



**Purchasing Department**  
140 Stonewall Avenue West, Ste 204  
Fayetteville, GA 30214  
Phone: 770-305-5420  
[www.fayettecountyga.gov](http://www.fayettecountyga.gov)

March 9, 2022

**Subject: Request for Quotes 2069-A: Flint River Raw Water Pump #1 Repairs**

Gentlemen/Ladies:

Fayette County, Georgia invites you to submit a quote for the above listed solicitation in accordance with the information and specifications contained herein.

**A mandatory pre-quote conference will be held on 11:00 a.m., Thursday, March 17, 2022, at the Flint River Pump Station, 437 Hampton Road, Fayetteville, GA 30215** to provide an opportunity for you to become familiar with the site and work conditions, and to ask questions. Companies that attend will be invited to submit quotes for this project.

Address any questions you may have about this request for quotes to Natasha Duggan via email to [nduggan@fayettecountyga.gov](mailto:nduggan@fayettecountyga.gov) or fax to (770) 719-5534. **Questions will be accepted until 3:00 p.m., Thursday, March 24, 2022.**

**Quotes will be accepted until 3:00 p.m., Thursday, March 31, 2022.** Please provide your quote and other information via email to Natasha Duggan, Contract Administrator at [nduggan@fayettecountyga.gov](mailto:nduggan@fayettecountyga.gov) or fax to (770) 719-5534.

Purchasing Department office hours are Monday through Friday 8:00 a.m. to 5:00 p.m. The office telephone number is (770) 305-5420.

Sincerely,

Ted L. Burgess  
Director of Purchasing

**GENERAL TERMS AND CONDITIONS**  
**RFQ #2069-A: Flint River Raw Water Pump #1 Repairs**

1. **Definitions:** The term "contractor" as used in these Terms and Conditions shall be used synonymously with the term "successful responder." The term "County" shall mean Fayette County, Georgia.
2. **Quote is Offer to Contract:** Each quote constitutes an offer to become legally bound to a contract with the County, incorporating the request for quote and the responder's quote. The binding offer includes compliance with all terms, conditions, special conditions, specifications, and requirements stated in the request for quote, except to the extent that a responder takes written exception to such provisions. All such terms, conditions, special conditions, specifications, and requirements will form the basis of the contract. The responder should take care to answer all questions and provide all requested information, and to note any exceptions in the quote submission. Failure to observe any of the instructions or conditions in this request for quote may result in rejection of the quote.
3. **Binding Offer:** To allow sufficient time for a contract to be awarded, each quote shall constitute a firm offer that is binding for ninety (90) days from the received by date, unless the responder takes exception to this provision in writing.
4. **References:** Include with your quote a list of three (3) jobs that your company has done that are of the same or similar nature to the work described in this request for quote, on the form provided. Include all information as requested on the form.
5. **Preparation Costs:** The responder shall bear all costs associated with preparing the quote.
6. **More Than One Quote:** Do not submit alternate quotes or options, unless requested or authorized by the County in the request for quote. If a responder submits more than one quote without being requested or authorized to do so, the County may disqualify the quotes from that responder, at the County's option.
7. **Defects or Irregularities:** The County reserves the right to waive any defect or irregularity in any quote received. In case of an error in extension of prices or totals in the quote, the unit prices shall govern.
8. **Brand Name:** If items in this request for quote have been identified, described, or referenced by a brand name or trade name description, such identification is intended to be descriptive, but not restrictive and is to indicate the quality and characteristics of products that may be offered. Alternative products may be considered for award if clearly identified in the quote. Items offered must meet required specifications and must be of a quality which will adequately serve the use and purpose for which intended.
9. **Prices Held Firm:** Prices quoted shall be firm for the period of the contract, unless otherwise specified in the quote. All prices for commodities, supplies, equipment, or other products shall be quoted FOB Destination, Fayette County or job site.



