

Geohydrology Section
1930 Constant Avenue
Lawrence, KS 66047-3724
March 9, 2009

Debra Carlson Ohlde
Project Administrator
North Central Regional Planning Commission
109 N. Mill St.
P. O. Box 565
Beloit, KS 67420

Dear Ms. Ohlde:

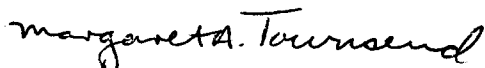
I have reviewed the plans for the City of St. George wastewater treatment construction. Overall the project looks reasonable and will help the city expand their wastewater treatment capabilities.

The only concern I have is where exactly the deactivated sludge will be land applied. The soils in the area vary from silty loam (moderate permeability) in the vicinity of the treatment plant to fine sandy loams in areas away from the river. My concern is with the level of nutrients or other contaminants that may be contained within the sludge. Land application of this waste can result in leaching to the ground water and possibly to the river if the soil is permeable and there is sufficient precipitation or if irrigation is utilized (now or in the future). The areas for land disposal should be evaluated to determine if there is likely to be excessive leaching because of the addition of sludge to the sites. If these concerns are addressed, I have no problem with the project moving forward.

The above comments are based on regional geologic conditions and limited information available to the KGS at the time of writing and cannot be used in substitute for a detailed site characterization. Other geologic conditions, not discussed here, or for which the KGS has no knowledge, may affect the viability or safe operation of this facility or property.

Geotechnical engineering and design are outside the purview of the KGS. It is the responsibility of the applicant to produce any detailed site characterizations, geotechnical or environmental testing, or design by a licensed professional geologist or engineer to complete the project.

Sincerely,



Margaret A. Townsend
Hydrogeologist

AGENCY REVIEW TRANSMITTAL FORM

Comments by: _____

Type or Print Name and Agency

Transmittal Date

PROJECT TITLE:	City of St. George Wastewater Treatment Construction	☒	Notification of Intent
		☐	Preapplication
CONTACT PERSON:	Deb Ohlde, NCRPC, Administrator (785) 446-3775	☐	Final Application
		☐	Direct Development

This form provides notification and the opportunity for your agency to review and comment on this proposed project as required by Executive Order 12372. Please complete Parts I, II & III as appropriate. Your prompt response will be appreciated.

RETURN TO: **By 3/30/09**
 Deb Ohlde
 North Central Regional Plan. Comm.
 P.O. Box 157
 Clyde, Kansas 66938

PART I

REVIEW AGENCIES/COMMISSIONS (check one or more)

☐ Aging	☒ Geological Survey, KS	☐ Transportation
☐ Agriculture -- DWR	☐ Health & Environment	☐ Water Office, KS
☐ Biological Survey, KS	☐ Historical Society	☐ Wildlife & Parks
☐ Corporation Comm.	☐ Human Resources	☐ Emergency Preparedness
☐ Commerce	☐ Natural Resource Cons. S.	
☐ Conservation Commission	☐ Social & Rehab. Services	☐ Other _____
☐ Education	☐ State Forester, KS	☐ Other _____

PART II (To be completed by review agency and returned to contact person.)

AGENCY REVIEW COMMENTS: *See attached letter*

PART III (To be completed by review agency and returned to contact person.)

RECOMMENDED ACTION COMMENTS

☐ Clearance of the project should be granted	☐ Clearance of the project should not be delayed but the Applicant should (in the final application) address or clarify the questions or concerns indicated above
☐ Clearance of the project should not be granted	☐ Request the opportunity to review the final application prior to submission to the federal funding/state funding agency.
☐ Clearance of the project should be delayed until the issues or questions have been clarified	☐ Request a State Process Recommendation in concurrence with above comments

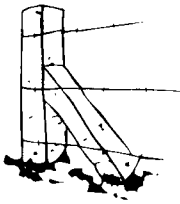
DIVISION/AGENCY/COMMISSION

Reviewer's Signature

Margaret A. Townsend

Date:

3-9-09



North Central Regional Planning Commission

109 N. Mill St., P.O. Box 565 • Beloit, Kansas 67420 • (785) 738-2218

February 26, 2009

Kansas Geological Survey
University of Kansas
1930 Constant Ave., Campus West
Lawrence, KS 66047

Re: City of St. George Wastewater Treatment Construction
KWPCRF Loan Fund Project No. C20 1713 01

To Whom It May Concern:

The City of St. George is pursuing a KWPCRF loan from KDHE for the cost of the project of the project described above. This notification is being sent in order to seek comments regarding the environmental review for the proposed project.

The project will involve construction of a new wastewater treatment facility near the location of the existing plant, within the city limits, as can be seen on the enclosed maps. The location is in the NW 1/4 Section 16 Township T10S Range 9E in Pottawatomie County Kansas.

