



# **Engineering Report**

**Proposed \$120,000,000 Bond Authorization**

**Northwest Harris County Municipal Utility  
District No. 5**

**Harris County, Texas**

March 2021



**ENGINEERING REPORT**

Proposed \$120,000,000 Bond Authorization

Northwest Harris County Municipal Utility District No. 5

Harris County, Texas



*Keli M. Schroeder*  
3/25/2021

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BGE, Inc.  
Texas Registered Engineering Firm No. F-1046

March 2021



March 25, 2021

Board of Directors  
Northwest Harris County Municipal Utility District No. 5  
c/o Smith, Murdaugh, Little & Bonham, LLP  
2727 Allan Pkwy #1100  
Houston, Texas 77019

Re: Northwest Harris County Municipal Utility District No. 5  
Preliminary Engineering Report for Bond Authorization Election

Dear Directors:

We are pleased to present this engineering report detailing a \$120,000,000 bond authorization. The proposed construction of facilities described under the bond issue program is feasible, practical and necessary for the maintenance of the District's existing infrastructure and water conservation efforts. Actual issuance of bonds will not be based on this report but will require preparation of detailed engineering reports and applications based on specific projects, construction contracts, and financial feasibility as required by the Texas Commission on Environmental Quality.

BGE, Inc. will be happy to answer any questions you have concerning this report.

Sincerely,

A handwritten signature in blue ink that reads 'Keli M. Schroeder'.

Keli M. Schroeder, P.E.  
Engineer for the District

cc: Mr. James Bonham – Smith, Murdaugh, Little & Bonham, LLP  
Ms. Julie Peak – Mastersons Advisors, LLC  
BGE File

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**EXECUTIVE SUMMARY**

Northwest Harris County Municipal Utility District No. 5 (the “District”) of Harris County, Texas, was created to provide water, sewer and drainage service to the land in the District. The District will finance, with proceeds from its bond issues, the construction of improvements to and maintenance of water supply, sanitary sewer and drainage systems in the District.

The District contains approximately 2,830.2073 acres within Harris County, Texas. The District is located approximately 25 miles northwest of the center of downtown Houston and is located at the southeast and southwest corners of the intersection of Grant Road and Spring-Cypress Road, on the north side of Spring-Cypress Road east of Faulkey Gully and on the west side of Grant Road approximately one-half mile north of Spring-Cypress Road, and the District is located in the City of Houston’s extraterritorial jurisdiction. A location map is included as Exhibit A.

The proposed bond program is feasible from engineering and economic viewpoints and is necessary to support the maintenance and preservation of the District’s aging existing infrastructure. The feasibility of the District’s bond authorization program is outlined in the following summary.

## **INTRODUCTION**

This report is intended as an aid to the Board of Directors and voters within the District in preparing for a bond authorization election whereby voters in the District will decide whether or not to approve a total of \$120,000,000 in bonds to support the maintenance of the existing infrastructure.

The District was created pursuant to an order of the Texas Water Rights Commission effective December 3, 1974. At the time of creation, the District contained approximately 180.414 acres of land. Since its creation, the District has completed twenty-one annexations and currently includes 2,830.2073 acres of land within its present boundaries. The voters within the District had previously authorized bonds in the total amount of \$259,935,000. at seven elections held for that purpose. The elections authorized \$4,275,000 on April 3, 1976; \$2,855,000 on April 2, 1983; \$9,625,000 on February 26, 1990; \$30,180,000 on July 13, 1998; \$80,000,000 on April 17, 2001; \$125,000,000 on November 4, 2008; and \$8,000,000 on May 9, 2009.

The District has not issued all bond funds previously authorized but the remaining authorized tax bonds are allocated to upcoming infrastructure projects. An evaluation of the bond proceeds indicates that the District must authorize these bonds to maintain existing infrastructure.

## **PROPOSED BOND AUTHORIZATION**

The construction costs for the District's infrastructure and improvements are based on an 5.00% interest rate. This includes contingencies, engineering, and inflation.

