



Control Number: 45879



Item Number: 15

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JOINT APPLICATION OF THE CITY §  
OF SANGER AND BOLIVAR WATER §  
SUPPLY CORPORATION TO AMEND §  
CERTIFICATES OF CONVENIENCE §  
AND NECESSITY AND FOR §  
APPROVAL OF A WATER SERVICE §  
AGREEMENT IN DENTON COUNTY §

PUBLIC UTILITIES COMMISSION

OF TEXAS

FILING CLERK

**CITY OF SANGER'S RESPONSES TO COMMISSION STAFF'S FIRST REQUEST FOR  
INFORMATION, QUESTION NOS. STAFF 1-1 THROUGH STAFF 1-2**

COMES NOW; the City of Sanger, Texas ("the City"), by and through its attorney of record, and hereby responds to the First Request for Information received from the Public Utilities Commission of Texas ("the Commission") on September 9, 2016.

**QUESTION NO. STAFF 1-1**

Please provide documentation that shows that the public water supply for the City of Sanger is in compliance with the TCEQ issued violation for failure to have sanitary control easements for wells B, E, F & G.

**CITY'S RESPONSE TO QUESTION NO. STAFF 1-1**

To protect the public water supply, the City enacted Ordinance 04-06-14 on April 21, 2014. See Exhibit A attached hereto and made part hereof for all purposes. The ordinance restricts potentially harmful activities near wells, provides a criminal penalty for such activities, and allows the City a right of entry to conduct inspections in areas near wells.

The ordinance governs construction and other uses of land within one hundred fifty feet (150') of wells to secure these areas from pollution hazards and enable the City to ensure the cleanliness and safety of the public water supply.

Also attached are current survey maps that depict the exact locations of the City's wells and the radius thereabout where potentially harmful activities are restricted. See Exhibit A.

15

The ordinance explicitly prohibits thirty specific activities in these prohibited zones, as well as restricting "all other construction or operation that could create an unsanitary condition" within a one hundred fifty foot (150') radius of each well. Furthermore, other activities are prohibited within a fifty foot radius of each well, such as the construction or operation of sewers, septic tanks, or cemeteries and the presence of any livestock.

To enforce these restrictions, the ordinance also permits City employees or other authorized representatives to immediately enter any premises within one hundred fifty feet (150') of any well to conduct inspections or otherwise enforce the restrictions. Violations, if discovered, are required to be removed upon notification from the City, and each violation is punishable by a maximum two thousand dollar (\$2000.00) criminal penalty per day of the violation. This inspection and enforcement regime, implemented by the Ordinance, satisfied the sanitary control easement requirement and protects the public water supply.

#### **QUESTION NO. STAFF 1-2**

Please provide documentation that shows that the public water supply for the City of Sanger is in compliance with the TCEQ issued violation for failure to meet the minimum capacity requirement of 0.6 gallons per minute.

#### **CITY'S RESPONSE TO QUESTION NO. STAFF 1-2**

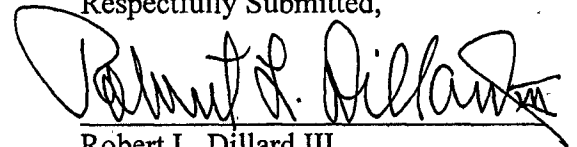
The City of Sanger has taken action to meet the minimum capacity requirements of 0.6 gallons per minute by drilling two new wells to increase capacity. Both wells will be on line by the end of 2016.

The City's new wells, City Wells nos. 8 and 9, are both TCEQ approved wells located within Denton County and the city limits. The drilling of Well 8 began on January 12, 2016, and was completed on April 22, 2016, and provides a yield of 735 gallons per minute with a 215 ft. drawdown after thirty-six hours. A State of Texas Well Report for Well 8, with tracking number

423367, is attached to this response. The drilling of Well 9 began on September 7, 2015, and was completed on January 20, 2016, and provides a yield of 725 gallons per minute with a 295 ft. drawdown after thirty-six hours. A State of Texas Well Report for Well 9, with tracking number 415109, is attached to this response. All the referenced reports are attached collectively as Exhibit B and made a part hereof for all purposes.

The purpose of these new wells is to increase the City's public water supply capacity and meet the requirements set by the Commission. These new wells were drilled by C. Miller Drilling, a licensed operator, and conducted with plans approved by TCEQ. Additionally, the pumps for each well have been certified. With the added capacity generated by these two new wells, the City's total production will far exceed TCEQ's minimum requirements.

Respectfully Submitted,



Robert L. Dillard III  
State Bar Number 05870000

T. Evan Fisher

State Bar Number 24084207

Nichols, Jackson, Dillard, Hager &  
Smith LLP

1800 Ross Tower

500 North Akard

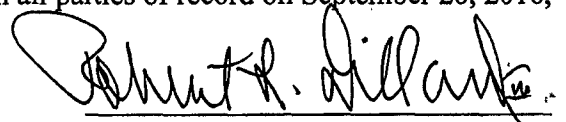
Dallas, Texas 75201

214-965-9900 telephone

214-965-0010 facsimile

#### **CERTIFICATE OF SERVICE**

I certify that a copy of this document will be served on all parties of record on September 28, 2016, in accordance with 16 TAC § 22.74.



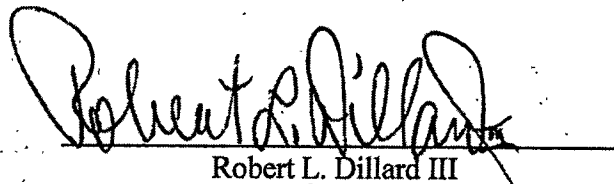
Robert L. Dillard III

JOINT APPLICATION OF THE CITY §  
OF SANGER AND BOLIVAR WATER §  
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CERTIFICATES OF CONVENIENCE §  
AND NECESSITY AND FOR §  
APPROVAL OF A WATER SERVICE §  
AGREEMENT IN DENTON COUNTY §

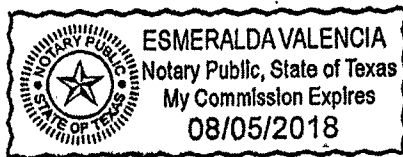
PUBLIC UTILITIES COMMISSION  
OF TEXAS

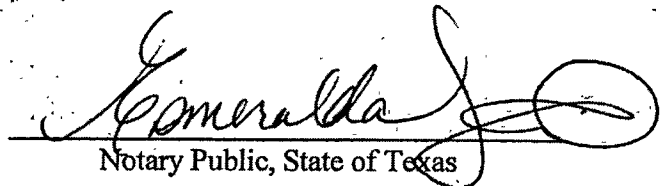
VERIFICATION

BEFORE ME, the undersigned authority, on this day personally appeared Robert L. Dillard III, known to me to be the person whose name is subscribed hereto, and who after being by me first duly sworn deposed on his oath and stated that he is city attorney for the City of Sanger, that he has read the foregoing responses, that he has personal knowledge of the facts stated therein, and that all of said facts are within his knowledge and are true and correct.

