Control Number: 51864

Item Number: 1

Addendum StartPage: 0

51864

Harkins Engineering, Inc.

March 2, 2021

Filing Clerk
Texas Public Utility Commission
1701 North Congress
P.O. Box 13326
Austin, Texas 78711-3326

RE: Application of the City of Midlothian to amend CCN Number 11706 in Ellis County, Texas

Dear Filing Clerk:

Please the attached CCN Amend Application for the City of Midlothian, Texas and required attachments and digital data.

Please let me know if you need any further information or have any additional questions. Thank you for your time

Sincerely,

Victoria Richards Harkins, Ph.D., P.E.
President

2413 Belaire East Lane, Granite Shoals, Texas 78654 Phone: (512) 784-8511

Application Summary

Applicant: City of Midlothian, Texas

CCN No. to be amended: 11706

or ☐ **Obtain NEW CCN** ☐ **Water** ☐ **Sewer**

County(ies) affected by this application: Ellis

Dual CCN requested with: _____

(name of retail public utility)

CCN No.: _____ ☐ **Portion or** ☐ **All** of requested area

Decertification of CCN for: _____

(name of retail public utility)

CCN No.: _____ ☐ **Portion or** ☐ **All** of requested area

Table of Contents

Please mark the items included in this filing

☐	Partnership Agreement	Part A: Question 4
☐	Articles of Incorporation and By-Laws (WSC)	Part A: Question 4
☐	Certificate of Account Status	Part A: Question 4
☐	Franchise, Permit, or Consent letter	Part B: Question 7
☒	Existing Infrastructure Map	Part B: Question 8
☒	Customer Requests For Service in requested area	Part B: Question 9
☒	Population Growth Report or Market Study	Part B: Question 10
☒	TCEQ Engineering Approvals	Part B: Question 11
☐	Requests & Responses For Service to ½ mile utility providers	Part B: Question 12.B
☐	Economic Feasibility (alternative provider) Statement	Part B: Question 12.C
☐	Alternative Provider Analysis	Part B: Question 12.D
☐	Enforcement Action Correspondence	Part C: Question 16
☒	TCEQ Compliance Correspondence	Part D: Question 20
☒	Purchased Water Supply or Treatment Agreement	Part D: Question 23
☐	Rate Study (new market entrant)	Part E: Question 28
☐	Tariff/Rate Schedule	Part E: Question 29
☒	Financial Audit	Part E: Question 30
☐	Application Attachment A & B	Part E: Question 30
☒	Capital Improvement Plan	Part E: Question 30
☐	Disclosure of Affiliated Interests	Part E: Question 31
☒	Detailed (large scale) Map	Part F: Question 32
☒	General Location (small scale) Map	Part F: Question 32
☒	Digital Mapping Data	Part F. Question 32
☒	Signed & Notarized Affidavit	Page 12

Part A: Applicant Information

1. **A.** Name: City of Midlothian, Texas
(individual, corporation, or other legal entity)

☐ Individual ☐ Corporation ☐ WSC ☒ Other: City

B. Mailing Address: 104 West Avenue E
Midlothian, Texas 76065

Phone No.: (972) 775-3481 Email: mike.adams@midlothian.tx.us

C. Contact Person. Please provide information about the person to be contacted regarding this application. Indicate if this person is the owner, operator, engineer, attorney, accountant, or other title.

Name: Victoria Richards Harkins, Ph.D., P.E. Title: Engineer

Mailing Address: 2413 Belaire East Lane, Granite Shoals, Texas 78654

Phone No.: (512) 784-8511 Email: VHarkins@harkinsengineering.com

2. If the Applicant is someone other than a municipality, is the Applicant currently paid in full on the Regulatory Assessment Fees (RAF) remitted to the TCEQ?

☐ Yes ☐ No ☒ N/A

3. If the Applicant is an Investor Owned Utility (IOU), is the Applicant current on Annual Report filings with the Commission?

☐ Yes ☐ No If no, please state the last date an Annual Report was filed: _____

4. The legal status of the Applicant is:

☐ Individual or sole proprietorship

☐ Partnership or limited partnership (*attach* Partnership agreement)

☐ Corporation: Charter number (recorded with the Texas Secretary of State): _____

☐ Non-profit, member-owned, member controlled Cooperative Corporation [Article 1434(a) Water Supply or Sewer Service Corporation, incorporated under TWC Chapter 67]
Charter number (as recorded with the Texas Secretary of State): _____
☐ Articles of Incorporation and By-Laws established (*attach*)

☒ Municipally-owned utility

☐ District (MUD, SUD, WCID, FWSD, PUD, etc.)

☐ County

☐ Affected County (a county to which Subchapter B, Chapter 232, Local Government Code, applies)

☐ Other (please explain): _____

5. If the Applicant operates under an assumed name (i.e., any d/b/a), provide the name below:

Name: _____

Part B: Requested Area Information

6. Provide details on the existing or expected land use in the requested area, including details on requested actions such as dual certification or decertification of service area.

The area requested is within the current corporate limits of the City of Midlothian. The City of Midlothian and its neighboring utilities maintain a proactive and professional relationship regarding the best use of available resources to serve the area. As a result, the utilities have determined the best provider for current un-certificated areas due to location of available resources and land use.

7. The requested area (check all applicable):

☐ Currently receives service from the Applicant ☒ Is being developed with no current customers

☒ Overlaps or is within municipal boundaries ☐ Overlaps or is within district boundaries

Municipality: City of Midlothian District: _____

Provide a copy of any franchise, permit, or consent granted by the city or district. If not available please explain:

Applicant is a city

8. Describe the circumstances (economic, environmental, etc.) driving the need for service in the requested area:

The area is planned for development to include a school and single use homes. As part of an agreement with neighboring utilities, the City of Midlothian and Mt. Peak SUD have agreed to service areas that best utilize the resources available as well as to meet the needs of the area development. See Attachment 9. The City of Midlothian has an adjacent 16" water line available for service.

9. Has the Applicant received any requests for service within the requested area? See Attachment 1

☒ Yes* ☐ No *Attach copies of all applicable requests for service and show locations on a map

10. Is there existing or anticipated growth in the requested area?

☒ Yes* ☐ No *Attach copies of any reports and market studies supporting growth See Attachment 2

11. **A.** Will construction of any facilities be necessary to provide service to the requested area?

☒ Yes* ☐ No *Attach copies of TCEQ approval letters See Attachment 3

B. Date Plans & Specifications or Discharge Permit App. submitted to TCEQ: 1/14/2020 Log # P-11082019-064, 1/17/2020, P-11082019-063

C. Summarize an estimated timeline for construction for any required facilities to serve the requested area:

Water Treatment plant and production facilities complete. Line extensions are planned according to non-standard development.

D. Describe the source and availability of funds for any required facilities to serve the requested area:

Municipal funds as well as capital impact fees.

Note: Failure to provide applicable TCEQ construction or permit approvals, or evidence showing that the construction or permit approval has been filed with the TCEQ may result in the delay or possible dismissal of the application.

12. **A.** If construction of a physically separate water or sewer system is necessary, provide a list of all retail public water and/or sewer utilities within one half mile from the outer boundary of the requested area below:

N/A

B. Did the Applicant request service from each of the above water or sewer utilities?

☐ Yes* ☐ No *Attach copies of written requests and copies of the written response

C. Attach a statement or provide documentation explaining why it is not economically feasible to obtain retail service from the water or sewer retail public utilities listed above.

D. If a neighboring retail public utility agreed to provide service to the requested area, attach documentation addressing the following information:

(A) A description of the type of service that the neighboring retail public utility is willing to provide and comparison with service the applicant is proposing;
(B) An analysis of all necessary costs for constructing, operating, and maintaining the new facilities for at least the first five years of operations, including such items as taxes and insurance; and
(C) An analysis of all necessary costs for acquiring and continuing to receive service from the neighboring retail public utility for at least the first five years of operations.

13. Explain the effect of granting the CCN request on the Applicant, any retail public utility of the same kind serving in the proximate area, and any landowners in the requested area. The statement should address, but is not limited to, regionalization, compliance, and economic effects.

As stated, the CCN amendment is a result of proactive measures of all neighboring utilities to best utilize current resources to meet service demands. The City of Midlothian is a superior ranked water system in the State of Texas and has a history of providing reliable and consistent water service that exceeds regulatory minimums. The landowners will benefit from the regional approach for best use of resources that directly affect cost and availability.

Part C: CCN Obtain or Amend Criteria Considerations

14. Describe the anticipated impact and changes in the quality of retail utility service for the requested area:

There is currently no service in the area. Service will be improved with the availabiltiy of superior ranked water service. The City of Midlothian has an adjacent 16" water line available for service.

15. Describe the experience and qualifications of the Applicant in providing continuous and adequate retail service:

The City of Midlothian maintains a full line of full time professional and engineering staff. The City of Midlothian is a superior ranked water system in the State of Texas and has a history of providing reliable and consistent water service that exceeds regulatory minimums.

16. Has the Applicant been under an enforcement action by the Commission, TCEQ, Texas Department of Health (TDH), the Office of the Attorney General (OAG), or the Environmental Protection Agency (EPA) in the past five (5) years for non-compliance with rules, orders, or state statutes?

☐ Yes* ☒ No

*Attach copies of any correspondence with the applicable regulatory agency concerning any enforcement actions, and attach a description of any actions or efforts the Applicant has taken to comply with these requirements.

17. Explain how the environmental integrity of the land will or will not be impacted or disrupted as a result of granting the CCN as requested:

The environmental integrity of the land will be improved with meaningful and planned central water service that includes fire flow.

18. Has the Applicant made efforts to extend retail water or sewer utility service to any economically distressed area located within the requested area?

The City of Midlothian does not discriminate service to any appropriate applicant.

19. List all neighboring water or sewer retail public utilities, cities, districts (including ground water conservation districts), counties, or other political subdivisions (including river authorities) providing the same service located within two (2) miles from the outer boundary of the requested area:

Sardis Lone Elm WSC
Mt. Peak SUD
Prairie Lands GCD
Trinity River Authority
Ellis County

Part D: TCEQ Public Water System or Sewer (Wastewater) Information

20. A. Complete the following for **all** Public Water Systems (PWS) associated with the Applicant's CCN:

TCEQ PWS ID:	Name of PWS:	Date of TCEQ inspection*:	Subdivisions served:
TX0700005	City of Midlothian, Texas	1/23/2020	Corporate limits, ETJ
	Inspection, Attachment 4		

*Attach evidence of compliance with TCEQ for each PWS

B. Complete the following for **all** TCEQ Water Quality (WQ) discharge permits associated with the Applicant's CCN:

TCEQ Discharge Permit No:	Date Permit expires:	Date of TCEQ inspection*:	Subdivisions served:
WQ-			
WQ-			
WQ-			
WQ-			

*Attach evidence of compliance with TCEQ for each Discharge Permit

C. The requested CCN service area will be served via: PWS ID: TX0700005
WQ -

21. List the number of ***existing*** connections for the PWS & Discharge Permit indicated above (Question 20. C.):

Water				Sewer	
	Non-metered	203	2"		Residential
5,641	5/8" or 3/4"	38	3"		Commercial
245	1"	12	4"		Industrial
26	1 ½"	26	Other		Other
	Total Water Connections:		6,191	Total Sewer Connections:	

22. List the number of ***additional*** connections projected for the requested CCN area:

Water				Sewer	
	Non-metered		2"		Residential
200	5/8" or 3/4"		3"		Commercial
	1"	1	4"		Industrial
	1 ½"		Other		Other
	Total Water Connections:		201	Total Sewer Connections:	

23. **A.** Will the system serving the requested area purchase water or sewer treatment capacity from another source?

☒ Yes* ☐ No *Attach a copy of purchase agreement or contract. See Attachment 5

Capacity is purchased from:

Water: Tarrant Regional Water District

Sewer: _____

B. Are any of the Applicants PWS's required to purchase water to meet the TCEQ's minimum capacity requirements or TCEQ's drinking water standards?

☒ Yes ☐ No

C. What is the amount of supply or treatment purchased, per the agreement or contract? What is the percent of overall demand supplied by purchased water or sewer treatment (if any)?

	Amount in Gallons /day	**Percent of demand**
Water:	12,200,000	100%
Sewer:		0%

24. Does the PWS or sewer treatment plant have adequate capacity to meet the current and projected demands in the requested area?

☒ Yes ☐ No

25. List the name, class, and TCEQ license number of the operators that will be responsible for the operations of the water or sewer utility service provided to the requested area:

Name (as it appears on license)	**Class**	**License No.**	**Water/Sewer**
See Attachment			
See Attachment 6			

26. **A.** Are any improvements required for the existing PWS or sewer treatment plant to meet TCEQ or Commission standards?

☐ Yes ☒ No

B. Provide details on each required major capital improvement necessary to correct deficiencies to meet the TCEQ or Commission standards (attach any engineering reports or TCEQ approval letters):

Description of the Capital Improvement:	**Estimated Completion Date:**	**Estimated Cost:**

27. Provide a map (or maps) showing all facilities for production, transmission, and distribution, and the location of existing or proposed customer connections, in the requested area. Facilities should be identified on subdivision plats, engineering planning maps, or other large scale maps. Color coding can be used, and is encouraged, to distinguish types of facilities.

See Attachment 7

Part E: Financial Information

28. If the Applicant seeking to obtain a CCN for the first time is an Investor Owned Utility (IOU) and under the original rate jurisdiction of the Commission, a proposed tariff must be attached to the application. The proposed rates must be supported by a rate study, which provides all calculations and assumptions made. Once a CCN is granted, the Applicant must submit a rate filing package with the Commission within 18 months from the date service begins. The purpose of this rate filing package is to revise a utility's tariff to adjust the rates to a historic test year and to true up the new tariff rates to the historic test year. It is the Applicant's responsibility in any future rate proceeding to provide written evidence and support for the original cost and installation date of all facilities used and useful for providing utility service. Any dollar amount collected under the rates charged during the test year in excess of the revenue requirement established by the Commission during the rate change proceeding shall be reflected as customer contributed capital going forward as an offset to rate base for ratemaking purposes.

29. If the Applicant is an existing IOU, please attach a copy of the current tariff and indicate:

A. Effective date for most recent rates: _____

B. Was notice of this increase provided to the Commission or a predecessor regulatory authority?

☐ No ☐ Yes Application or Docket Number: _____

C. If notice was not provided to the Commission, please explain why (ex: rates are under the jurisdiction of a municipality)

If the Applicant is a Water Supply or Sewer Service Corporation (WSC/SSC) and seeking to obtain a CCN, attach a copy of the current tariff.

30. **Financial Information**

Applicants must provide accounting information typically included within a balance sheet, income statement, and statement of cash flows. If the Applicant is an existing retail public utility, this must include historical financial information and projected financial information. However, projected financial information is only required if the Applicant proposes new service connections and new investment in plant, or if requested by Commission Staff. If the Applicant is a new market entrant and does not have its own historical balance sheet, income statement, and statement of cash flows information, then the Applicant should establish a five-year projection.

Historical Financial Information may be shown by providing any combination of the following that includes necessary information found in a balance sheet, income statement, and statement of cash flows:

See Attachment 8

1. Completed Appendix A;
2. Documentation that includes all of the information required in Appendix A in a concise format; or
3. Audited financial statements issued within 18 months of the application filing date. This may be provided electronically by providing a uniform resource locator (URL) or a link to a website portal.

Projected Financial Information may be shown by providing any of the following:

1. Completed Appendix B;
2. Documentation that includes all of the information required in Appendix B in a concise format;
3. A detailed budget or capital improvement plan, which indicates sources and uses of funds required, including improvements to the system being transferred; or
4. A recent budget and capital improvements plan that includes information needed for analysis of the operations test for the system being transferred and any operations combined with the system. This may be provided electronically by providing a uniform resource locator (URL) or a link to a website portal.

31. Attach a disclosure of any affiliated interest or affiliate. Include a description of the business relationship between all affiliated interests and the Applicant.

DO NOT INCLUDE ATTACHMENTS A OR B IF LEFT BLANK

Part F: Mapping & Affidavits

32. Provide the following mapping information with each of the seven (7) copies of the application:

1. A general location (small scale) map identifying the requested area in reference to the nearest county boundary, city, or town. The Applicant should adhere to the following guidance: See Attachment 10

- **i.** If the application includes an amendment for both water and sewer certificated service areas, separate maps must be provided for each.
- **ii.** A hand drawn map, graphic, or diagram of the requested area is not considered an acceptable mapping document.
- **iii.** To maintain the integrity of the scale and quality of the map, copies must be exact duplicates of the original map. Therefore, copies of maps cannot be reduced or enlarged from the original map, or in black and white if the original map is in color.

2. A detailed (large scale) map identifying the requested area in reference to verifiable man-made or natural landmarks such as roads, rivers, and railroads. The Applicant should adhere to the following guidance: See Attachment 11

- **i.** The map should be clearly labeled and the outer boundary of the requested area should be marked in reference to the verifiable man-made or natural landmarks. These verifiable man-made and/or natural landmarks must be labeled and marked on the map as well.
- **ii.** If the application includes an amendment for both water and sewer certificated service area, separate maps need to be provided for each.
- **iii.** To maintain the integrity of the scale and quality of the map, copies must be exact duplicates of the original map. Therefore, copies of maps cannot be reduced or enlarged from the original map, or in black and white if the original map is in color.

3. One of the following identifying the requested area:

- **i.** A metes and bounds survey sealed or embossed by either a licensed state land surveyor or a registered professional land surveyor. Please refer to the mapping guidance in part 2 (above);

ii. A recorded plat. If the plat does not provide sufficient detail, Staff may request additional mapping information. Please refer to the mapping guidance in part 2 (above); or

iii. Digital mapping data in a shapefile (SHP) format georeferenced in either NAD 83 Texas State Plane Coordinate System (US Feet) or in NAD 83 Texas Statewide Mapping System (Meters). The digital mapping data shall include a single, continuous polygon record. The following guidance should be adhered to:

a. The digital mapping data must correspond to the same requested area as shown on the general location and detailed maps. The requested area must be clearly labeled as either the water or sewer requested area.

b. A shapefile should include six files (.dbf, .shp, .shx, .sbx, .sbn, and the projection (.prj) file). Attachment 12

c. The digital mapping data shall be filed on a data disk (CD or USB drives), clearly labeled, and filed with Central Records. Seven (7) copies of the digital mapping data is also required.

Part G: Notice Information

The following information will be used to generate the proposed notice for the application.
DO NOT provide notice until the application is deemed sufficient for filing and the Applicant is ordered to provide notice.

33. Complete the following using verifiable man-made and/or natural landmarks such as roads, rivers, or railroads to describe the requested area (to be stated in the notice documents). Measurements should be approximated from the outermost boundary of the requested area:

The total acreage of the requested area is approximately: 53

Number of customer connections in the requested area: 201

The closest city or town: Midlothian

Approximate mileage to closest city or town center: 0

Direction to closest city or town: 0

The requested area is generally bounded on the North by: Mt. Zion Road

on the East by: Mt. Zion Road

on the South by: SCS Reservoir No. 5

on the West by: South 114th Street

34. A copy of the proposed map will be available at City Hall, Midlothian, Texas

Applicant's Oath

STATE OF Texas

COUNTY OF Ellis

I, Chris Dick being duly sworn, file this application to obtain or amend a water or sewer CCN, as City Manager, City of Midlothian
(owner, member of partnership, title as officer of corporation, or authorized representative)

I attest that, in such capacity, I am qualified and authorized to file and verify such application, am personally familiar with the documents filed with this application, and have complied with all the requirements contained in the application; and, that all such statements made and matters set forth therein with respect to Applicant are true and correct. Statements about other parties are made on information and belief. I further state that the application is made in good faith and that this application does not duplicate any filing presently before the Commission.

I further represent that the application form has not been changed, altered, or amended from its original form.
I further represent that the Applicant will provide continuous and adequate service to all customers and qualified applicants within its certificated service area should its request to obtain or amend its CCN be granted.

CITY OF MIDLOTHIAN, TEXAS

AFFIANT
(Utility's Authorized Representative)

If the Affiant to this form is any person other than the sole owner, partner, officer of the Applicant, or its attorney, a properly verified Power of Attorney must be enclosed.

