

**Proposed Project for Application to the Kansas Department of Health and Environment
for the Kansas Water Pollution Control Revolving Loan Fund.**

Applicant: City of Willowbrook
Sewage Treatment Facility Improvements
KWPCRF Project No. C20 1199 01

Contact Person: Bill K. Binford, P.E.
Address: BG Consultants, Inc.
900 E. 27th Avenue
Hutchinson, KS 67502

Sent to the Kansas Geological Survey for environmental review.

Agency Review Comments:

Based on an examination of the documents and site map sent for review, and information obtained during a telephone call to BG Consultants, the proposed improvements to the wastewater treatment facility appear to be appropriate for the City of Willowbrook. Any short-term adverse impacts during construction should be offset by the long-term benefits of the improvements to the wastewater treatment system and result in decreasing nutrient and microorganism concentrations in the wastewater discharged to Cow Creek.

The proposed treatment lagoons are to be lined with plastic, which will prevent or minimize potential contamination of the ground water underlying the lagoons

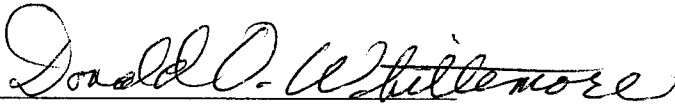
Recommended Action:

- ☒ Clearance of project should be granted
☐ Clearance of project should not be granted
☐ Clearance of project should be delayed until the issues or questions have been clarified
☐ Clearance of project should not be delayed, but the applicant (in the application) should address or clarify the questions or concerns indicated above

Donald O. Whittemore
Reviewer's Name

Geohydrology Section, Kansas Geological Survey
Division/Agency

8/27/03
Date


Reviewer's Signature

03-112H

August 1, 2003

Mr. Rance Walker
Kansas Department of Health & Environment
Division of Environment
Bureau of Water, Municipal Programs
Curtis State Office Building
1000 SW Jackson, Suite 420
Topeka, Kansas 66612-1367

Re: City of Willowbrook, Ks - Sewage Treatment Facility
NPDES Permit No. M-AR95-oo01
DWPCRF Project No. C20 1199 01
Intergovernmental Review Comments

Dear Mr. Walker:

The City of Willowbrook, Kansas is applying to the Kansas Water Pollution Control Revolving Loan Fund for assistance with their Wastewater Treatment Facility Improvement. To facilitate your review and comments, please find enclosed an information packet regarding the proposed Wastewater Treatment Facility for Willowbrook. The information packet includes the following items:

- 1) Application for Loan Assistance.
- 2) Legal Description of Proposed Site.
- 3) Excerpts from Engineering Report with pertinent statistics and information.
- 4) Location Map.
- 5) Proposed Site Location Map.



Also

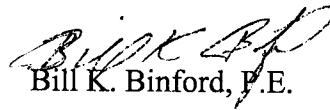
Lawrence, Ks. • Emporia, Ks. • Manhattan, Ks.

Mr. Rance Walker
August 1, 2003
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By this letter we are requesting review and clearance of the project from all listed agencies. If possible, we would appreciate the individual agencies review and comments within 30 days of this date.

Should you have any questions regarding this request, please contact our office at 620-665-3952. Thank you for your assistance in this matter.

Sincerely,



Bill K. Binford, P.E.

cc: Bob W. Barker, Mayor
Bill Gill, Fish & Wildlife Service
Keith Sexson, Wildlife & Parks
Harold Klaege, Natural Resource Conservation Service
Dr. Edward Martinko, University of Kansas
Clark Duffy, Kansas Water Office
David Pope, Kansas Dept. of Agriculture
Maurice Korphage, Kansas Corporation Comm
Mary Allman, Kansas State Historical Society
Tracey Streeter, State Conservation Comm
Dr. Dee Allison, Kansas Geological Survey
Bill Bolin, So. Central Ks Economic Dev. District
Sharon White, Corp of Engineers

