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BAXTER
STEWART

WORK AUTHORIZATION No. 1

UNDER

GRANT COUNTY SANITARY SEWER DISTRICT

ENGINEERING SERVICES AGREEMENT DATED August 21, 2014

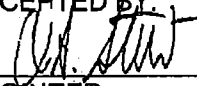
OWNER

ENGINEER

Name	<u>Grant County Sanitary Sewer District</u>	<u>HMB Professional Engineers, Inc.</u>
Street Address	<u>1 Farrell Drive</u>	<u>3 HMB Circle</u>
City, State, Zip	<u>Crittenden, KY 41030</u>	<u>Frankfort, KY 40601</u>
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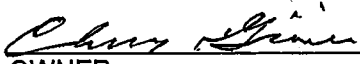
Project Identification: Name: Wastewater Facility Plan

- I. FEE/BUDGET FOR WORK:
Facility Plan = \$85,000
- II. PAYMENT METHOD (i.e. hourly rate/not to exceed, hourly rate, lump sum, etc.):
Lump Sum to be billed monthly based on percent complete.
- III. PROJECT MANAGER AND KEY PERSONNEL:
Facility Plan PM = Benton Hanson, PE
Key Personnel = Brandon Baxter, PE, Nick Pilcher, EIT
- IV. SCOPE OF WORK:
See Attached
- V. SCHEDULE OF WORK (provide duration and major milestones):
Facility Plan = July 2022 DOW Submittal
- VI. SUBCONTRACTORS AND PORTION OF SCOPE PROVIDED:
None

ACCEPTED BY:


 ENGINEER
 1/25/22

 Date

AUTHORIZED BY:


 OWNER
 1-27-22

 Date

Two originals of this work authorization shall be executed by the ENGINEER and returned to District. A fully executed copy will be returned to the ENGINEER.

ATTACHMENT A

SCOPE OF WORK

Grant County Sanitary Sewer District (OWNER)

Wastewater Facility Plan

**Prepared by HMB Professional Engineers, Inc. (ENGINEER)
December 13, 2021**

The OWNER desires the ENGINEER to complete a study and design of the following:

1. Wastewater Facility Plan for the Grant County Sanitary Sewer District service area over a 20-year planning period.

The ENGINEER shall provide the following services:

1. **Planning Phase**

- Prepare a Facility Plan per the Kentucky Division of Water (DOW) requirements as of November 2021. Please see Attachment B for the DOW's current Regional Facility Plan Guidance dated April 2016, which outlines the current requirements.
- Coordinate and conduct one (1) Public Hearing, as required by DOW, to solicit comments and/or questions from the general public relative to the Facilities Plan and its recommendations. The cost and placement of public advertisements are not included in this Scope of Work and shall be the responsibility of the OWNER. Additional public meetings requested by the OWNER shall be Additional Services.
- Review alternatives for wastewater collection and treatment with the OWNER.
- Provide OWNER with Draft Facility Plan documents for review and comment at approximately 60% and 90% completion. Update documents as reasonably necessary

to incorporate OWNER comments where applicable.

- Submit the Wastewater Facilities Plan to the DOW for review and approval.
- Respond to DOW comments that are within the ENGINEER's control as reasonably necessary to obtain DOW approval.
- Additional requirements of either the OWNER or DOW after the date of this Scope of Work shall be Additional Services, payable at the ENGINEER's Standard Hourly Rates.

2. Owner Furnished Items

- A. Summarize influent/effluent testing results at WWTP (2019 – 2021) in tables.
- B. Summarize operation and maintenance costs from (2019 – 2021) audits in tables per category.
- C. List each yearly debt payments from audits with payouts (retirements)(2019 – 2021).
- D. Evaluate each pump station and wastewater treatment plant component.
- E. List bypasses or overflows from the collection system and the WWTP. Identify locations, number of times, and flow amounts over the past 8 years
- F. Identify any future areas where sewers maybe installed that currently have septic sewer systems or where a package treatment plant maybe removed from service
- G. Provide a list of major wastewater customers – top 10
- H. Breakout number of customer and list those within each water usage category (0 – 2000, 2000 – 4000, 4000 – 8,000, etc.)
- I. Provide the following:
 - a. KPDES permit
 - b. Ordinances
 - c. Notice of violation letters from KDOW
 - d. WWTP evaluation reports from KDOW
 - e. Planning and Zoning information

ATTACHMENT B

**DIVISION OF WATER
REGIONAL FACILITY PLAN GUIDANCE**

Regional Facilities Plan Guidance

per

401 KAR 5:006

April 2016

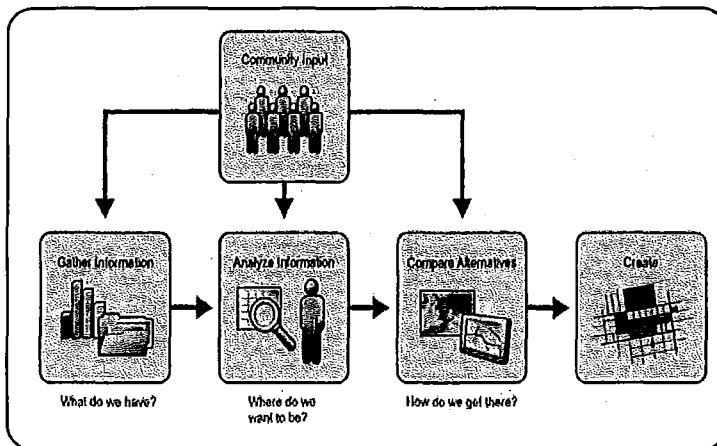


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General Guidance

Facility planning is a process designed to provide direction and focus for the future of the utility and its infrastructure. The first step in the process is to assess the current situation. This will serve as a baseline for future plans. Taken together with projections for the future, the needs of the community can be established. These needs are