**NORTHWEST HARRIS COUNTY MUD NO. 5  
 BOND AUTHORIZATION REQUIREMENT 2021  
 WATER, SEWER AND DRAINAGE COST SUMMARY**

<b><u>CONSTRUCTION COSTS</u></b>		
<b>District Items</b>	<b><u>Total</u></b>	<b><u>District Share</u></b>
<b>1. Water Plant No. 1</b>		
Water Plant No. 1 Repairs	\$ 65,000	\$ 65,000
Generator Replacement	\$ 235,000	\$ 235,000
Water Plant No. 1 Improvements	\$ 993,000	\$ 993,000
Water Well No. 1 and Pump Rehabilitation	\$ 100,000	\$ 100,000
<b>2. Water Plant No. 2</b>		
Water Well No. 1 and Pump Rehabilitation	\$ 100,000	\$ 100,000
Water Well No. 2 and Pump Rehabilitation	\$ 100,000	\$ 100,000
Booster Pump Replacement and Seal Replacement	\$ 87,000	\$ 87,000
Generator No. 1 Replacement	\$ 275,000	\$ 275,000
Replacement of Chemical LAS System	\$ 48,000	\$ 48,000
Replacement of Chemical Chlorine System	\$ 48,000	\$ 48,000
<b>3. Water Plant No. 3</b>		
Site Improvements due to Chloramination Updates: Piping Adjustment	\$ 70,000	\$ 70,000
Site Improvements due to Chloramination Updates: Construct Evangeline Well	\$ 2,100,000	\$ 2,100,000
Water Well No. 1 and Pump Rehabilitation	\$ 92,500	\$ 92,500
Booster Pump Replacement and Seal Replacement	\$ 87,000	\$ 87,000
HPT No. 2 and HPT No. 3 and Above Ground Piping Rehabilitation	\$ 170,600	\$ 170,600
Replacement of Chemical LAS System	\$ 63,000	\$ 63,000
Replacement of Chemical Chlorine System	\$ 48,000	\$ 48,000
<b>4. Water Plant No. 4</b>		
GST No. 1 and HPT No. 1 Rehabilitation with Site Improvements	\$ 190,000	\$ 190,000
Booster Pump Replacement and Seal Replacement	\$ 87,000	\$ 87,000
Replacement of Chemical LAS System	\$ 67,000	\$ 67,000
Replacement of Chemical Chlorine System	\$ 67,000	\$ 67,000
<b>5. Wastewater Treatment Plant No. 1</b>		
Chemical Equipment Replacement Including Disinfection, Auto Sampler, and Pump	\$ 71,000	\$ 71,000
UV Disinfection	\$ 570,000	\$ 570,000

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<b>6. Wastewater Treatment Plant No. 2</b>			
Expansion from 1.25 MGD to 2.50 MGD	\$	10,000,000	\$ 10,000,000
Wastewater Treatment Plant No. 2 Rehabilitation	\$	173,500	\$ 173,500
Return Activated Sludge Lift Station Wet Well and Piping Rehabilitation	\$	87,700	\$ 87,700
Chemical Equipment Replacement Including Disinfection, Auto Sampler, and Pump	\$	71,000	\$ 71,000
UV Disinfection	\$	570,000	\$ 570,000
<b>7. Lift Station No. 5</b>			
Pump Replacement	\$	33,000	\$ 33,000
Wet Well and Piping Rehabilitation	\$	148,700	\$ 148,700
<b>8. Lift Station No. 9</b>			
Wet Well and Piping Rehabilitation	\$	189,200	\$ 189,200
Pump Replacement	\$	93,000	\$ 93,000
Force Main Discharge Manhole Rehabilitation	\$	21,000	\$ 21,000
<b>9. Lift Station No. 10</b>			
Wet Well and Piping Rehabilitation	\$	107,100	\$ 107,100
Pump Replacement	\$	43,000	\$ 43,000
<b>10. Lift Station No. 11</b>			
Wet Well and Piping Rehabilitation	\$	119,300	\$ 119,300
Pump Replacement	\$	108,000	\$ 108,000
<b>11. Lift Station No. 12</b>			
Wet Well and Piping Rehabilitation	\$	155,200	\$ 155,200
Force Main Discharge Manhole Rehabilitation	\$	21,000	\$ 21,000
<b>12. Lift Station No. 13</b>			
Wet Well and Piping Rehabilitation	\$	122,600	\$ 122,600
Pump Replacement	\$	39,000	\$ 39,000
Force Main Discharge Manhole Rehabilitation	\$	21,000	\$ 21,000
<b>13. Forest Creek Stormwater Pump Station</b>			
Wet Well and Piping Rehabilitation	\$	106,300	\$ 106,300
Pump Replacement	\$	43,000	\$ 43,000
<b>14. Oakcrest Stormwater Pump Station</b>			
Wet Well and Piping Rehabilitation	\$	76,100	\$ 76,100
Pump Replacement	\$	69,000	\$ 69,000