The Total proposed budget for the project is \$1,500,000

\$1,300,000	Construction
\$ 118,000	Engineering design
\$ 60,300	Construction inspection
\$ 11,700	Legal, Soils, Misc.
\$ 10,000	Administration

We would appreciate your review of the project description and location, and any comments you may have, within 30 days which would be March 30, 2009. A project review form is enclosed for your use. Please disregard the enclosed review/response form if you prefer to respond with a letter or with your own form. Please call me at the North Central Regional Planning Commission at 785-446-3775 or e-mail dcohlde@nckcn.com if you have any questions.

Sincerely,

Debra Carlson Ohlde
Project Administrator

C. Mechanical Wastewater Treatment

The City of St. George currently operates an extended aeration activated sludge mechanical wastewater treatment facility, and the City Operator is quite familiar with activated sludge treatment processes. The City has discussed the implementation of an Aero-Mod Sequox facility, an SBR unit, an Eimco Carrousel, and a Shreiber Counter Current plant if a mechanical type facility is chosen. Due to the City's proximity to the Aero-Mod headquarters in Manhattan and the neighboring communities of Wamego and St. Marys utilizing this type of wastewater treatment process, St. George has decided that an Aero-Mod Sequox plant would be their most logical mechanical treatment option.

The location of a new mechanical WWTP would be on the north side of, and adjacent to, the existing plant. The land around the existing facility is owned by the City, and there is a sufficient amount of area available for a new Aero-Mod plant with room for future expansion if necessary. This site is ideal in most respects because it minimizes pumping and eliminates the need for the City to acquire additional property.

The Aero-Mod Sequox biological nutrient removal treatment process is an activated sludge process that implements a sequencing aeration process while providing continuous clarification. By adding what is termed anaerobic selector tankage into the design, phosphorus removal can be achieved as well. The process is energy efficient and requires a small footprint which minimizes up front capital costs. The overall process is very operator friendly and utilizes stainless steel components with no moving parts below the water surface. Numerous communities throughout Kansas have successfully implemented this treatment method.

A 0.160 MGD Sequox plant sized to handle 312 mg/l average BOD₅ influent wastewater will require an area approximately 60' wide by 53' long. The depth of the basins are anticipated to be 16'. The plant will also have provisions for biological phosphorus removal with the incorporation of Bio-P fermenter and anaerobic chambers. The tankage will be sized to handle a sustained peak flow of 0.480 MGD and a peak hourly flow of 0.640 MGD.

In addition to the Aero-Mod treatment process, the overall facility will include pump station improvements, sludge dewatering equipment, UV disinfection, a control building, and a standby generator for backup power. The existing pump station will require retrofitting new submersible pumps into the existing 6' diameter wetwell to handle approximately 500 gallons per minute (the existing grinder pumps are rated for only 98 gpm). The pump station will also likely be fitted with an influent trash basket to keep large debris out of the pumps. In addition, a magnetic type flow meter will be incorporated into the pumping facility to monitor and record flow data at the plant. Further, a shaftless spiral screen for plastics and rubber material removal is planned between the pump station and the treatment tankage. Since the City has indicated multiple times that grit is not a significant problem with their collection system, grit removal equipment is not planned for this facility.

Sludge dewatering will be accomplished using a belt filter press. A 0.8 meter press will certainly handle all sludge dewatering necessary for the proposed plant as well as any realistic amount of expansion well into the future. Currently a Tritan 0.8 meter press is

budgeted, but other manufacturers may be considered during the project design process. The dewatered sludge will be land applied to nearby agricultural fields. 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000

Disinfection of the effluent stream will be accomplished by ultraviolet (UV) light. The City has a couple of options available for consideration as their current UV unit is only a few years old and performing quite well. The existing unit is a Trojan UV3200K and has a peak hydraulic capacity of 280,000 gpd. KDHE officials have indicated that it will be necessary to treat the peak calculated effluent flow of 0.480 MGD from the plant. However, KDHE also says that it is possible to build the 0.160 MGD plant but only permit it for 0.080 MGD allowing the City to utilize the existing UV unit. This option would require upgrades in the future as well as permit modifications. Another option would be to install a new UV unit sized for the future peak flow of 0.480 MGD and removing the existing unit for salvage. The anticipated equipment cost for this option is \$27,000 and the estimated annual power usage is approximately \$1,220.00. A third option is to keep the existing UV unit and install a second unit of the same type and size to operate in parallel with the existing unit. To make this option work, a flow distribution box would be required at the upstream connection point. The equipment cost for this option is approximately \$20,000 plus \$6,000 for the flow distribution box. The real benefit to this option, in addition to capital savings, is that the City would only need to operate one of the two units until the average daily flow approaches 0.080 MGD. With each of the units consuming approximately \$600 of power per year, a savings of about \$600/year could be realized until operation of the second unit was required based on flow. In addition, having a second, separate unit will provide a level of redundancy that is desirable in the event that one unit becomes inoperable due to damage or malfunction. Therefore, the installation of a second, parallel UV unit of the same type and size is recommended for this facility. This will provide redundancy in the disinfection process and save the City a modest amount of capital investment as well as power savings until the average daily flow at the plant exceeds 0.08 MGD.