evaluated and alternatives are developed to meet those needs. The final plan is then developed through the careful comparison and evaluation of the alternatives to determine the best option for the community. The document developed as a result of this effort is known as a Facilities Plan. Elected officials, local organizations, county health departments, and planning area residents should be included in the planning process as early as possible and, to the extent possible, to ensure all needs are adequately addressed. Once the Facilities Plan is complete, it is reviewed by the Cabinet for compliance with regulations and to assure plans are in the best interest of public health and the environment.

Regional Facilities Plan Triggers

A Regional Facilities Plan is required when:

- A new regional planning agency is formed;
- A new wastewater treatment plant is proposed for construction within an existing planning area;
- An existing regional planning agency proposes to expand the average daily design capacity of an existing wastewater treatment facility by more than thirty (30) percent;
OR
- The equivalent population served by an existing wastewater collection system or a system with a Kentucky Inter-System Operating Permit is proposed for expansion by more than thirty (30) percent of the population served in the previously approved regional facility plan.

Pre-planning Meeting Requirement

A regional planning agency must schedule a pre-planning conference with the Cabinet to discuss the scope of the work before submitting the Regional Facilities Plan. The purpose of a pre-planning meeting is to provide the opportunity for Cabinet representatives and the regional planning agency to discuss an appropriate planning effort according to the purpose and need for the plan, elements of the plan, alternatives, scope and timing of projects, funding, applicable regulatory requirements, critical issues considered in reviewing the plan, and any constraints that may have a bearing on the decisions related to the Plan.

Guidance Purpose and Use

This guidance is intended to provide recommendations to regional planning agencies to help meet the requirements of 401 KAR 5:006 and is intended to help facilitate a more effective and timely review of the regional facilities plan. This guidance is organized to identify the requirements of each section of the Regional Facilities Plan and to provide more specific recommendations regarding content for each section.

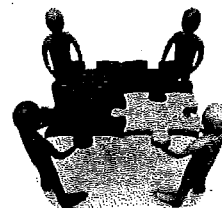
Submittal Requirements

One (1) hard copy and one (1) digital copy of the Regional Facilities Plan, certified by a professional engineer licensed in Kentucky (201 KAR 18:104), and the planning area shapefile shall be submitted to the Cabinet for review and approval. For consistent and expedient reviews, the Cabinet requests organizing the sections of the Facilities Plan as shown in this guidance document.

Section 1: Regional Facilities Plan Summary

This section should provide a brief executive summary of the findings and conclusions of the Regional Facilities Plan, including the following:

1. Overview of the need for the Plan and the major problems evaluated.
2. Identify the recommended alternative chosen to remediate or correct the problems and/or serve the area(s) of need identified.
3. Identify any institutional arrangements necessary to implement the recommended alternative such as inter-municipal agreements, establishment of sanitation districts, or the need for any specific rules or ordinances.
4. Present the estimated cost of implementing the proposed plan (including user fees) and the proposed funding method(s).
5. Identify the planning agency commitments necessary to implement the plan such as those related to cross-cutter requirements.
6. Provide a schedule of implementation for projects that identify the major milestones with dates or timeframes necessary to accomplish the projects. Include dates for the future initiation of projects for planning periods in excess of five (5) years.



Section 2: Statement of Purpose and Need

Briefly describe the purpose and need for the Regional Facilities Plan. Needs would include such items as water quality issues, public health concerns, inadequate system or system components related to wastewater, or increased treatment level requirements to improve effluent quality.



Specific system needs should be described including the severity and nature of the problems. These may include, but are not limited to, water quality issues, inadequate treatment capacity, infiltration and inflow, combined and/or sanitary sewer overflows, problems caused by straight pipes and failing on-site systems, and inadequate treatment. The Regional Facilities Plan should explain why it is being prepared in relation to the specific needs.

Section 3: Physical Characteristics of the Planning Area

Provide a delineation of the planning area boundaries and present points of interest/concern within the boundaries. Digital or electronic submission of the planning area boundary shapefile in a standard GIS format should also be included. This section should include mapping of specific details:



- Planning area boundary
- Service area boundary
- Watershed boundaries
- County and corporate boundaries,
- Wastewater treatment facilities (including package treatment plants),
- Collection systems including lines and lift stations,
- Public drinking water intake points and water treatment plants, and
- Water supply areas [Source Water Area Protection Plans (SWAPP) zones and/or Wellhead Protection Areas (WHPA)],
- Project areas, and
- Proposed planning period phases
 - Phase I – 0 to 2 years
 - Phase II – 3 to 10 years
 - Phase III – 11 – 20 years

A seven and one-half (7 ½) minute USGS topographic map should be used as a base for mapping details as listed.

This section should also include mapping for:

- Delineation of the 100-year floodplain, and
- Local planning and zoning land use, if available.