Kansas Department of Health and Environment

APPLICATION FOR SRF LOAN ASSISTANCE		New	Amendment
Project Number	C 20-11- 9901	X	
1. Legal Applicant / Recipient		2. Type of Applicant / Recipient	
Applicant Name	City of Willowbrook	A. City	
Organization Unit	City Council	B. County	
Street / PO Box	P.O. Box 1067	C. Other (Specify)	
City	Willowbrook	Enter Appropriate Letter	
County	Reno	A	
State / Zip code	Kansas 67504-1067		
Contact Person Name	Bob W. Barker, Mayor		
Telephone Number	620-669-0145		
3. Title of applicants project			
City of Willowbrook Wastewater Treatment & Collection System			
4. Type of Project			
Discharging Wastewater Treatment Lagoon & Collection System Upgrade			
5. Employer Identification Number			
6. Area of project impact (Names of cities, counties, etc)			
Reno County			
7a. Congressional District / Applicant			
First			
7b. Congressional District / Project			
First			
8. Type of change			
		Increase dollars	\$600,000
		Decrease dollars	\$
9. Proposed Funding			
SRF Loan 9a.	\$ 600,000	10. Project Start Date	
Applicant 9b.	\$ 25,000	12-03	
CDBG 9c.	\$	(Estimated)	
EPA 9d.	\$	11. Project Duration	
EDA 9e.	\$	4	
Other 9f.	\$	(Months)	
Total	\$ 625,000	12. Date Submitted	
		7-31-03	
		(To KDHE)	
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	1-2-98 7-31-03
15. Certifying Representative		Signature	
Name	Bob W. Barker		
Title	Mayor		
Mail completed application to:		If you need assistance please contact:	
Kansas Department of Health and Environment		Bill Mondt	
Bureau of Water / Attn: Rod Geisler		Administrative / Finance Section, Suite 420	
Municipal Programs Section, Suite 420		1000 SW Jackson Street	
1000 SW Jackson Street		Topeka, KS 66612-1367	
Topeka, KS 66612-1367		785-296-4049	

PROPOSED LOCATION
FOR
CITY OF WILLOWBROOK, KANSAS
WASTEWATER TREATMENT LAGOON.

LEGAL DESCRIPTION:

A TRACT OF LAND LOCATED IN THE NORTH HALF OF THE NORTHEAST QUARTER OF SECTION 33, TOWNSHIP 22 SOUTH, RANGE 6 WEST OF THE 6TH P.M. IN RENO COUNTY, KANSAS, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A STONE AT THE NORTH QUARTER CORNER OF SAID SECTION 33; THENCE ALONG THE NORTH LINE OF THE NORTHEAST QUARTER OF SAID SECTION 33
N.89°18'48"E. 300.00 FEET TO THE POINT OF BEGINNING, BEING ON THE EAST LINE OF "THE CITY OF HUTCHINSON, KANSAS" EASEMENT AND RIGHT-OF-WAY TRACT, AS DESCRIBED ON PAGE 127 OF BOOK 88 AT THE RENO COUNTY REGISTER OF DEEDS; THENCE ALONG THE EAST LINE OF SAID "THE CITY OF HUTCHINSON, KANSAS" EASEMENT AND RIGHT-OF-WAY TRACT
S.0°45'12"E. 1299.06 FEET; THENCE
N.29°33'44"E. 990.56 FEET; THENCE
N.0°45'12"W. 443.37 FEET TO THE NORTH LINE OF THE NORTHEAST QUARTER OF SAID SECTION 33; THENCE ALONG THE NORTH LINE OF THE NORTHEAST QUARTER OF SAID SECTION 33
S.89°18'48"W. 500.00 FEET TO THE POINT OF BEGINNING, CONTAINING 10.000 ACRES.

THE BEARINGS ON THE ABOVE DESCRIPTION ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER AS BEARING "N.89°25'00"E.

The proposed area is presently a wheat field immediately southeast of the City.

**PROPOSED
WASTEWATER TREATMENT LAGOON
AND
COLLECTION SYSTEM UPGRADE
FOR
THE CITY OF WILLOWBROOK, KANSAS**

INTRODUCTION.

SCOPE: The City of Willowbrook, located approximately two (2) miles northwest of Hutchinson in Reno County, Kansas, maintains and operates a Public Sewer System that presently serves approximately thirty-eight (38) residences. The City is served by a wastewater facility that consists of a bar screen, ejector lift pump, extended aeration activated sludge plant, and an aerated sludge storage tank. The system was installed approximately 30 years ago with a life expectancy of 20 years. Despite numerous repairs and maintenance the system is in very poor condition and has periodically not been able to stay in compliance with it's Kansas Water Pollution Control Permit and the U.S. Environmental Protection Agency, National Pollutant Discharge Elimination System (NPDES) Permit.

REPORT OBJECTIVE: The objective of this report shall be to determine the most cost effective, long term solution to the current problem.