A control building will be required to house some of the mechanical WWTP components and serve as the control center of the facility. The control building will need to be approximately 20' wide by 32' wide and have provisions for a belt filter press room, a blower room, a laboratory/office area, and an electrical/mechanical/control room. The blower room will have sufficient area to accommodate additional blowers for the day when a further plant expansion is necessary.

A backup power source will be required to operate the proposed blowers, pumps, UV equipment and control system in the event of a power outage. It is anticipated that a 150 KW standby generator with an automatic transfer switch will be sufficient to provide backup power for this facility in the event of a power outage.

Kansas Department of Health and Environment

APPLICATION FOR SRF LOAN ASSISTANCE		New	Amendment
Project Number	C20-1713-01	Application Type	XX
1. Legal Applicant / Recipient		2. Type of Applicant / Recipient	
Applicant Name	City of St. George	A. City	
Organization Unit	Wastewater Treatment	B. County	
Street / PO Box	214 First St., PO Box 33	C. Other (Specify)	
City	St. George	Enter Appropriate Letter	
County	Pottawatomie	A	
State / Zip code	Kansas 66535-0033		
Contact Person Name	Carole Soupene, Clerk		
Telephone Number	785-494-2558		
3. Title of applicants project		Construction of New Wastewater Treatment Facility	
4. Type of Project		A New Facility will be constructed at the site of current facility; all components are included	
5. Employer Identification Number			
6. Area of project impact (Names of cities, counties, etc)		St. George Kansas	
7a. Congressional District / Applicant		District 2/Jenkins	
7b. Congressional District / Project		District 2/Jenkins	
8. Type of change		Increase dollars	\$ - N/A
		Decrease dollars	\$ - N/A
9. Proposed Funding			
SRF Loan 9a.	\$ 1,510,000	10. Project Start Date 10/01/09	
Applicant 9b.	\$ -	(Estimated)	
CDBG 9c.	\$ -	11. Project Duration 18	
EPA 9d.	\$ -	(Months)	
EDA 9e.	\$ -	12. Date Submitted 05/06/09	
Other 9f.	\$ -	(To KDHE)	
Total	\$ 1,510,000		
13. Requested Loan Repayment Period (Must not be over 20 years)		20	
14. The applicant certifies that: To the best of my knowledge and belief, data in this pre-application / application is true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved		This notice of intent / preapplication / application was made available to the state executive order 12372 process for review on: Date 05/06/09	
15. Certifying Representative		Signature	
Name	Hans Tessman		
Title	Mayor		
Mail completed application to: Kansas Department of Health and Environment Bureau of Water / Attn: Rod Geisler Municipal Programs Section, Suite 420 1000 SW Jackson Street Topeka, KS 66612-1367		If you need assistance please contact: Brenda Diegel Administrative / Finance Section, Suite 420 1000 SW Jackson Street Topeka, KS 66612-1367 785-296-4262	

NORTH

NO SCALE

ST. GEORGE
KANSAS

PROPOSED WWTP



Send To Printer Back To TerraServer Change to 11x17 Print Size Show Grid Lines Change to Landscape