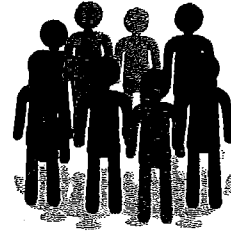
In a planning area assessment, appropriate attention should be given to include the entire area where cost savings, regionalization, other management advantages, or environmental gains may result either from interconnection of individual wastewater facilities or collective management of the systems. For determining the planning area extents, it is recommended to start with the basic watershed area and make adjustments from there based on other physical features, topography, and existing facilities.

The Regional Facilities Plan should be carefully coordinated with applicable state, local, and regional land-use management regulations and plans. Projected land-use patterns and densities should be used as a basis for determining the optimum capacity, type, and location of facilities. Where land use plans have not been prepared for all or part of the planning area, an estimate of future land use patterns and densities should be prepared in consultation with existing planning agencies, zoning commissions, and elected officials. The input of elected officials is critical to the determination of future land use and development and will play a central role in defining the need for wastewater facilities.

Section 4: Socioeconomic Characteristics of the Planning Area

Discuss the socioeconomic characteristics of the planning area:

- Population
 - Historical – adequate to indicate trends in growth (minimum 40 years) based on available documentation (previous Facilities Plans, Area Development District data, etc.) and the US Census Bureau data
 - Current – based on data from the US Census Bureau and the Kentucky State Data Center (Univ. of Louisville)
 - Projected for end of planning period – based on projections from the US Census Bureau and the Kentucky State Data Center (Univ. of Louisville)
- Median Household Income
- Industrial and commercial users
 - Current
 - Projected for end of planning period



The projections of economic and population growth discussed in this section should be used for estimating future waste loads and flows. Projections should be based on an analysis of historical and current growth trends and an estimate of future residential, commercial, and industrial growth. Projections should be consistent with stated sources; appropriate justification should be provided for any differing information used.

Note: In most cases specific planning area population data is not available therefore data for municipal areas and counties must be utilized to determine projections. Current data down to small blocks and groups is available on the US Census Bureau interactive map site at <http://www.census.gov/2010census/popmap/index.php>.

Section 5: Existing Environment in the Planning Area

Describe the existing environment within the planning with an emphasis on those that may be impacted by, or may impact, the proposed plan or projects:



- **Endangered Species:** Identify plant and animal communities in the planning area with an emphasis upon those species likely to be impacted. Threatened or endangered status should be discussed if applicable.
- **Water Resources:** Describe resource features such as surface water and groundwater quality, water sources and supply, wetlands, lakes, streams, and floodplains. Indicate whether waterbodies within the planning area are supporting their designated uses as listed on the 303(d) or 305(b) list of waters reports in the Integrated Report to Congress on Water Quality in Kentucky. For 303(d) listed waterbodies, indicate the name, river mile segment(s), the type of impairment(s), and the cause(s) and source(s) likely causing or contributing to the impairment(s). Also indicate whether a Total Maximum Daily Load (TMDL) has been developed/approved, or is under development, that will allow the stream to meet water quality standards.
- **Pedology, Geology, and Topography:** Describe the soils, geology, and topography of the planning area in relation to their potential effect on wastewater systems.
- **Cultural:** Describe archaeological and historical resources that may be affected by the proposed project.
- **Other Resource Features:** Identify national and state parks, recreational areas, USDA Designated Important Farmland (prime farmland, unique farmland, and farmland designated by the state or local jurisdiction), and any other applicable environmentally sensitive areas including drinking water supplies, shellfish beds, and outstanding natural resource waters.

The following websites are resources for environmental information:

Groundwater Resources in Kentucky: <http://www.uky.edu/KGS/water/library/webintro.htm>

Kentucky Geography Network: <http://kygeonet.ky.gov/>

Integrated Report: <http://water.ky.gov/waterquality/Pages/IntegratedReport.aspx>

Kentucky Department of Fish and Wildlife Species Information: <http://fw.ky.gov/kfwis/speciesInfo/speciesInfo.asp>

Kentucky Infrastructure Authority- Water Resources Information System: <http://kia.ky.gov/wris/ims.htm>; <http://kia.ky.gov/wris/data.htm>

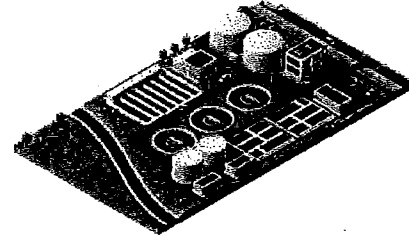
The Commonwealth Map: <http://kygisserver.ky.gov/tcmbase/>

Web Soil Survey: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Section 6: Existing Wastewater System

Provide a description of all existing wastewater facilities serving the planning area:

- **On-site Disposal:** Describe septic tank problems or straight pipe discharges in the planning area, including an approximate number of households using septic tanks or straight pipes. This data may be attainable from local health departments that issue on-site subsurface disposal permits.
- **Collection and Transportation System:** Describe the type, age, and condition of sewer collection lines, force mains, and interceptors. Describe the type, horsepower, pumping capacity, age, and condition of all lift stations.



Provide an evaluation of the collection system in regard to infiltration and inflow including a discussion of combined and sanitary sewer overflows. An estimate of non-excessive infiltration/inflow should be completed. For an existing system an infiltration allowance of less than 275 gallons per capita per day of sewage flow based on the maximum flow received during a twenty-four (24) hour period exclusive of industrial flow; or less than 120 gallons per capita per day of sewage flow based on the annual average of daily flows exclusive of industrial flow should be used for estimating initial I/I flows from sewer lines.