POPULATION CHARACTERISTICS: The City of Willowbrook has an almost constant population, as very few lots are available inside the City Limits. Therefore the future population equivalent is projected minimal. Present population is listed at 97 people.

AREA DESCRIPTION: The City of Willowbrook is somewhat unique in that there are no businesses in the City. The "City" consists of 38 residential homes, a swimming pool and a 9 hole golf course intertwined among the homes in the area.

The entire city is protected by a Corps of Engineers perimeter dike. The dike is approximately the City Limits and protects the City from flooding caused by occasional high water levels of Cow Creek to the west and south. Cow Creek was actually rerouted around the area when the dike was

constructed around the City. Design of the dike protection was initiated in 1948 and finished in 1954. Originally the area was titled Island Park and Willowbrook. Island Park was considered the approximate south half of the protected area. (See attached Flood Insurance Rate Map (FIRM) excerpt).

RECEIVING WATER COURSE: Cow Creek is a contributor to the Low Arkansas Basin Section of the Kansas Water Plan approved by the Kansas Water Authority. It's drainage area is 950 square miles at the Cow Creek Diversion Canal structures. The structures are located approximately three (3) miles southeast of Willowbrook, which is at the Northeast corner of Hutchinson, Kansas.

Willowbrook's wastewater discharges into Cow Creek, south, from the existing plant. The out-fall main is approximately 660 feet in length.

DESIGN PARAMETERS.

DISCUSSION: Consideration of alternatives for updating, improving or modifying a wastewater treatment facility require certain design parameters be established as a basis for alternative comparison. The parameters pertain to current and projected wastewater flows, Biochemical Oxygen Demand (5-Days), (BOD5) loading, wastewater composition, existing condition of the treatment facility and other general design consideration. These parameters are based upon KDHE “Minimum Design Standards”, standard engineering principals and practices, field survey data, existing city information and knowledge and practical experience.

PROJECTED WASTEWATER FLOWS: To establish existing, as well as projected, wastewater flows research was done as detailed in Section 1.3, Population Characteristics, on the current and future populations of Willowbrook. In addition, research was done on the wastewater production as shown in Section 3.1, Water Supply and Section 3.2, Wastewater Production and Population Equivalent.

1994 Population	92 P.E.
2003 (current) Population	97 P.E.
2021 (projected) Population	120 P.E.
Actual yearly average per capita Wastewater Flow	139 gpd
Estimated Future per capita Wastewater Flow	150 gpd
Wastewater Flow:	
Estimated Future (2021) Daily Wastewater Flow	
(Based on 120 P.E. and 150 gpd)	18000 gpd

With I & I eliminated, 20-year projected flow could be as low as:

(Based on 120 P.E. and 75 gpcd)	9000 gpd
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Potentially, if I & I is eliminated, or severely reduced, present daily flows could reduce to 7500 GPD.

INFLOW AND INFILTRATION: As mentioned in this report the City of Willowbrook has an inflow and infiltration problem. With the spikes in the maximum flow during a rain event, the City is aware of problems from surface and/or groundwater entering into the collection system.