  
Robert L. Dillard III

SUBSCRIBED AND SWORN TO BEFORE ME, on this 28<sup>th</sup> day of September 2016, to certify which witness my hand and official seal.



  
Notary Public, State of Texas

**JOINT APPLICATION OF THE CITY § PUBLIC UTILITIES COMMISSION  
OF SANGER AND BOLIVAR WATER §  
SUPPLY CORPORATION TO AMEND § OF TEXAS  
CERTIFICATES OF CONVENIENCE §  
AND NECESSITY AND FOR §  
APPROVAL OF A WATER SERVICE §  
AGREEMENT IN DENTON COUNTY §**

**TABLE OF EXHIBITS**

In support of the above Responses given by the City, the following Exhibits are attached and hereby incorporated as part of the City's Responses.

Exhibit A: City of Sanger Ordinance #04-06-14, sanitary easement survey maps

Exhibit B: State of Texas Well Report for Tracking #423367; State of Texas Well Report for Tracking #415109; Pump Performance Test Results

**ORDINANCE #04-06-14**

**AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SANGER, TEXAS, ESTABLISHING RULES AND REGULATIONS REGARDING SANITATION AND POLLUTION CONTROL OF THE AREAS IN PROXIMITY TO THE CITY'S PUBLIC WATER SUPPLY WELLS.**

**WHEREAS**, the City of Sanger, Texas (the "City"), owns and operates water supply facilities within the City, including two (2) water wells and related facilities (the "Wells"), which provide potable water to the residents of the City; and

**WHEREAS**, because maintenance of sanitary conditions around such Wells is vital to the protection of the Wells and to the protection of the health and safety of the residents of the City, the City Council deems it necessary and proper to establish rules and regulations governing the control of sanitary conditions around the Wells.

**NOW THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF SANGER, TEXAS:**

**Section 1. Purpose.**

A. This ordinance sets forth uniform requirements for the users and the construction of facilities in or on land within one hundred fifty feet (150') of the Wells in order to promote sanitary conditions in and around such Wells, to secure all such land from pollution hazards, and to enable the City to comply with all applicable state and local regulations.

B. The objective of this Ordinance is to prevent certain uses and the construction of facilities in or on land surrounding the Wells, which might create a danger of pollution to the water produced from such Wells.

**Section 2. Definitions.**

Unless the context requires otherwise, the following terms and phrases, as used in this Ordinance, shall have the meanings hereinafter designated:

- A. *City Council* shall mean the City Council of the City of Sanger, Texas.
- B. *City* shall mean the City of Sanger, Texas.
- C. *Ordinance* shall mean this Ordinance Establishing Rules and Regulations Regarding Sanitary and Pollution Control of the Area in Proximity to the City's Public Water Supply Wells.
- D. *Person* shall mean any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity, or any other legal entity, or its legal representatives, agents, successors or assigns.
- E. *Wells* shall mean the water wells owned and operated by the City, which are more specifically identified and described in Exhibit "A" attached hereto and made a part hereof.

**EXHIBIT**

tabbies

A

### **Section 3. Prohibited Activities.**

The following activities are prohibited within the designated areas of land surrounding the Wells:

- A. Construction and/or operation of any underground petroleum and/or chemical storage tank, liquid transmission pipeline, stock pen, feedlot, dump grounds, privy, cesspool, septic tank, sewage treatment plant, sewage wet well, sewage pumping station, drainage ditch which contains industrial waste discharges or the wastes from sewage treatment systems, solid waste disposal site, land on which sewage plant or septic tank sludge is applied, land irrigated by sewage plant effluent, septic tank perforated drain field, absorption bed, evapotranspiration bed, area irrigated by low dosage, low angle spray on-site sewage facility, military facility, industrial facility, wood treatment facility, liquid petroleum and petrochemical production, storage and/or transmission facility, Class 1, 2 3, and/or 4 injection well, pesticide storage and/or mixing facility, abandoned well, inoperative well, improperly constructed water well of any depth, and all other construction or operation that could create an unsanitary condition is prohibited within, upon, or across all areas of land within a 150-foot radius of the Wells. For the purposes of this Ordinance, "improperly constructed water wells" are those wells that do not meet the surface and subsurface construction standards for a public water supply well.
- B. Construction and/or operation of tile or concrete sanitary sewers, sewer appurtenances, septic tanks, storm sewers, and cemeteries is specifically prohibited within, upon, or across any area of land within a 50-foot radius of the Wells.
- C. Construction of homes or building upon any area of land within a 150-foot radius of the Wells is permitted, provided the restrictions described in items A and B above are met.
- D. Normal farming and ranching operations are not prohibited by the Ordinance; provided, however, livestock shall not be allowed within a 50-foot radius of the Wells.

### **Section 4. Right of Entry.**

City employees, or authorized representatives of the City, bearing proper credentials and identification, shall be permitted to immediately enter upon any premises located within a 150-foot radius of any Well to conduct any inspection or observation necessary to enforce this Ordinance.

### **Section 5. Penalty.**

Any person who shall violate any provision of this Ordinance shall be deemed guilty of a misdemeanor and, upon conviction, shall be fined in the amount not to exceed \$2,000. Each day of the violation shall constitute a separate offense.



**Section 6. Required Removal.**

Any person who shall violate any provision of this Ordinance shall be required to remove the prohibited construction or potential source of contamination within 10 days after notification that they are in violation of this Ordinance.

**Section 7. Superseding Regulation or Statute.**

Whenever any applicable statute, regulation, or permit of any state, federal, or other agency having jurisdiction over the subject matter of the Ordinance, is in conflict herewith, the stricter requirement shall apply, unless mandated otherwise.

**Section 8. Severability.**

In the event any clause, phrase, provision, sentence, or part of this Ordinance or the application of the same to any person or circumstances shall for any reason be adjudged invalid or held unconstitutional by a court of competent jurisdiction, it shall not affect, impair, or invalidate this Ordinance as a whole or any part of provision hereof other than the part declared to be invalid or unconstitutional; and the City Council of the City of Sanger, Texas, declares that it would have passed each and every part of the same notwithstanding the omission of any such part thus declared to be invalid or unconstitutional, whether there be one or more parts.