Treatment Facilities: Describe the type, age, design capacity, process units, peak and average wastewater flows, and condition of all wastewater treatment facilities in the planning area including a schematic layout of the plant. An analysis of pollutant loads from residential, commercial, and industrial sources in the existing sewer system should be included.

- **Biosolids Disposal:** Describe the method of residuals disposal, including management of septage, biosolids(sludge), scum, grit, and screenings. Volumes of disposed solids and specific locations of disposal areas should be discussed.

Describe any major operation and maintenance problems. Discuss probable causes and sources of the problems.

Section 7: KPDES Permit Conditions and Compliance

Provide a description of the current KPDES permit requirements, if applicable, for **all** wastewater treatment facilities within the planning area. Copies of permits should be included in the appendices.

A compilation of at least the past year's worth of analytical data should be presented and discussed in relation to compliance with the existing permit(s). Describe any noncompliance issues experienced and cited KPDES permit violations.

Also provide a brief description of any state and/or federal orders against the regional planning agency with copies of the documents in the appendices.



Section 8: Forecasts of Flows and Waste Loads in the Planning Area

Present current loadings (minimum total suspended solids, biochemical oxygen demand, and ammonia-nitrogen) and flows (average daily flow and peak 24 hr. flow) received at the wastewater treatment plants, as well as any overflows from the system. Estimate the loadings and flows expected to be generated in the planning area over the entire planning period and the three phase timeframes (average daily flow and peak 24 hr. flow). Flows should be presented in terms of:

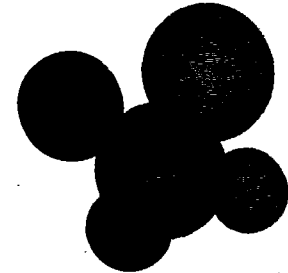
- Residential flows
- Commercial and industrial flows
- Infiltration and Inflow (I/I)

The proposed wastewater treatment plant design capacity to properly treat the loadings and flows anticipated over the planning period should be presented in this section. A copy of the waste load allocation (WLA) issued by the Division of Water should also be included.

It is extremely important to accurately define wastewater flows since this information is critical in developing and assessing wastewater alternatives. The development of these flows must also consider inflow and infiltration and combined sewer overflows. It is preferable to use existing wastewater flow and water usage records when projecting future flows. In lieu of existing flow records, resources such as *Wastewater Engineering: Treatment, Disposal, Reuse* (aka Metcalf and Eddy) and *Recommended Standards for Wastewater Facilities* (aka Ten State Standards) should be consulted for developing potential future flows. Land with the potential for commercial or industrial development should also be taken into account.

Estimates should be made for future residential, commercial, institutional, and industrial flows and loadings based on background data presented in the information on socioeconomic characteristics and the existing wastewater system. A breakdown of flows that identifies residential, industrial, institutional, commercial, I/I, and septage flows for the existing, initial year (initial flows projected at startup of recommended facilities), and design years should be presented. A table presenting these flows is desirable. In many instances, it may also be advisable to further breakdown flows geographically in the planning area to take decentralized alternatives into consideration.

- **Demographic and Economic Projections:** Projections of economic and population growth, in conjunction with the land use planning, should be used for estimating future waste loads and flows. Projections should be based on an analysis of current growth trends and an estimate of future residential, commercial, and industrial growth. The Kentucky State Data Center,



regional planning agencies, federal and state census authority studies, or planning documents should be used as sources of demographic information for communities within the planning area. Reasons for any inconsistencies should be documented.

- **Land Use:** The regional facility plan should be carefully coordinated with state, local, and regional land-use management regulations, and plans. Projected land-use patterns and densities should be used as a basis for determining the optimum capacity, type, and location of facilities. Where land use plans have not been prepared for all or part of the planning area, an estimate of future land use patterns and densities should be prepared in consultation with existing planning agencies, zoning commissions, and elected officials.
- **Planning Period:** The planning period is the time-span over which wastewater management needs are forecasted, facilities are planned to meet such needs, and costs are amortized. The facility planning period should extend beyond the date when the planned facilities are scheduled to begin operation. Since phased construction of facilities will often be a cost-effective approach to meet changing conditions over the planning period, consideration should be given to defining initial flows and incremental flows projected for only a part of the planning period.

A projection of benefits possible from water conservation programs or other selected measures to reduce flow and wastes should also be considered.

Section 9: Evaluation of Alternatives

Evaluate alternatives in order to determine the appropriate facilities to meet the wastewater needs of the planning area and provide benefits that are the most cost-effective, implementable, and environmentally sound. Alternatives should include:

- No-action,
- Optimization of existing facilities examining at least three (3) treatment technology options,
- Regionalization,
- Decentralization, and
- Any other alternative the regional planning agency wants to consider.



The Facilities Plan should discuss the reasons for the selection of a preferred alternative and the reasons for the elimination of other alternatives. The evaluation must include:

- Monetary evaluation: A detailed cost analysis including twenty (20) year present worth analysis for each alternative.
- Nonmonetary evaluation: criteria include implementability, constructability, environmental impact, engineering evaluation, and public support.