SUBSCRIBED AND SWORN BEFORE ME, a Notary Public in and for the State of Texas
this day the 2nd **of** March , 2021

SEAL

MARY MCDONALD
Notary Public, State of Texas
Comm. Expires 06 10 2023
Notary ID 128644172

Mary McDonald
NOTARY PUBLIC IN AND FOR THE STATE OF TEXAS

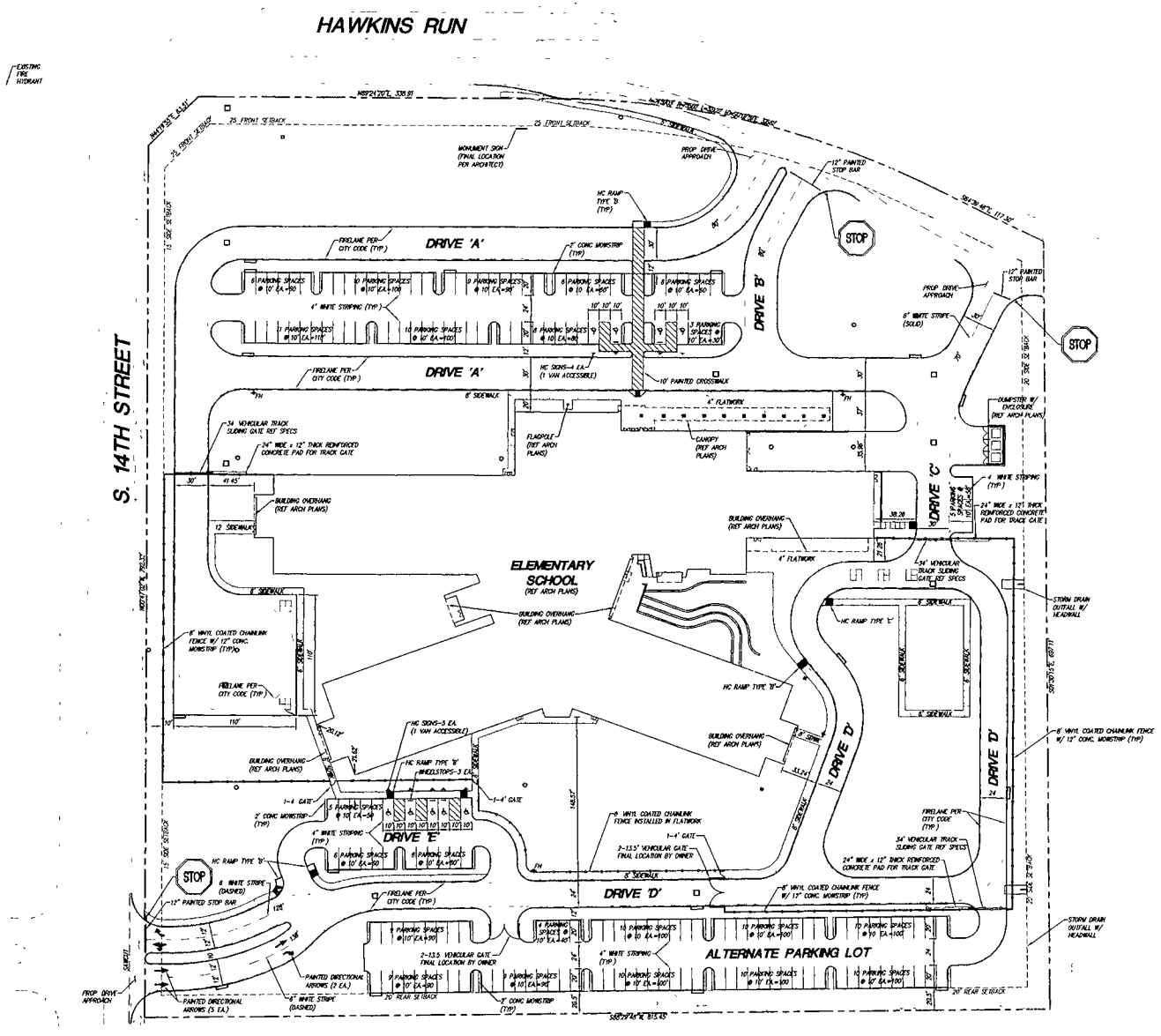
Mary McDonald
PRINT OR TYPE NAME OF NOTARY

My commission expires: 06/10/2023

Attachment Index

1. Midlothian ISD School Plan
2. Growth Studies, CIP, Thoroughfare Plan
3. TCEQ Approval Letters
4. Compliance Inspection
5. Tarrant Regional Water District Contract and Amendment
6. Operator List
7. Facilities Map
8. Comprehensive Financial Audit
9. Service Agreement Mt. Peak SUD
10. Small Scale Map
11. Large Scale Map
12. Digital Data

1. Midlothian ISD School Plan



BUILDING/PARKING DATA	
EXISTING BUILDING AREA	XXX,XXX SF
PROPOSED BUILDING AREA	XX,XXX SF
TOTAL BUILDING AREA	XXX,XXX SF
REQ. PARKING SPACES X SPACE PER XX STUDENTS	
X,XXX STUDENTS/XX = XX REQUIRED	
EXISTING PARKING	XXX
EXISTING PARKING TO REMAIN	XXX
PROPOSED PARKING	XX
TOTAL PARKING:	XXX

BICYCLE DATA	
EST. MAX. EMPLOYEE PARKING	XXX
REQUIRED BICYCLE PARKING XXX SPACES x XX% = X	
BICYCLE RACKS PROVIDED	X

LOT REQUIREMENTS	
MINIMUM FRONT YARD	25 FEET
MINIMUM SIDE YARD (STREET/NONRESIDENTIAL/RESIDENTIAL)	15/10/20 FEET
MINIMUM REAR YARD (NONRESIDENTIAL/RESIDENTIAL)	10/20 FEET

SITE PLAN

FOR

MIDLOTHIAN ELEMENTARY SCHOOL
MIDLOTHIAN INDEPENDENT SCHOOL DISTRICT

DATE PREPARED
OCTOBER 2020

LOCATION ADDRESS
600 HAWKINS RUN DRIVE
MIDLOTHIAN, TEXAS 76065

OWNER/APPLICANT
MIDLOTHIAN I.S.D.
100 WALTER STEPHENSON RD
MIDLOTHIAN, TEXAS 76065
PHONE 469 856 5000

ENGINEER
TEAGUE NALL & PERKINS, INC.
5237 N RIVERSIDE DRIVE, SUITE 100
FORT WORTH, TEXAS 76137
817 336 5773
CONTACT: PHILIP C. VARUGHESE, P.E.

tnp

GRAPHIC SCALE
40 0 20 40 80
GRAPHIC SCALE 1" = 40

TNP PROJECT NO. VLK20368
TBPELS: ENGR F-230; SURV 10018600, 10018601, 10194381
GBPE: PEF007431; TBAE: BR 2673

VLK|ARCHITECTS

ARCHITECT
VLK Architects, Inc
5801 Tennyson Pkwy Suite 100
Plano, Texas 75024
Main Phone: 972.455.1845
www.vlkarchitects.com

CIVIL ENGINEER
Teague Nall & Perkins Inc
5237 N. Riverside Drive Suite 100
Fort Worth, Texas 76137
Main Phone: 817.336.5773
www.tnpinc.com

LANDSCAPE DESIGNER
Teague Nall & Perkins Inc
5237 N. Riverside Drive Suite 100
Fort Worth, Texas 76137
Main Phone: 817.336.5773
www.tnpinc.com

90% CONSTRUCTION DOCUMENTS

This document is for interim review and is not intended for construction, bidding or permit purposes.

PHILIP C. VARUGHESE, P.E. Date: [illegible]
Lic. Reg. # 114584

ISSUED January 21 2021

REVISIONS

Revision No.	Revision Date

Director	Drawn By
RER	TNP
Designer	Quality Control
JS	QC
Proj. Arch	
ARM	

PROJECT NO.
20-057 00

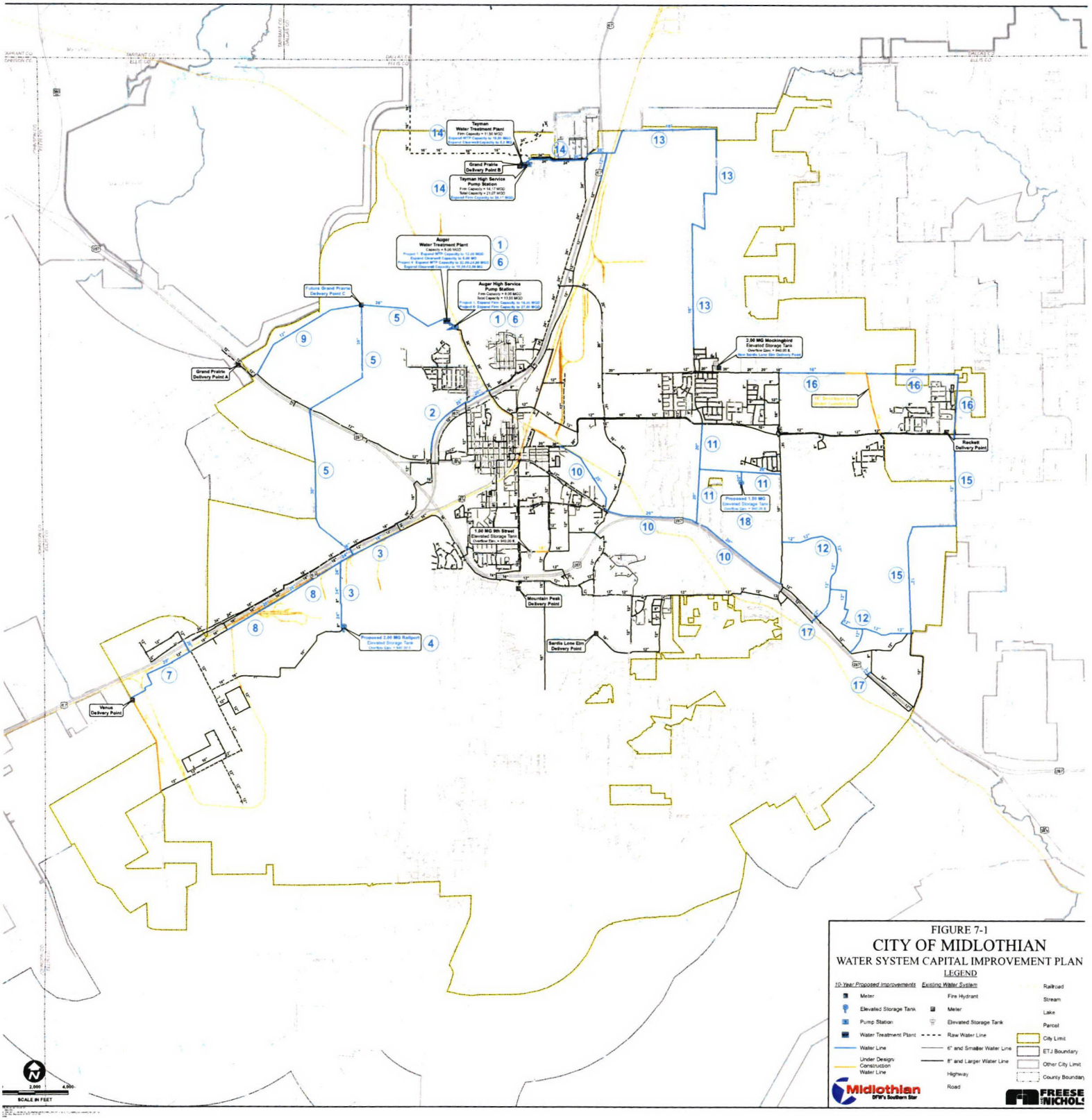
SHEET TITLE
SITE PLAN

SHEET NO.
C1.04

MIDLOTHIAN ISD
MIDLOTHIAN, TEXAS

Elementary School No. 8

2. Growth Studies, CIP, Thoroughfare Plan


Teyman
Water Treatment Plant
Grand Prairie
Delivery Point B
Teyman High Service
Pump Station
Auger
Water Treatment Plant
Auger High Service
Pump Station
Future Grand Prairie
Delivery Point C
Grand Prairie
Delivery Point A
2.00 MG Mockingbird
Elevated Storage Tank
Rockett
Delivery Point
Proposed 1.00 MG
Elevated Storage Tank
1.00 MG 9th Street
Elevated Storage Tank
Mountain Peak
Delivery Point
Proposed 2.00 MG Railport
Elevated Storage Tank
Sardis Lone Elm
Delivery Point
Venus
Delivery Point
2,000
4,000
SCALE IN FEET
FIGURE 7-1
CITY OF MIDLOTHIAN
WATER SYSTEM CAPITAL IMPROVEMENT PLAN
LEGEND
10-Year Proposed Improvements
Existing Water System
Meter
Elevated Storage Tank
Pump Station
Water Treatment Plant
Water Line
Under Design/
Construction
Water Line
Fire Hydrant
Meter
Elevated Storage Tank
Raw Water Line
6" and Smaller Water Line
8" and Larger Water Line
Highway
Road
Railroad
Stream
Lake
Parcel
City Limit
ETJ Boundary
Other City Limit
County Boundary
Midlothian
DFW's Southern Star
FREESE
NICHOLS

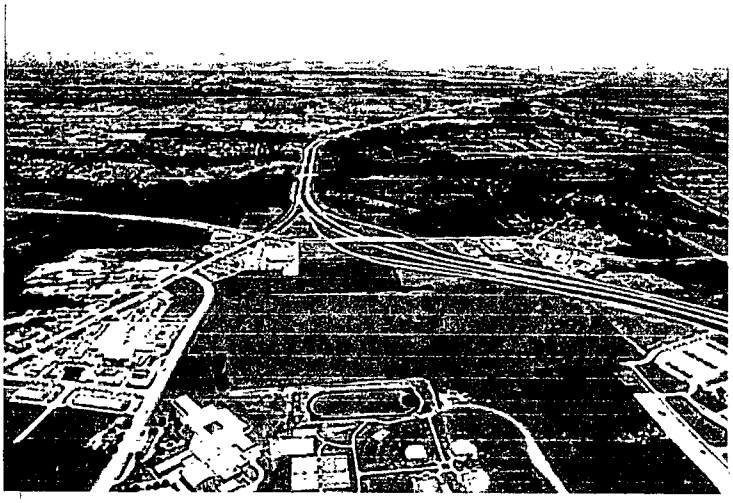
City of Midlothian

10/10/2020
Third Quarter Report
July 1—Sept. 30

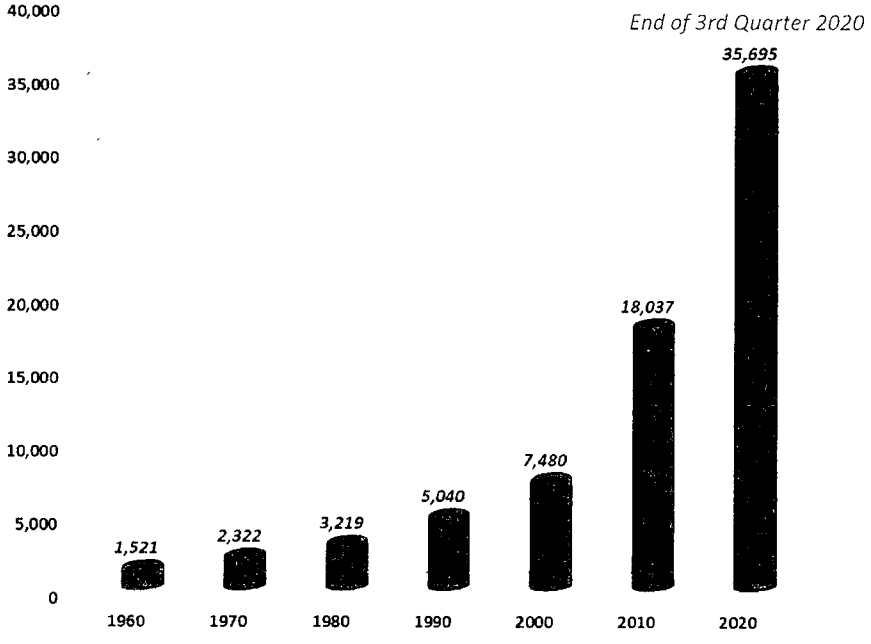
*Population**

January 1, 2017 - 25,419
January 1, 2018 - 30,814
January 1, 2019 - 32,603
January 1, 2020 - 34,339

End of 2020 Third Quarter : 35,695



Population Trend



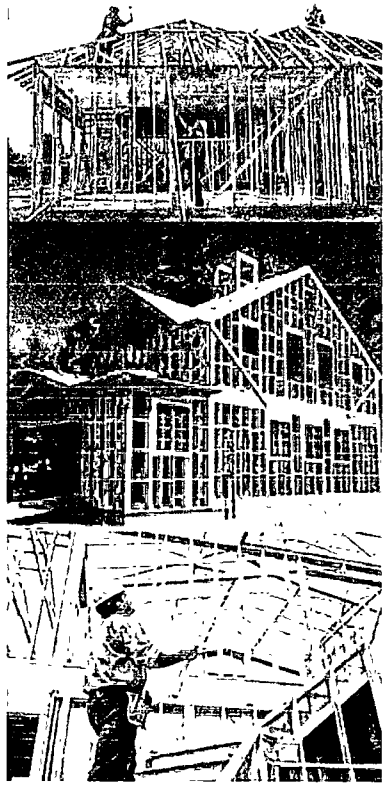
First Quarter	January 1—March 31
Second Quarter	April 1—June 30
Third Quarter	July 1—September 30
Fourth Quarter	October 1—December 31

* Population growth estimated using the number of net new dwelling units added to housing stock and average occupancy rate/household size.

Quarterly Permitting Activity

Third Quarter 2020

TYPE	PERMITS (3rd QTR)	PERMITS (YTD)
RESIDENTIAL		
New Construction		
Single Family *(Attached & Detached)*	151	413
Additions/Remodels	62	146
TOTAL	**213**	**559**
NON-RESIDENTIAL		
New Construction	0	5
Additions/Remodels	7	22
Other (Shell Building)	7	7
TOTAL	**14**	**34**



New Single-Family Dwelling Units

(Detached Only)

	SQUARE FOOTAGE
3Q19 4th Quarter	2,803
2020 1st Quarter	2,673
2nd Quarter	2,633
3rd Quarter	**2,701**

New & Existing Single-Family Units

(Attached & Detached)

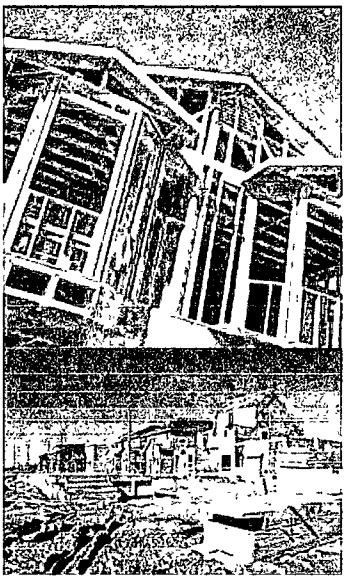
SALE VALUE *(Estimate)*
$326,166
$320,945
$331,890
$340,242

Notes:

1. *Sale Value based on the Texas REALTOR Data Relevance Project (MLS, Real Estate Center at Texas A&M, and Texas Association of Realtors)*

Housing Units Completed City-Wide*

Quarterly from Fourth Qtr. 2019 to Present



		SINGLE FAMILY	MULTI-FAMILY
Fourth Quarter	2019	96	5 (buildings) - 118 units
First Quarter	2020	121	1 (buildings) - 154 units
Second Quarter	2020	94	0
Third Quarter	2020	144	0
	TOTAL	**455**	**6 (buildings) - 272 units**

* Units that received a Residential Certificate of Occupancy (RCO)

New Development Activity:

Data Center located in RailPort along Railport Parkway

Google

Along US-287 adjacent to Presidential Parkway

BaylorScott&White HEALTH

On the southwest corner of Harvest Hill Dr. and Reindeer Dr.