This ordinance will take effect immediately from and after its passage, and the publication of the caption, as the law and Charter in such cases provide.

**PASSED AND APPROVED** this 21st day of April, 2014 by the City Council of the City of Sanger, Texas.

**ATTEST:**

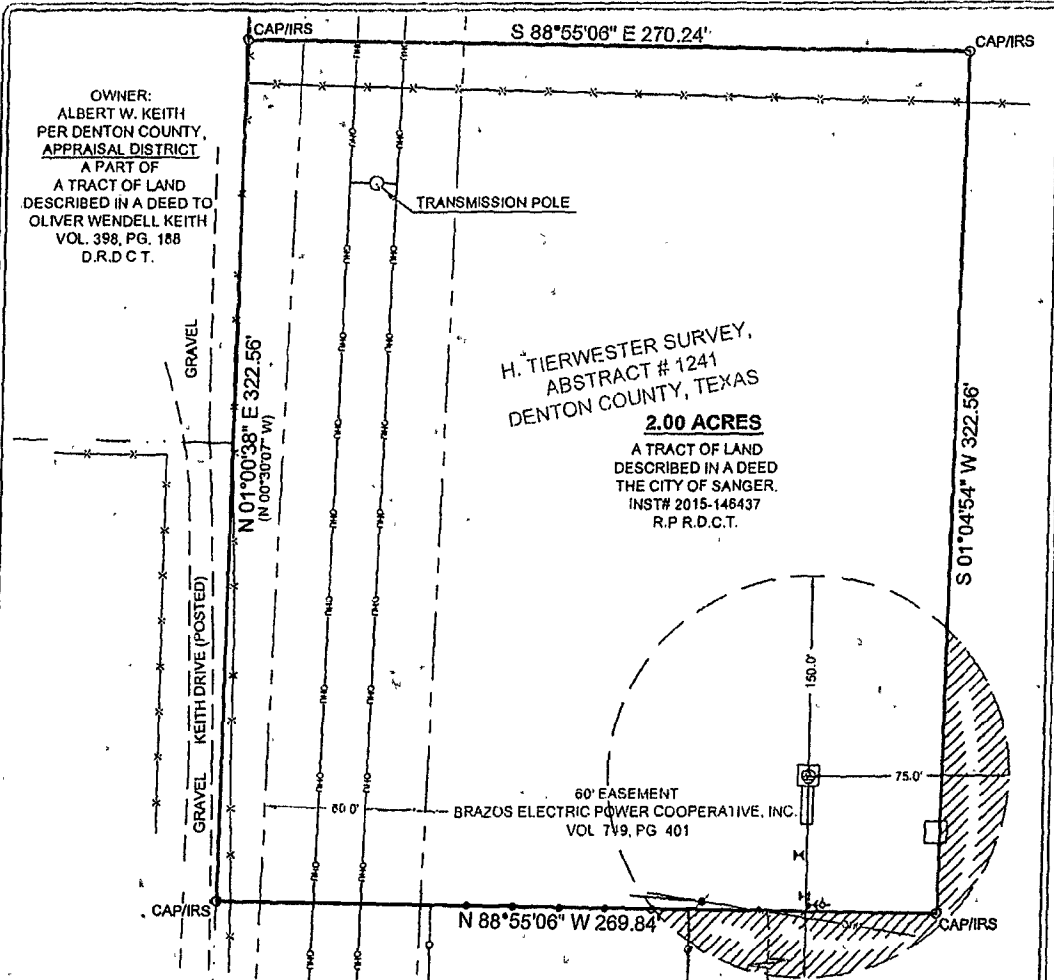
  
Tami Taber, City Secretary



**APPROVED:**

  
Thomas Muir, Mayor

OWNER:  
ALBERT W. KEITH  
PER DENTON COUNTY,  
APPRAISAL DISTRICT  
A PART OF  
A TRACT OF LAND  
DESCRIBED IN A DEED TO  
OLIVER WENDELL KEITH  
VOL. 398, PG. 188  
D.R.D.C.T.



NOTE: This survey is certified to City of Sanger.

NOTE: This survey correctly represents the results of an on-the-ground survey made under my direction and supervision on 9-2-2016. There are no visible or apparent intrusions or protrusions except as shown hereon.

NOTE: This survey was performed without the benefit of a title commitment.

NOTE: Bearings shown hereon are referenced to the Texas Coordinate System of 1983, North Central Zone (4202), and are based on the North American Datum of 1983, 2011 Adjustment.

#### LEGEND

( ) = PLAT OR DEED CALL  
CAP/IRF = CAPPED IRON ROD FOUND  
CAP/IRS = CAPPED IRON ROD SET  
⊗ = WELL  
⚡ = POWER POLE  
H = WATER VALVE  
— = OVERHEAD UTILITY



**K Z**  
**SURVEYING**

TX FIRM REGISTRATION # 10002100

1720 WESTMINSTER  
DENTON, TX 76205  
(940)382-3446

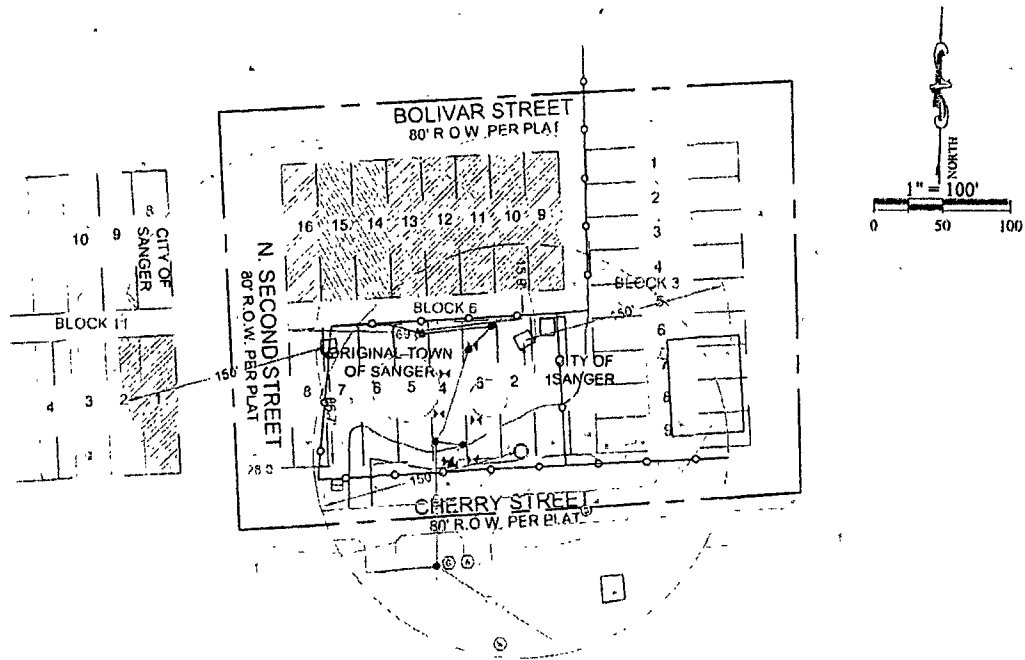
JOB NUMBER: 140955

DRAWN BY: MMF

DATE: 9-8-2016

R.P.L.S.