Once all alternatives are presented and evaluated, a single recommended alternative must be presented. Provide a narrative description of the facilities including the capacity of the treatment plant to meet reliability and redundancy requirements in 401 KAR 5:005, Section 13.

Considerations for Alternatives

No Action

The alternative for doing nothing to the existing facilities should be considered first. This should include a statement as to what is expected if no action is taken and why it is not considered further.

Optimization of Existing Facilities

The level of treatment attainable with optimum performance of the existing facilities should serve as a baseline for planning additions or modifications to the existing wastewater facilities, flow/waste reduction, and water conservation. For communities with centralized facilities, this alternative includes optimization of operation and maintenance of the wastewater collection, treatment, and disposal facilities. For communities where on-site systems are used for

wastewater treatment and disposal (decentralized), this alternative includes optimizing septage management plans, and the continuing maintenance, repair, and upgrade of on-site systems in the planning area. Discuss the potential environmental and socioeconomic benefits of this alternative.

- **Treatment Alternatives:** A range of treatment alternatives should be considered.
 - No Discharge Treatment Technologies - Include slow-rate overland flow, slow-rate subsurface infiltration, and rapid infiltration methods.
 - Conventional Treatment Technologies - Include those that employ proven and reliable technologies (i.e. complete mix, sequencing batch reactor (SBR), contact stabilization, extended aeration, oxidation ditch, and pond technologies). The engineer should discuss how each proposed technology enables the regional planning agency to meet the waste load allocations issued by the Division of Water and should also demonstrate how the proposed design meets the reliability requirements of 401 KAR 5:005, section 13.
 - Advanced Treatment Technologies - If the treatment facilities are required to meet stringent water quality limits, the regional planning agency may need to install advanced treatment technologies in order to meet those limits consistently. Example technologies include tertiary filtration, chemical precipitation, and enhanced biological reactor systems.

Regionalization

The possibility of implementing a regional solution to meet the wastewater needs of the planning area should be explored early in the planning process. Regional solutions may include interconnection of facilities, construction of one or more large facilities to eliminate the need for many small facilities, or joint management of facilities to improve operation and maintenance and reduce costs. Joint facilities may involve interceptors, treatment plants, septage facilities, or sludge and effluent disposal systems. Any detailed analysis of regional alternatives should include a map of wastewater collection and treatment system configurations and show the boundaries of political jurisdictions and service areas for each facility. The analysis of regional solutions should address the following special considerations:

- Effects of interceptor locations on land use within and between urban areas, particularly where land is undeveloped.

- Possible limitations on future expansion of wastewater facilities due to unavailability of land.
- Operational efficiencies expected from implementing the regionalization alternative.
- Environmental and economic costs of delays likely to be associated with efforts to achieve a regional solution.
 - Legal agreements necessary in order to implement the regional solution.

Decentralization

The use of decentralized facilities for treatment and disposal of wastewater, including the potential for utilizing on-site systems, package treatment plants, cluster systems, or other systems may preclude the need for centralized facilities. Conventional on-site systems as well as recirculating sand filters, peat systems, attached-growth systems, and other innovative, alternative systems have been shown to provide efficient wastewater treatment and disposal when installed in appropriate locations. The site suitability, pollutant removal efficiency, groundwater and surface water impacts, and operation and maintenance requirements of these systems should be evaluated along with the other feasible alternatives.

Collection and Transportation Alternatives

Collection system alternatives for the planning area should be considered such as pressure, small diameter, vacuum and Septic Tank Effluent Pumping (STEP) systems. Alternative arrangements of interceptors and trunk lines should be compared to determine the most cost-effective configuration. Sewers in developing areas should be planned on the basis of anticipated changes in land use and density. Analysis should be made, whenever possible, of the residential, commercial and industrial land use changes that a centralized project will induce. The sizes of interceptors should be based on projected flows and a cost effective analysis of alternatives. Preliminary routing should be done on a map that delineates the areas most likely to require sewers over the life of the plan.

- *Other Alternative Considerations:*
 - Wastewater treatment and disposal of effluent and residuals, including reuse, recycling, land application and contractual services for processing and disposal - Wherever feasible, beneficial reuse of wastewater residuals as achieved in land application alternatives is encouraged.

- Flow and waste reduction, including water conservation - Some types of flow and waste reduction measures include: measures for reducing sewer system infiltration/inflow; water conservation measures; industrial reuse, recycling and pretreatment programs; continuation of the use of on-site (private) facilities, such as conventional septic systems or alternative systems.
- Seasonal or controlled discharge options - The potential of retaining generated wastewaters for controlled release under optimal conditions, i.e. during periods when the receiving water has greater assimilative capacity.