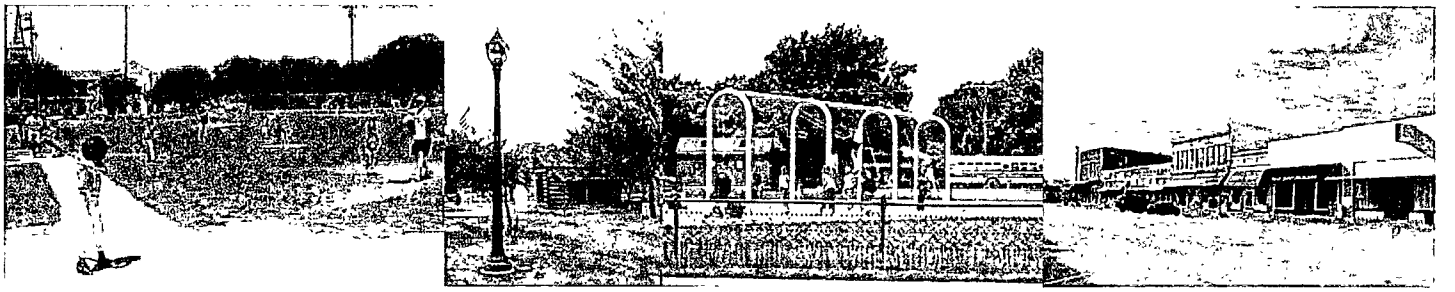
ALDI

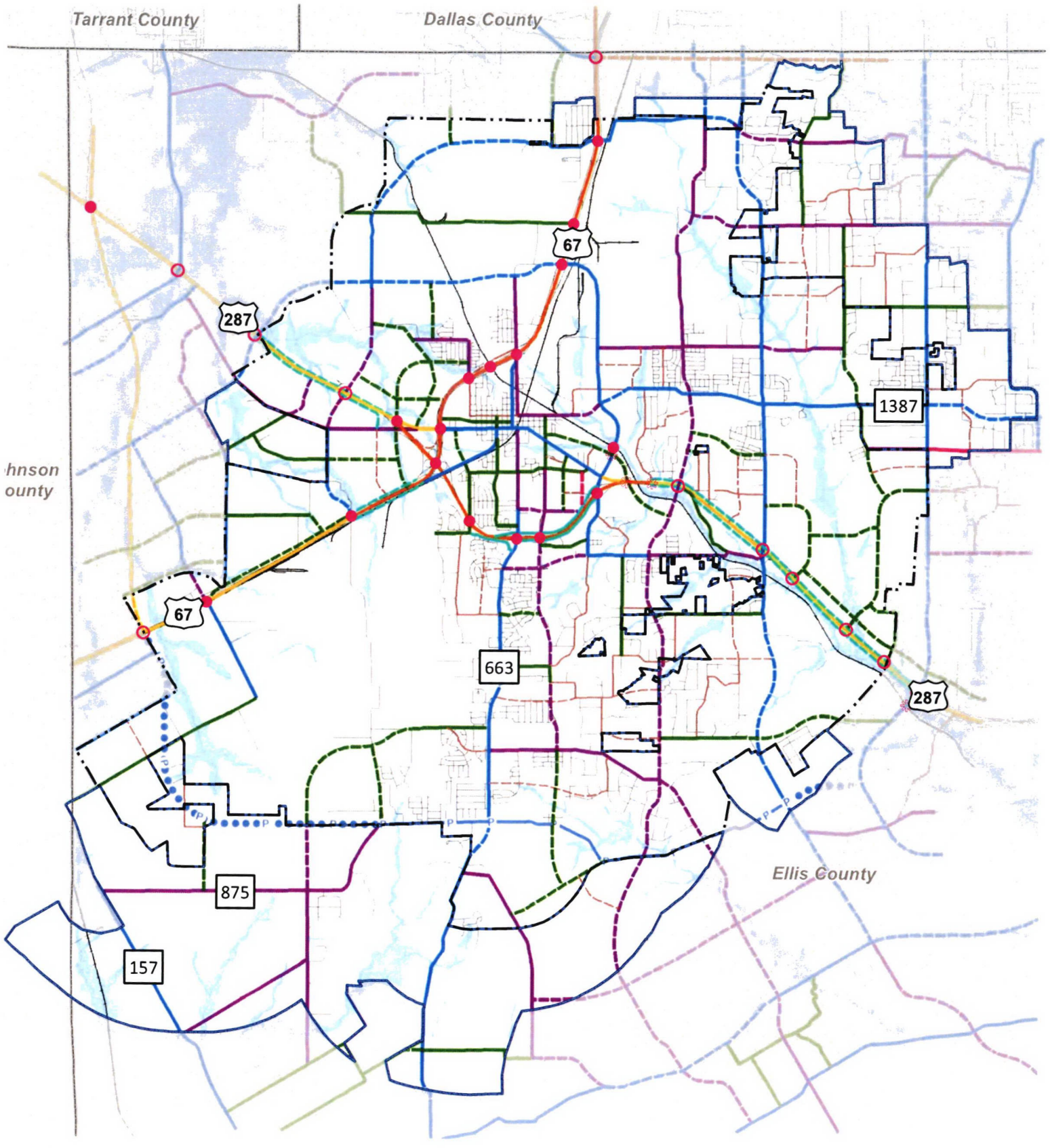
BURGER KING

BANK OF AMERICA

Along US-287 adjacent to the Midlothian ISD Multi-Purpose Stadium

Methodist HEALTH SYSTEM





Midlothian
DFW's Southern Star

Thoroughfare Plan

- Existing Grade Separation
- Proposed Interchange
- Proposed Grade Separation
- Existing Freeway
- Proposed Freeway
- Existing Highway
- Proposed Highway
- Existing Major Thoroughfare/Arterial (120' ROW)
- Proposed Major Thoroughfare/Arterial (120' ROW)
- Existing Rural Parkway (150' ROW)
- Proposed Rural Parkway (150' ROW)
- Existing Minor Thoroughfare/Arterial (90' ROW)
- Proposed Minor Thoroughfare/Arterial (90' ROW)
- Existing Major Collector (80' ROW)
- Proposed Major Collector (80' ROW)
- Proposed Minor Collector B (70' ROW)
- Existing Minor Collector B (70' ROW)
- Existing Service Road (60' ROW-min)
- Proposed Service Road (60' ROW-min)
- Existing Minor Collector (60' ROW)
- Proposed Minor Collector (60' ROW)
- City Limit
- ETJ
- CountyRegion
- 100 Year Flood Zone (2013)
- Railroad
- Streams

N

1.5 Miles

FREESE NICHOLS

3. TCEQ Approval Letters

PWS_0700005_CO_20200114_Plan Ltr

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

January 14, 2020

RECEIVED at FRONT DESK

Mr. James Naylor, P.E.
Freese & Nichols, Inc.
2711 North Haskell Avenue, Suite 3300
Dallas, TX 75204

CITY OF MIDLOTHIAN, TEXAS

Re: City of Midlothian - Public Water System ID No. 0700005
Proposed High Service Pump Station Expansion
Engineer Contact Telephone: (214) 214-2223
Plan Review Log No. P-11082019-064
Ellis County, Texas

CN: 600488373; RN: 101398212

Dear Mr. Naylor:

On November 8, 2019, the Texas Commission on Environmental Quality (TCEQ) received planning material with your letter dated November 7, 2019 for the proposed high service pump station expansion. Based on our review of the information submitted, the project generally meets the minimum requirements of Title 30 Texas Administrative Code (TAC) Chapter 290 - Rules and Regulations for Public Water Systems and is **approved for construction**.

The submittal consisted of 25 sheets of engineering drawings and technical specifications. The approved project consists of:

- Two (2) 3,125 gallons per minute service vertical turbine pumps; and,
- Various yard piping, valves, fittings and related appurtenances.

This approval is for the construction of the above listed items only. Any wastewater components contained in this design were not considered.

The City of Midlothian public water supply system provides water treatment.

The project is located 1,900 feet north of the intersection of Yukon Drive and Sabine Drive in Ellis County, Texas.

An appointed engineer must notify the TCEQ's Region 4 Office in Dallas/Fort Worth at (817) 588-5800 when construction will start. Please keep in mind that upon completion of the water works project, the engineer or owner will notify the commission's Water Supply Division, in writing, as to its completion and attest to the fact that the completed work is substantially in accordance with the plans and change orders on file with the commission as required in 30 TAC §290.39(h)(3).

Please refer to the Plan Review Team's Log No. **P-11082019-064** in all correspondence for this project.

Please complete a copy of the most current Public Water System Plan Review Submittal form for any future submittals to TCEQ. Every blank on the form must be completed to minimize any delays in the review of your project. The document is available on TCEQ's website at the address shown below. You can also download the most current plan submittal checklists and forms from the same address.

https://www.tceq.texas.gov/drinkingwater/udpubs.html

For future reference, you can review part of the Plan Review Team's database to see if we have received your project. This is available on TCEQ's website at the following address:

https://www.tceq.texas.gov/drinkingwater/planrev.html/#status

You can download the latest revision of 30 TAC Chapter 290 - Rules and Regulations for Public Water Systems from this site.

If you have any questions concerning this letter or need further assistance, please contact Mr. Craig Stowell at (512) 239-4633 or by email at craig.stowell@tceq.texas.gov or by correspondence at the following address:

Plan Review Team, MC-159
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Sincerely,

Craig A. Stowell, P.E.
Plan Review Team
Plan and Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

Vera Poe, P.E., Team Leader
Plan Review Team
Plan and Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

VP/CAS/sg

cc: City of Midlothian, Attn: Mr. Richard Reno, 104 West Avenue East, Midlothian, TX 76065-2901

PWS_0700005_CO_20200117_Plan Ltr

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

January 17, 2020

RECEIVED at FRONT DESK

Mr. James L. Naylor, P.E.
Freese & Nichols, Inc.
2711 North Haskell Avenue
Dallas, TX 75204

Re: City of Midlothian - Public Water System ID No. 0700005
Proposed Auger Water Treatment Plant (WTP) Modifications
Engineer Contact Telephone: (214) 214-2223
Plan Review Log No. P-11082019-063
Ellis County, Texas

CITY OF MIDLOTHIAN, TEXAS

CN600488373; RN101398212

Dear Mr. Naylor:

On November 8, 2019, the Texas Commission on Environmental Quality (TCEQ) received planning material with your letter dated November 8, 2019 for the proposed Auger WTP modifications. Based on our review of the information submitted, the project generally meets the minimum requirements of Title 30 Texas Administrative Code (TAC) Chapter 290 - Rules and Regulations for Public Water Systems and is **conditionally approved for construction** if the project plans and specifications meet the following requirement(s):

1. Approval is subject to all requirements and conditions of TCEQ letters dated February 12, 2013; July 11, 2012; and January 13, 2010 (enclosed) concerning use of microfiltration;

2. Upon reaching 90-percent completion of construction, a revised disinfectant contact time (CT) study must be submitted which addresses any approved change orders and as-built dimensions for TCEQ review and approval as specified in 30 TAC §290.111(d)(2)(B). TCEQ approval of the revised CT study must be received prior to placing the expanded facilities into production.

3. Plan submittal details modifications that include the addition of two sets of inclined plate settlers to be installed in the two existing sedimentation basins. Plate settlers are required to have a surface overflow rate exception prior to receiving log removal credits. These are typically done with a full-scale verification study (plate settlers already installed). Currently the WTP receives a 0.5 log Giardia removal credit for conventional pretreatment. When the plate settlers are installed, they will lose the 0.5 log credit unless an exception is granted. Please contact the TCEQ Technical Review and Oversight Team for guidance for obtaining a surface overflow rate exception for the use of plate settlers. It appears the WTP receives enough credit with the membranes alone. Please ensure proper log removal credits are received during construction and during full scale verification study of the plate settlers.

Written exception request must be submitted to the TCEQ's Technical Review and Oversight Team (TROT) at the following address:

Technical Review and Oversight Team, MC-159
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

For information about the exception process, please go to the URL below:

http://www.tceq.texas.gov/drinkingwater/trot/exception

Please note that an "Exception Request Form" must be completed for all exception submittals.

If after you have reviewed the information available at the webpage above you have a question regarding the exception process, please call (512) 239-4691 and ask to speak to a member of the TROT about exceptions.

The rated net capacity of each *Siemens Memcor® L20N* membrane module is 16,878.87 GPD per 375 square foot module at 20 degrees Celsius with a rated plant capacity of 12.15 MGD based on a total of 720 modules.

The submittal consisted of 66 sheets of engineering drawings and technical specifications. The approved project consists of:

- Two (2) additional membrane trains each with 120 *Siemens Memcor®* L20N membrane modules per unit. This will add an additional 240 modules to the 480 existing modules, for a total of 720 modules;
- One (1) additional 3,822 gallon per minute (gpm) variable drive frequency vertical turbine membrane feed pump. This will make 4 pumps total with a capacity of 22 MGD total with a firm capacity of 16.5 MGD;
- One (1) 250-micron self-cleaning strainer. This will make a total of 3 strainers;
- Two (2) inclined plate settler units (55 degrees) in the existing sedimentation basins with a design flow of 6.0 MGD per unit, and an SOR of 3.0 gallons per minute per square foot;
- One (1) 1,800-gallon tank with heater and transfer pump for existing Clean in Place (CIP) system;
- One (1) 20,000-gallon Brine storage tank with secondary containment; and,
- Various yard piping, valves, fittings and related appurtenances.

This approval is for the construction of the above listed items only. Any wastewater components contained in this design were not considered.

The City of Midlothian public water supply system provides water treatment.

The project is located 1,900 feet north of the intersection of Yukon Drive and Sabine Drive in Ellis County, Texas.

An appointed engineer must notify the TCEQ's Region 4 Office in Dallas/Fort Worth at (817) 588-5800 when construction will start. Please keep in mind that upon completion of the water works project, the engineer or owner will notify the commission's Water Supply Division, in writing, as to its completion and attest to the fact that the completed work is substantially in accordance with the plans and change orders on file with the commission as required in 30 TAC §290.39(h)(3).

Please refer to the Plan Review Team's Log No. **P-11082019-063** in all correspondence for this project.

Please complete a copy of the most current Public Water System Plan Review Submittal form for any future submittals to TCEQ. Every blank on the form must be completed to minimize any delays in the review of your project. The document is available on TCEQ's website at the address shown below. You can also download the most current plan submittal checklists and forms from the same address.

https://www.tceq.texas.gov/drinkingwater/udpubs.html

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https://www.tceq.texas.gov/drinkingwater/planrev.html/#status

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If you have any questions concerning this letter or need further assistance, please contact Mr. Craig Stowell at (512) 239-4633 or by email at craig.stowell@tceq.texas.gov or by correspondence at the following address:

Plan Review Team, MC-159
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Sincerely,

Craig A. Stowell, P.E.
Plan Review Team
Plan and Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

Vera Poe, P.E., Team Leader
Plan Review Team
Plan and Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

VP/CAS/faSS

Enclosures TCEQ letters dated February 12, 2013; July 11, 2012; and January 13, 2010

cc: City of Midlothian, Attn: Mr. Richard Reno, 104 West Avenue East, Midlothian, TX 76065-2901

File PWS 0700005/CO
RN 101398212
CN 600488373

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

December 7, 2009

Mr. Bryant Caswell, P.E.
Schrickel, Rollins and Associates, Inc.
1161 Corporate Drive West, Suite 200
Arlington, Texas 76006

Subject: Hollow-Fiber (HF) Microfiltration (MF) Membrane Pilot Study Report
City of Midlothian - PWS ID # 0700005
Ellis County, Texas

Dear Mr. Caswell:

We have reviewed your letter dated August 28, 2009, and the referenced Low-Pressure Membrane Pilot Study Results (Report) dated July 25, 2007. Based on our previous evaluations of this Report, the Texas Commission on Environmental Quality (TCEQ) approved the **Siemens Water Technologies Memcor® XS HF MF membrane system** for the City of Waxahachie (in our letter dated May 30, 2007) and approved the **Pall HF MF Membrane Pilot System (Settled Water with Full Pretreatment)** for the City of Fort Worth (in our letter dated May 27, 2008). Your letter states the City of Midlothian (City) is requesting an exception to §290.42(g) to design and build a membrane water treatment plant (WTP). The City has acquired 18 MGD of water rights from the Tarrant Regional Water District (TRWD). The water supply is available through the TRWD's water lines that cross the City's site for the plant. The current project involves a 9-MGD WTP, expandable to 18 MGD, with the proposed treatment to include a membrane filtration process preceded by a pretreatment train comprised of the following elements:

- Chlorine dioxide added to raw water
- Rapid mix of aluminum sulfate
- Two-stage flocculation and sedimentation
- Granular activated carbon contactors

Your letter states in 2007 the City participated in the Low-Pressure Membrane Pilot Study conducted by Alan Plummer and Associates, Inc., using the TRWD raw water. As noted in our previous pilot study reviews for the City of Waxahachie and the City of Fort Worth, the raw water sources for the pilot evaluation were the Richland-Chambers and Cedar Creek lakes. The TRWD also receives water from Lake Benbrook; however, due to drought conditions, water from Lake Benbrook was not pumped to the pilot facility during the study. A technical memorandum, dated December 5, 2006, providing comparison data of the raw water quality for the three sources stated that the City of Fort Worth receives the highest amount of Lake Benbrook water due to the City's proximity to this source.

You have requested in your letter approval to begin design that includes a capacity rating for both the Siemens and Pall piloted membrane systems. Although other pilot tests were conducted and documented in the Report with membrane equipment from G.E. Zenon Environmental and G.E. Ionics, this letter will address only the

pilot data for the selected Siemens Corporation and Pall HF MF membrane systems. Based on our review of the Report, we find that the pilot studies are **acceptable** for TCEQ staff to issue capacity ratings.

Siemens Water Technologies Memcor® XS membrane system

Based on 24 hours of continuous operation of the Siemens Memcor® XS test unit, the TCEQ finds that the following piloted operating parameters are **accepted to yield a maximum of 13,480 GPD of filtrate water at 20° C available for use by the City's customers for a 300-sf membrane element:**

- A pretreatment train consisting of chlorine dioxide at 1.4 mg/L to the raw water, chemical induction and rapid mixing with aluminum sulfate (alum) at 50mg/L, three stage flocculation and sedimentation with tube settlers, and granular activated carbon (GAC) contactors;
- A HF MF immersed/vacuum membrane element containing polyvinylidene-flouride fibers approximately 41.3 inches in length with a total feed side surface area of 300-sf per membrane fiber bundle;
- A membrane fiber nominal pore size of 0.04 µm;
- A membrane fiber absolute pore of 0.1 µm;
- Outside to inside flow mode;
- Operation in the dead end mode;
- A maximum transmembrane pressure (TMP) of 12.4 psi;
- Allowable temperature operating range of 1° to 40°C;
- Allowable pH tolerance range of 2 to 10;
- A feed water turbidity operating limit of 100 NTU;
- A maximum instantaneous chlorine tolerance of 1000 ppm;
- A backwash frequency of 30 minutes with a 2.5 minute duration, and a flow rate of 9.9 gpm/module for 15 seconds;
- A chemically enhanced backwash procedure of once every 2 weeks for a duration of 20 minutes followed by a backwash;
- A total of 1,325.9 minutes per day in filtrate mode and 114.1 minutes per day in backwash and maintenance activity;
- A total time of 110.5 minutes of backwash per day yielding a total in-plant consumption of potable water for backwashing of **109.4 GPD per 300 sf membrane module**;
- A minimum chemical CIP frequency of at least 30 days with a total duration of 5 hours; The procedure is comprised of a normal backwash, refill membrane tank with filtrate, recirculation of chemical through membranes, aeration then soaking (repeated 9 times), and two rinse backwashes; Chemicals used during the 2-step CIP procedure: citric acid (2% weight) and sodium hypochlorite (500 ppm);
- An average filtrate flux rate of **49.21 gfd** (temperature corrected to 20° C); and,
- A gross filtrate production of 13,592.38 GPD and an in-plant use of filtrate of 111.60 GPD to yield a **net filtrate of 13,480.78 GPD per 300.0-sf module at 20° C available for customer use.**

Based on our understanding of the submitted Siemens pilot study data in the Report, the **TCEQ would issue a capacity rating of 9.0 MGD for a proposed SWTP design based on 667 Siemens Memcor® XS 10 membrane modules.**

Pall Microsa UNA HF MF Membrane Pilot System (Settled Water with Full Pretreatment):

Based on 24 hours of continuous operation of the Pall HF MF membrane test unit, the TCEQ finds that the following piloted operating parameters are **accepted to yield a maximum of 32,033 GPD of filtrate water at 20° C available for use by the City's customers for a 538-sf membrane element:**

- A pretreatment train consisting of chlorine dioxide at 1.4 mg/L to the raw water, chemical induction and rapid mixing with aluminum sulfate (alum) at 47-50mg/L, flocculation and sedimentation. **In lieu of the use of chlorine dioxide to oxidize iron and manganese, your September 14, 2007 letter proposed the use of ozone for the full-scale Northwest Water Treatment Plant. We have included several conditions for the use of ozone at the full-scale facility in this letter;**
- A HF MF pressure membrane module 79 inches in length and containing PVDF fibers with a total feed side surface area of 538-sf;
- A membrane fiber nominal pore size of 0.1 microns;
- A membrane fiber maximum pore size of 0.2 microns;
- Outside-to-inside flow mode;
- Allowable operating temperature range of 0 to 40° C;
- A 5,000 mg/L chlorine resistance;
- Allowable pH operating range of 1 to 10;
- An allowable feed water turbidity operating limit of 500 NTU;
- A backwash cycle (SASRF) of once every 15 minutes for a duration of 90 seconds;
- A sodium hypochlorite enhanced filtrate maintenance (EFM) wash procedure of once every 24 hours for a duration of 36.5 minutes with a 300 mg/L of NaOCl solution circulated for 30.0 minutes followed by a SASRF for a total filtrate water use of 28.5 gallons per module;
- A total of **1,268.64 minutes per day in filtrate mode** and 171.36 minutes per day in backwash and maintenance wash;
- A minimum chemical CIP frequency of at least 30 days for duration of 4 hours. The CIP uses a heated 1% NaOH and 0.1%NaOCl solution re-circulated through the membranes and filtrate piping for 2 hours. The process is repeated with a citric acid and hydrochloric acid solution;
- An average filtrate flux rate of **70.6 gfd (temperature corrected to 20° C);** and,
- A gross filtrate production of 33,463 GPD and an in-plant use of filtrate of 1,429 GPD to yield a **net filtrate of 32,033 GPD per a 538-sf module at 20° C available for customer use.**

Based on our understanding of the submitted Pall pilot study data in the Report, the **TCEQ would issue a capacity rating of 9.0 MGD for a proposed SWTP design based on 281 Pall HF MF membrane modules.**

TCEQ Capacity Rating:

The TCEQ issues a net capacity rating for MF membrane facilities based on an instantaneous filtrate flux corrected to 20° C. This rating is determined by subtracting the total in-plant use of produced filtrate (such as backwashing the membranes, any "maintenance cleans," EFM, "mini CIP," CEB, soaks, or any other in-plant use) from the gross potential filtrate production when a membrane unit is actually in service for a 24-hour period of operation. The TCEQ understands, and accepts, that an increase in membrane feed water temperature normally results in an increase in the filtrate flux rate and a corresponding increase in potable water available for customer use. A decrease in water temperature will result in a reduction of the filtrate flux rate and a corresponding decrease in potable water available for customer use. This seasonal increase and decrease of water temperatures corresponds to the accepted increase of summer and decrease of winter customer demands. This increased production shall have TCEQ approval provided it does not exceed a temperature-corrected filtrate flux rate based one of the following calculations:

For Siemens Memcor® XS membrane:

$$J_T = J_{20} [1.784 - (0.0575 \times T) + (0.0011 \times T^2) - (10^{-5} \times T^3)]$$

Where: J_T is the filtrate flux rate at the current water temperature
J_{20} is the TCEQ approved filtrate flux rate at 20° C
T is the actual temperature of the water

For Pall Microza® UNA membrane:

$$J_T = J_{20} \times 0.9826 / [(0.0004481 \times (T^2)) - (0.03946 \times T) + 1.5926]$$

Where: J_T is the filtrate flux rate at the current water temperature
J_{20} is the TCEQ approved filtrate flux rate at 20° C
T is the actual temperature of the water

This approval will be revoked any time the seasonal increase and decrease in membrane filtration production results in low distribution pressures or water outages, and the public water system will be required to install additional membranes or develop an additional source of potable water.

Please note that the time out of service required for the various pressure modules to conduct a CIP was not calculated into the above design capacity rating for their membranes. The projection of a CIP once per month per unit was not considered to have a significant impact in overall production. The pilot was conducted with a chemically enhanced backwash procedure of once per day for a duration of 30 minutes. Therefore, the TCEQ shall require this procedure to continue under full-scale operation.