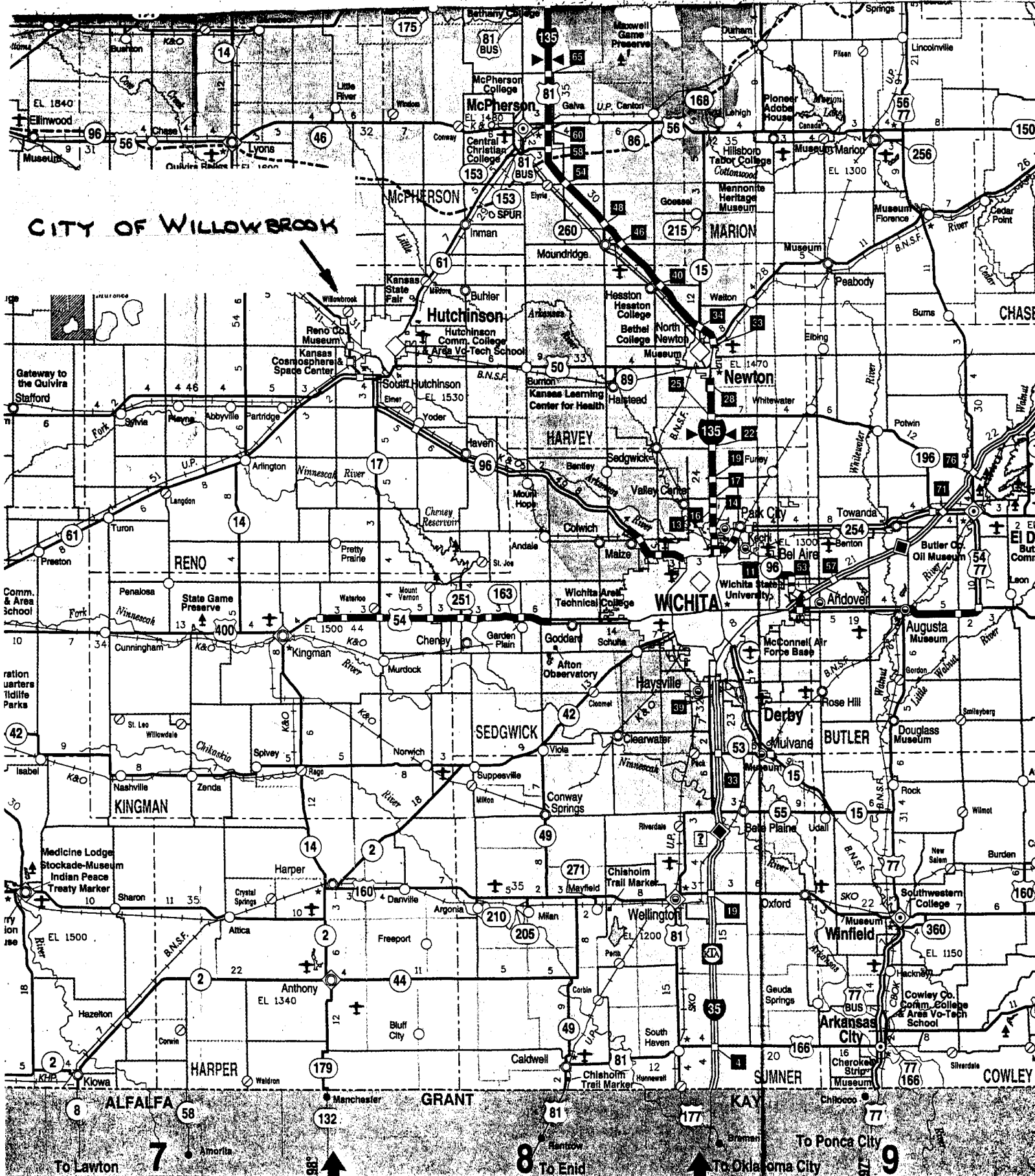
As the collection system gets older the inflow and infiltration will increase. A TV inspection program of the sanitary sewer lines was conducted in 1994. This TV inspection program was completed by Utility Maintenance Contractors of Wichita, Kansas. The video shows the considerable I & I throughout the system.

The I & I into the sanitary sewer system according to KDHE Minimum Design Standards shall not exceed 250 gallons per day per inch of nominal pipe diameter per mile of sanitary sewer line. The design amount of I & I for this report shall be the maximum allowed by KDHE.

PROJECTED WASTE LOAD: For domestic waste, the size and/or type of wastewater treatment utilized is, in part dependent upon the amount of organic matter which must be decomposed by that facility. This organic matter is measured in terms of 5-day Biochemical Oxygen Demand (BOD5). The Kansas Department of Health and Environment recommends design values for BOD5 and Total Suspended Solids (TSS) as follows:

Design Year	2021
Design Population	120 P.E.
Design Waste Load	0.17 lbs. BOD5/P.E./day
	0.21 lbs. TSS/P.E./day
Total Daily Loading (Design)	
120 P.E. x 0.17 =	20.4 lbs./BOD5/day
120 P.E. x 0.21 =	25.2 lbs./TSS/day

The above calculated figures will be utilized in design for the following options in new facilities design.



LOCATION MAP

RENO COUNTY
CITY OF WILLOWBROOK

28

50th Avenue

Cow Creek

ZONE X

City of
Willowbrook
200285

Proposed
Location
of Lagoons

Wilson Road

Cow Creek

Existing Discharge Main

COW CREEK DRAINAGE DIST.
BROOKS TRACT 127

Proposed Lift Station

Proposed Force Main

Proposed Discharge Main

ZONE X

NORTH

Property Boundary



Scale: 1" = 400'