Alternative Analysis

The alternative analysis includes:

- ***Screening of Alternatives:*** The realm of alternatives initially evaluated should include a broad range of wastewater options that have the potential to meet the foreseeable wastewater needs for the planning area. Alternatives should be rejected if they fail to meet physical constraints of the planning area, such as climate, soils or topography, or if they are incompatible with water quality plans. A screening process should be employed to determine those alternatives that appear to provide the greatest environmental and cost benefit. This preliminary screening process will be guided by the wastewater needs specific to the planning area and a preliminary assessment of the major environmental, financial, technical, and institutional considerations of each alternative. Alternatives for treatment and discharge should take into account and allow to the extent practicable for the application of technologies at a later date to remove nutrients, including nitrogen and phosphorus. Following initial screening of the wastewater alternatives, a limited number of the most feasible alternatives should be evaluated in detail.
- ***Comparison of Alternatives:*** Alternative selection will involve making choices among options based on an evaluation of the significant costs, environmental impacts, and benefits of each. While costs of alternatives may be directly compared, the comparison of environmental, institutional, and social impacts of each alternative may not be as straightforward. Sound, professional judgment on the overall impacts of the alternatives will be critical in selecting the plan with the greatest overall benefit. The impacts should be considered, wherever possible, in quantitative terms, and be based on the supporting analysis elsewhere in the plan. Where quantification is not possible, the comparison should be made by brief narrative description. The alternatives may be ranked after they are presented to aid final selection of a plan. Public meetings should

be held at this critical stage of the planning effort so that the alternatives reflect the interests of the community and sufficient support is engendered for the regional facilities planning process.

- *Ranking of Alternatives:* Alternatives should be ranked based on both a monetary and non-monetary basis:
 - Monetary costs - The costs of each alternative along with a 20-year present worth cost analysis. Sufficient details shall be provided to allow for conducting a thorough cost analysis.
 - User rates - Current and projected user rates resulting from implementation of the recommended alternative.
 - Environmental impacts - Alternatives should be evaluated and screened for their environmental impacts. All significant impacts should be weighed to derive a value judgment as to the net overall effect of each alternative relative to other plans. Significant adverse impacts could be a basis for rejecting an option and, thus, reduce the number of viable alternatives. Other impacts that may require further study or professional surveys should be identified, to the extent possible, early in the planning process.
 - Implementation capability - The ability of the regional planning agency to implement the recommended alternative should be weighed carefully. If there are operational, financial, managerial, or legal barriers that would prevent the complete and timely implementation of the Regional Facilities Plan, then those barriers should be addressed in the plan before it is adopted. If implementation of the plan requires the passage of ordinances, or the development of interlocal agreements, these articles should be developed as part of the planning process.
 - Other considerations - The contribution to water quality objectives, flexibility, and public acceptability should also be evaluated in selecting the alternative that provides the greatest overall benefit.
- *Design Considerations*
 - Location of Facilities - To the extent possible, evaluation of sites for treatment plants, interceptors, transmission lines, outfalls, pumping stations, and other major works should take into account the following factors: (a) minimize odors and locate facilities away from residential areas; (b) minimize aesthetic problems through

proper design and landscaping at facility sites; (c) locate treatment plants, outfalls, and other facilities where they will not affect any sensitive use areas; and (d) proximity to 25 and 100 year flood levels and impacts on floodplains and floodways. Where alternative sites are unavailable, special precautions must be taken. Ten States Standards Section 11.28 c. contains additional site evaluation criteria that may need to be considered.

- Process unit sizing basis shall be provided - 401 KAR 5:005 establishes minimum requirements for commonly used technologies. Ten States Standards is incorporated by reference into this regulation and should be consulted for design requirements. A process flow diagram shall be included.
- Proposed treatment technologies not included in 401 KAR 5:005 or Ten States Standards will be required to demonstrate reliable and effective treatment (refer to Ten States Standards Section 53.2) and will be approved by the Cabinet on a case by case basis.
- Phased Construction - Adding capacity in phases during a planning period may be more cost-effective in some cases than providing sufficient capacity in initial construction for the entire planning period. A present worth cost analysis of phased development should be included in the Regional Facilities Plan. Factors to be considered are: (a) relative cost of providing excess capacity initially compared with the cost of providing capacity when needed; (b) uncertainties of projected long-term wastewater flows, and possible technological advances or flow and waste reduction measures that may limit need for excess capacity. Modular development of operable components of wastewater facilities is advisable in areas where high growth rates are projected, or where existing facilities are to be used initially but phased out later; (c) Flexibility - planning should assess wastewater alternatives in relation to providing sufficient land to allow for expansion of the wastewater facilities to handle unforeseen increases in wastewater flows, pollutant loads, and/or more stringent treatment requirements.
- *Evaluation of Costs:* A cost effective analysis should be performed on all alternatives advanced for detailed evaluation and should include all costs associated with construction of and operation of wastewater facilities. This analysis should be done in accordance with accepted engineering economic principles and include a calculation of the direct monetary costs of each alternative using present worth or equivalent uniform

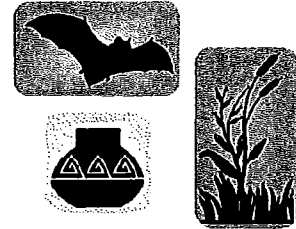
annual cost as a basis. The analysis should include consideration of all project costs over a 20-year period.

- Capital Costs - Costs of construction of wastewater facilities (including biosolids/sludge and septage management) and any costs associated with lease, easement, or acquisition of rights-of-way.
- Operation and Maintenance (O&M) Costs - These costs should include costs for labor, utilities, materials, contractual services, expenses, and replacement of equipment and parts to ensure effective and dependable operation during the planning period. The O&M costs should be adjusted to also reflect any revenues received from the sale or distribution of wastewater facility by-products (methane gas, sludge products, etc.).
- Salvage Value - The salvage value of any wastewater facilities at the end of 20-years should also be considered in the cost effectiveness analysis. This value is normally based on straight line depreciation from the initial cost at the time of analysis to the end of the asset useful life. The economic analysis should also reference anticipated staged capital costs and anticipated equipment costs within the 20 year evaluation period.
- 20-year Present Worth - A present worth may be thought of as the sum that, if invested now at a given interest rate, would provide exactly the funds required to finance all necessary expenditures during the life of the project. The same cost analysis method must be utilized for all wastewater alternatives being considered.
- 20-year Equivalent Uniform Annual Cost (EUAC) – A EUAC is the expression of non-uniform series of expenditures as a uniform annual amount. This method will allow the regional planning agency to compare annualized costs for each alternative, which in some instances may be preferable for presentation to the stakeholder groups.