Conditions for Approval:
Based on our review, the TCEQ is **granting** the request for an exception to use HF MF membrane filtration in lieu of gravity multi media filters under the following conditions:

1. Approval from the TCEQ will be necessary prior to the use of any raw water source(s) other than the raw water line of the TRWD. If the City of Midlothian desires to use water from any source other than the raw water line of the TRWD or if the TRWD changes its water source(s), then an additional pilot study will need to be initiated using water from the alternate source(s).

2. The City's operators will be required to monitor each membrane unit in accordance with the PDW Program Guidance titled, Monitoring, Operating and Report Requirements for Membrane Installations.

3. A revised CT study must be submitted for TCEQ review and approval prior to delivery of potable water from any SWTP expansion project to the customers as specified in §290.110(c)

   The granted removal credits for pathogens are based on the TCEQ approval of direct integrity tests and continuous indirect integrity monitoring methods. Removal credits for *Giardia lamblia* cysts and *Cryptosporidium* oocysts will be based on the required continuous indirect integrity monitoring of each HF MF membrane unit's filtrate with a Hach Model FT660 FilterTrak laser turbidimeter, or an acceptable TCEQ alterative. The direct integrity test method must use a test pressure with a resolution to detect at least a 3.0-micron defect in each membrane unit and a sensitivity to verify the required log removal value. With the TCEQ's recent rule revisions, we are now accepting the calculations for determining the pressure level that detects a 3.0-micron defect for each vendor's membrane unit as it is specified in the US EPA's Membrane Filtration Guidance Manual – EPA 815-R-06-009, November 2005. Based on these requirements, data for the TCEQ to review the CT study and for the SWTP operators to complete a required "Membrane Monthly Operating Report" will need to include:

   a) volume of pressurized air (V_{sys}) in each HF MF membrane unit during a direct integrity test;
   b) maximum back pressure (BP_{max}) on each HF MF membrane unit during a direct integrity test;
   c) air-liquid conversion ratio (**ALCR**);
   d) flow of air through the critical breach during a pressure based direct integrity test (Q_{air});
   e) flow of water through the critical breach during filtration (Q_{breach});
   f) design capacity filtrate flow (Q_p);
   g) the P_{test} for each HF membrane unit;

h) smallest rate of pressure decay that can be reliably measured and associated with a known breach during the direct integrity test (ΔP_{test});
i) volumetric concentration factor (**VCF**); and,
j) the upper control limit (**UCL**) for the decay limit that will verify the integrity of the membrane unit and the granted LRV.

In addition, please submit with the revised CT study the following direct integrity test (DIT) calculations as found in the EPA's Membrane Filtration Guidance Manual – EPA 815-R-06-009, November 2005:

a) Provide detailed calculations and supporting documentation for how the reported minimum test pressure (P_{test}) psi of 14.5 psi for the Siemens membrane, or the 29-30 psi for the Pall membrane, used during the pilot study meets the required direct integrity test (DIT) resolution to detect a 3.0 micron defect or larger. The P_{test} must include the back pressure (BP_{max}) from the hydrostatic head pressure on the undrained side of the membrane if the pressure-driven membrane module remains filled with water during the test.

Equation 4.1 (for a 3.0 micron defect): $P_{test} = (0.193 \times \kappa \times \sigma \times \cos\theta) + BP_{max}$

Based on the range of water temperatures encountered, this documentation must demonstrate that the test pressures were adequate for all temperatures. Include the membrane specific pore shape correction factor (κ) and liquid-membrane contact angle (θ).

b) Provide the necessary data and calculations using Section 4.3.1.1 and Equations 4.3 and 4.9 of the US EPA's Membrane Filtration Guidance Manual to verify that the **sensitivity** of the direct integrity tests (DIT) conducted during the pilot study was equal to or greater than the required Log Removal Credit at this time for *Cryptosporidium* oocysts of 2.0-log as specified in Item No. VIII.C.18 of the TCEQ's Review of Pilot Study Reports for Membrane Filtration.

Equation 4.3: $LRV_{DIT} = \log [(Q_p) \div (VCF \times Q_{breach})]$
Equation 4.9: $LRV_{DIT} = \log [(Q_p \times ALCR \times P_{atm}) \div (\Delta P_{test} \times V_{sys} \times VCF)]$

Using Appendix C and Equations 4.6 and 4.8 from US EPA's Membrane Filtration Guidance Manual – EPA 815-R-06-009, November 2005, please provide the air-liquid conversion ratio (**ALCR**) and Q_{air} values to show how Q_{breach} was determined.

Equation 4.6: $Q_{breach} = (Q_{air} \div ALCR)$
Equation 4.8: $Q_{air} = [(\Delta P_{test} \times V_{sys}) \div P_{atm}]$

Use the applicable ALCR equation in Appendix C of the US EPA's Membrane Filtration Guidance Manual – EPA 815-R-06-009, November 2005 that applies to the Pall piloted test unit and proposed full-scale membrane filtration SWTP.

At this time, the TCEQ only requires one direct integrity test per week, after two consecutive 5-minute filtrate readings of 0.10 NTU or greater, and after each CIP procedure with continuous indirect integrity monitoring of each unit's filtrate turbidity levels using the Hach Model FT660 FilterTrak laser turbidimeter, or an acceptable TCEQ alternative. However, these requirements may change for specific membrane filtration SWTPs in the future based on the results of required raw surface water monitoring and any required additional log removal requirements for pathogens. The TCEQ-approved capacity rating for this and other membrane filtration SWTPs may also be revised at that time.

Based on the requirements of the US EPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and TCEQ's newly revised rules, each Texas public water system installing or replacing membranes that are used for microbiological treatment **after April 1, 2012**, can only continue to receive removal credit for *Cryptosporidium* oocysts and *Giardia lamblia* cysts if they meet the specifications in 30 TAC §290.42(g)(3)(A) and §290.111. This will include providing data for

TCEQ review and approval to verify their membrane's Challenge Test Log Removal Value (LRV_{CT}), Non-Destructive Performance Testing (NDPT) method, corresponding Quality Control Release Value (QCRV) and method for the Direct Integrity Test Log Removal Value (LRV_{DIT}) as specified in the US EPA's LT2ESWTR and Membrane Filtration Guidance Manual. It is unclear yet which systems in Texas may be required to provide additional removal of pathogens until the required raw surface water sampling is complete. Without the specific membrane data, the TCEQ may not be able to continue to grant a membrane SWTP the necessary removal credits for *Giardia lamblia* cysts and *Cryptosporidium* oocysts.

TCEQ reviewed these submitted documents for the **Siemens Water Technologies Memcor® XS membrane system** and the **Pall HF_MF Membrane Pilot System** Pilot Studies for the City of Midlothian:

- City of Midlothian Low-Pressure Membrane Pilot Study Results for the Treatment of Settled Water and Direct Filtration with PACl (received September 2, 2009, and dated July 25, 2007);

This letter is **not to be construed as approval to construct** for the proposed membrane filtration facility. This letter is only to address acceptance of the pilot study report and the exception to design for HF membrane filtration in lieu of granular media filters. We have enclosed a revised Public Water System Plan Review Submittal Form. Please complete a copy of this document for every future submittal to the TCEQ for review of improvements to a Public Water System. Every blank on the form must be completed to minimize delays to review your project.

The document is available on our web site at the address shown below. For your reference, you can review part of the TCEQ Utilities Technical Review Team's database to see if we have received your project. This is also available on the TCEQ's homepage on the Internet at this address:

http://www.tceq.state.tx.us/assets/public/permitting/forms/10233.pdf

If you have any questions concerning our evaluation of the pilot study report, or if we may be of further assistance, please contact us at the letterhead's address, or by phone at (512) 239-4729.

Sincerely,

Bill Melville

William R. Melville, P.E.
Technical Review & Oversight Team
Public Drinking Water Section, MC 155
Water Supply Division

Enclosure: Public Water System Plan Review Submittal Form

cc: TCEQ Dallas/Fort Worth Regional Office – R4
Ms. Vera Poe, P.E., Team Leader, TCEQ Utilities Technical Review Team – MC 153
The Honorable Boyce Whatley, Mayor, City of Midlothian, 104 W. Avenue E,
Midlothian, Texas, 76065-2901

PWS/0700005/CO
PWS/0810035/CO

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution
July 11, 2012

REVISED

Mr. Bryant Caswell, P.E.
Schrickel Rollins & Association, Inc.
1161 Corporate Drive West, Suite 200
Arlington, Texas 76006

Re: City of Midlothian - Public Water System ID No. 0700005
Tarrant Regional Water District (TRWD) – PWS ID No. 0810035
Proposed New Surface Water Treatment Plant No. 2
Engineer Contact Telephone: (817) 640-8212
Plan Review Log No. P-01252012-104
Ellis County, Texas

CN600488373 RN101398212

Dear Mr. Caswell:

On December 9, 2011, January 25, 2012, February 12, 2012, March 9, 2012, and March 14, 2012, the Texas Commission on Environmental Quality (TCEQ) received planning material for the proposed surface water treatment plant. The construction of the surface water plant along with the requests for exceptions to the Title 30 Texas Administrative Code (TAC) 290.42(g) have been reviewed separately below.

Engineering Plans and Specifications

The proposed project generally meets the minimum requirements of the TCEQ's Chapter 290 - Rules and Regulations for Public Water Systems and is **conditionally approved for construction** if the project plans and specifications meet the following conditions.

1. A disinfectant concentration time (CT) study for the new surface water treatment plant must be submitted to the TCEQ's Technical Review & Oversight Team (MC159). **We request that you submit this required CT study after reaching 90-percent completion of the project.** This will prevent the approval of incorrect T_{10} times for units that are modified during construction.

2. Prior to installing any new membrane modules and providing water to customers, the EPA Environmental Technology Verification (ETV) third-party challenge testing conducted for the *Siemens Memcor® L20N* must be submitted and approved in writing by the TCEQ.

3. All chemical makeup potable water supply lines must be protected with an air gap or a backflow prevention assembly device as required in Title 30 Texas Administrative Code (TAC) §290.42(d)(2)(C).

4. Upon completion of the water works project, the engineer must notify the TCEQ's Water Supply Division, in writing, as to its completion and attest to the fact that the work has been completed essentially according to the plans and change orders on file with the TCEQ as required in 30 TAC §290.39(h)(3).

Exception to Approved Pilot Study Requirements – Pretreatment Facilities

5. The TCEQ pilot study approval letter dated January 13, 2010, indicates that the membrane pretreatment scheme includes sedimentation with tube settlers and granular activated carbon contactors. The TCEQ received revisions to the pretreatment design on December 9, 2011, requesting approval to remove the granular activated carbon contactors (GAC) and tube settlers as originally approved, and additionally to reduce three flocculation zones to two flocculation zones. **The pretreatment revision to the original exception is granted.**

Exception to Approved Pilot Study Requirements – Membrane Module

6. A *Siemens Memcor® L20V* low pressure membrane module was approved for use by TCEQ in the pilot study review letter dated January 1, 2010, based on a previously approved pilot study using *Siemens Memcor® S10V* membrane modules. On February 1, 2012, the TCEQ received a request to approve a replacement fiber, the *Siemens Memcor® L20N* fiber. Based on our review of the materials submitted, **the replacement fiber revision to the original exception is denied.** Prior to installing any new membrane modules and providing water to customers, the EPA Environmental Technology Verification (ETV) third-party challenge testing conducted for the *Siemens Memcor® L20N* must be submitted and approved in writing by the TCEQ.

Siemens Water Technologies *Memcor® L20V* membrane module

Based on 24 hours of continuous operation of the *Siemens Memcor® XS* test unit, the TCEQ finds that the following piloted operating parameters are **accepted for a *Siemens Memcor® L20V* low pressure membrane module for a maximum of 18,482 gallons per day (gpd) of filtrate water at 20° C available for use by the City's customers for each 410.4 square foot (sf) membrane element:**

- A pretreatment train consisting of chlorine dioxide at 1.4 mg/L to the raw water, chemical induction and rapid mixing with aluminum sulfate (alum) at 50 mg/L, two stage flocculation and sedimentation;
- A HF UF pressure-driven membrane element containing polyvinylidene-fluoride fibers approximately 64.6 inches in length with a total feed side surface area of **410.4** sf per membrane fiber bundle;
- A membrane fiber nominal pore size of 0.04 µm;
- A membrane fiber absolute pore size of 0.1 µm;
- Outside to inside flow mode;
- Operation in the dead end mode;
- A maximum trans-membrane pressure (TMP) of 25 pounds per square inch (psi);
- Allowable temperature operating range of 0.1° to 40°C;

- Allowable cleaning pH tolerance range of 1 to 10.50;
- A feed water turbidity operating limit of 100 Nephelometric Turbidity Unites (NTU);
- A maximum instantaneous chlorine tolerance of 1000 ppm;
- Based on the previously approved pilot study with the *Siemens Memcor® S10V* membrane modules:
    - A backwash frequency of 30 minutes with a 2.5 minute duration, and a flow rate of 9.9 gallons per minute (gpm)/module for 15 seconds;
    - A chemically enhanced backwash procedure of once every 2 weeks for a duration of 20 minutes followed by a backwash;
    - A total of 1,325.9 minutes per day in filtrate mode and 114.1 minutes per day in backwash and maintenance activity;
    - A total time of 110.5 minutes of backwash per day yielding a total in-plant consumption of potable water for backwashing of **109.4 gpd per 3410.4 sf membrane module;**
    - A minimum chemical clean in place (CIP) frequency of at least 30 days with a total duration of 5 hours; The procedure is comprised of a normal backwash, refill membrane tank with filtrate, recirculation of chemical through membranes, aeration then soaking (repeated 9 times), and two rinse backwashes; Chemicals used during the 2-step CIP procedure: citric acid (2% weight) and sodium hypochlorite (500 ppm);
- An average filtrate flux rate of **49.21 gallons per square foot per day (gfd)** (temperature corrected to 20° C); and,
- A gross filtrate production of 18594.38 GPD and an in-plant use of filtrate of 111.6 GPD to yield **a net filtrate of 18,482.77 gpd per 410.4 sf module at 20° C available for customer use.**

Based on our understanding of the submitted Siemens pilot study data in the Report, the **TCEQ would issue a capacity rating of 9.0 MGD for a proposed SWTP design based on 487 *Siemens Memcor® L20V* membrane modules.**

Exception to Use Ultraviolet Oxidation for Taste and Odor Removal

7. The request for an exception to use Ultraviolet Oxidation (UV) oxidation for taste and odor removal was received by the TCEQ on January 25, 2012. Based on 30 TAC §290.39(l) and TCEQ review of the materials provided **the exception to use UV oxidation for taste and odor removal is granted.**

Table 1: UV Taste & Odor Design Criteria

Design Criteria	Unit	Design Value
Flow Rate	MGD	6.0
Vessel Pressure Rating	psi	75
Max headloss per reactor	in	2.0
Influent *Geosmin* concentration	ppt (ng/L)	See Table 1
Effluent *Geosmin* concentration	ppt (ng/L)	<=5
Total Trihalomethanes (TTHM)	mg/L	<=0.080
Haloacetic Acids (HAA5)	mg/L	<=0.060

Table 2: Performance Requirements - Geosmin

Description	Flow Rate (MGD)	Geosmin Influent Concentration (ng/L)	Maximum Effluent Geosmin Concentration (ng/L)	Maximum Residual Peroxide (mg/L)
0-1.5 log Geosmin reduction	6	150	<= 5	< 8.0
>1.5–2.0 log Geosmin reduction	6	500	<= 5	< 9.0
>2.0-3.0 log Geosmin reduction	6	2300	<= 5	< 15.0

Exception to Use Ultraviolet Oxidation for Pathogen Removal

The request for an exception to use Ultraviolet Oxidation (UV) oxidation for pathogen removal was received by the TCEQ on January 25, 2012. Based on 30 TAC §290.39(l) and TCEQ review of the materials provided **the exception to use UV oxidation for pathogen removal is granted for virus but not cryptosporidium** under the following conditions.

8. Prior to installing UV reactors on the second train of piping, a flow measuring device must be installed on each train of piping feeding the UV reactors.

9. Standard Operating Procedures (SOPs) must be written for the handling of "off-spec" water, water produced under conditions outside the validated operating parameters. These SOPs must be available to the TCEQ upon request.

10. Back-up power supply must be provided to the UV reactors or the plant must be supplied with automatic alarms and plant shutdown should the UV reactors lose power.

11. Ground fault circuit interrupters (GFCI) must be provided for each UV lamp.

12. UV light disinfection analyzers must be properly calibrated as required in 30 TAC §290. 46(s)(2)(D).

13. The system must continuously monitor and record UV intensity as measured by a UV sensor, lamp status, flow rate through the unit, UV transmittance, and lamp power. in accordance with 30 TAC §290.111(d)(3)(A).

14. The system must monitor and record the amount of water treated by each UV unit each month and the amount of water produced each month when the unit is not operating within validated conditions in accordance with 30 TAC §290.111(d)(3)(B).

The UV facility will be designed with two parallel thirty inch (30") UV reactor trains supplied with equal flow. One train will be for future expansion. Each train consists of the lateral piping and valves, and is joined to the other train by a 36 inch recombination effluent pipe. Initially, only one train will function and include two UV reactors in series.

Table 3: UV Disinfection Design Criteria

Design Criteria	Unit	Design Value
Flow Rate	MGD	4.0
Vessel Pressure Rating	psi	75
Max headloss per reactor	in	2.0
Giardia disinfection	Log inactivation	2.0
Virus disinfection	Log inactivation	2.0

The operating conditions for each UV reactor must be based on validation testing results in accordance with 40 CFR 141.720(d)(3). Validation testing was conducted in July and August 2003 on the *TrojanUVSwift™ 16L30-6L* disinfection system in conformance with the USEPA Ultraviolet Disinfection Guidance Manual (UVDGM, January 2005 and November 2006). The challenge organism for the biodosimetric testing was characterized for dose-response behavior using a standard collimated-beam apparatus and a conventional low-pressure mercury vapor lamp as a UV Source. Lignin sulfonate was used for ultraviolet transmittance (UVT) adjustment. Testing was conducted over a three dimensional matrix of UVT, flow and power input. For the 40 tests conducted the lowest reduction equivalent dose (RED) measured was 11.4 millijoules per square centimeter (mJ/cm^2). The equation derived from the bioassay testing and used to determine the RED is:

$$RED = C_{FM} \times \left[a \times \left(\frac{P}{Q} \right)^b \frac{UVT^c}{(d \times UVT - e)} \right] + C_{FB}$$

where,

- RED is the calculated RED (mJ/cm^2), which is later divided by the Validation Factor to ensure that the Validated Dose is greater than the target dose;
- UVT is the base 10 UV absorbance (cm^{-1});
- Q is the Flowrate (MGD);
- P represents the lamp output power calculated from the UV sensor intensity signals;
- CFM and CFB are scaling functions derived from the bioassay test results; and
- a, b, c, d and e are dose coefficients determined by fitting the equation to the biodosimetry data and are listed in the validation study submitted.

Table 3: Factors Considered in Validation Test Design

Validation Factor	Test Design
Purpose of validation testing	Validation of new reactor by water system to use for taste and odor control and pathogen inactivation
Dose-monitoring strategy of the UV reactor	Calculated Dose Approach
Challenge organism	MS2 bacteriophage
Lamp Power	30% - 100%
Lamp aging and fouling	EOLL = 94% FF = 95%
Target pathogen and target log inactivation	2.0 log inactivation of *Cryptosporidium* (EPA 5.8 mJ/cm²) 2.0 log inactivation of *Giardia* (EPA 5.2 mJ/cm²) 2.0 log inactivation of viruses (EPA 100 mJ/cm²)
Full operating range of flow rate and UVT	Range of flow = 3 – 41 mgd Range of UVT 78% - 98%

Table 4: Validation Parameters for Operating Conditions

Parameter	Design Parameters	Validated Parameters
Flow rate	4.0 MGD	3.0 – 41.0 MGD
UV Transmittance	90%	78% - 98%
Lamp Power	69%	30% - 100%
UV Dose 2 Log *Cryptosporidium*	5.8 mJ/cm² EPA minimum	15.52 – 27.61 mJ/cm²
UV Dose 2 Log *Giardia*	5.2 mJ/cm² EPA minimum	14.55 – 26.56 mJ/cm²
UV Dose 2 Log Virus	100 mJ/cm² EPA minimum	115.1 mJ/cm²

The submittal consisted of an engineering report, 509 sheets of engineering drawings and technical specification with numerous addendums and revisions. The proposed project consists of:

- **Interconnection** with Tarrant Regional Water District (TRWD) including connections to two TRWD pipelines, 72" and 90" in diameter which will supply the new surface water treatment plant.

- **Raw water facilities** including a control building, a pressure reducing valve and vault with raw water sample tap, an electromagnetic meter and vault with chlorine dioxide injection, and waterline consisting of

- 1,060 linear feet (l.f.) of twenty four inch (24") American Water Works Association (AWWA) C150/151 ductile iron or AWWA C200 steel or AWWA C303 concrete cylinder waterline;
- 222 l.f. of thirty inch (30") American Water Works Association (AWWA) C150/151 ductile iron or AWWA C200 steel or AWWA C303 concrete cylinder waterline;and
- 561 l.f. of thirty six inch (36") American Water Works Association (AWWA) C150/151 ductile iron or AWWA C200 steel or AWWA C303 concrete cylinder waterline;

- The **pre-filtration** process includes rapid mixing, conventional flocculation and sedimentation. Incoming raw water flows through an inline mechanical mixer, one 6' x 8' x 16' sidewall depth (SWD) influent box with a Mueller diffuser, through two flow splitting weir gates into two trains; each train flowing through a 12.5' x 6' x 16' SWD mixing channel with 3 vertical fiberglass reinforced plastic (FRP) baffles. Flow continues to a diffuser channel containing 20 eight inch (8") diffuser ports which split the flow into two floc chambers, each 14.5' square with a mechanical flocculator (parallel shaft type). The sedimentation basins will provide 58 minutes detention time at 9 MGD with one train out of service. The sludge collection equipment will be the submerged vacuum type. Channels, baffles, and launders are designed for a hydraulic capacity of 12 MGD to allow for a future plant expansion without construction of an additional structure. The settled water then flows to a 104 ft² by 27 ft concrete membrane pump wetwell.

