



**MATTHEW G. BEVIN**  
GOVERNOR

**CHARLES G. SNAVELY**  
SECRETARY

**ENERGY AND ENVIRONMENT CABINET**  
Department for Environmental Protection

**AARON B. KEATLEY**  
COMMISSIONER

300 SOWER BOULEVARD  
FRANKFORT, KENTUCKY 40601

September 29, 2017

Mr. Gary Revlett  
Director, Environmental Affairs  
LG&E and KU Energy LLC  
220 West Main Street  
Louisville, KY 40232

RE: Herrington Lake Corrective Action Plan  
QAPP/SOP- Cabinet Comments  
E.W. Brown Generating Station  
Agreed Order Case No. DOW-170001  
Agency Interest No. 3148, Mercer County

Dear Mr. Revlett:

The Energy and Environment Cabinet (cabinet) has completed its review of the Herrington Lake Quality Assurance Project Plan (QAPP) and Standard Operating Procedures (SOPs) for the sampling investigation of the various media (surface water, sediment, sediment pore water, fish tissue, and aquatic vegetation and invertebrates) to be conducted under the Herrington Lake Corrective Action Plan (CAP). The documents were received in our offices on September 18, 2017.

It is the cabinet's understanding that the field work is scheduled to begin Monday, October 2, 2017, in order for the sampling effort to be completed prior to the winter drawdown for the lake. The major technical questions and issues which were noted by the cabinet through its review of the documents related to the field sampling have been addressed through discussions held by the cabinet and consultants with Ramboll Environ, author of the documents. Therefore, the cabinet conditionally approves the QAPP and SOPs, provided the documents are revised based on the previous discussions and additional comments as attached, and are resubmitted within thirty (30) days of receipt of this letter.

We appreciate your cooperation in this matter. Should you have questions regarding the comments you may contact me at (502) 782-6956, or Tim Hubbard, Environmental Scientist Consultant Senior in the Division of Waste Management's Director's Office at (502) 782-6660.



Mr. Gary Revlett/KU Energy  
September 29, 2017  
Page 2 of 2

Sincerely,

A handwritten signature in blue ink, appearing to read "Peter Goodman for".

Peter Goodman, Director  
Division of Water

PG/th

Attachment

cc: Jon Maybriar, DWM  
Tony Hatton, DEP Comm. Office  
Jackie Quarles, OGC

**Cabinet Comments  
Herrington Lake QAPP and SOPs  
September 29, 2017**

**General comments:** As we have discussed, additional details regarding sampling methods and procedures should be included in the Herrington Lake QAPP and SOPs. While general statements are included in the Corrective Action Plan and QAPP about sampling methods and procedures, the QAPP and SOP documents need to include greater specificity in the tasks to be conducted and a thorough explanation of project details.

The QAPP and SOPs may benefit by following the recommended format and outline of the QAPP and SOPs on the KDOW website. Following KDOW guidance may ensure that critical content is not omitted, and structures the documents in an organized, easy to follow format.

The QAPP is a stand-alone document that may reference other project documentation (in this case, the CAP). The QAPP should include project specifics, including the roles of all individuals involved, description and explanation, history, location, and any other content covered in the templates. If a reference is made to procedures contained in other documentation (SOPs), ensure the appropriate chapters and sections are cited, and the relevant material is included.

An SOP is a stand-alone document that explains, in detail, how a task will be conducted, and should be written such that it is understood by a person unfamiliar with the task. The SOP should not reference the QAPP, or other procedural documents.

**Quality Assurance Content Required in the QAPP and SOPs**

**Administrative - QAPP**

1. Add KDEP Approvers to Signature Page:
  - a. Andrea Keatley, Manager, Water Quality Branch
  - b. Lisa Hicks, Quality Assurance Officer, Division of Water
  - c. Peter Goodmann, Director, Division of Water
  - d. Larry Taylor, Department for Environmental Protection Quality Assurance Manager
2. Add KDEP, ALS and any sub-contractors on distribution and task organization page
3. Add revision page to QAPP. First revision should be 0.0, second revision 1.0, etc.
4. Correct all Table and Appendix titles and headings that require it
5. Cite all references – AMEC, 2015b is missing from reference list

**Content – QAPP**

1. Include all project specific field forms to be used. If using KDOW forms, modify to reflect lake sampling.
2. Page 1, Section 1.2 - The ecological risk assessment will be more comprehensive than a screening level risk assessment. The words “screening level” shouldn’t be in the second sentence.
3. Page 5, Table 1 - Recommend providing a table that outlines DQI’s relating to ALL field measurements. Need to describe exactly how precision, sensitivity, accuracy, and completeness are going to be addressed for all field measurements (sediment sampling, in situ water quality measurements, fish tissue, aquatic plants, macroinvertebrate tissue, surface water, and pore water).