Section 10: Cross-Cutter Correspondence and Mitigation

Provide a discussion of all cross-cutter concerns and necessary mitigation efforts. Include copies of letters sent to the following cross-cutting agencies and their corresponding responses:

1. U.S. Fish and Wildlife Service
2. Kentucky Department of Fish and Wildlife Resources
3. Kentucky Heritage Council
4. US. Army Corps of Engineers
5. Natural Resources and Conservation Service



These letters must contain a detailed description of the proposed project(s) supported by location maps and/or photographs to each agency. The Regional Facilities Plan must adequately address concerns from the cross-cutting agencies either documenting “no-impact” from the proposed project, or providing a letter of commitment to address all agency concerns as each individual project is initiated. If the cross-cutting agency finds a resource will be adversely impacted as a result of a proposed action, the cross-cutting agency will direct the regional planning agency to implement specific measures to avoid, minimize, or compensate for the adverse impact.

Early predevelopment consultations with the cross-cutting agencies will serve to identify potential adverse impacts from the proposed project. These consultations may allow the project to be redesigned to avoid, minimize, or compensate for potential adverse effects to social, historical, or environmental resources and also avoid unnecessary project delays. Mitigation measures may include, but are not limited to: changes in design, size, or location of facilities; rerouting of facilities to avoid sensitive areas; phased construction of facilities; best management practices; or other measures intended to eliminate or lessen potential adverse impacts.

Section 11: Evaluation of Recommended Regional Facility Plan

Summarize the critical components of the recommended plan including environmental impacts, institutional structure, funding plan, customer impact, and implementation schedule.



1. **Environmental Impacts:** The environmental impacts of the recommended should include a discussion of impacts on surface and groundwater quality, water supply, air quality, wetlands, floodplains, endangered species, historical and archaeological sites, important prime farmland, and any other applicable environmentally sensitive areas. Any measures intended to mitigate adverse impacts should also be described.
2. **Institutional Structure:** Any institutional requirements for implementing the recommended plan should be presented. Such considerations include intermunicipal agreements, establishment of sanitation districts, or the need for any specific rules or ordinances.
3. **Funding Plan:** The funding plan necessary for implementation of the recommended plan should include proposed total project(s) cost and a list of the amount, sources, and status of all funding sources (e.g., federal, state, or locals funds).
4. **Economic and/or social impact on the affected community:** Discuss any positive or negative impact on the economy of the affected community including direct and/or indirect benefits that could occur as a result of the plan. Provide the current and projected residential user charge rate based on 4,000 gallons per month of water usage (based on the recommended plan). Also provide a copy of the regional planning agency's current user rate schedule.
5. **Implementation Schedule:** Present a schedule for implementation of the recommended plan including plans to phase construction and a general schedule for the design and construction of wastewater facilities.

Section 12: Documentation of Public Participation

Include:

1. A copy of the newspaper advertisement
2. Measures taken to solicit public participation
3. Minutes of the public meeting including a summary report of the recommended plan as presented
4. Public meeting attendance sheet
5. Public Comments

As indicated throughout this guidance document, the public should participate from the beginning in facilities planning so that interests and potential conflicts may be identified early and considered. The importance of building a consensus among citizens and stakeholders is extremely critical, as the fate of many planning efforts is decided by the willingness of the public to accept the plan and take action to appropriate the necessary funds for design and construction of facilities. Therefore, it is recommended to hold public meetings to discuss the draft alternatives and environmental impacts (at least one meeting) prior to the required public meeting.

The regional planning agency should define issues and analyze information so that the public will clearly understand the costs and benefits of alternatives considered during the planning process. Efforts should be made to ensure that the interests of a broad spectrum of the public are represented in the planning process. Projects that are complex or controversial may require a more substantial public outreach. The public can be informed and their input solicited through a variety of means, including the following: Advisory groups, depositions, information contacts, liaison with citizen groups, mailings, news media, polls, public meetings, speeches, surveys, task forces, correspondence, exhibitions, workshops, interviews, newsletters, and seminars.

Regional Facility Plan Completeness Checklist and Forms

Requirements: One (1) hard copy and one (1) digital copy of the Regional Facilities Plan certified by a professional engineer licensed in Kentucky and planning area shapefile on a Compact Disc (CD) shall be submitted to the Cabinet. This completeness checklist should be completed and submitted with each Regional Facilities Plan.