KENNETH A. ZOLLINGER

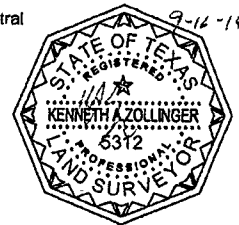


### 150' SANITARY EASEMENT

This survey is certified to the City of Sanger. This survey correctly represents the results of an on-the-ground survey made under my direction and supervision on 9-14-2016. There are no visible or apparent intrusions or protrusions except as shown hereon.

NOTE: This survey has been performed without the benefit of a Schedule A&B, Title Report or Title Binder.

NOTE: Bearings shown hereon are referenced to the Texas Coordinate System of 1983, North Central Zone (4202), and are based on the North American Datum of 1983, 2011 Adjustment, and GPS observations.



#### LEGEND

—○—	= CHAINLINK FENCE
✕	= WATER VALVE
●	= POWER POLE
—	= OVERHEAD UTILITY
⊙	= GAS METER
⊗	= WATER METER
⊕	= SANITARY SEWER MANHOLE
■	= CONCRETE

**K Z**  
**SURVEYING**

TX FIRM REGISTRATION # 10002100

1720 WESTMINSTER  
DENTON, TX 76205  
(940)382-3446

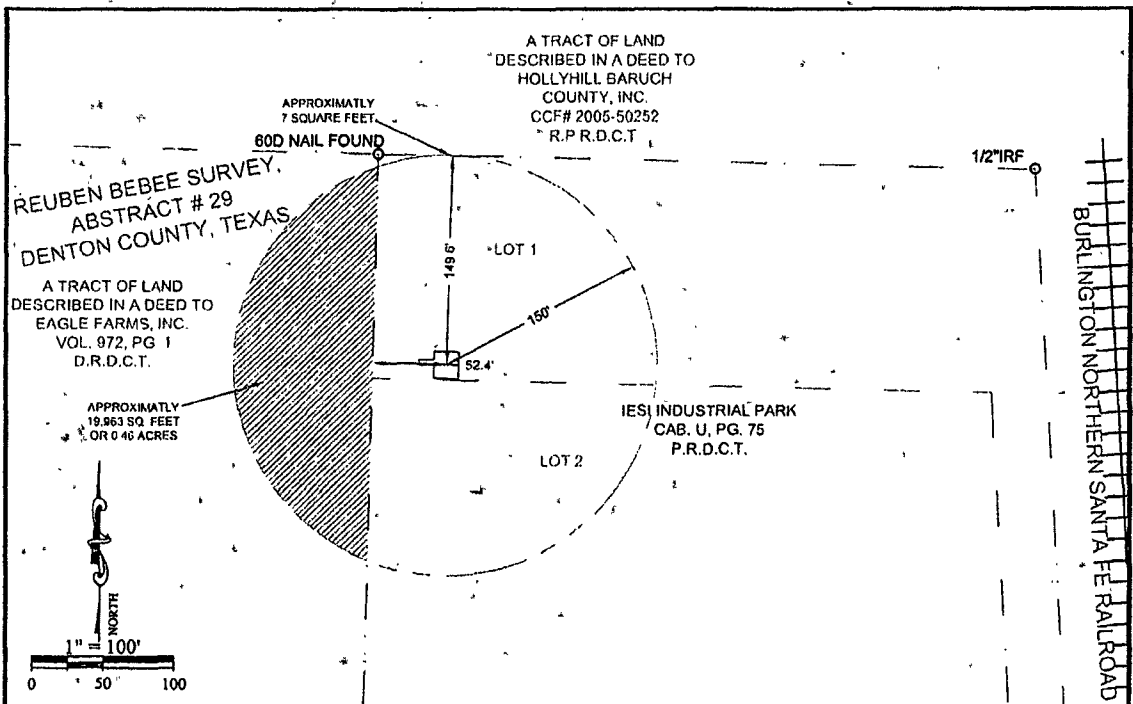
JOB NUMBER: 140126-02

DRAWN BY: MMF

DATE: 9-15-2016

R.P.L.S.

KENNETH A. ZOLLINGER

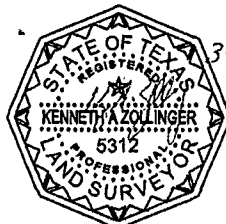


## 150' SANITARY EASEMENT

This survey is certified to the City of Sanger. This survey correctly represents the results of an on-the-ground survey made under my direction and supervision on 3-6-2014. There are no visible or apparent intrusions or protrusions except as shown hereon.

NOTE: This survey has been performed without the benefit of a Schedule A&B, Title Report or Title Binder.

NOTE: Bearings shown hereon are referenced to the Texas Coordinate System of 1983, North Central Zone (4202), and are based on the North American Datum of 1983, 2011 Adjustment, and GPS observations.



WELL # 7

JOB # 140126  
DRAWN BY: H.C.I.  
DATE: 3-14-2014  
R.P.L.S.  
KENNETH A. ZOLLINGER

NOTES:

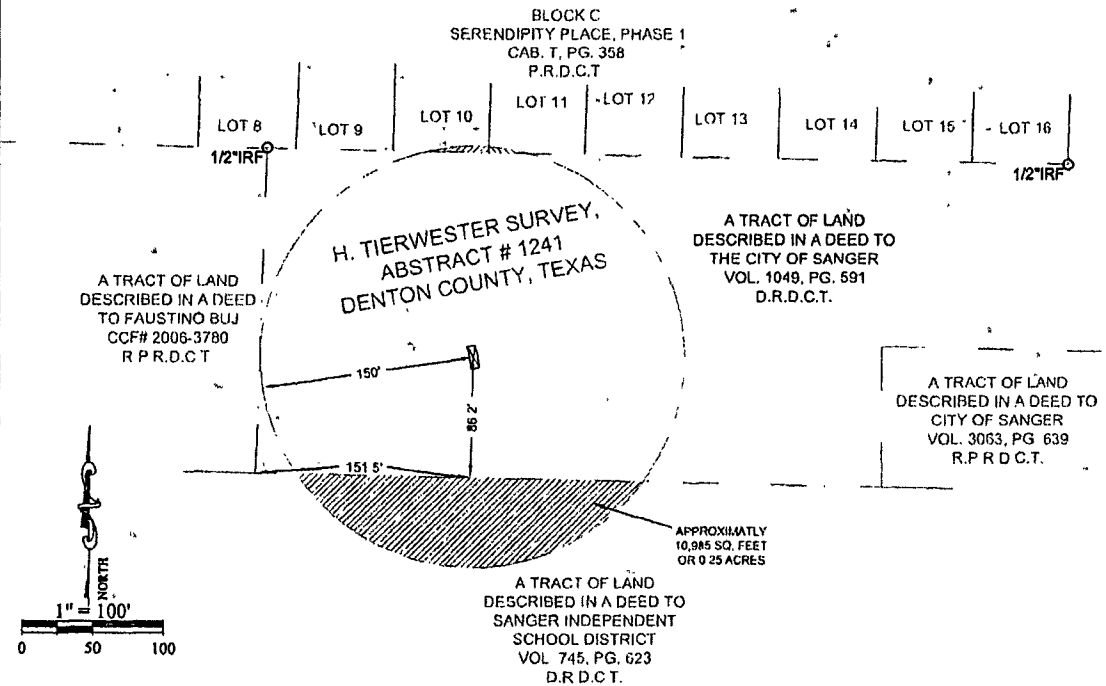
**KAZ**  
SURVEYING  
1720 WESTMINSTER  
DENTON, TX 76205  
(940)382-3446  
www.kazsurveying.com

1. BENCH MARK  
 2. BURIED SURVEYOR BOX  
 3. CABLE RISER  
 4. ELECTRIC RISER  
 5. ELECTRIC TRANSFORMER  
 6. FIRE HYDRANT  
 7. GAS METER  
 8. LIGHT POLE  
 9. POWER POLE  
 10. PROpane TANK  
 11. SEWER MANHOLE  
 12. TELEPHONE RISER  
 13. BURIED ELECTRIC BOX  
 14. BURIED CABLE BOX  
 15. WATER METER  
 16. WATER VALVE  
 17. BUILDING LINE  
 18. DRAINAGE EASEMENT  
 19. DRAINAGE/UTILITY EASEMENT  
 20. FINISHED FLOOR  
 21. PUBLIC UTILITY EASEMENT  
 22. UTILITY EASEMENT  
 23. METAL FENCE CORNER POST  
 24. WOOD FENCE CORNER POST  
 25. BURIED FIBER OPTIC CABLE  
 26. GAS PIPELINE (GPI)  
 27. PLAT DIVIDED CALL  
 28. CONTROLLING POINT/END  
 29. IRON ROD/POST/SP  
 30. CAPED IRON ROD FOR END  
 31. FIVE FENCE  
 32. WIRE FENCE  
 33. WOOD FENCE  
 34. CHAIN LINK FENCE  
 35. WROUGHT IRON OR VINYL FENCE

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LOT	SQ. FT.	DEED	OWNER
10	149	CCF# 2011-115450	MICHAEL L COZAD
11	77	CCF# 2013-114854	SAUL T. CARDONA AND LUCIA F. CARDONA



## 150' SANITARY EASEMENT

This survey is certified to the City of Sanger. This survey correctly represents the results of an on-the-ground survey made under my direction and supervision on 3-6-2014. There are no visible or apparent intrusions or protrusions except as shown hereon.

NOTE: This survey has been performed without the benefit of a Schedule A&B, Title Report or Title Binder.

NOTE: Bearings shown hereon are referenced to the Texas Coordinate System of 1983, North Central Zone (4202), and are based on the North American Datum of 1983, 2011 Adjustment, and GPS observations.



## WELL # 5

JOB # 140126  
DRAWN BY: H.C.I.  
DATE: 3-14-2014  
R.P.L.S.  
KENNETH A. ZOLLINGER

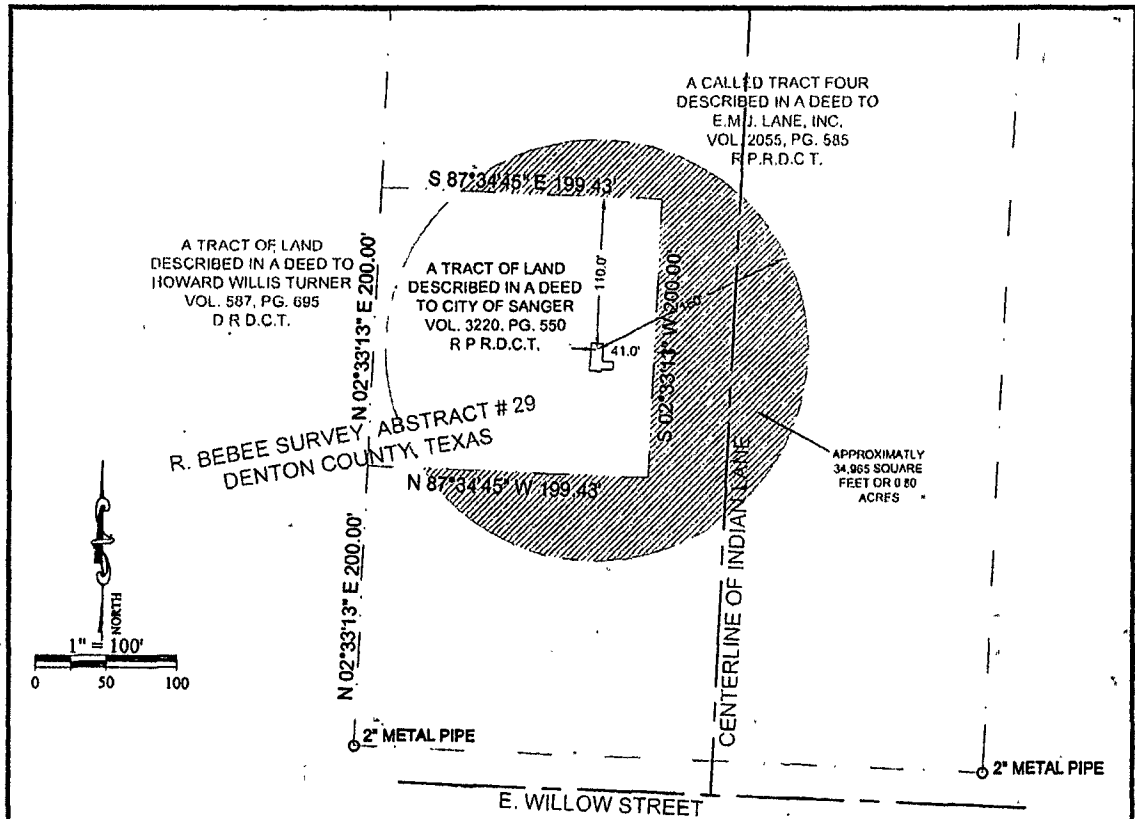
NOTES:  
3-16-2014; removed eastern location - H.C.