- The **filtration** unit consists of hollow-fiber ultrafiltration (HF/UF) membranes and each membrane module provides a nominal surface area of 410.4 square feet based on the external fiber diameter. The membrane fibers in each membrane module shall be polyvinylidene fluoride with a 0.04 micron nominal pore size. **The rated net capacity of each membrane module is 16,878.87 GPD per 375 square foot module at 20 degrees Celsius with a rated plant capacity of 8.1 MGD based on a total of 480 *Siemens Memcor® L20V* membrane modules.** The membrane system includes:
  - Two (2) self-cleaning strainers with a 250 micron pore size;
  - Four (4) membrane units each with 120 ***Siemens Memcor® L20N*** low pressure membrane modules per unit;
  - Support structures for the modules and valves;
  - On-skid feed, filtrate, drains, filtrate vent (if applicable), backwash system, cleaning solution feed, cleaning solution return, air scrub, and control air piping manifolds;
  - One vented (1) 1500 gallon high density polyethylene (HDPE) or fiberglass reinforced plastic (FRP) membrane backwash tank;
  - Three (3) variable drive frequency (VFD), 150 horsepower (hp) vertical turbine membrane feed pumps with 3,822 gpm capacity each;
  - Clean in Place (CIP) system including one(1) hot water supply pump, one (1) 1,800 gallon tank with heater, chemical dosing system with multiple pneumatic pumps for caustic (NaOH), citric acid, hydrochloric acid, and sodium hypochlorite (NaOCl) feed systems;
  - Chemical neutralization system including one (1) 3 hp, 157 gallons per minute (gpm) pump, and one (1) 6,200 gallon FRP tank;

- Membrane integrity testing system (MITS) with alarms capable of detecting a membrane defect having a minimum size of 3 microns or smaller, or a pressure hold method operating at a minimum pressure of 25 pounds per square inch(psi) and shall be capable of reliably verifying log removal values of 4.0 or greater.
- One (1) *HACH 1702E* turbidimeter with SC100 controller and one (1) *HACH FilterTrak 660™sc* laser nephelometer;
- Two (2), 30 hp, 550 standard cubic feet per minute (scfm) positive displacement blowers;
- Two (2) 15 hp, 55 scfm rotary screw compressors with one (1) 200 gallon air receiver for controls and one (1) 620 gallon air receiver for treatment processes; and
- Rack-mounted valves, instrumentation, control hardware and electrical control panel.

- **Chemical feed and storage** systems include:
  - Alum including one (1) 10,300 gallon high density cross-linked polyethylene (HDXLPE) bulk storage tank, one (1) 1,300 gallon HDXLPE day tank, and two (2) peristaltic chemical feed pumps rated 15 to 26.6 gallons per hour (gph);
  - Caustic (sodium hydroxide) including one (1) 6,000 gallon HDXLPE bulk storage tank, two (2) 685 and 295 gallon HDXLPE day tanks, one (1) single stage, end suction centrifugal chemical transfer pumps rated 40 gpm, and three (3) peristaltic chemical feed pumps rated 2.4 to 12.2 gallons per hour (gph);
  - Sodium chlorite including one (1) 10,300 gallon HDXLPE bulk storage tank, one (1) 6,000 gallon high density cross-linked polyethylene (HDXLPE) bulk storage tank, one (1) 155 gallon HDXLPE day tank;
  - Hydrochloric acid including one (1) 6,000 gallon high density cross-linked polyethylene high density linear polyethylene (HDLPE) bulk storage tank, one (1) 155 gallon HDLPE day tank; and
  - Hydrogen peroxide including one (1) 6,000 gallon high density cross-linked polyethylene (HDLPE) bulk storage tank, one (1) 295 gallon HDLPE day tank.

- **Disinfection** will be a multi-stage process. Chlorine dioxide is proposed for pretreatment, hypochlorite for free chlorine zones within the plant, and chloramines will be used post filtration in the distribution system. The current design also includes ultraviolet (UV) oxidation after membrane filtration. Chemical feed and storage systems include:
  - One (1) 150 pound per day (ppd) *Millenium III™ T-VF* three chemical chlorine dioxide generator and supply equipment consisting of chemical (sodium chlorite, hydrochloric acid and sodium hypochlorite) storage tanks, water supply, and the chlorine dioxide generator in which the reactants are mixed to produce the chlorine dioxide solution;
  - Two (2) each 800 ppd *MicrOclor Model MC-800* sodium hypochlorite generators including one (1) 20,000 gallon brine tank, three (3) dual tank water softeners, two (2) 10,300 gallon each fiber glass reinforced plastic (FRP) hypochlorite bulk storage tanks and one (1) single stage, end suction centrifugal chemical transfer pump rated 80 gpm and three (3) 1.5 to 5 .0 gph and two (2) 1.5 to 25 gph chemical metering pumps; and

- Liquid ammonium sulfate (LAS) feed system including one (1) 6,000 gallon high HDXLPE bulk storage tank, one (1) 295 gallon HDXLPE day tank, and three (3) peristaltic chemical feed pumps rated 1.5 to 5.0 gph; and
- Ultraviolet system including two (2) *TrojanUVSwift™ 16L30-6L* reactors each with 16 medium pressure lamp and ballast assemblies, six (6) for disinfection mode, and six (6) sensors.

- System wide supervisory control and data acquisition (SCADA) equipment.

- The **residuals handling** system consists of three sludge lagoons, two (2) each 75 feet by 75 feet and one 125 feet by 75 feet, operated in series or parallel with spillways between each basin, floating intakes from Lagoons Nos. 2 and 3, and a 20 hp, 160 gpm irrigation pump. Sedimentation basin, membrane cleaning residuals, and other process wastes, except membrane chemical cleaning backwashes, will be directed to the lagoons via a gravity drain line, where the residuals will settle before draining to the irrigation pump.

- A **recycle pump station** with two (2) 100 gpm each submersible pumps will return daily membrane backwashes to the head of the treatment plant via 1,000 l.f. of eight inch (8") AWWA C900 PVC recycle waterline to the raw water supply pipeline;.

- Approximately 1,810 l.f. of twenty four – thirty six inch (24" - 36") AWWA C150/151 ductile iron or AWWA C200 steel or AWWA C300 reinforced concrete cylinder raw waterline; and

- Approximately 4,179 l.f. of two to twelve inch (2" - 12") AWWA C900 or Schedule 80 polyvinyl chloride (PVC) yard piping, flow meters, and related valves, fittings and miscellaneous appurtenances.

Proposed water treatment for the system will be provided by the City of Midlothian public water supply system. Source water is provided wholesale by the Trinity River Authority through the Tarrant Regional Water District.

Please refer to the Utilities Technical Review Team's Log No. P-01252012-10 in all correspondence for this project. This will help complete our review and prevent it from being considered a new project.

Please complete a copy of the most current Public Water System Plan Review Submittal form for any future submittals to TCEQ. Every blank on the form must be completed to minimize any delays in the review of your project. The document is available on our website at the address shown below.

http://www.tceq.texas.gov/utilities/planrev.html

For future reference, you can review the Utilities Technical Review Team's database to see if we have received your project. This is available on the TCEQ's homepage at the following address:

http://www.tceq.texas.gov/utilities/planrev.html#status

You can download the construction checklists and the latest revision of Chapter 290 "Rules and Regulations for Public Water Systems" from this site.

If you have any questions concerning this letter or would like further assistance, please contact Mrs. Teresa L. Rogers at (512) 239-1734 or by email at "teresa.rogers@tceq.texas.gov" or by correspondence at the following address:

Utilities Technical Review Team, MC-159
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Sincerely,

Vera Poe, P.E., Team Leader
Utilities Technical Review Team, MC-159
Plan & Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

for Ada Lichaa, P.G., Manager
Plan & Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

TLR/av

cc: City of Midlothian: 104 W. Avenue E Midlothian, TX 76065-2901
TCEQ Central Records PWS File 0700005
TCEQ Central Records PWS File 0810035
TCEQ Region No. 4 Office – Dallas/Fort Worth
TCEQ Technical Review & Oversight Team

File PWS 0700005/CO
RN 101398212
CN 600488373

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

January 7, 2010

Mr. Bryant Caswell, P.E.
Schrickel, Rollins and Associates, Inc.
1161 Corporate Drive West, Suite 200
Arlington, Texas 76006

Subject: Hollow-Fiber (HF) Microfiltration (MF) Membrane Pilot Study Report
City of Midlothian - PWS ID # 0700005
Ellis County, Texas

Dear Mr. Caswell:

We have reviewed your letter dated December 21, 2009, submitted in response to the Texas Commission on Environmental Quality (TCEQ) letter (Letter) dated December 7, 2009 which approved the City of Midlothian (City) for the use of the **Siemens Water Technologies Memcor® XS HF MF membrane system** and the **Pall HF MF Membrane Pilot System (Settled Water with Full Pretreatment)** based on alternate-site data from the Low-Pressure Membrane Pilot Study Results (Report) dated July 25, 2007. The City has recently acquired 18 MGD of water rights from the Tarrant Regional Water District (TRWD), and the current project involves a 9-MGD water treatment plant (WTP). Your letter addresses an extraneous pretreatment condition for the Pall system in the Report that applied to the use of ozone by a different public water system (the City of Fort Worth). Based on our review of the Report and your letter, we find that the pilot study is **acceptable** for TCEQ staff to issue a capacity rating.

Pall Microsa UNA HF MF Membrane Pilot System (Settled Water with Full Pretreatment):

Based on 24 hours of continuous operation of the Pall HF MF membrane test unit, the TCEQ finds that the following piloted operating parameters are **accepted to yield a maximum of 32,033 GPD of filtrate water at 20° C available for use by the City's customers for a 538-sf membrane element:**

- A pretreatment train consisting of chlorine dioxide at 1.4 mg/L to the raw water, chemical induction and rapid mixing with aluminum sulfate (alum) at 47-50mg/L, flocculation and sedimentation;
- A HF MF pressure membrane module 79 inches in length and containing PVDF fibers with a total feed side surface area of 538-sf;
- A membrane fiber nominal pore size of 0.1 microns;
- A membrane fiber maximum pore size of 0.2 microns;
- Outside-to-inside flow mode;
- Allowable operating temperature range of 0 to 40° C;
- A 5,000 mg/L chlorine resistance;
- Allowable pH operating range of 1 to 10;
- An allowable feed water turbidity operating limit of 500 NTU;
- A backwash cycle (SASRF) of once every 15 minutes for a duration of 90 seconds;
- A sodium hypochlorite enhanced filtrate maintenance (EFM) wash procedure of once every 24 hours

for a duration of 36.5 minutes with a 300 mg/L of NaOCl solution circulated for 30.0 minutes followed by a SASRF for a total filtrate water use of 28.5 gallons per module;

- A total of **1,268.64 minutes per day in filtrate mode** and 171.36 minutes per day in backwash and maintenance wash;
- A minimum chemical CIP frequency of at least 30 days for duration of 4 hours. The CIP uses a heated 1% NaOH and 0.1%NaOCl solution re-circulated through the membranes and filtrate piping for 2 hours. The process is repeated with a citric acid and hydrochloric acid solution;
- An average filtrate flux rate of **70.6 gfd (temperature corrected to 20° C)**; and,
- A gross filtrate production of 33,463 GPD and an in-plant use of filtrate of 1,429 GPD to yield a **net filtrate of 32,033 GPD per a 538-sf module at 20° C available for customer use.**

Based on our understanding of the submitted Pall pilot study data in the Report, the **TCEQ would issue a capacity rating of 9.0 MGD for a proposed SWTP design based on 281 Pall HF MF membrane modules.**

TCEQ Capacity Rating:
The TCEQ issues a net capacity rating for MF membrane facilities based on an instantaneous filtrate flux corrected to 20° C. This rating is determined by subtracting the total in-plant use of produced filtrate (such as backwashing the membranes, any "maintenance cleans," EFM, "mini CIP," CEB, soaks, or any other in-plant use) from the gross potential filtrate production when a membrane unit is actually in service for a 24-hour period of operation. The TCEQ understands, and accepts, that an increase in membrane feed water temperature normally results in an increase in the filtrate flux rate and a corresponding increase in potable water available for customer use. A decrease in water temperature will result in a reduction of the filtrate flux rate and a corresponding decrease in potable water available for customer use. This seasonal increase and decrease of water temperatures corresponds to the accepted increase of summer and decrease of winter customer demands. This increased production shall have TCEQ approval provided it does not exceed a temperature-corrected filtrate flux rate based on the following calculation:

For Pall Microza® UNA membrane:

$$J_T = J_{20} \times 0.9826 / [(0.0004481 \times (T^2)) - (0.03946 \times T) + 1.5926]$$

Where: J_T is the filtrate flux rate at the current water temperature
J_{20} is the TCEQ approved filtrate flux rate at 20° C
T is the actual temperature of the water

This approval will be revoked any time the seasonal increase and decrease in membrane filtration production results in low distribution pressures or water outages, and the public water system will be required to install additional membranes or develop an additional source of potable water.

Please note that the time out of service required for the various pressure modules to conduct a CIP was not calculated into the above design capacity rating for their membranes. The projection of a CIP once per month per unit was not considered to have a significant impact in overall production. The pilot was conducted with a chemically enhanced backwash procedure of once per day for a duration of 30 minutes. Therefore, the TCEQ shall require this procedure to continue under full-scale operation.

Conditions for Approval:
Based on our review, the TCEQ is **granting** the request for an exception to use HF MF membrane filtration in lieu of gravity multi media filters under the following conditions:

1. Approval from the TCEQ will be necessary prior to the use of any raw water source(s) other than the raw water line of the TRWD. If the City of Midlothian desires to use water from any source other than

the raw water line of the TRWD or if the TRWD changes its water source(s), then an additional pilot study will need to be initiated using water from the alternate source(s).

2. Conditions in the Letter for **Siemens Water Technologies Memcor® XS HF MF membrane system** still apply.

3. The City's operators will be required to monitor each membrane unit in accordance with the PDW Program Guidance titled, Monitoring, Operating and Report Requirements for Membrane Installations.

4. A revised CT study must be submitted for TCEQ review and approval prior to delivery of potable water from any SWTP expansion project to the customers as specified in §290.110(c)

   The granted removal credits for pathogens are based on the TCEQ approval of direct integrity tests and continuous indirect integrity monitoring methods. Removal credits for *Giardia lamblia* cysts and *Cryptosporidium* oocysts will be based on the required continuous indirect integrity monitoring of each HF MF membrane unit's filtrate with a Hach Model FT660 FilterTrak laser turbidimeter, or an acceptable TCEQ alterative. The direct integrity test method must use a test pressure with a resolution to detect at least a 3.0-micron defect in each membrane unit and a sensitivity to verify the required log removal value. With the TCEQ's recent rule revisions, we are now accepting the calculations for determining the pressure level that detects a 3.0-micron defect for each vendor's membrane unit as it is specified in the US EPA's Membrane Filtration Guidance Manual – EPA 815-R-06-009, November 2005. Based on these requirements, data for the TCEQ to review the CT study and for the SWTP operators to complete a required "Membrane Monthly Operating Report" will need to include:

   a) volume of pressurized air (V_{sys}) in each HF MF membrane unit during a direct integrity test;
   b) maximum back pressure (BP_{max}) on each HF MF membrane unit during a direct integrity test;
   c) air-liquid conversion ratio (**ALCR**);
   d) flow of air through the critical breach during a pressure based direct integrity test (Q_{air});
   e) flow of water through the critical breach during filtration (Q_{breach});
   f) design capacity filtrate flow (Q_p);
   g) the P_{test} for each HF membrane unit;
   h) smallest rate of pressure decay that can be reliably measured and associated with a known breach during the direct integrity test (ΔP_{test});
   i) volumetric concentration factor (**VCF**); and,
   j) the upper control limit (**UCL**) for the decay limit that will verify the integrity of the membrane unit and the granted LRV.

   In addition, please submit with the revised CT study the following direct integrity test (DIT) calculations as found in the EPA's Membrane Filtration Guidance Manual – EPA 815-R-06-009, November 2005:

   a) Provide detailed calculations and supporting documentation for how the reported minimum test pressure (P_{test}) psi of 14.5 psi for the Siemens membrane, or the 29-30 psi for the Pall membrane, used during the pilot study meets the required direct integrity test (DIT) resolution to detect a 3.0 micron defect or larger. The P_{test} must include the back pressure (BP_{max}) from the hydrostatic head pressure on the undrained side of the membrane if the pressure-driven membrane module remains filled with water during the test.

      Equation 4.1 (for a 3.0 micron defect): $P_{test} = (0.193 \times \kappa \times \sigma \times \cos\theta) + BP_{max}$

Based on the range of water temperatures encountered, this documentation must demonstrate that the test pressures were adequate for all temperatures. Include the membrane specific pore shape correction factor (κ) and liquid-membrane contact angle (θ).

b) Provide the necessary data and calculations using Section 4.3.1.1 and Equations 4.3 and 4.9 of the US EPA's Membrane Filtration Guidance Manual to verify that the **sensitivity** of the direct integrity tests (DIT) conducted during the pilot study was equal to or greater than the required Log Removal Credit at this time for *Cryptosporidium* oocysts of 2.0-log as specified in Item No. VIII.C.18 of the TCEQ's Review of Pilot Study Reports for Membrane Filtration.

Equation 4.3: $\mathbf{LRV_{DIT}} = \log [(\mathbf{Q_p}) \div (\mathbf{VCF} \times \mathbf{Q_{breach}})]$
Equation 4.9: $\mathbf{LRV_{DIT}} = \log [(\mathbf{Q_p} \times \mathbf{ALCR} \times \mathbf{P_{atm}}) \div (\mathbf{\Delta P_{test}} \times \mathbf{V_{sys}} \times \mathbf{VCF})]$

Using Appendix C and Equations 4.6 and 4.8 from US EPA's Membrane Filtration Guidance Manual – EPA 815-R-06-009, November 2005, please provide the air-liquid conversion ratio (**ALCR**) and Q_{air} values to show how Q_{breach} was determined.

Equation 4.6: $\mathbf{Q_{breach}} = (\mathbf{Q_{air}} \div \mathbf{ALCR})$
Equation 4.8: $\mathbf{Q_{air}} = [(\mathbf{\Delta P_{test}} \times \mathbf{V_{sys}}) \div \mathbf{P_{atm}}]$

Use the applicable ALCR equation in Appendix C of the US EPA's Membrane Filtration Guidance Manual – EPA 815-R-06-009, November 2005 that applies to the Pall piloted test unit and proposed full-scale membrane filtration SWTP.

At this time, the TCEQ only requires one direct integrity test per week, after two consecutive 5-minute filtrate readings of 0.15 NTU or greater, and after each CIP procedure with continuous indirect integrity monitoring of each unit's filtrate turbidity levels using the Hach Model FT660 FilterTrak laser turbidimeter, or an acceptable TCEQ alternative. However, these requirements may change for specific membrane filtration SWTPs in the future based on the results of required raw surface water monitoring and any required additional log removal requirements for pathogens. The TCEQ-approved capacity rating for this and other membrane filtration SWTPs may also be revised at that time.

Based on the requirements of the US EPA's Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and TCEQ's newly revised rules, each Texas public water system installing or replacing membranes that are used for microbiological treatment **after April 1, 2012**, can only continue to receive removal credit for *Cryptosporidium* oocysts and *Giardia lamblia* cysts if they meet the specifications in 30 TAC §290.42(g)(3)(A) and §290.111. This will include providing data for

TCEQ review and approval to verify their membrane's Challenge Test Log Removal Value (LRV_{CT}), Non-Destructive Performance Testing (NDPT) method, corresponding Quality Control Release Value (QCRV) and method for the Direct Integrity Test Log Removal Value (LRV_{DIT}) as specified in the US EPA's LT2ESWTR and Membrane Filtration Guidance Manual. It is unclear yet which systems in Texas may be required to provide additional removal of pathogens until the required raw surface water sampling is complete. Without the specific membrane data, the TCEQ may not be able to continue to grant a membrane SWTP the necessary removal credits for *Giardia lamblia* cysts and *Cryptosporidium* oocysts.

TCEQ reviewed these submitted documents for the **Siemens Water Technologies Memcor® XS membrane system** and the **Pall HF_MF Membrane Pilot System** Pilot Studies for the City of Midlothian:

- City of Midlothian Low-Pressure Membrane Pilot Study Results for the Treatment of Settled Water and Direct Filtration with PACl (received September 2, 2009, and dated July 25, 2007);

This letter is **not to be construed as approval to construct** for the proposed membrane filtration facility. This letter is only to address acceptance of the pilot study report and the exception to design for HF membrane filtration in lieu of granular media filters. We have enclosed a revised Public Water System Plan Review Submittal Form. Please complete a copy of this document for every future submittal to the TCEQ for review of improvements to a Public Water System. Every blank on the form must be completed to minimize delays to review your project.

