ENVIRONMENTAL SAMPLING PLAN FOR VILLAGE CREEK NEAR CHANUTE, KANSAS

(Final: 24 June 2011)

1. Introduction

Based on recent discussions between the United States Environmental Protection Agency (EPA) and the Kansas Department of Health and Environment (KDHE), the KDHE Bureau of Environmental Field Services (BEFS) has agreed to participate in environmental sampling activities near Chanute, Kansas. The specific activities outlined in this work plan are intended to determine whether detectable concentrations of selected contaminants occur in Village Creek. Data obtained through this sampling effort will be used along with other information to assess possible environmental and public health-related impacts.

2. Study Setting

Village Creek originates in northeastern Wilson County and flows 19 miles in a northeasterly direction before entering the Neosho River in adjacent Neosho County. The creek drains an area of about 54 square miles and yields an estimated median flow of 4.2 cubic feet per second (Perry et al. 2004). Approximately 56% of the watershed is covered by grassland, 28% is devoted to row crop production, 7.5% has undergone some level of urban or residential development, and the remainder is covered by woody vegetation, wetlands, barren areas (e.g., active quarries), or open water. Ash Grove Cement Company currently discharges storm water runoff and treated effluent to Village Creek (NPDES permit #KS0001201). Chanute extends into the watershed of Village Creek, but the municipal sewage treatment plant discharges to another stream outside this watershed.

3. Contaminants of Concern

This screening-level study will endeavor to quantify prevailing concentrations of selected contaminants in surface water, sediment, and fish tissue. Surface water samples will be analyzed for all routine parameters considered in the Kansas stream chemistry monitoring program (SCMP) (Attachment A). Analyses for pH, electrical conductance, and temperature will be measured in the field by KDHE staff, and all other analyses will be performed at the KDHE laboratory in Topeka. Fluvial sediment samples will be analyzed for the parameters identified in Appendix B. These analyses will be performed by EPA or a contractual laboratory chosen by EPA. Fish tissue samples will be analyzed for all routine and supplemental parameters included in the KDHE fish tissue contaminant monitoring program (FTCMP) (Appendix C). All such analyses will be performed by EPA or a contractual laboratory chosen by EPA.

4. Sampling Design

During an extended period of dry weather and base stream flow, an effort will be made to collect water, sediment, and fish tissue samples from five targeted locations along Village Creek. Two sites (stations 1 and 2) will be located well upstream of the Ash Grove Cement Company's wastewater and storm water outfalls, two other sites (stations 3 and 4) will closely bracket these outfalls, and the remaining site (station 5) will be located near the lower terminus of Village Creek (Attachment D). Village Creek also will be reconnoitered for previously undocumented discharges that could contribute to the observed contaminant concentrations. Additional water, sediment, and/or fish tissue samples may be collected from the vicinity of any such discharges.

5. Sampling Protocols

At each of the targeted sites, the following actions will be undertaken: (a) grab water samples will be collected from existing bridges pursuant to the methods set forth in KDHE standard operating procedure (SOP) SCMP-005; (b) sediment samples will be collected from stream banks, bars, or islands in accordance with KDHE SOP BER-04; and (c) a composite fillet sample of a bottom-feeding fish species (e.g., common carp) and a composite fillet sample of a carnivorous, open-water species (e.g., largemouth bass) will be collected pursuant to KDHE SOP FTCMP-001, FTCMP-002, and FTCMP-003. It is recognized that habitat limitations may preclude the collection of one or both targeted fish species at some sampling sites.

All samples will be preserved in accordance with the procedures described in the above SOPs. For site verification purposes, the location of each sampling location will be documented in the field using a hand-held global positioning system (GPS) device (KDHE SOP SCMP-001).

6. Sample Transfer Procedures

Chain-of-custody procedures for water samples submitted to the KDHE laboratories will comply with KDHE SOP SCMP-006. KDHE will work with EPA to establish appropriate sample transfer procedures for water, sediment, and fish tissue samples transported to the EPA facilities or contractual laboratories.

7. Analytical Protocols

Water samples submitted to the KDHE laboratories will be handled, processed, and analyzed in accordance with procedures identified in the SCMP quality assurance management plan (KDHE 2007b). KDHE will work with EPA to identify appropriate handling, processing, and analytical procedures for sediment and fish tissue samples transported to the EPA facilities or contractual laboratories.