**KAZ**  
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1720 WESTMINSTER  
DENTON, TX 76205  
(940)382-3446  
www.kazsurveying.com

<ul style="list-style-type: none"> <li>○ = BENCHMARK</li> <li>○ = BURIED IRON ROD</li> <li>○ = CABLE MARK</li> <li>○ = ELECTRIC RIG</li> <li>○ = ECLIPSE TRANSFORMER</li> <li>○ = FIRE HYDRANT</li> </ul>	<ul style="list-style-type: none"> <li>○ = GAS METER</li> <li>○ = LIGHT POLE</li> <li>○ = POWER POLE</li> <li>○ = PROPANE TANK</li> <li>○ = TELEPHONE MANHOLE</li> <li>○ = TELEPHONE RIVER</li> </ul>	<ul style="list-style-type: none"> <li>○ = BURIED ELECTRIC BOX</li> <li>○ = BURIED CABLE SHED</li> <li>○ = WATER METER</li> <li>○ = WATER VALVE</li> <li>○ = BURIED DRAINAGE</li> <li>○ = DRAINAGE EASEMENT</li> </ul>	<ul style="list-style-type: none"> <li>○ = DRAINAGE / UTILITY EASEMENT</li> <li>○ = FINISHED FLOOR</li> <li>○ = PUBLIC UTILITY EASEMENT</li> <li>○ = UTILITY EASEMENT</li> <li>○ = UTILITY FENCE CORNER POST</li> <li>○ = WOOD FENCE CORNER POST</li> </ul>	<ul style="list-style-type: none"> <li>○ = BOUNDARY FENCE</li> <li>○ = BOUNDARY FENCE</li> <li>○ = BOUNDARY FENCE</li> <li>○ = BOUNDARY FENCE</li> <li>○ = BOUNDARY FENCE</li> <li>○ = BOUNDARY FENCE</li> </ul>	<ul style="list-style-type: none"> <li>○ = CAPED IRON ROD</li> <li>○ = TYPE FENCE</li> <li>○ = WIDE FENCE</li> <li>○ = WOOD FENCE</li> <li>○ = CHAINLINK FENCE</li> <li>○ = BROUGHT IRON OR VINYL FENCE</li> </ul>
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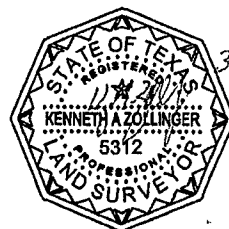


## 150' SANITARY EASEMENT

This survey is certified to the City of Sanger. This survey correctly represents the results of an on-the-ground survey made under my direction and supervision on 3-6-2014. There are no visible or apparent intrusions or protrusions except as shown hereon.

NOTE: This survey has been performed without the benefit of a Schedule A&B, Title Report or Title Binder.

NOTE: Bearings shown hereon are referenced to the Texas Coordinate System of 1983, North Central Zone (4202), and are based on the North American Datum of 1983, 2011 Adjustment, and GPS observations.



WELL # 6

JOB # 140126  
DRAWN BY: H.C.I.  
DATE: 3-14-2014  
R.P.L.S.  
KENNETH A. ZOLLINGER  
NOTES:

**KAZ**  
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DENTON, TX 76205  
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BENCHMARK  
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 CABLE POLE  
 ELECTRIC POLE  
 ELECTRIC TRANSFORMER  
 FIRE HYDRANT  
 GAS METER  
 LIGHT POLE  
 POWER POLE  
 PROPANE TANK  
 SEWER MANHOLE  
 TELEPHONE POLE  
 BURIED ELECTRIC BOX  
 BURIED CABLE BOX  
 WATER METER  
 WATER VALVE  
 BUILDING LINE  
 DRAINAGE EASEMENT  
 DRAINAGE / UTILITY EASEMENT  
 FINISHED FLOOR  
 PUBLIC UTILITY EASEMENT  
 UTILITY EASEMENT  
 METAL FENCE CORNER POST  
 WOOD FENCE CORNER POST  
 BURIED FIBER OPTIC SIGN  
 GAS PIPELINE SIGN  
 PLAT ON DEED CALL  
 CONTROLLING SURVEYMENT  
 IRON ROD FOUND  
 CAPED IRON ROD SET  
 CAPED IRON ROD FOUND  
 PIPE FENCE  
 WIRE FENCE  
 WOOD FENCE  
 CHAIN LINK FENCE  
 WROUGHT IRON OR VINYL FENCE  
 OVERHEAD UTILITY  
 CONCRETE  
 WOOD  
 ROCK  
 BRICK

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# STATE OF TEXAS WELL REPORT for Tracking #415109

Owner:	City of Sanger	Owner Well #:	9
Address:	P.O. Box 1729 Sanger, TX 76266	Grid #:	19-47-2
Well Location:	Kelth Dr. Sanger, TX 76266	Latitude:	33° 22' 13.26" N
Well County:	Denton	Longitude:	097° 11' 08.04" W
		Elevation:	No Data

Type of Work:	New Well	Proposed Use:	Public Supply
---------------	----------	---------------	---------------

Drilling Start Date: 9/7/2015

Drilling End Date: 1/20/2016

Plans Approved by TCEQ - YES

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	26	955	1050
	20.75	0	955
	14.75	1050	1055

Drilling Method: Mud (Hydraulic) Rotary

Borehole Completion: Under-reamed

	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
Annular Seal Data:	0	955	Cement 800 6 % Gel

Seal Method: Pressure

Sealed By: Driller

Distance to Property Line (ft.): 150+

Distance to Septic Field or other  
concentrated contamination (ft.): 150+

Distance to Septic Tank (ft.): 150+

Method of Verification: Owner & Engineer

Surface Completion: No Data

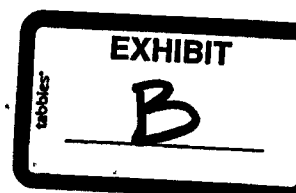
Water Level: 504 ft. below land surface on No Data