The document is available on our web site at the address shown below. For your reference, you can review part of the TCEQ Utilities Technical Review Team's database to see if we have received your project. This is also available on the TCEQ's homepage on the Internet at this address:

http://www.tceq.state.tx.us/assets/public/permitting/forms/10233.pdf

If you have any questions concerning our evaluation of the pilot study report, or if we may be of further assistance, please contact us at the letterhead's address, or by phone at (512) 239-4729.

Sincerely,

Bill Melville

William R. Melville, P.E.
Technical Review & Oversight Team
Public Drinking Water Section, MC 155
Water Supply Division

Enclosure: Public Water System Plan Review Submittal Form

cc: TCEQ Dallas/Fort Worth Regional Office – R4
Ms. Vera Poe, P.E., Team Leader, TCEQ Utilities Technical Review Team – MC 153
The Honorable Boyce Whatley, Mayor, City of Midlothian, 104 W. Avenue E,
Midlothian, Texas, 76065-2901

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 28, 2019

Mr. Jordan S. Hibbs, P.E.
Enprotec / Hibbs and Todd, Inc.
402 Cedar St.
Abilene, TX 79601

Re: City of Midlothian - Public Water System ID No. 0700005
Proposed Auger Water Treatment Plant 3.0 Million-Gallon Ground Storage Tank
Engineer Contact Telephone: (325) 698-5560
Plan Review Log No. P-08292019-174
Ellis County, Texas

CN: 600488373; RN: 101398212

Dear Mr. Hibbs:

On August 29, 2019, the Texas Commission on Environmental Quality (TCEQ) received planning material with your letter dated August 27, 2019 for the Auger Water Treatment Plant (TP410621) 3.0 million-gallon ground storage tank. Based on our review of the information submitted, the project generally meets the minimum requirements of Title 30 Texas Administrative Code (TAC) Chapter 290 - Rules and Regulations for Public Water Systems and is **approved for construction**.

The submittal consisted of 13 sheets of engineering drawings and technical specifications. The approved project consists of:

- One (1) 3 million-gallon American Water Works Association (AWWA) Standard D110, Type III, prestressed concrete water tank;
- Approximately 137 linear feet of 20-inch AWWA Standard C151 ductile iron pipe;
- Approximately 338 linear feet of 36-inch AWWA Standard C303 concrete steel cylinder pipe;
- All weather access drive; and,
- All necessary valves, fittings, yard piping, and appurtenances.

This approval is for the construction of the above listed items only. Any wastewater components contained in this design were not considered.

The City of Midlothian public water supply system provides water treatment.

The project is located at 1761 Auger Road in Midlothian in Ellis County, Texas.

An appointed engineer must notify the TCEQ's Region 4 Office in Dallas/Fort Worth at (817) 588-5800 when construction will start. Please keep in mind that upon completion of the water works project, the engineer or owner will notify the commission's Water Supply Division, in writing, as to its completion and attest to the fact that the completed work is substantially in accordance with the plans and change orders on file with the commission as required in 30 TAC §290.39(h)(3).

Please refer to the Plan Review Team's Log No. **P-08292019-174** in all correspondence for this project.

Please complete a copy of the most current Public Water System Plan Review Submittal form for any future submittals to TCEQ. Every blank on the form must be completed to minimize any delays in the review of your project. The document is available on TCEQ's website at the address shown below. You can also download the most current plan submittal checklists and forms from the same address.

https://www.tceq.texas.gov/drinkingwater/udpubs.html

For future reference, you can review part of the Plan Review Team's database to see if we have received your project. This is available on TCEQ's website at the following address:

https://www.tceq.texas.gov/drinkingwater/planrev.html/#status

You can download the latest revision of 30 TAC Chapter 290 – Rules and Regulations for Public Water Systems from this site.

If you have any questions concerning this letter or need further assistance, please contact David Smith at 512-239-4703 or by email at David.Smith@Tceq.Texas.Gov or by correspondence at the following address:

Plan Review Team, MC-159
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Sincerely,

David T. Smith, P.E.
Plan Review Team
Plan and Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

Vera Poe, P.E., Team Leader
Plan Review Team
Plan and Technical Review Section
Water Supply Division
Texas Commission on Environmental Quality

VP/DS/db

cc: City of Midlothian, Attn: Honorable Mayor Bill Houston, 104 W Avenue E, Midlothian, TX 76065-2901

4. Compliance Inspection

[redacted]

CITY OF MIDLOTHIAN WATER PLANT
440 TAYMAN DR
MIDLOTHIAN, ELLIS COUNTY, TX 76065

Investigation # 1652152
Investigation Date: 01/22/2020

Additional ID(s): 0700005

[redacted]

Track No: 752327

30 TAC Chapter 290.42(f)(1)(E)
30 TAC Chapter 290.42(f)(1)(E)(ii)
30 TAC Chapter 290.42(f)(1)(E)(ii)(I)

Alleged Violation:

Investigation: 1652152 Comment Date: 06/25/2020

Failure to provide adequate containment facilities for the chemical day tanks at the Tayman Water Treatment Plant (WTP).

During the comprehensive compliance investigation on January 22-23, 2020, it was noted that the day tanks holding the treatment chemicals at the Tayman WTP did not have proper containment.

30 TAC 290.42(f)(1) Chemical storage facilities shall be designed to ensure a reliable supply of chemicals to the feeders, minimize the possibility and impact of accidental spills, and facilitate good housekeeping.

30 TAC 290.42(f)(1)(E) Bulk storage facilities and day tanks must be designed to minimize the possibility of leaks and spills.

30 TAC 290.42(f)(1)(E)(ii) Except as provided in this clause, adequate containment facilities shall be provided for all liquid chemical storage tanks.

30 TAC 290.42(f)(1)(E)(ii)(I) Containment facilities for a single container or for multiple interconnected containers must be large enough to hold the maximum amount of chemical that can e stored with a minimum freeboard of six vertical inches or to hold 110% of the total volume of the container(s), whichever is less.

Recommended Corrective Action: Provide adequate containment facilities for the chemical day tanks at the Tayman WTP. Submit a letter describing the action taken and supporting documentation (photographs, completed work orders, etc) to the TCEQ Region 4 Office to document that the alleged violation has been corrected.

Resolution: Compliance documentation was received from the public water system on March 10, 2020. Included in the documentation were photographs of the secondary containment structures installed at the Tayman WTP. Based on the photographs, the violation was resolved.

Track No: 752328

30 TAC Chapter 290.46(f)(3)(A)(i)(I)

Alleged Violation:

Investigation: 1652152 Comment Date: 06/25/2020

Failure to record the amount of ammonia used each day.

During the comprehensive compliance investigation on January 22-23, 2020, it was noted that the water system was not recording the amount of ammonia used on a daily basis. Records of all other chemicals used were available.

30 TAC 290.46(f)(3)(A)(i)(I) Systems that treat surface water or groundwater under the direct influence of surface water shall maintain a record of the amount of each chemical used each day.

Recommended Corrective Action: Record the amount of all chemicals used each day. Submit a letter describing the action taken and supporting documentation (chemical usage records) to the TCEQ Region 4 Office to document that the alleged violation has been corrected.

Resolution: Compliance documentation was received from the public water system on March 3, 2020. Included in the documentation were copies of chemical usage records which recorded the ammonia usage on a daily basis. Based on the documentation, the violation was resolved.

Track No: 752329

30 TAC Chapter 290.110(c)(5)(B)(iii)

Alleged Violation:

Investigation: 1652152 Comment Date: 06/25/2020

Failure to monitor the nitrate and nitrite at each entry point on a quarterly basis.

During the comprehensive compliance investigation on January 22-23, 2020, it was noted that the water system was not monitoring the nitrate and nitrite levels at the entry point to the distribution system on a quarterly basis. According to water system records it appeared this monitoring was conducted annually.

30 TAC 290.110(c)(5)(B)(iii) Nitrite and nitrate (as nitrogen) shall be monitored quarterly at the first customer after establishing the baseline. Nitrite and nitrate samples collected at entry points for compliance with 290.106 of this title may be used for these quarterly samples.

Recommended Corrective Action: Perform nitrite and nitrate monitoring at the entry point to the distribution system on a quarterly basis. Submit a letter describing the action taken and supporting documentation (chemical usage records) to the TCEQ Region 4 Office to document that the alleged violation has been corrected.

Resolution: Compliance documentation was received from the public water system on March 3, 2020. Included in the documentation were records for the nitrite and nitrate monitoring. Based on the documentation, the violation was resolved.

ADDITIONAL ISSUES

Description	Additional Comments
Item #4	During a review of the water system records, it was noted that the public water system has not completed the approval process for the use of EPA Method 334 for online disinfectant residual monitoring at the surface water treatment plants. The water system should complete the Initial Demonstration of Capability (IDC) and submit the documentation to the TCEQ Water Supply Division for review and approval.

5. Tarrant Regional Water District Contract and Amendment

Tarrant Regional Water District
Additional Party Raw Water Supply Contract
Municipal

City of Midlothian

Cedar Creek and Richland-Chambers Reservoirs and Pipelines

Tarrant Regional Water District
Additional Party Contract-Municipal
City of Midlothian

TARRANT REGIONAL WATER DISTRICT
ADDITIONAL PARTY CONTRACT-MUNICIPAL

TABLE OF CONTENTS

LIST OF EXHIBITS

THE STATE OF TEXAS	§	**ADDITIONAL PARTY**
	§	**MUNICIPAL**
COUNTY OF TARRANT	§	**RAW WATER SUPPLY CONTRACT**

This Additional Party Raw Water Supply Contract ("Agreement") is made and entered into by and between **TARRANT REGIONAL WATER DISTRICT, a Water Control and Improvement District** ("District"), a conservation and reclamation district and political subdivision of the State of Texas, and **the City of Midlothian** ("Purchaser"), a Municipality in the State of Texas.

RECITALS

1. District owns or has the right to use water from Richland-Chambers Reservoir, Cedar Creek Reservoir, Benbrook Reservoir, Eagle Mountain Lake, Lake Worth, Lake Arlington, and Lake Bridgeport (collectively defined as the "System") and may sell water from the System subject to the contract between District and the City of Fort Worth, City of Arlington, City of Mansfield, and Trinity River Authority of Texas, dated September 1, 1982 (the "Amendatory Contract"). For the purposes of this Agreement, the "Project" is defined as Cedar Creek and Richland-Chambers Reservoirs and associated pipelines and the sale of water to Purchaser, in addition to being subject to the Amendatory Contract, is also subject to the provisions of Certificates of Adjudication Nos. 08-4976 and 08-5035, as amended. Purchaser wants to purchase, and District is willing to sell, raw water from the Project subject to the terms and

conditions of this Agreement.

2. Purchaser will divert water from the Project at the Point(s) of Delivery, subject to all applicable rules and regulations of District and state and federal agencies.

3. In 2003, Trinity River Authority of Texas ("TRA") through a contract with District obtained the right to 6 MGD of raw water which it agreed in a separate contract with Purchaser to provide to Purchaser for it to treat and provide to Purchasers treated water customers. The 2003 contract between District and TRA was amended four times as were the contracts between TRA and Purchaser. The terms and conditions of the supply water formerly provided by TRA to Purchaser, after the execution of the Fourth Amendment to the 2003 Raw Water Supply Contract dated as of November 7, 2017 and Fourth Amendment Raw Water Supply Contract Between Trinity River Authority of Texas and the City of Midlothian dated as of October 25, 2017 is 10.33 MGD and is now stated in this Agreement.

AGREEMENT

For and in consideration of the mutual promises, covenants, obligations, and benefits described in this Agreement, District and Purchaser agree as follows:

SECTION 1. AMENDATORY CONTRACT

This Agreement is entered into pursuant to Section 3(B)(a) of the Amendatory Contract, and the rights and obligations of District and Purchaser under this Agreement shall be subject to, and be interpreted consistent with, the terms and conditions of the Amendatory Contract. The Amendatory Contract is incorporated into this Agreement

by reference as if quoted verbatim in this section. The Initial Contracting Parties (as identified in the Amendatory Contract) shall, within the limits permitted by law, have absolute priority over Purchaser's right to purchase water from District in accordance with this Agreement.

SECTION 2. PIPELINE TAPS

District has authorized and Purchaser has constructed 18 MGD taps and related appurtenances into the Richland Chambers and Cedar Creek Pipelines at the location indicated in Exhibit 1. These taps are the Point(s) of Delivery for delivery of water under this Agreement. If in the future, service to Purchaser requires increasing the delivery capacity of the taps, Purchaser agrees to reimburse District for all costs of increasing the delivery capacity of the taps and appurtenances within sixty (60) days after receipt of notice of completion of the requested construction of each tap and related appurtenance.

SECTION 3. TERM

This Agreement shall be effective on the date it is signed by District's authorized representative ("Effective Date"), as shown on the signature page of this Agreement, and shall continue in effect for a period of thirty (30) years from the effective date, and thereafter from year to year during the useful life of the Project; unless this Agreement is terminated sooner because the Amendatory Contract is terminated, District and Purchaser both agree to terminate this Agreement or this Agreement is terminated pursuant to its terms.

SECTION 4. VOLUME

Subject to the limitations and conditions described in the Agreement, the Amendatory Contract, and Certificates of Adjudication Nos. 08-4976 and 08-5035, as amended, the District agrees to sell Purchaser raw water from the Project at the Point(s) of Delivery described in this Agreement. The volume of water actually purchased depends upon Purchaser's demand. Based upon past usage and future projections, the average quantity of water to be furnished in succeeding years is estimated to be from 672.08 to 11,587.36 acre-feet per year (0.6 MGD to 10.33 MGD). Purchaser may not divert more than 11,587.36 acre-feet in an Annual Payment Period, as defined in the Amendatory Contract, without prior written approval of District.

SECTION 5. POINT(S) OF DELIVERY

Purchaser shall divert the raw water from the pipelines at the Point(s) of Delivery as herein established. The location of the Point(s) of Delivery are delineated on a vicinity map that attached as Exhibit 1 to this Agreement. Purchaser shall provide the location of the Point(s) of Delivery in Digital Format, which for purposes of this Agreement means in digital AutoCAD R-14 or ArcView 3.2x Shapefile format, projected to the following Tarrant Regional Water District data standards: Projection: Lambert Conformal Conic, Coordinate System: Texas State Plane, Zone 5351, Units: Feet, Datum: NAD83.

The diversion shall be accomplished by taps on the District's Cedar Creek and Richland-Chambers Pipelines with each tap currently having a maximum flow rate of 18 MGD (12,500 GPM). The District's Cedar Creek and Richland-Chambers

Pipelines are primarily used to transport large quantities of raw water from Cedar Creek and Richland-Chambers Reservoirs to the District's major customers in and around Tarrant County and for terminal storage in Lake Benbrook and Eagle Mountain Lake. Because of these operations, water may not be available at one or both of Point(s) of Delivery. If Purchaser desires to have additional or larger taps installed, it must make a request to do so to the District and if the District approves the request, the District will add or modify the taps. Purchaser shall reimburse District for the cost of adding or modifying the taps.

Purchaser shall provide, at Purchaser's expense, the facilities required to transport raw water from the Point(s) of Delivery to Purchaser's place of treatment and use.

SECTION 6. RATE OF DELIVERY

Purchaser acknowledges that the delivery of water to Purchaser through District's pipelines is subject to adequate pipeline capacity and efficiency of pipeline operations. In that regard, Purchaser agrees to maintain sufficient storage or an alternative supply of raw water to supply Purchaser's demand for raw water without taking water under this Agreement for a period of sixty (60) days. Purchaser agrees that prior to each annual period, it will provide District with a schedule of requested daily deliveries ("Desired Daily Rate") for the ensuing annual period. District shall provide Purchaser seven (7) days written notice of any day upon which it determines, at its sole discretion, that it will not provide water at the Point(s) of Delivery at the Desired Daily Rate specified in Purchaser's schedule of requested deliveries. Purchaser shall give District seven (7) days written notice of any changes to the Desired Daily Rate.

Beginning on the first day on which the District does not deliver water at the Desired Daily Rate, District shall keep an account of the difference between the water delivered and the Desired Daily Rate ("Delivery Deficit") and within sixty (60) days of such first day, shall deliver enough water in excess of the Desired Daily Rate to reduce the Delivery Deficit to zero.

SECTION 7. PURPOSE AND PLACE OF USE

Purchaser shall use raw water purchased from District under this Agreement for retail and wholesale purposes only and with the retail service being generally within the area served by Purchaser's municipal water system, which area is shown by the vicinity map attached as Exhibit 2 to this Agreement. In addition, Purchaser shall provide District the information regarding Purchaser's retail and wholesale service areas in Digital Format.

If Purchaser extends its water system service area, Purchaser shall deliver to District a reproducible vicinity map that shows the added territory and any wholesale treated water customers, and, subject to District's approval, which will not be unreasonably withheld or delayed, this Agreement will be modified by attaching the updated map to this Agreement as an exhibit. Upon filing this Agreement, as modified, with the Texas Commission on Environmental Quality or any successor agency ("Commission"), and providing District the changed information in Digital Format, Purchaser may use the water within the added territory.

SECTION 8. TEXAS COMMISSION OF ENVIRONMENTAL QUALITY RULES

The effectiveness of this Agreement is dependent upon District and Purchaser

complying with the rules of the Commission, specifically including the rules codified as Texas Administrative Code, Title 30, §§ 295.101 and 297.101-.108 as of the effective date of this Agreement. District will file a signed copy of this Agreement with the Executive Director of the Commission as required by the rules of the Commission. Purchaser may continue diverting raw water from the Project unless District notifies Purchaser that District has received written notification from the Commission that a copy of this Agreement has been received by the Commission but not accepted for filing. Purchaser shall submit written reports annually to the Commission, with a copy to District, on forms provided by the Commission, indicating the total amount of water taken under this Agreement each week and each month. Purchaser also shall submit to District written reports each month indicating the total amount of water diverted under this Agreement each week and each month.

SECTION 9. REGULATORY REQUIREMENTS

This Agreement is subject to all applicable federal, state, and local laws and any applicable ordinances, rules, orders, and regulations of any local, state, or federal governmental authority having jurisdiction. However, nothing contained in this Agreement shall be construed as a waiver of any right to question or contest any law, ordinance, order, rule, or regulation in any forum having jurisdiction, and District and Purchaser each agree to make a good faith effort to support proposed laws and regulations which would be consistent with the performance of this Agreement in accordance with its terms.

SECTION 10. WATER CONSERVATION PLANS

Purchaser shall cooperate with and assist District in its efforts to develop and implement plans, programs, and rules to develop water resources and to promote practices, techniques, and technologies that will reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in use of water, or increase the recycling and reuse of water. District's obligations under this Agreement shall be subject to Purchaser preparing and implementing a water conservation plan or water conservation measures acceptable to the District, as well as implementing any water conservation plans and drought contingency plans adopted by District and required or approved by the Commission, the Texas Water Development Board, or any other federal, state, or local regulatory authority with power to require or approve water conservation and drought contingency plans. Prior to the execution of this Agreement, Purchaser shall submit to the District an approved water conservation plan and update the plan every five years in accordance with Commission guidelines or more often as requested in writing by the District.

The District acknowledges that the Purchaser currently provides wholesale treated water service to the entities shown in Exhibit 2. If District authorizes Purchaser to resell District water to any additional wholesale customers, then Purchaser shall require through a contract condition that any successive user of District water must implement water conservation measures that comply with the State's, District's, and Purchaser's water conservation plans, programs, and rules.

SECTION 11. WATER QUALITY

Purchaser shall cooperate with and assist District in its efforts to develop and implement plans, programs, and rules to maintain and improve the quality of the water flowing into or impounded within reservoirs owned or used by District; to maintain the existing uses of the water impounded in reservoirs owned or used by District for public water supply, contact recreation, and high quality aquatic habitat; and to decrease the effects of eutrophication and siltation upon the storage capacity and uses of reservoirs owned or used by District. Such plans, programs, and rules may include, but are not limited to, matters involving water conservation; water quality; construction, operation, and regulation of wastewater collection, treatment, and disposal facilities; siting and operation of solid waste transfer and disposal facilities; non-point source pollution control; generation, storage, transportation, and disposal of hazardous substances; sedimentation due to construction activities; improper farming practices; and highly erodible soil.

Purchaser agrees that in areas subject to its jurisdiction, it will require and enforce compliance with the Commission rules relating to Construction Standards for On-Site Sewage Facilities currently found at 30 Tex. Admin. Code Chapter 285. Purchaser further agrees to require and enforce compliance with any stricter standards that may be imposed by state or federal governments in the future. District agrees that, after review and approval by District, Purchaser may impose stricter standards than the current Commission (or any successor agency) standards.

SECTION 12. WASTEWATER TREATMENT

This section does not apply to wastewater plants owned and operated by the Trinity River Authority. By signing this Agreement, Purchaser stipulates and agrees that District is potentially aggrieved or affected by any actions taken by Purchaser or relating to the collection, treatment, and disposal of wastewater within a Project Watershed, and further, Purchaser agrees to include language in Purchaser's contracts with its Customers which states that by signing the contract Purchaser's Customer stipulates and agrees that District is potentially aggrieved or affected by any actions taken by Project Watershed Dischargers relating to the collection, treatment, and disposal of wastewater within a Project Watershed. Project Watershed Dischargers are defined as Purchaser and/or Purchaser's customers who, during the term of this Agreement, own, operate, or apply for a permit to construct or operate a wastewater treatment plant which discharges or will discharge into a Project Watershed. Purchaser hereby agrees to include language in its contract with its customers imposing Project Watershed Discharger obligations on its customers and to provide that the District has standing to file such suits as may be necessary to enforce such contracts either at law or in equity. The obligations imposed on Project Watershed Dischargers are as follows:

A. If a Project Watershed Discharger proposes to renew, modify, or amend its permit(s), if any, or obtain additional or new permit(s) which authorize the construction of wastewater treatment facilities or the disposal of treated effluent within a Project Watershed, the Project Watershed Discharger shall inform District of the Project Watershed Discharger's plans and provide District a comprehensive assessment of the individual and cumulative effect of the Project Watershed Discharger's proposed

activities on surface water and groundwater quality and such additional information as District may reasonably require. The Project Watershed Discharger shall provide notice of its proposed plans within a Project Watershed to District at least sixty (60) days before the Project Watershed Discharger submits an application to the Commission or other regulatory authority.