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<b>15. Construct Reclaimed Water System</b>		
WWTP No. 1 and Distribution Piping	\$ 5,250,000	\$ 5,250,000
WWTP No. 2 and Distribution Piping	\$ 8,500,000	\$ 8,500,000
NWCHMUD 15 WWTP and Distribution Piping	\$ 8,500,000	\$ 8,500,000
16. Contingencies (15%)	\$ 6,015,270	\$ 6,015,270
17. Engineering (20%)	\$ 9,223,414	\$ 9,223,414
18. Inflation (3% for 5 years)	\$ 8,301,073	\$ 8,301,073
<b>Total District Items</b>	<b>\$ 63,941,557</b>	<b>\$ 63,941,558</b>
<b>Developer Items</b>		
1. 450 acres of Single Family Development	\$ 19,000,000	\$ 19,000,000
2. Contingencies (15%)	\$ 2,850,000	\$ 2,850,000
3. Engineering (20%)	\$ 4,370,000	\$ 4,370,000
4. Inflation (3% for 5 years)	\$ 3,933,000	\$ 3,933,000
<b>Total Developer Items</b>	<b>\$ 30,153,000</b>	<b>\$ 30,153,000</b>
<b>Total Construction Costs (78.41% of BAR)</b>	<b>\$ 94,094,557</b>	<b>\$ 94,094,558</b>
<b><u>NONCONSTRUCTION COSTS</u></b>		
1. Legal Fees (2.5% of BAR)	\$	3,000,000
2. Financial Advisor Fees (2.5% of BAR)	\$	3,000,000
3. Interest Costs:		
a. Capitalized Interest (2 years at 5%)	\$	12,000,000
b. Developer Interest (2 years at 5%)	\$	3,015,300
4. Bond Discount (3% of BIR)	\$	3,600,000
5. Engineering Reports	\$	500,000
6. Administrative Costs	\$	370,142
7. Attorney General Fee (0.10% of BAR)	\$	120,000
8. T.C.E.Q. Bond Issuance Fee (0.25% of BAR)	\$	300,000
<b>Total Nonconstruction Costs (21.59% of BAR)</b>	<b>\$</b>	<b>25,905,442</b>
<b>BOND AUTHORIZATION REQUIREMENT</b>	<b>\$</b>	<b>120,000,000</b>