Packers: No Data

Type of Pump: No Data

Well Tests: Pump

Yield: 725 GPM with 295 ft. drawdown after 36 hours



**Certification Data:** The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

**Company Information:** **C. Miller Drilling**  
**7355 St. Hwy 154 East**  
**Winnsboro, TX 75494**

**Driller Name:** **Cory L. Miller** **License Number:** **2464**

**Comments:** **No Data**

# 1



922	944	Shale & Rock
944	1039	Sand w/ Small Rock strks /drilled good
1039	1055	Shale & Rock

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**IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY**

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

**Texas Department of Licensing and Regulation  
P.O. Box 12157  
Austin, TX 78711  
(512) 463-7880**

# STATE OF TEXAS WELL REPORT for Tracking #423367

Owner:	City of Sanger	Owner Well #:	8
Address:	P.O. Box 1729 Sanger, TX 76266	Grid #:	19-47-2
Well Location:	Cherry St. Sanger, TX 76266	Latitude:	33° 21' 41.88" N
Well County:	Denton	Longitude:	097° 10' 13.38" W
		Elevation:	No Data
Type of Work:	New Well	Proposed Use:	Public Supply

Drilling Start Date: 1/12/2016

Drilling End Date: 4/22/2016

Plans Approved by TCEQ - YES

	Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
Borehole:	24	970	1097
	18.875	0	970
	13.125	1097	1100
	9.875	1100	1130

Drilling Method: Mud (Hydraulic) Rotary

Borehole Completion: Under-reamed

	Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
Annular Seal Data:	0	970	Cement 750 w/6% Gel

Seal Method: Pressure

Sealed By: Driller

Distance to Property Line (ft.): 50+

Distance to Septic Field or other concentrated contamination (ft.): 150+

Distance to Septic Tank (ft.): 150+

Method of Verification: Engineer & Owner

Surface Completion: Surface Slab Installed

Surface Completion by Driller

Water Level: 490 ft. below land surface on No Data

Packers: No Data

Type of Pump: Submersible

Pump Depth (ft.): 798

Well Tests: Pump

Yield: 738 GPM with 215 ft. drawdown after 36 hours

Water Quality:                      **Strata Depth (ft.)**                      **Water Type**  
    **No Data**                      **No Data**  
    **Chemical Analysis Made: Yes**  
    **Did the driller knowingly penetrate any strata which**  
    **contained injurious constituents?: No**

**Certification Data:**      The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

**Company Information:**    **C. Miller Drilling**  
    **7355 St. Hwy 154 East**  
    **Winnsboro, TX 75494**

**Driller Name:**                      **Cory L. Miller**                      **License Number: 2464**

**Comments:**                      **No Data**

Lithology: DESCRIPTION & COLOR OF FORMATION MATERIAL			Casing: BLANK PIPE & WELL SCREEN DATA					
Top (ft.)	Bottom (ft.)	Description	Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
0	4	Top Soil	14	Blank	New Steel		0	970
4	185	Rock & Shale	8.625	Blank	New Steel		870	973
185	245	Shale w/ Sand & Rock strks	8.625	Screen	New Stainless Steel	0.010	973	1083
245	305	Shale & Rock	8.625	Blank	New Steel		1083	1090
305	345	Sand w/ Shale strks						
345	355	Rock & Shale						
355	425	Sand w/ Shale & Rock strks						
425	465	Shale & Rocks						
465	505	Sand w/ Shale & Rock strks						
505	520	Shale						
520	540	Sand w/ Shale strks						
540	715	Shale w/ Small Rock & Sand strks						
715	755	Sand w/ Shale strks						
755	775	Shale w/ Sand strks						
775	810	Sand w/ Shale & Rocks						
810	835	Shale & Rock						
835	850	Sand w/ Shale & Rock strks						

850	870	Shale & Rock
870	905	Sand w/ Shale & Rocks
905	970	Shale & Rocks
970	1083	Sand w/ Small Shale & Rock strks
1083	1130	Shale & Rock

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## Certified Factory Pump Performance Test Results

### TEST DATA PUMP PERFORMANCE (at tested speed)

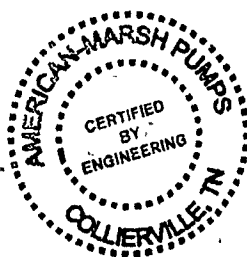
TEST POINTS	1	2	3	4	5	6	7	8	9	10
Tested RPM	1798	1797	1797	1797	1797	1797	1797	1797		
GPM	0	150	225	300	357	405	470	510		
TDH	320.32	281.09	264.98	258.13	239.72	205.12	184.47	163.76		
BHP	21.40	22.64	23.19	25.87	27.70	28.01	29.00	29.10		
Pump Eff.	0.00	47.03	64.92	75.59	78.02	74.90	75.50	72.48		