B. A Project Watershed Discharger's rights under this Agreement or its contract with Purchaser, as the case may be, may be terminated by the District, as herein provided, without liability to a Project Watershed Discharger, if the Project Watershed Discharger seeks or obtains authorization from the Commission, or its successors, or other regulatory authority to discharge effluent within a Project Watershed which contains concentrations of biochemical oxygen demand (5-day), total suspended solids, ammonia-nitrogen, or other regulated constituents, any of which is in excess of the concentrations allowed by the Project Watershed Discharger's most stringent permit to discharge effluent within a Project Watershed in existence at that time; or concentrations of dissolved oxygen in amounts less than the concentrations allowed by the Project Watershed Discharger's most stringent permit within a Project Watershed in existence at that time; or provides for inadequate disinfection. A Project Watershed Discharger's rights under this Agreement also may be terminated by the District as herein provided, without liability to the Project Watershed Discharger, if a court, or federal or state regulatory authority with jurisdiction to regulate the Project Watershed Discharger's collection, treatment, and disposal of wastewater within a Project Watershed, enters an order of any type which includes an express finding that the Project Watershed Discharger violated applicable statutes, rules, orders, or permits

and that the noncompliance caused a hazard to public health and safety or severe adverse impact on or to the uses of a receiving stream or of groundwater.

C. A Project Watershed Discharger shall allow District's employees or agents exhibiting proper credentials to enter upon the Project Watershed Discharger's premises or other premises under the control of the Project Watershed Discharger within a Project Watershed where an effluent source is located or in which any records are required to be kept under the terms and conditions of the Project Watershed Discharger's permit or the Commission's (or any successor agency) rules, at any reasonable times, to copy any records required to be kept under the terms and conditions of the Project Watershed Discharger's permit or the Commission's (or any successor agency) rules, to inspect any monitoring equipment or monitoring method required in the Project Watershed Discharger's permit or the Commission's (or any successor agency) rules, to sample any discharge, and to perform an enforcement and/or operation and maintenance inspection of the Project Watershed Discharger's facility or facilities.

D. Contemporaneously with the filing by a Project Watershed Discharger of any notifications, self-reporting data, sludge disposal records, or other records and reports required by the rules, orders, or permits of the Commission, or its successors, the Project Watershed Discharger shall deliver a copy of the signed document to District.

E. Project Watershed Dischargers shall install and maintain adequate safeguards to prevent the discharge of untreated or inadequately treated wastewater within a Project Watershed from its collection treatment, and disposal facilities during

electrical power failures and equipment failures or repairs by means of alternate power sources, standby generators, adequate spare parts, or retention facilities.

SECTION 13. PAYMENTS BY PURCHASER

As consideration for the water supply to be provided to Purchaser under this Agreement, Purchaser agrees to pay District, at the time and in the manner provided by this Agreement, Purchaser's proportionate share of District's Annual Requirement as determined under the Amendatory Contract. Purchaser's proportionate share shall equal Purchaser's Annual Payment after adjustment, as described below. Purchaser's Annual Payment shall be calculated as follows:

A. Determination of Annual Payment

The term "Annual Payment" means the amount of money to be paid to District by Purchaser during each Annual Payment Period as defined in the Amendatory Contract. Purchaser shall make monthly payments based on actual raw water usage multiplied by the District's Standard Rate as defined in Section 14 herein, in effect on the first (1st) day of the applicable Annual Payment Period. Payment and a report of the amount of water used are due by the tenth (10th) day of the following month.

B. Minimum Amount

For the purpose of calculating the minimum amount of each Annual Requirement for which Purchaser is unconditionally liable, without offset or counterclaim, Purchaser during each Annual Payment Period shall be deemed to have taken and used the minimum annual average daily amount of Project water (regardless of whether or not such amount is or was actually taken or used) specified for Purchaser as follows:

I. Beginning on Effective Date of the Agreement, and during each Annual Payment

Period thereafter, an amount for Purchaser, expressed in MGD, equal to the greater of:

a. 0.6 MGD, or

b. the average annual MGD use actually taken from the Project by Purchaser during the period of the immediately preceding five (5) consecutive Annual Payment Periods.

II. Beginning October 1, 2021, the District, at intervals of not less than three years, may review and increase the minimum amount of each Annual Requirement in Section 13 B I. a. However, any increase under 13 B II shall not increase the minimum amount to an amount greater than 2.25 MGD while the maximum annual quantity remains 10.33 MGD. District agrees to notify purchaser at least 120 days in advance of any increase under this Section.

C. Determination of Adjusted Annual Payment

The term "Adjusted Annual Payment" means the Annual Payment, as adjusted during or after each Annual Payment Period, as provided by this Agreement. At the close of each Annual Payment Period, District shall determine, with the cooperation of Purchaser, the actual amount of water diverted and used by Purchaser during the preceding Annual Payment Period. District shall calculate Purchaser's Adjusted Annual Payment by multiplying District's audited Standard Rate applicable to the Annual Payment Period in accordance with this Agreement times the greater of either:

I. The actual amount of water diverted and used from the Project expressed in thousands of gallons; or

II. Purchaser's minimum amount of water applicable during the Annual Payment

Period as determined in accordance with this Agreement, expressed in thousands of gallons.

The difference, if any, between the Annual Payment paid by Purchaser during the Annual Payment Period and the Adjusted Annual Payment, when determined, shall be applied as a credit or debit to Purchaser's account with District and shall be credited or debited in one-twelfth (1/12th) increments to Purchaser's next twelve (12) monthly payments, or as otherwise agreed upon between District and Purchaser, provided that the total amount of the credit or debit shall be made within the next twelve (12) months.

D. Dispute

If Purchaser at any time disputes the amount to be paid by it to District, Purchaser shall nevertheless promptly make the disputed payment or payments, but if it is subsequently determined by agreement or court decision that the disputed amount paid by Purchaser should have been less or more, District shall promptly revise and reallocate Purchaser's Annual Payment in a manner that Purchaser or District will recover the amount due.

If a court, the Commission, or any federal or state regulatory authority finds that District's rates or policies for delivering water to Purchaser under this Agreement are unreasonable or otherwise unenforceable, District has the option to terminate this Agreement without liability to Purchaser. By signing this Agreement, Purchaser stipulates and agrees that District and its other customers will be prejudiced if Purchaser avoids the obligation to pay the rates for water specified in this Agreement while accepting the benefits of obtaining water from District. Nothing in this Agreement shall

be construed as constituting an undertaking by District to furnish water to Purchaser except pursuant to the terms of this Agreement. If Purchaser initiates or participates in any proceeding regarding District's rates and policies under this Agreement and advocates a position that is adverse to District and District prevails, Purchaser shall pay District for its expenses, including reasonable attorney's fees, in the proceeding within fifteen (15) days after District's demand for payment. Purchaser stipulates and agrees that the rates and policies specified in this Agreement are just, reasonable, and without discrimination.

SECTION 14. RATE

Pursuant to the Amendatory Contract and the discussion below, Purchaser specifically agrees to pay the rate per 1,000 gallons (U.S. Standard Liquid Measure) of water equal to District's Standard Rate, which for any given year shall be the rate charged by District to Trinity River Authority of Texas for its Tarrant County Water Supply Project, the City of Mansfield, or the City of Fort Worth for its out-of-district water sales in effect on the first (1st) day of such year pursuant to Section 4 of the Amendatory Contract. As an example, for the Annual Payment Period that began October 1, 2018, and ends September 30, 2019, the budgeted Standard Rate, including premium and surcharge, was $1.26 per thousand gallons.

Purchaser further agrees to pay a buy-in premium based on Purchaser's demand for water and the capital cost of District's System, less depreciation should it request and District agree to provide additional water. The buy-in premium rate is calculated by dividing the capital cost of District's System, less depreciation, by the yield of District's System in MGD. The buy-in premium rate is adjusted annually. The buy-

in premium rate for fiscal year 2018 is $1,135,513 per MGD. Purchaser's buy-in premium will be based on the premium rate in effect on the Effective Date of this Agreement times Purchaser's maximum annual volume of water as specified in Section 4, above. Purchaser shall pay the buy-in premium within sixty (60) days after the execution of the Amendment to this Agreement increasing the amount of water to be provided to Purchaser.

Failure to pay any payment due District shall be sufficient grounds for District to exercise any remedy available to District under this Agreement.

SECTION 15. MEASUREMENT

Purchaser shall provide, operate, maintain, and read meters which shall record water taken by Purchaser from District at Purchaser's Point(s) of Delivery. Water shall be measured through conventional types of approved meter(s). Purchaser shall keep accurate records of all measurements of water required under this Agreement, and the measuring device(s) and such records shall be open for District inspection at all times. District shall have access to Purchaser's metering equipment at all reasonable times. This access shall include authorization for District to install, inspect, adjust, or test measuring and recording equipment. Upon written request of District, Purchaser will give District copies of such records or permit District to have access to the same in Purchaser's office during reasonable business hours. If requested in writing by District and not more than once in a six-month period, on a date as near the end of such a six month period as practical, Purchaser shall calibrate its raw water meter(s) in the presence of a District representative, and District and Purchaser shall jointly observe any adjustments that shall be necessary. If District

shall in writing request Purchaser to calibrate its raw water meter(s), Purchaser shall give District notice of the time when any such calibration is to be made and, if a representative of District is not present at the time set, Purchaser may proceed with the calibration and adjustment in the absence of any representative of District.

If, upon any test of the raw water meter(s), the percentage of inaccuracy of such metering equipment is found to be in excess of two percent (2%), (a) District may increase the calibration frequency to monthly until any inaccuracy is resolved and (b) registration thereof shall be corrected for a period extending back to the time when such inaccuracy began, if such time is ascertainable. If such time is not ascertainable, then registration thereof shall be corrected for a period extending back one-half (1/2) of the time elapsed since the last date of calibration, but in no event further back than a period of six (6) months. If any meter(s) are out of service or out of repair so that the amount of water delivered cannot be ascertained or computed from the reading thereof, the water delivered through the period such meter(s) are out of service or out of repair shall be estimated and agreed upon by District and Purchaser upon the basis of the best data available, and, upon written request by District, Purchaser shall install new meter(s) or repair existing meter(s) within a reasonable time not to exceed one hundred eighty (180) days. Upon Purchaser's refusal to install new meter(s) or repair existing meter(s) or after one hundred eighty (180) days following District's request to do so, District, at its option, may install new meters or repair existing meters at Purchaser's cost. District shall recover its cost of labor and materials by billing Purchaser each month. If District and Purchaser fail to agree on the amount of water delivered during such period, the amount of water delivered may be estimated by:

(a) Correcting the error if the percentage of the error is ascertainable by calibration tests or mathematical calculation; or

(b) Estimating the quantity of delivery by deliveries during the preceding periods under similar conditions when the meter or meters were registering accurately.

All books and records pertaining to this Agreement shall be open and available for copying, inspection, and audit by District.

SECTION 16. ADDITIONAL SOURCE OF SUPPLY

The District acknowledges that on the Effective Date of this Agreement, the Purchaser has an existing wholesale contract for water from the Trinity River Authority. The District consents to the Purchaser's current treated water agreement.

SECTION 17. SOURCE AND ADEQUACY OF SUPPLY

Water supplied by District to Purchaser under this Agreement shall be water stored by District in the Project and from no other source, unless District, at its sole discretion, decides to supply water from another source available to District. District will use its best efforts to remain in a position to furnish raw water sufficient for the reasonable demands of Purchaser. District's agreement to provide water to Purchaser shall not be deemed a guarantee on District's part that any particular quantity of water will be available, and the quantity of water taken shall at all times be subject to the right of District to reduce said quantity of water as District, in its sole judgment, may deem necessary in order to meet District's commitments under the Amendatory Contract, comply with any order of any court or administrative body having appropriate

jurisdiction, reduce flooding, or prevent injury.

District has adopted a Water Conservation and Emergency Demand Management Plan. With respect to water provided to the Purchaser under this agreement, if Purchaser fails to implement District's and its own emergency demand management plans when trigger conditions occur, District's General Manager is authorized to institute rationing pursuant to the Amendatory Contract and any other applicable wholesale water contracts, including this Agreement, as well as to enforce any contractual, statutory, or common law remedies available to District necessary to protect the public welfare. District water made available to Purchaser when Purchaser is not in compliance with District's Water Conservation and Emergency Demand Management Plan will be reduced to the amount of water that District's General Manager estimates would be necessary to satisfy Purchaser's demand if Purchaser was operating in compliance with both District's and Purchaser's Water Conservation and Emergency Demand Management Plan.

District's rights to maintain and operate the reservoirs owned or used by District and its water transportation facilities and at any and all times in the future to impound and release waters thereby in any lawful manner and to any lawful extent District may see fit is recognized by Purchaser, and, except as otherwise provided herein, there shall be no obligation hereunder upon District to release or not to release any impounded waters at any time or to maintain any waters at any specified level.

SECTION 18. PLEDGE OF REVENUE

Purchaser represents and covenants that all payments to be made by it under this

Agreement shall constitute reasonable and necessary "operating expenses" of its system as defined in Tex. Gov't Code Ann. §§ 1502.056-.058 Vernon 2015), and that all such payments will be made from the revenues of its water system. Purchaser represents and has determined that the new water supply to be obtained from the Project is absolutely necessary and essential to the present and future operation of its water system and is the only available and adequate source of supply of water therefor, and, accordingly, all payments required by this Agreement to be made by Purchaser shall constitute reasonable and necessary operating expenses of Purchaser's system or systems as described above with the effect that the obligation to make such payments from revenues of such system or systems shall have priority over any obligation to make any payments from such revenues, whether of principal, interest, or both, with respect to all bonds or other debt instruments heretofore or hereafter issued by Purchaser.

Purchaser agrees throughout the term of this Agreement to continuously operate and maintain its water system and to fix and collect such rates and charges for water services to be supplied by its water system as will produce revenues in an amount equal to at least (i) all of its payments under this Agreement and (ii) all other amounts as required by the provisions of the ordinances or resolutions authorizing its revenue bonds or other obligations now or hereafter outstanding.

District shall never have the right to demand payment by Purchaser of any obligation assumed or imposed on it under this Agreement from funds raised or to be raised by taxation, it being expressly understood by District and Purchaser that all payments due by Purchaser are to be made from the revenues and income received by Purchaser from the ownership and operation of its utility system.

SECTION 19. RAW WATER QUALITY

THE WATER WHICH DISTRICT OFFERS TO SELL TO PURCHASER IS NONPOTABLE, RAW, AND UNTREATED. PURCHASER HAS SATISFIED ITSELF THAT SUCH WATER IS SUITABLE FOR ITS NEEDS. DISTRICT EXPRESSLY DISCLAIMS ANY WARRANTY AS TO THE QUALITY OF THE RAW WATER OR SUITABILITY OF THE RAW WATER FOR ITS INTENDED PURPOSE. DISTRICT EXPRESSLY DISCLAIMS THE WARRANTIES OF MERCHANTABILITY AND FITNESS. PURCHASER AGREES THAT ANY VARIATION IN THE QUALITY OR CHARACTERISTICS OF THE RAW WATER OFFERED FOR SALE AS PROVIDED BY THIS AGREEMENT SHALL NOT ENTITLE PURCHASER TO AVOID OR LIMIT ITS OBLIGATION TO MAKE PAYMENTS PROVIDED FOR BY THIS AGREEMENT. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION CONTAINED WITHIN THIS AGREEMENT.

SECTION 20. RETURN FLOWS

This section does not apply to wastewater treated by the Trinity River Authority. Purchaser acknowledges that some of the water supplied to it by District may be returned to water courses in the Trinity River Basin as return flows, which, for purposes of this Agreement, are termed System Return Flows. District and Purchaser believe that the most economical means for meeting some of the future demands of District's customers may involve the use of return flows to extend or enhance the yield of the System. In this regard, District will, with Purchaser's cooperation, study the potential benefits to the System that can be realized through the use of return flows. In

anticipation that District will determine that use of return flows is both feasible and economical, Purchaser agrees that, other than for purposes of liability, title to all system water remains in District. Purchaser agrees that District has the right, Subsequent to the Purchaser's use of system water, Purchaser agrees that District has the right, subsequent to Purchasers use of System water, to make whatever reuse of the water District deems desirable. Purchaser will receive no compensation, credit, or offset for making System Return Flows available to District.

To the extent that Purchaser contracts to resell Project water to others, after the Effective Date of this Agreement, Purchaser shall include language in any contract for resale of Project water assigning System Return Flows to the District and requiring cooperation with the District in making System Return Flows available to District. Similarly, to the extent that Purchaser does not treat its wastewater, Purchaser shall include language in any wastewater treatment contract assigning System Return Flows to District and requiring cooperation with District in making System Return Flows available to District. Neither Purchaser nor its customers will be entitled to consideration or credit of any type, either in exchange of water, money, or other consideration, for the System Return Flow assigned back to the District. Use of System Return Flows by Purchaser initiated prior to the effective date of this Agreement are exempt from this section provided Purchaser provides the District with plans and specifications of the existing reuse project, and any other information reasonably requested by the District within ninety days of the effective date of this Agreement. If Purchaser proposes to engage in a new reuse project using System Return Flows, it shall provide the District with sufficient information to allow the

District to evaluate whether the proposed reuse project will significantly increase the water rate for District customers or decrease the yield of the District Reuse Project. Subsequent to evaluation by the District, the project will be approved by the District unless the District determines that the project will increase the District's water rates or decrease the yield of the District Reuse Project without a corresponding decrease in the demand for raw water from the District.

SECTION 21. TITLE

Title for liability purposes to all water supplied hereunder to Purchaser shall be in District up to the Point(s) of Delivery, at which point title for liability purposes shall pass to Purchaser. While title for liability purposes remains in a party, that party hereby agrees to save and hold the other party harmless from all claims, demands, and causes of action which may be asserted by anyone on account of the transportation and delivery of said water.

SECTION 22. OTHER CHARGES

In the event that any sales or use taxes, or taxes, assessments, or charges of any similar nature, are imposed on diverting, storing, delivering, gathering, impounding, taking, selling, using, or consuming the water received by Purchaser from the Project, the amount of the tax, assessment, or charge shall be borne by Purchaser, in addition to all other charges, and whenever District shall be required to pay, collect, or remit any tax, assessment, or charge on water received by Purchaser, then Purchaser shall promptly pay or reimburse District for the tax, assessment, or charge in the manner directed by District.

SECTION 23. DEFAULT IN PAYMENTS

All amounts due and owing to District by Purchaser shall, if not paid when due, bear interest at the Texas post-judgment interest rate set out in Tex. Fin. Code Ann. § 304.003 (Vernon 2015), or any successor statute, from the date when due until paid, provided that such rate shall never be usurious or exceed the maximum rate permitted by law. If any amount due and owing by Purchaser to District is placed with an attorney for collection, Purchaser shall pay to District, in addition to all other payments provided for by this Agreement, including interest, District's collection expenses, including court costs and attorneys' fees. District shall, to the extent permitted by law, suspend delivery of water from the Project to Purchaser if Purchaser remains delinquent in any payments due hereunder for a period of sixty (60) days and shall not resume delivery of water while Purchaser is so delinquent and may, at its option, terminate this Agreement without further liability to Purchaser. District shall pursue all legal remedies against Purchaser to enforce and protect the rights of District, District customers, and the holders of District's bonds. It is understood that the foregoing provisions are for the benefit of the holders of District's bonds.

SECTION 24. TERMINATION

If District decides to terminate this Agreement, as provided by this Agreement, District shall deliver written notice of the decision to Purchaser. Purchaser shall discontinue taking water from District or its facilities and physically seal Purchaser's diversion facilities within one hundred eighty (180) days after District delivers written notice to Purchaser.

SECTION 25. WAIVER AND AMENDMENT

Failure to enforce or the waiver of any provision of this Agreement or any breach or nonperformance by District or Purchaser shall not be deemed a waiver by Purchaser or District of the right in the future to demand strict compliance and performance of any provision of this Agreement. Regardless of any provision contained in this Agreement to the contrary, any right or remedy or any default under this Agreement, except the right of District to receive the Annual Payment which shall never be determined to be waived, shall be deemed to be conclusively waived unless asserted by a proper proceeding at law or in equity within two (2) years plus one (1) day after the occurrence of the default.

No officer or agent of District or Purchaser is authorized to waive or modify any provision of this Agreement. No modifications to or rescission of this Agreement may be made except by a written document approved by the governing body and signed by District's and Purchaser's authorized representatives.

SECTION 26. REMEDIES

It is not intended hereby to specify (and this Agreement shall not be considered as specifying) an exclusive remedy for any default, but all such other remedies (other than termination) existing at law or in equity may be availed of by any party hereto and shall be cumulative. Recognizing, however, that failure in the performance of any party's obligations hereunder could not be adequately compensated in money damages alone, each party agrees in the event of any default on its part that each party shall have available to it the equitable remedies of mandamus, injunction and specific

performance, in addition to any other legal or equitable remedies (other than termination) which also may be available to District.

