APPENDIX O
FILO METHODOLOGY

FILO Methodology

Based on our field reconnaissance and available aerial photographs, the project corridor had been previously separated into three broad habitat type, including mature woods, disturbed woods, and developed areas. During the field reconnaissance several streams were assessed using the Rapid Bioassessment Protocol (RBP) to determine quality. Due to the limited amount of time available during the field reconnaissance, the majority of the RBPs were conducted in the developed areas along the roads and not within the mature woods or disturbed woods habitats. One major factor influencing stream quality is anthropogenic disturbances, which remove wooded habitat and alter flow regimes. Streams within the project area were then separated by the habitat type where they were located. Streams located within the mature woods habitat were considered Excellent quality. Streams within the disturbed woods habitat were considered Average quality, and streams within the developed areas were considered Poor quality. These assumptions were generally confirmed by the RBP information collected during the field reconnaissance.

Once the streams were assigned a quality value based on the habitat, the Adjusted Mitigation Units (AMUs) were calculated for streams of each quality and flow regime by multiplying the length by the appropriate mitigation multiplier. A weighted average cost per AMU was calculated by multiplying the cost per AMU from the Kentucky Department of Fish and Wildlife Resources ($300/AMU) by the mitigation multiplier and the percentage of the total stream associated with that flow regime and quality. To calculate an overall cost per ft for each flow regime, the individual weighted averages for each quality type were summed. The resulting weighted averages are: Ephemeral $288.99/ft; Intermittent $542.86/ft; and Perennial $738.89/ft.

These values do not include the 20% temporal loss multiplier required by the Corps of Engineers. If the 20% multiplier is added, then the cost per foot goes to:

- **Ephemeral $346.79/ ft**
- **Intermittent $651.43/ ft**
- **Perennial $886.67/ ft.**

These values are somewhat conservative as it is assumed that all streams within the mature woods habitat are Excellent quality, which is unlikely. These assumptions do not reflect the streams in the southern portion of the project area that are within the Eastern Kentucky Protocol area since they total only about 4% of the total streams within the project area.

Comparing this methodology to the Central Kentucky Protocol Mitigation Multipliers, the mitigation costs for excellent quality streams of each flow regime are: Ephemeral $300/ft; Intermittent $600/ ft; and Perennial $900/ ft.

These values do not include the 20% temporal loss multiplier required by the Corps of Engineers. If the 20% multiplier is added, then the cost per foot goes to:

- Ephemeral $360/ ft.
- Intermittent $720/ ft.
- Perennial $1,080/ ft.

The former values were utilized to consider estimating in lieu fees based on the reconnaissance level assessment.

Summary Table
KY 59 – KY 344 – KY 377 Improvement Project
Lewis and Rowan Counties, Kentucky
KYTC Item No.: 9-231.00

Feature	Status	Length (miles)	Area (acres)	Number
Ephemeral Streams	Jurisdictional	67.4	---	---
Intermittent Streams	Jurisdictional	26.7	---	---
Perennial Streams	Jurisdictional	50.8	---	---
Stream Total		**144.9**	**---**	---
Special Use Waters	---	5.6	---	---
Special Use Waters Total		**5.6**	**---**	---
Forested Wetlands	Jurisdictional	---	118.7	---
Scrub-Shrub Wetlands	Jurisdictional	---	9.7	---
Emergent Wetlands	Jurisdictional	---	6.7	---
Agricultural Wetlands	Jurisdictional	---	17.1	---
Wetland Total		---	**152.2**	---
Ponds	Jurisdictional	---	13.1	55
Pond Total		---	**13.1**	
Mature Woods Habitat	---	---	8995	---
Disturbed Woods Habitat	---	---	1172	---
Scrub-Shrub Habitat	---	---	52	---
Open/Developed	---	---	3236	---
Terrestrial Habitat Total			**13455**	---
Potential Virginia Spiraea Habitat	---	24.2	---	---
Potential Mussel Habitat	---	38.9	---	---
Potential InBat/NLE Bat Summer Habitat	---	---	10286	---
Potential VBE Bat Summer Roosting (Outcrop Areas)	---	---	119	---
Known Indiana Bat Habitat Zone Overlap	---	---	1,038	---
Known NLE Bat Habitat Zone Overlap	---	---	2,326	---
Rapid Bioassessment Protocol Points	---	---	---	11
Water Quality Sampling Points	---	---	---	17