### TEST DATA PUMP PERFORMANCE (at rated speed per submitted curve) Rated Speed (RPM): 3525

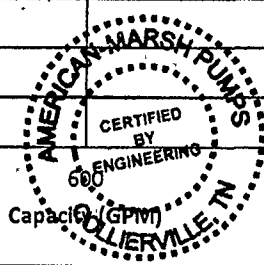
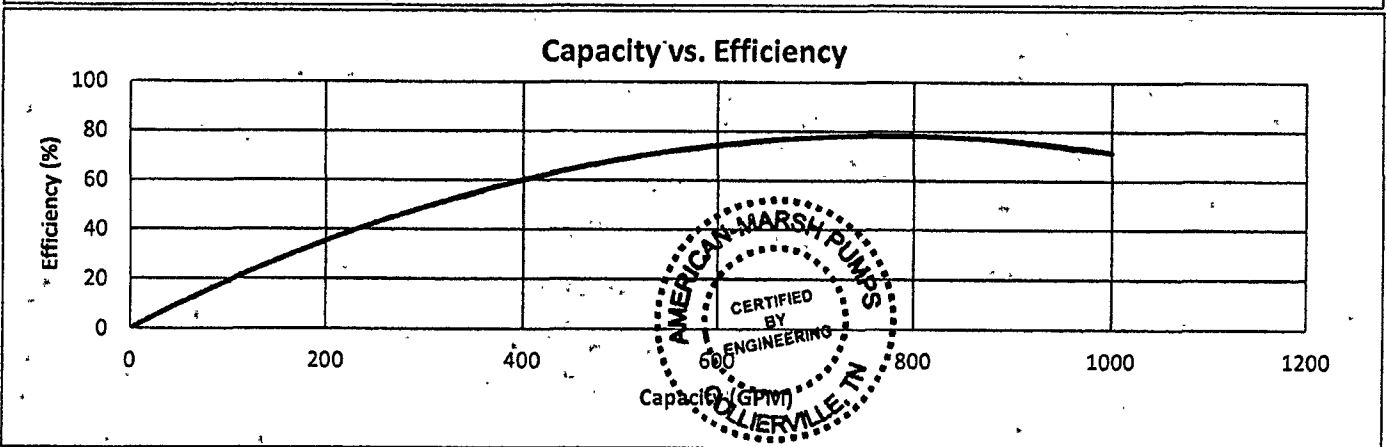
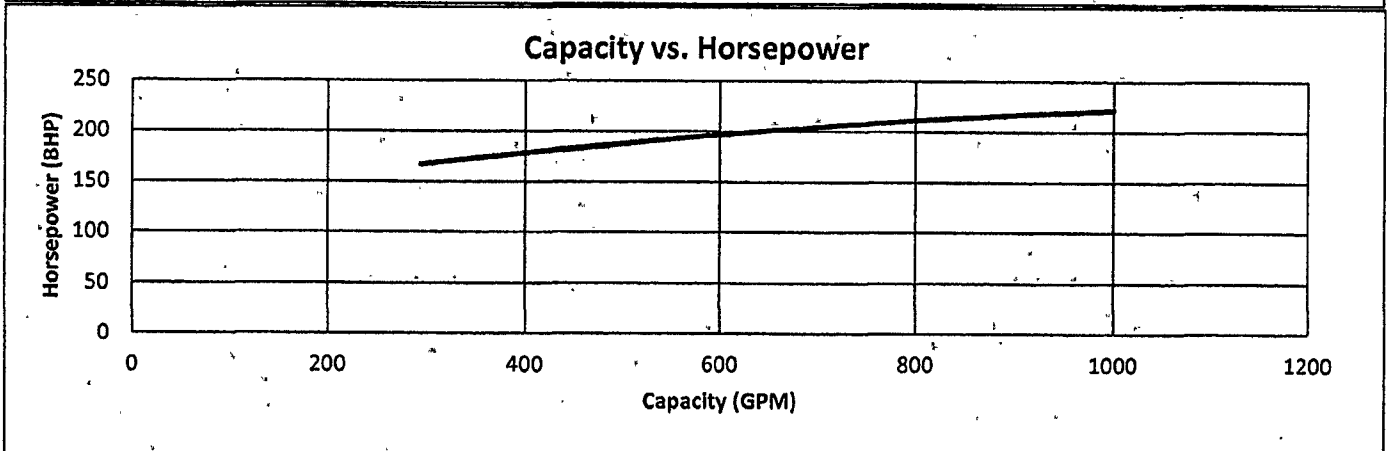
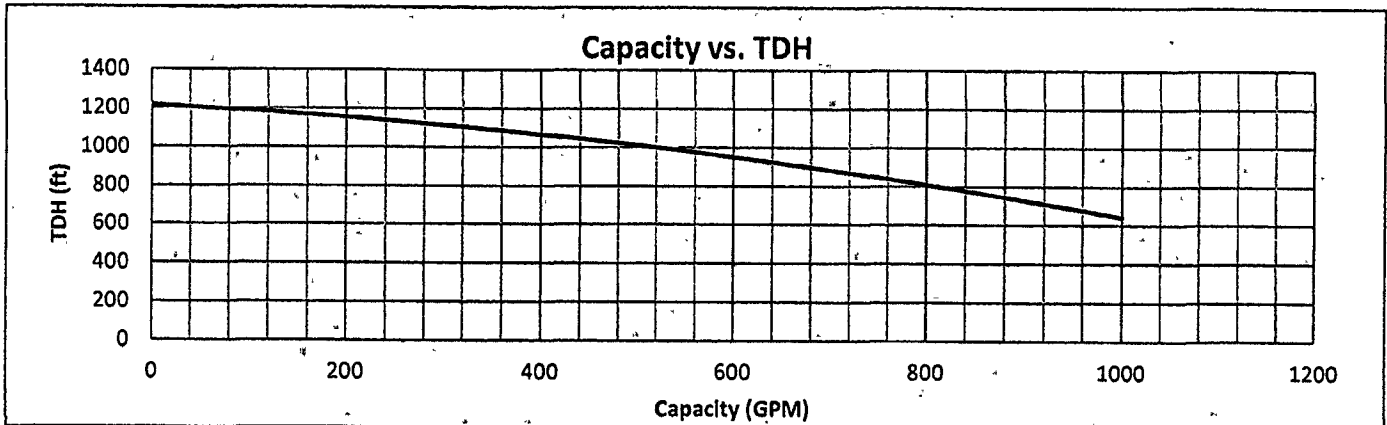
TEST POINTS	1	2	3	4	5	6	7	8	9	10
GPM	0	294	441	588	700	794	922	1000		
TDH	1231.18	1081.60	1019.61	993.25	922.42	789.28	709.82	630.13		
BHP	161.26	170.89	175.04	195.27	209.08	211.42	218.89	219.65		
Pump Eff.	0.00	47.03	64.92	75.59	78.02	74.90	75.50	72.48		

Materials of Construction	
Casing	Cast Iron
Impeller	Stainless

Impeller Trim (in)	Number of Stages
7.41	2
6.87	4



CUSTOMER Wholesale Pump and Supply						P.O.# 785631	
JOB NAME						TAG NAME	
PUMP MODEL 9LC-6 Stage			GPM 700	TDH 917.2	RPM 3525	ROTATION	
MOTOR HP	FRAME	PHASE	HERTZ	VOLTS	ENCLOSURE		
CURVE NUMBER 2016-314			CERTIFIED BY Harley Thordson			S.O.# 95086	
SERIAL NUMBER 303921			SIGNATURE <i>Harley Thordson</i>			DATE 7/8/2016	



Test Curve Speed (RPM): 3525

CUSTOMER Wholesale Pump and Supply					P.O.# 785631
JOB NAME					TAG NAME
PUMP MODEL 9LC-6 Stage	GPM 700	TDH 917.2	RPM 3525	ROTATION	
MOTOR HP	FRAME	PHASE	HERTZ	VOLTS	ENCLOSURE
CURVE NUMBER 2016-314		CERTIFIED BY Harley Thordson			S.O.# 95086
SERIAL NUMBER 303921		SIGNATURE <i>Harley Thordson</i>			DATE 7/8/2016