**CONCLUSION**

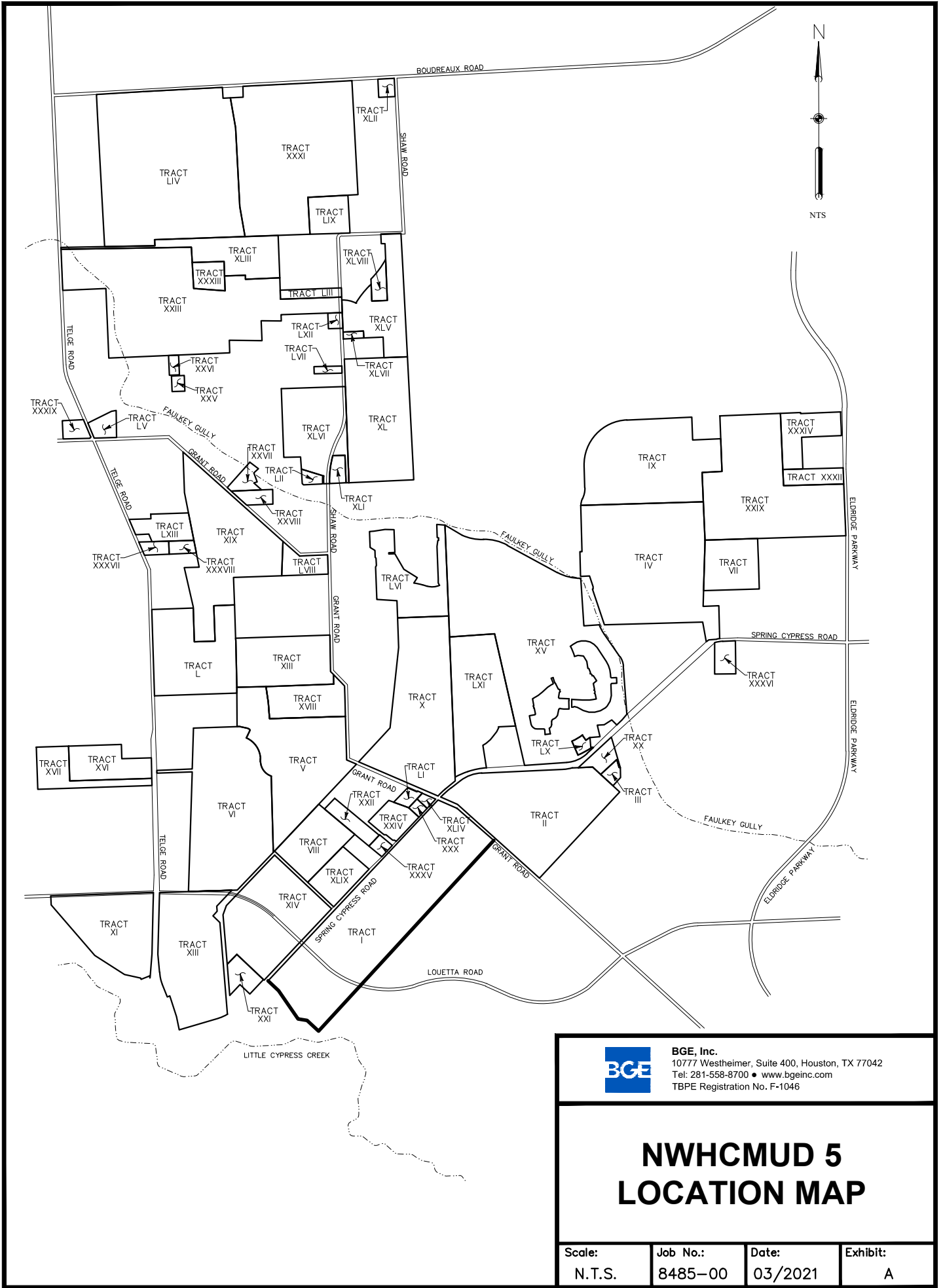
The District's proposed \$120,000,000 bond authorization is practical and feasible from the engineering and economic perspectives and are necessary for the realization of the District's development potential, for the continued maintenance and preservation of the District's existing infrastructure.

NORTHWEST HARRIS COUNTY MUNICIPAL UTILITY DISTRICT NO. 5  
*\$120,000,000 Bond Authorization*

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**EXHIBIT A**  
LOCATION MAP

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**BGE, Inc.**  
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TBPE Registration No. F-1046

# NWHCMUD 5 LOCATION MAP

Scale:	Job No.:	Date:	Exhibit:
N.T.S.	8485-00	03/2021	A