SECTION 27. INDEMNITY

By signing this Agreement, Purchaser agrees, on behalf of itself and its successors and assigns, that it relinquishes and will, to the fullest extent permitted by law, defend, protect, indemnify, and hold harmless District and District's officers, directors, employees, agents, and consultants from and against all claims, losses, expenses, costs, damages, demands, judgments, causes of action, suits, and liability in tort, contract or any other basis and of every kind and character whatsoever (including but not limited to all costs of defense, such as fees and charges of attorneys, expert witnesses, and other professionals incurred by District and all court or arbitration or other dispute resolution costs) arising out of or incident to, directly or indirectly, this Agreement, including but not limited to any such claim for bodily injury, death, property damage, consequential damage, or economic loss and any claim that may arise in connection with the quality, quantity, use, misuse, impoundment, diversion, transportation, and measurement of Project water and any claim that may arise as a result of installation, inspection, adjusting, or testing of measuring and recording equipment involving Purchaser's diversion of District water, as well as any claim that may arise from any condition of Purchaser's facilities, separate operations being conducted on Purchaser's facilities, or the imperfection or defective condition, whether latent or patent, of any material or equipment sold, supplied, or furnished by District. This indemnification and release shall survive termination or expiration of the agreement. Any indemnity provided by this Section 27 shall not be considered a

waiver of any statutory or constitutional sovereign immunity protections afforded Purchaser.

SECTION 28. FORCE MAJEURE

If, for any reason of force majeure, either District or Purchaser shall be rendered unable, wholly or in part, to carry out its obligation under this Agreement, other than the obligation of Purchaser to make the payments required under the terms of this Agreement, then if the party shall give notice of the reasons in writing to the other party within a reasonable time after the occurrence of the event or cause relied on, the obligation of the party giving the notice, so far as it is affected by the "force majeure," shall be suspended during the continuance of the inability then claimed, but for no longer period. The term "force majeure," as used in this Agreement, shall mean acts of God, strikes, lockouts, or other industrial disturbances, acts of public enemy, orders or actions of any kind of government of the United States or of the State of Texas, or any civil or military authority, insurrections, riots, epidemics, landslides, lightning, earthquakes, fires, hurricanes, storms, floods, washouts, droughts, arrests, restraints of government and people, civil disturbances, explosions, breakage or accident to dams, machinery, pipelines, canals, or other structures, partial or entire failure of water supply, including pollution (accidental or intentional), and any inability on the part of District to deliver water, or of Purchaser to receive water, on account of any other cause not reasonably within the control of the party claiming the inability.

SECTION 29. NON-ASSIGNABILITY

Purchaser understands and agrees that any assignment of rights or delegation of duties under this Agreement is void without the prior written consent of District.

SECTION 30. NO THIRD-PARTY BENEFICIARIES

This Agreement shall inure only to the benefit of the parties hereto and third persons not privy hereto shall not, in any form or manner, be considered a third-party beneficiary of this Agreement. Each party hereto shall be solely responsible for the fulfillment of its customer contracts or commitments, and District shall not be construed to be responsible for Purchaser's contracts or commitments by virtue of this Agreement or any provision contained herein.

SECTION 31. RELATIONSHIP OF THE PARTIES

This Agreement is by and between District and Purchaser and is not intended, and shall not be construed to create, the relationship of agent, servant, employee, partnership, joint venture, or association as between District and Purchaser nor between District and any officer, employee, contractor, or representative of Purchaser. No joint employment is intended or created by this Agreement for any purpose. Purchaser agrees to so inform its employees, agents, contractors, and subcontractors who are involved in the implementation of or construction under this Agreement.

SECTION 32. SOLE AGREEMENT

Except for the Amendatory Contract, this Agreement constitutes the sole and only agreement of Purchaser and District regarding District's provision of water to the

Purchaser and supersedes any prior understanding or oral or written agreements between District and Purchaser respecting the subject matter of this Agreement, including any oral or written agreement with District that Purchaser obtained by assignment.

SECTION 33. SEVERABILITY

The provisions of this Agreement are severable, and if, for any reason, any one or more of the provisions contained in this Agreement shall be held to be invalid, illegal, or unenforceable in any respect, the invalidity, illegality, or unenforceability shall not affect any other provision of this Agreement, and this Agreement shall remain in effect and be construed as if the invalid, illegal, or unenforceable provision had never been contained in the Agreement.

SECTION 34. NOTICES

All notices, payments, and communications (collectively "notices") required or allowed by this Agreement shall be in writing and be given by hand-delivery or by depositing the notice in the United States mail, postage prepaid, registered or certified, with return receipt requested, and addressed to the party to be notified. Notice deposited in the mail in the previously described manner shall be conclusively deemed to be effective from and after the expiration of three (3) days after the notice is deposited in the mail. For purposes of notice, the addresses of and the designated representative for receipt of notice for each of the parties shall be shown above the signatures of the individuals who signed this Agreement on behalf of District and Purchaser. Either party may change its address giving written notice of the change to the other party at least fifteen (15) days before the change becomes effective.

SECTION 35. PLACE OF PERFORMANCE

All acts performable under the terms of this Agreement and all amounts due under this Agreement, including but not limited to payments due under this Agreement or damages for the breach of this Agreement, shall be paid and be due in Tarrant County, Texas, said Tarrant County, Texas, being the place of performance agreed to by the parties to this Agreement. In the event that any legal proceeding is brought to enforce this Agreement or any provision hereof, the same shall be brought in Tarrant County, Texas.

SECTION 36. DUPLICATE ORIGINALS

Purchaser and District, acting under the authority of their respective governing bodies, shall authorize the execution of this Agreement in several counterparts, each of which shall be an original. Purchaser shall submit written evidence in the form of bylaws, charters, resolutions, or other written documentation specifying the authority of Purchaser's representative to sign this Agreement, which evidence shall be attached to this Agreement as Exhibit 3.

EFFECTIVE as of the later of the date this Agreement is signed by the authorized representatives of the District and Purchaser or December 1, 2018 (the "Effective Date").

Executed on this the ___ day of _____, 2018.

Tarrant Regional Water District

By: _____

James M. Oliver

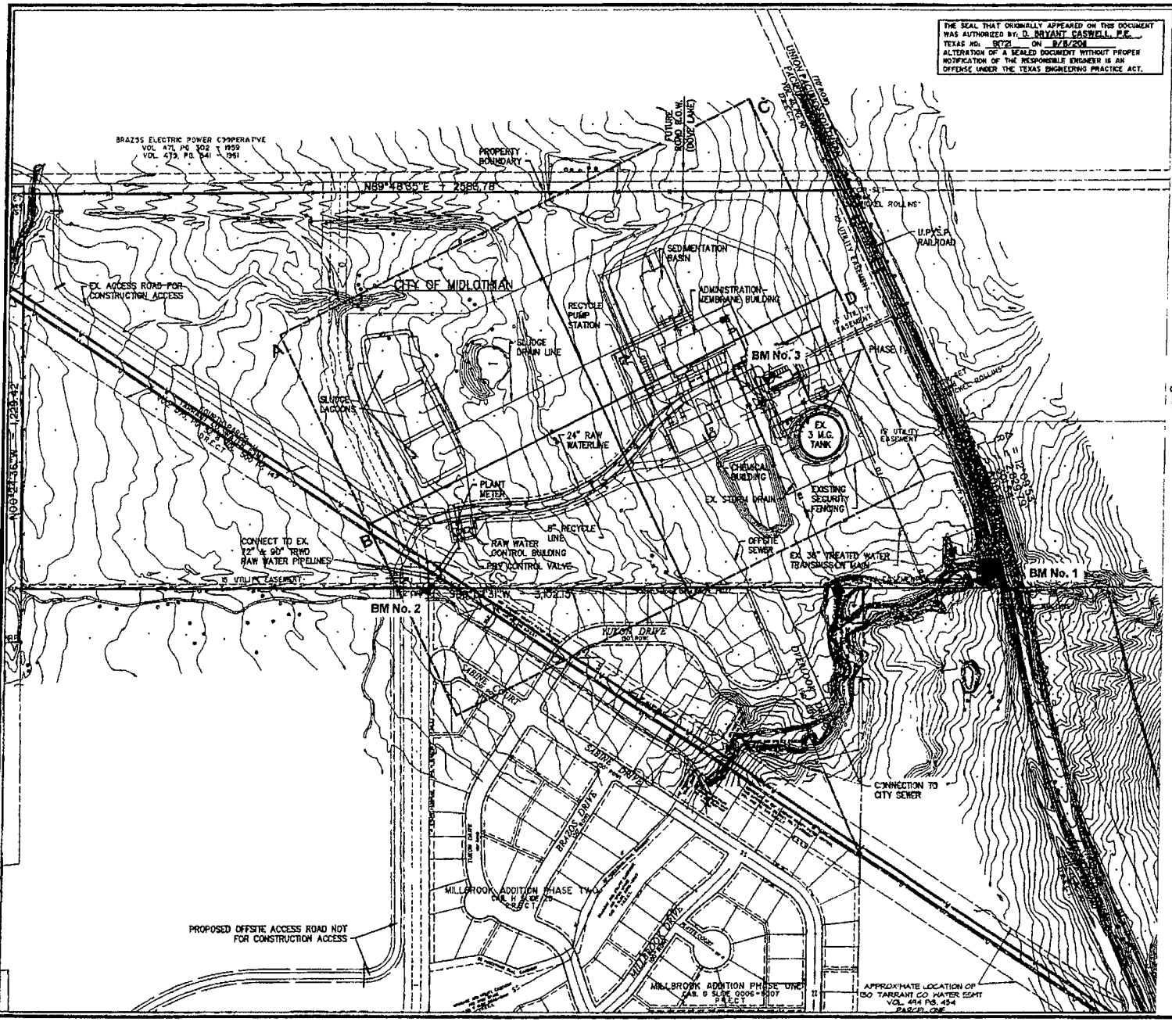
General Manager

Executed on this the 11th day of December, 2018

City of Midlothian

By: _____

Chris Dick, City Manager



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Fax: 817.649.7645

FREESE and NICHOLS
1701 N. Market Street, Suite 500, LB 51
Dallas, Texas 75202-2001
Phone - (214) 217-2200
Fax - (214) 217-2201

SE SHRADER ENGINEERING
Electrical · Mechanical · Information Technology

CITY OF MIDLOTHIAN WTP NO. 2 PHASE II

RECORD DRAWING
This record drawing is a compilation of a copy of the sealed engineering drawing for this project as modified by addenda, change orders, and information furnished by the Owner and/or Contractor (Corney Construction). The information shown on the record drawing that was provided by the Contractor or others not associated with the Engineer, cannot be verified for accuracy or completeness. The original bid drawings are on file at the offices of Schrickel, Rollins, & Associates, Inc.

DATE:	
REVISED:	
STATUS:	BID SET 2
DESIGN BY:	DBC
DRAWN BY:	KBW
JOB NO.	4889
PROJECT NAME	Midlothian WTP No. 2, Phase II

SITE LAYOUT

BAR IS ONE INCH LONG ON ORIGINAL DRAWING. CHECK SCALE AND ADJUST ACCORDINGLY.
1"

SHEET NO. 5

GE-2.00

Phenorme: H:\Job\4889\01 ACAD\Sheets\01 GE\SITE LAYOUT.dwg Date: 11/14/14 User: Wills, Robert

Exhibit 2

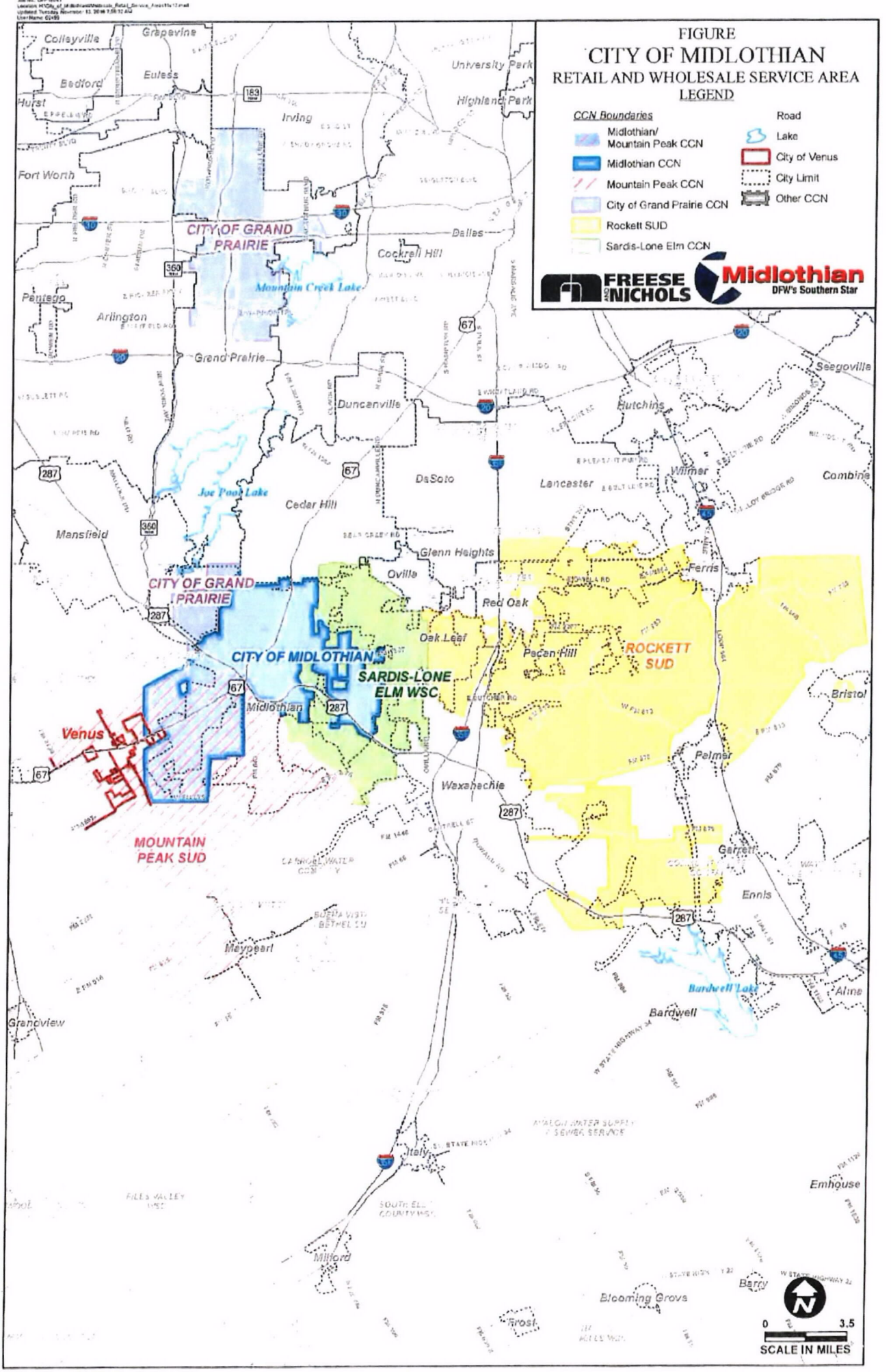
FIGURE
CITY OF MIDLOTHIAN
RETAIL AND WHOLESALE SERVICE AREA
LEGEND
CCN Boundaries
Midlothian/ Mountain Peak CCN
Midlothian CCN
Mountain Peak CCN
City of Grand Prairie CCN
Rockett SUD
Sardis-Lone Elm CCN
Road
Lake
City of Venus
City Limit
Other CCN
FREESE AND NICHOLS
Midlothian
DFW's Southern Star
Colleyville
Grapevine
Euless
Bedford
Hurst
Irving
University Park
Highland Park
Fort Worth
CITY OF GRAND PRAIRIE
Dallas
Cockrell Hill
Mountain Creek Lake
Pantego
Arlington
Grand Prairie
Duncanville
Hutchins
Seagoville
DeSoto
Lancaster
Wilmer
Combine
Joe Pool Lake
Cedar Hill
Mansfield
Glenn Heights
Oville
Ferris
CITY OF GRAND PRAIRIE
Red Oak
Oak Leaf
Pecan Hill
ROCKETT SUD
CITY OF MIDLOTHIAN
SARDIS-LONE ELM WSC
Midlothian
Bristol
Venus
Palmer
Waxahachie
MOUNTAIN PEAK SUD
Garrett
Ennis
Maypearl
Bardwell Lake
Alma
Bardwell
Grandview
Italy
Emhouse
Milford
Blooming Grove
Frost
Barry
0
3.5
SCALE IN MILES

THE STATE OF TEXAS §

COUNTY OF ELLIS §

CERTIFICATION

I, Tammy Varner, City Secretary of the City of Midlothian, Texas, do hereby certify that I am custodian of the records of the City of Midlothian, Texas, and that the attached is a true and correct copy of the Additional Party Municipal Raw Water Supply Contract between Tarrant Regional Water District and the City of Midlothian, adopted by the City Council of the City of Midlothian on December 11, 2018. The agreement is for the purchase of water from the Cedar Creek and Richland-Chambers Reservoirs and Pipelines.

Witness My Hand and Official Seal of the City of Midlothian, Texas, this the 12th day of December, 2018.

CITY OF MIDLOTHIAN, TEXAS

Tammy Varner, City Secretary
City of Midlothian

Tarrant Regional Water District
Amendment to
Additional Party Raw Water Supply Contract
Municipal

Midlothian First Amendment

Cedar Creek and Richland-Chambers Reservoirs and Pipelines

TARRANT REGIONAL WATER DISTRICT
ADDITIONAL PARTY CONTRACT- MUNICIPAL

THE STATE OF TEXAS	§	**ADDITIONAL PARTY**
	§	**MUNICIPAL**
COUNTY OF TARRANT	§	**RAW WATER SUPPLY**
		CONTRACT AMENDMENT

FIRST AMENDMENT TO THE 2018 MIDLOTHIAN ADDITIONAL PARTY CONTRACT

Between **TARRANT REGIONAL WATER DISTRICT** ("District") and the **CITY OF MIDLOTHIAN TEXAS** ("Purchaser"), a municipality of the State of Texas.

RECITALS

1. Purchaser and District entered into an Additional Party Raw Water Supply Contract ("2018 Midlothian Additional Party Contract") that was executed on December 11, 2018.

2. Subsequent to the execution of 2018 Midlothian Additional Party Contract, Purchaser requested on behalf of Sardis Lone Elm Water Supply Corporation an additional 1.86 million gallons per day ("MGD") of water from District. By this First Amendment to the 2018 Midlothian Addition Party Contract ("First Amendment"), the annual volume of water supply available to Purchaser from the District pursuant to the 2018 Midlothian Additional Party Contract and is now 12.19 MGD.

AGREEMENT

For and in consideration of the mutual promises, covenants, obligations, and benefits described in this the 2018 Midlothian Additional Party Contract, and the First Amendment, District and Purchaser agree to amend the 2018 Midlothian Additional Party Contract as follows:

1. Delete Section 4 of the 2018 Midlothian Additional Party Contract regarding Volume and replace with the following:

SECTION 4. VOLUME

Subject to the limitations and conditions described in this Agreement, the Amendatory Contract, and Certificates of Adjudication Nos. 08-4976 and 08-5035, District agrees to sell Purchaser raw water from the Project at the Point(s) of Delivery described in this Agreement. The volume of water actually purchased depends upon Purchaser's demand, but the average volume to be furnished during the first year in which Purchaser takes water is estimated to be 300 acre-feet (0.27 million gallons per day ("MGD")). Based upon past usage and future projections, the average quanity of water to be furnished in succeeding years is estimated to range from 672.08 acre-feet to 13,654.55 acre-feet (0.6 to 12.19 MGD). The Maximum Annual Quanity is defined as 13,654.55 acre-feet. Purchaser may not divert more than the Maximum Annual Quanity in an Annual Payment Period, as defined in Section 14, without prior written approval of District.

2. Add a new Section 13A to the 2018 Contract and reorder Section 13 accordingly:

A. Buy-in Premium

In addition to buy-in premiums previously paid by Purchaser, Purchaser shall cause Sardis Lone Elm Water Supply Corporation to pay directly to District an additional $2,256,620.82 within sixty (60) days after the execution of this First Amendment for additional supply of 1.86 MGD to serve Sardis Lone Elm Water Supply Corporation.

3. Delete Section 13B of the 2018 Contract regarding Minimum Amount and replace with a new and reordered Section 13 C:

C. Minimum Amount

For the purpose of calculating the minimum amount of each Annual Requirement for which Purchaser is unconditionally liable, without offset or counterclaim, Purchaser during each Annual Payment Period shall be deemed to have taken and used the minimum annual

average daily amount of Project water (regardless of whether or not such amount is or was actually taken or used) specified for Purchaser as follows:

I. Beginning on Effective Date of the Agreement, and during each Annual Payment Period thereafter, an amount for Purchaser, expressed in MGD, equal to the greater of:

a. 0.75 MGD, or

b. the average annual MGD use actually taken from the Project by Purchaser during the period of the immediately preceding five (5) consecutive Annual Payment Periods.

II. Beginning October 1, 2021, the District, at intervals of not less than three years, may review and increase the minimum amount of each Annual Requirement in Section 13 C I. a. However, any increase under 13 C II shall not increase the minimum amount to an amount greater than 2.25 MGD while the maximum annual quantity remains 12.19 MGD. District agrees to notify purchaser at least 120 days in advance of any increase under this Section.

IN WITNESS WHEREOF, the undersigned District and Purchaser execute this First Amendment to the 2018 Contract in duplicate originals on the dates hereunder, each of which is deemed to be an original.

EFFECTIVE as of the date signed by the authorized representative of District.

TARRANT REGIONAL WATER DISTRICT,
A Water Control and Improvement District
P.O. Box 4508
Fort Worth, TX 76164-0508
Attn.: General Manager

BY: _____

TITLE: General Manager

DATE: 6/18/2019