10. **Responder Substitutions:** Responders offering substitutions or deviations from specifications stated in the request for quote, shall list such substitutions or deviations on the "Exceptions to Specifications" sheet provided, or on a separate sheet to be submitted with the quote. The absence of such list shall indicate that the responder has taken no exception to the specifications. The evaluation of quotes and the determination as to equality and acceptability of products or services offered shall be the responsibility of the County.
11. **Non-Collusion:** By responding to this request for quote, the responder represents that the quote is not made in connection with any competing responder, supplier, or service provider submitting a separate response to this request for quote and is in all respects fair and without collusion or fraud.
12. **Ethics – Disclosure of Relationships:** Before a proposed contract in excess of \$10,000.00 is recommended for award to the Board of Commissioners or the County Administrator, or before the County renews, extends, or otherwise modifies a contract after it has been awarded, the contractor must disclose certain relationships with any County Commissioner or County Official, or their spouse, mother, father, grandparent, brother, sister, son or daughter related by blood, adoption, or marriage (including in-laws). A relationship that must be reported exists if any of these individuals is a director, officer, partner, or employee, or has a substantial financial interest in the business, as described in Fayette County Ordinance Chapter 2, Article IV, Division 3 (Code of Ethics).

If such relationship exists between your company and any individual mentioned above, relevant information must be presented in the form of a written letter to the Director of Purchasing. You must include the letter with any bid, proposal, or price quote you submit to the Purchasing Department.

In the event that a contractor fails to comply with this requirement, the County will take action as appropriate to the situation, which may include actions up to and including rejection of the bid or offer, cancellation of the contract in question, or debarment or suspension from award of a County contract for a period of up to three years.

13. **Evaluation:** Award will be made to the lowest responsive, responsible responder, taking into consideration payment terms, vendor qualifications and experience, quality, references, any exceptions listed, and/or other factors deemed relevant in making the award. The County may make such investigation as it deems necessary to determine the ability of the responder to perform, and the contractor shall furnish to the County all information and data for this purpose as the County may request. The County reserves the right to reject any item, any quote, or all quotes, and to re-solicit for pricing.
14. **Payment Terms and Discounts:** The County's standard payment terms are Net 30. Any deviation from standard payment terms must be specified in the resulting contract, and both parties must agree on such deviation. Cash discounts offered will be a consideration in awarding the quote, but only if they give the County at least 15 days from receipt of invoice to pay. For taking discounts, time will be computed from the date of invoice acceptance by the County, or the date a correct invoice is received, whichever is the later date. Payment is deemed made, for the purpose of earning the discount, on the date of the check.

15. **Trade Secrets – Confidentiality:** If any person or entity submits a bid or proposal that contains trade secrets, an affidavit shall be included with the bid or proposal. The affidavit shall declare the specific included information which constitutes trade secrets. Any trade secrets must be either (1) placed in a separate envelope, clearly identified and marked as such, or (2) at a minimum, marked in the affidavit or an attached document explaining exactly where such information is, and otherwise marked, highlighted, or made plainly visible. See O.C.G.A. § 50-18-72 (A)(34).
16. **Trade Secrets – Internal Use:** In submitting a quote, the responder agrees that the County may reveal any trade secret materials contained in the quote to all County staff and officials involved in the selection process, and to any outside consultant or other third parties who may assist in the selection process. The responder agrees to hold harmless the County and each of its officers, employees, and agents from all costs, damages, and expenses incurred in connection with refusing to disclose any material which the responder has designated as a trade secret.
17. **Contract Execution & Notice to Proceed:** After an award is made, and all required documents are received by the County, and the contract is fully executed with signature of both parties, the County will issue a written Notice to Proceed. The County shall not be liable for payment of any work done or any costs incurred by any responder prior to the County issuing the Notice to Proceed.
18. **Unavailability of Funds:** This contract will terminate immediately and absolutely at such time as appropriated and otherwise unobligated funds are no longer available to satisfy the obligations of the County under the contract.
19. **Insurance:** The contractor shall procure and maintain the following insurance, to be in effect throughout the term of the contract, in at least the amounts and limits as follows:
  - a. **General Liability Insurance:** \$1,000,000 combined single limit per occurrence, including bodily and personal injury, destruction of property, and contractual liability.
  - b. **Automobile Liability Insurance:** \$1,000,000 combined single limit each occurrence, including bodily injury and property damage liability.
  - c. **Worker's Compensation & Employer's Liability Insurance:** Workers Compensation as required by Georgia statute.