Regional Planning Agency Name _____ Date _____

		PAGE #
SECTION 1		
REGIONAL FACILITY PLAN SUMMARY – Brief summary of the information provided in the facility plan, including the following:		
1.	Basic overview of the plan and major problems evaluated.	
2.	Recommended alternative chosen to remediate or correct the problems and/or serve the area of need identified in the plan.	
3.	Any institutional arrangements necessary to implement the recommended alternative(s), if applicable.	
4.	Estimated cost of implementing the proposed plan (including user fees) and the proposed funding method to be used.	
5.	Planning agency commitments necessary to implement the plan (i.e. cross-cutter mitigation).	
6.	Schedule of implementation for projects.	
SECTION 2		
STATEMENT OF PURPOSE AND NEED - This section shall contain a brief description of the purpose and need for a submitting the facility plan.		
SECTION 3		
PHYSICAL CHARACTERISTICS OF THE PLANNING AREA - Planning area boundaries and points of interest/concern. Two or more maps to include USGS 7 ½ minute topographic map as base map as appropriate.		
1.	Planning area boundary	
2.	Service Area boundary	
3.	Watershed boundary	
4.	County and corporate boundaries	
5.	All wastewater treatment facilities	
6.	Collection systems (lines and lift stations)	
7.	Public drinking water intakes and treatment plants	
8.	SWAPP zones and WHPAs	
9.	Project areas	
10.	Planning phases (I – 0-2 yr, II – 3-10 yr, and III – 11-20 yr)	
11.	100 year floodplain	
12.	If available, local planning and zoning land use map.	

		PAGE #
SECTION 4		
SOCIOECONOMIC CHARACTERISTICS OF THE PLANNING AREA - Characteristics of the planning area		
1.	Historical population data:	Planning Area
		Municipality
		County
2.	Current population data:	Planning Area
		Municipality
		County
3.	Projected population data:	Planning Area
		Municipality
		County
4.	Industrial/Commercial Users:	Current
		Projected
5.	Median Household Income (MHI)	
SECTION 5		
EXISTING ENVIRONMENT IN THE PLANNING AREA – Description of the current environment in the planning area.		
1.	Endangered species (plant and animal)	
2.	Water Resources:	Surface and ground water quality (Impairments)
		Water sources and supply
		Wetlands, lakes and streams
		Floodplains
3.	Soils	
4.	Geology	
5.	Topography	
6.	Cultural	
4.	Other Resource Features (National and state parks, recreational areas, USDA Designated Important Farmland, and any other applicable environmentally sensitive areas)	
SECTION 6		
EXISTING WASTEWATER SYSTEM - Description of the existing facilities within the planning area.		
1.	On-site systems in the planning area	
2.	Physical condition of the existing collection and transportation system	
3.	Physical condition of the existing wastewater treatment plant(s)	
4.	Existing biosolids disposal method	
5.	Operation and maintenance issues	

		PAGE #
SECTION 7		
KPDES Permit Conditions and Compliance – Description of permit requirements and compliance		
1.	Copy of KPDES permit	
2.	Table analytical results related to KPDES permit (min. 1 year)	
3.	Compliance/non-compliance issues	
SECTION 8		
FORECASTS OF FLOWS AND WASTE LOADS IN THE PLANNING AREA – Flow and loadings expected in the wastewater system based on data presented in previous sections		
1.	Flow	
	Residential flow:	Current
		Projected
	Industrial, institutional, and commercial flow:	Current
		Projected
	Infiltration and Inflow:	Current
		Projected
2.	Loading	
	Current loading:	Total Suspended Solids
		Carbonaceous Biochemical Oxygen Demand
		Ammonia-nitrogen
		Other
	Projected loading:	Total Suspended Solids
		Carbonaceous Biochemical Oxygen Demand
		Ammonia-nitrogen
		Other
3.	A copy of the waste load allocation (WLA) issued by the DOW for new or expanded treatment plant projects	
SECTION 9		
1.	No-action alternative	
2.	Optimization of existing facilities	
3.	Treatment technology alternatives	
4.	Regionalization	
5.	Decentralization	
6.	Collection and transportation alternatives	
7.	Other alternatives	
8.	Detailed cost analysis along with 20 year present worth analysis for each alternative	
9.	Non-monetary analysis of each alternative	
10.	Comparison table of alternatives	
11.	Analysis to recommend alternative	

			PAGE #
SECTION 10			
CROSS-CUTTER CORRESPONDENCE AND MITIGATION - Cross-cutter correspondences to and from each agency and discuss mitigation required.			
1.	U.S. Fish and Wildlife Service- Kentucky Ecological Services Field Station	Scoping Letter	
		Response Letter	
		Mitigation Needed	
2.	Kentucky Department of Fish and Wildlife Resources	Scoping Letter	
		Response Letter	
		Mitigation Needed	
3.	The Kentucky Heritage Council State Historic Preservation Office	Scoping Letter	
		Response Letter	
		Mitigation Needed	
4.	US Army Corps of Engineers	Scoping Letter	
		Response Letter	
		Mitigation Needed	
5.	Natural Resources Conservation Service (NRCS)	Scoping Letter	
		Response Letter	
		Mitigation Needed	
SECTION 11			
EVALUATION OF RECOMMENDED REGIONAL FACILITY PLAN - Summarize the critical components and impact of the recommended plan.			
1.	Environmental impacts		
2.	Institutional structure		
3.	Funding plan		
4.	Economic and/or social impact		
5.	Implementation schedule		
SECTION 12			
DOCUMENTATION OF PUBLIC PARTICIPATION – All documentation associated with the public participation in the Facilities Plan development.			
1.	Newspaper advertisement		
2.	Measures taken to solicit participation		
3.	Minutes of public meeting		
4.	Public meeting attendance sheet		
5.	Public comments		