USGS St. George, Kansas, United States 01 Jul 1978

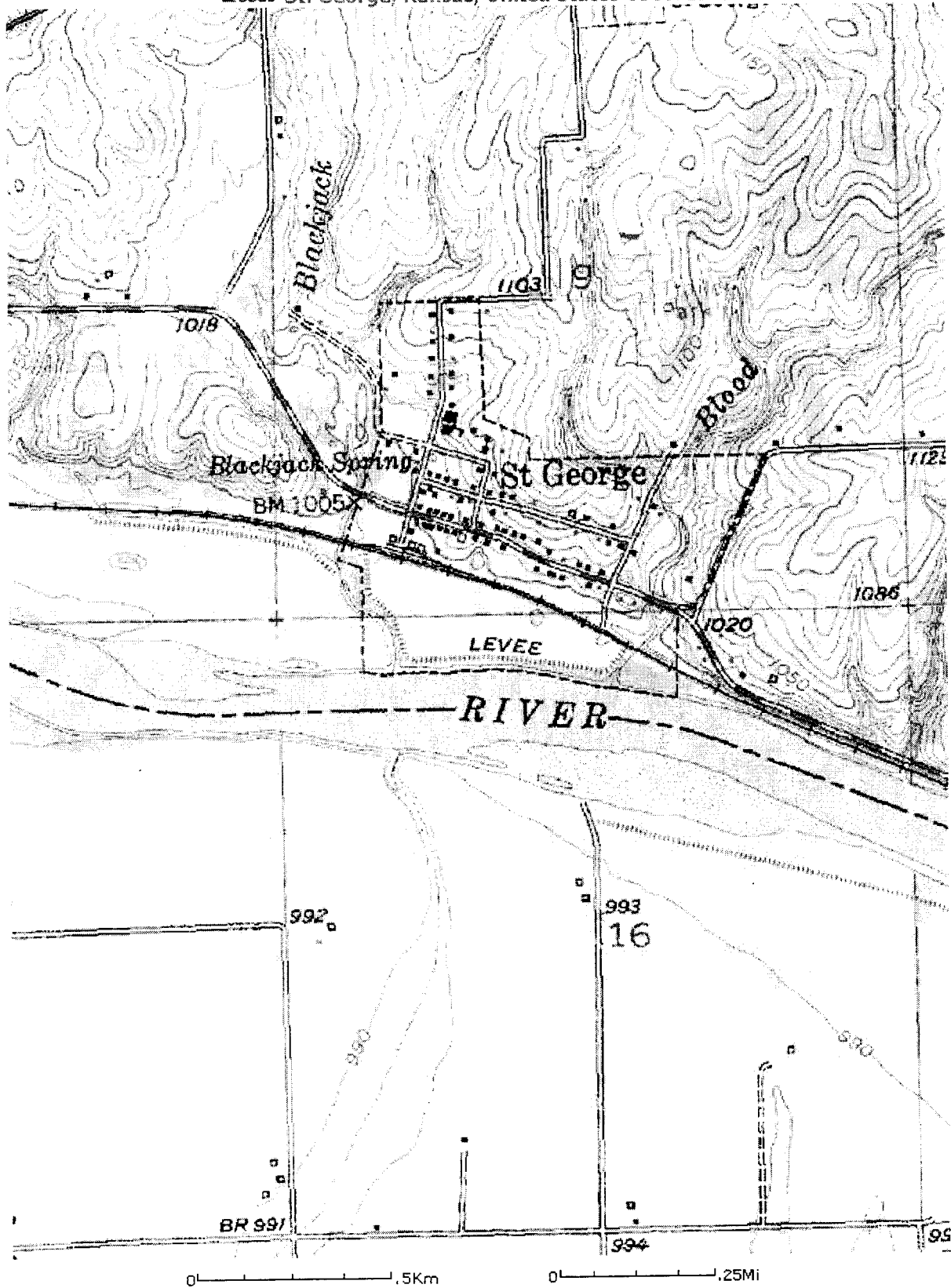


Image courtesy of the U.S. Geological Survey

© 2004 Microsoft Corporation. **Terms of Use** **Privacy Statement**



Web Soil Survey 2.1
National Cooperative Soil Survey

Soil Map—Pottawatomie County, Kansas, and Riley County, Kansas
(St. George Kansas)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot

 Very Stony Spot

 Wet Spot

 Other

Special Line Features

-  Gully
-  Short Steep Slope
-  Other

Political Features

-  Cities
-  PLSS Township and Range
-  PLSS Section

Water Features

-  Oceans
-  Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

Map Scale: 1:9,790 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 14N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Pottawatomie County, Kansas
Survey Area Data: Version 8, Dec 8, 2008

Soil Survey Area: Riley County, Kansas
Survey Area Data: Version 7, Nov 17, 2008

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 7/6/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



Map Unit Legend

Pottawatomie County, Kansas (KS149)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2284	Wann fine sandy loam, channeled	19.1	4.5%
3900	Ortello fine sandy loam, 3 to 7 percent slopes	29.0	6.8%
7036	Eudora-Bismarckgrove silt loams, occasionally flooded	76.1	17.9%
7650	Thurman loamy fine sand, 3 to 8 percent slopes	228.6	53.8%
9982	Fluvents, frequently flooded	5.5	1.3%
9999	Water	31.9	7.5%
Subtotals for Soil Survey Area		390.2	91.9%
Totals for Area of Interest		424.8	100.0%

Riley County, Kansas (KS161)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
7028	Belvue silt loam, occasionally flooded	0.5	0.1%
7104	Belvue silt loam, rarely flooded	1.2	0.3%
9999	Water	32.9	7.7%
Subtotals for Soil Survey Area		34.6	8.1%
Totals for Area of Interest		424.8	100.0%