley Gibson will be shown at the upcoming Public Information Meeting (TBA). There are pros and cons with each and a wide range of opinions. The preferred alignment may be modified somewhat during final plan development.
    a. Red Alignment - From a traffic engineering perspective, the through movement should be on KY 362 with stop conditions on Hawley Gibson, thus preferring the red alignment (offset intersection). Oldham County representatives felt that drivers would object to the left-turn movements between Old Henry and Hawley Gibson.
    b. Blue Alignment - Some of the Oldham County representatives would prefer a direct tie to Hawley Gibson, which would necessitate new stops on KY 362 (blue alignment). Old Henry Road would become the through movement without having the heaviest traffic. As discussed, the public was previously against the direct tie to Hawley Gibson and it would be much less compatible with a future extension to Crestwood. Construction and R/W costs would increase. Any temporary ties to Hawley Gibson would need to be torn out if the extension to Crestwood were built in the future. There would be landfill and other issues to investigate.
7. Possible meeting locations in both counties were discussed. The D5 Public Information Officer (PIO) will be asked for recommendations.
8. There is no need to further consider sound walls on this project since the proposed typical section essentially adds a center turn lane and does not increase the number of travel lanes.
9. Costs could be reduced somewhat by removing proposed shared-use paths and/or sidewalks from the plans. The shared-use path is currently shown on the north side of Old Henry Road with a sidewalk on the south side. Their costs would be relatively low compared to the total funding needs. The entire R/W width is needed for utilities even without the shared-use path or sidewalk. Louisville Metro and others have requested that we continue to show the shared-use paths and sidewalks as final plans are developed. Depending on available funds, it could become necessary to remove

them from the plans at some point in the future. It was decided to continue with shared-use paths and sidewalks throughout the design phase.

10. Another possible cost reduction would be to remove the curve west of Arnold Palmer Boulevard from the plans. However, this is currently a hazardous area due to the tight radius (1,000-ft +/-) and inadequate superelevation. The as-built situation resulted from adjacent developments tying into Old Henry Rd from each direction. For safety reasons, it was decided to bring the curve up to design standards with this project rather than removing 1,200-LF +/- from the project limits.
11. Plans will be developed for the entire project (2.2-miles +/-). Additional funding needs, breakout projects, and/or construction phasing will be addressed at a later date as cost estimates are refined. There should be adequate funding currently programmed with State bond funds to finish the Design, Right-of-Way, and Utility phases.
12. Cost estimates need to be refined as much as possible by January 2012 for the upcoming General Assembly.
13. It was suggested that a newspaper article should be written to help inform the public about this project.

This is my understanding of the minutes of this LEO meeting. Please contact me with any necessary revisions.

Minutes issued by: Paul Davis, P.E.
Date issued 8-11-11

Appendix Q – Preliminary Line and Grade


OLD HENRY ROAD
PRELIMINARY LINE & GRADE
I-265 TO ASH AVE
JUNE 8, 2011
265
LEGEND
PROPERTY LINE
TEMP. EASE.
PROP. RIGHT OF WAY
CONST. LIMITS
SIDEWALK
SHARED USE PATH
HISTORICAL PROPERTY
LEGEND
PROPERTY LINE
TEMP. EASE.
PROP. RIGHT OF WAY
CONST. LIMITS
SIDEWALK
SHARED USE PATH
HISTORICAL PROPERTY
SCALE 1" = 100'