8. Data Reporting and Evaluation

Environmental data obtained during this study will be shared in a timely manner between KDHE and EPA. Data evaluation will be performed jointly by the two agencies.

9. References

Perry, CA, DM Wolock and JC Artman. 2004. Estimates of median flows for streams on the 1999 Kansas surface water register. U.S. Geological Survey Scientific Information Report 2004-5032. 219 pp.

KDHE. 2007a. Appendix A: BER standard operating procedures. 247 pp. In: Division of Environment quality management plan. Part III: Program level quality management plans. Bureau of Environmental Remediation, KDHE, Topeka.

KDHE. 2007b. Kansas stream chemistry monitoring program quality assurance management plan. 105 pp. In: Division of Environment quality management plan. Part III: Program level quality assurance management plans. Bureau of Environmental Field Services, KDHE, Topeka.

KDHE. 2010. Kansas fish tissue contaminant monitoring program quality assurance management plan. 65 pp. In: Division of Environment quality management plan. Part III: Program level quality assurance management plans. Bureau of Environmental Field Services, KDHE, Topeka.

ATTACHMENT A

Core Physicochemical Parameters: KDHE Stream Chemistry Monitoring Program

Composite and Inorganic Parameters

Alkalinity, total (as $CaCO_3$)
Aluminum, total recoverable
Ammonia, total (as N)
Antimony, total recoverable
Arsenic, total recoverable
Barium, total recoverable
Beryllium, total recoverable
Boron, total recoverable
Bromide
Cadmium, total recoverable
Calcium, total recoverable
Carbon, total organic
Chloride
Chromium, total recoverable
Cobalt, total recoverable
Copper, total recoverable
Dissolved oxygen
Fluoride
Hardness, total (as $CaCO_3$)
Iron, total recoverable
Kjeldahl nitrogen
Lead, total recoverable
Magnesium, total recoverable
Manganese, total recoverable
Mercury, total
Molybdenum, total recoverable
Nickel, total recoverable
Nitrate (as N)
Nitrite (as N)
pH (field)
Phosphate, ortho- (as P)
Phosphorus, total (as P)
Potassium, total recoverable
Selenium, total recoverable
Silica, total recoverable (as SiO_2)
Silver, total recoverable
Sodium, total recoverable
Specific conductance
Strontium, total recoverable
Sulfate
Thallium, total recoverable
Total dissolved solids (calculated)
Total suspended solids
Turbidity
Vanadium, total recoverable
Zinc, total recoverable
Temperature (field)

Organic Parameters

Acetochlor
Alachlor
Aldrin
Atrazine (Aatrex)
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Butachlor
Carbofuran (Furadan)
Chlordane
Cyanazine (Bladex)
DCPA (Dacthal)
p,p'-DDD
p,p'-DDE
p,p'-DDT
Dieldrin
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Methoxychlor
Metolachlor (Dual)
Metribuzin (Sencor)
PCB-1016
PCB-1221
PCB-1232
PCB-1242
PCB-1248
PCB-1254
PCB-1260
Propachlor (Ramrod)
Propazine (Milogard)
Simazine
Toxaphene

ATTACHMENT B

Priority Pollutant Parameters

gamma-BHC (Lindane)
Cadmium
Chlordane, technical
cis-Chlordane
trans-Chlordane
p,p'-DDD
p,p'-DDE
p,p'-DDT
Dieldrin
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Lead
Mercury
Mirex
cis-Nonachlor
trans-Nonachlor
Oxychlordane
PCB-1248
PCB-1254
PCB-1260
Pentachloroanisole
Pentachlorobenzene
Selenium
1,2,4,5-Tetrachlorobenzene
Trifluralin (Treflan)

ATTACHMENT C

Core Chemistry Parameters:
KDHE Fish Tissue Contaminant Monitoring Program

Organic and Inorganic Parameters

gamma-BHC (Lindane)
Cadmium
Chlordane, technical
cis-Chlordane
trans-Chlordane
p,p'-DDD
p,p'-DDE
p,p'-DDT
Dieldrin
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Lead
Mercury
Mirex
cis-Nonachlor
trans-Nonachlor
Oxychlordane
PCB-1248
PCB-1254
PCB-1260
Pentachloroanisole
Pentachlorobenzene
Selenium
1,2,4,5-Tetrachlorobenzene
Trifluralin (Treflan)

ATTACHMENT D

Map of Village Creek Watershed Showing Location of Sampling Sites