**Example:**

<b>Requirement</b>	<b>Frequency</b>	<b>Corrective Action</b>	<b>Persons Responsible for Corrective Action</b>	<b>Data Quality Indicator</b>	<b>Measurement Performance Criteria</b>
<b>Water Chemistry Field Duplicates</b>	Minimum of 10% of samples collected	<ul style="list-style-type: none"> <li>•Evaluate and compare lab dups</li> <li>•Censor or qualify data as necessary</li> </ul>	Project Coordinator	Precision	≤20% RPD if both original and duplicate samples are ≥ five times (5x) the Limit of Quantitation (LOQ)
<b>Water Chemistry Field Blank</b>	Minimum of 10% of samples collected	<ul style="list-style-type: none"> <li>•Censor or qualify data as necessary</li> <li>•Review sample collection, sample storage procedures</li> </ul>	Project Coordinator	Precision, Contamination	Result is < Limit of Detection (LOD)
<b>Rinsate Blanks</b>	One for each day orthophosphorus samples are collected	<ul style="list-style-type: none"> <li>•Censor or qualify data as necessary</li> <li>•Review sample collection procedures</li> </ul>	Project Coordinator	Precision, Contamination	Result is <0.01 mg/L (LOD)

4. Each sampling site needs to be photographed with explanatory information concerning the orientation of the image. For example, "Rocky Run Embayment looking west." Fish and sediment samples should also be photo-documented.
5. Page 6, Section 2.3 – Need to state all training and experience for field samplers, and data review (as discussed on conference call).
6. Page 15, Chapter 4 – some stated analytical methods are not EPA approved, and are not listed in 40 CFR Part 136. Amend the following methods:
  - a. State the methods for TOC in water – SM 5310 B-2000, C-2000 or D-2000 are EPA approved.
  - b. State that DOC is analyzed by SM 5310 A, Section 2 – that is the 40 CFR Part 136 approved method for TOC and the sub-part (dissolved).
  - c. Clarify that water samples will be analyzed by 200.8 for total and dissolved metals, and 1631E for mercury.
7. Page 18, Section 4.3 – All field equipment must be identified, perhaps in a table, with the calibration frequency and acceptable limits of measurements. Section 4.3.2 states field instruments will be recalibrated as least once per day, but the initial calibration requirements are not included. It also states that calibration checks will be conducted as needed – all equipment should be calibrated before every sampling event.
8. Page 20, Section 4.6.4 – What EPA guidelines are being referenced?
9. QC Samples to include a field duplicate, a field blank, an equipment blank and a fish tissue split. State acceptable limits for each type of sample.
10. Describe the blind study submittal process used for samples.

#### **Content - SOPs**

1. Provide SOP for water sampling and field (*in situ*) measurements (or may include as SOP with aquatic plants and macros).
2. Amend SOP for aquatic vegetation to include:
  - a. Definition of "reasonableness of collecting"
  - b. Explanation of how sorting of material will be completed to sufficiently extract only plant material
  - c. Details on the procedure for rinsing samples with source water and why this isn't a QA concern. Or cite SOP that addresses this condition.
3. Amend SOP for aquatic invertebrates to include:
  - a. Define what methods will be used to sample from boats, shoreline, and wadeable areas. Identify hierarchy of sampling procedures, if species aren't found using intended method.

- b. Define how invertebrates will be composited, including the species used. Explain how field collections will ensure enough mass is collected for tissue analysis.

**4. Amend SOP for fish sampling to include:**

- a. Document and explain each method to be used (electrofishing, gill, set, Fyke). If using references, clearly state what procedure or method is from what reference.
- b. Describe the hierarchy of sampling procedures, if species aren't found using first intended method (ex. Electrofishing first, gill nets, set lines, etc.). Explain what triggers moving to a different method.
- c. Define the process to be used for determining which fish are filleted.
- d. Provide a table of wet weights and dry weights of each of the two fillets and the carcass (two together) for each composite.
- e. Define sample gear used to collect target and alternate species.