Before a contract is executed, the Certificates of Insurance for all required coverage shall be submitted. The certificate shall list an additional insured as follows:

Fayette County, Georgia  
140 Stonewall Avenue West  
Fayetteville, GA 30214

20. **Unauthorized Performance:** The County will not compensate the contractor for work performed unless the work is authorized under the contract, as initially executed, or as amended.



21. **Assignment of Contract:** Assignment of any contract resulting from this request for quotes will not be authorized, except with express written authorization from the County.
22. **Indemnification:** The contractor shall indemnify and save the County and all its officers, agents, and employees harmless from all suits, actions, or other claims of any character, name and description brought for or on account of any damages, losses, or expenses to the extent caused by or resulting from the negligence, recklessness, or intentionally wrongful conduct of the contractor or other persons employed or utilized by the contractor in the performance of the contract. The contractor shall pay any judgment with cost which may be obtained against the County growing out of such damages, losses, or expenses.
23. **Severability:** The invalidity of one or more of the phrases, sentences, clauses, or sections contained in the contract shall not affect the validity of the remaining portion of the contract. If any provision of the contract is held to be unenforceable, then both parties shall be relieved of all obligations arising under such provision to the extent that the provision is unenforceable. In such case, the contract shall be deemed amended to the extent necessary to make it enforceable while preserving its intent.
24. **Delivery Failures:** If the contractor fails to deliver contracted goods or services within the time specified in the contract or fails to replace rejected items in a timely manner, the County shall have authority to make open-market purchases of comparable goods or services. The County shall have the right to invoice the contractor for any excess expenses incurred or deduct such amount from monies owed the contractor. Such purchases shall be deducted from contracted quantities.
25. **Substitution of Contracted Items:** The contractor shall be obligated to deliver products awarded in this contract in accordance with terms and conditions specified herein. If a contractor is unable to deliver the products under the contract, it shall be the contractor's responsibility to obtain prior approval of the ordering agency to deliver an acceptable substitute at the same price quoted in the contractor's original bid. In the event any contractor consistently needs to substitute or refuses to substitute products, the County reserves the right to terminate the contract or invoke the "Delivery Failures" clause stated herein.
26. **Termination for Cause:** The County may terminate the contract for cause by sending written notice to the contractor of the contractor's default in the performance of any term of this agreement. Termination shall be without prejudice to any of the County's rights or remedies by law.
27. **Termination for Convenience:** The County may terminate the contract for its convenience at any time with 10 days' written notice to the contractor. In the event of termination for convenience, the County will pay the contractor for services performed. The County will compensate partially completed performance based upon a signed statement of completion.
28. **Force Majeure:** Neither party shall be deemed to be in breach of the contract to the extent that performance of its obligations is delayed, restricted, or prevented by reason of any act of God, natural disaster, act of government, or any other act or condition beyond the reasonable control of the party in question.

29. **Governing Law:** This agreement shall be governed in accordance with the laws of the State of Georgia. The parties agree to submit to the jurisdiction in Georgia, and further agree that any cause of action arising under this agreement shall be required to be brought in proper venue in Fayette County, Georgia.

## Checklist of Required Documents

*(Be Sure to Return This Checklist and  
the Required Documents in the order listed below)*

### RFQ #2069-A: Flint River Raw Water Pump #1 Repairs

Company information – on the form provided \_\_\_\_\_

Contractor Affidavit under O.C.G.A. § 13-10-91(b)(1) \_\_\_\_\_

Pricing sheet \_\_\_\_\_

List of exceptions, if any – on the form provided \_\_\_\_\_

References – on form provided \_\_\_\_\_

Addenda, signed, if any are issued \_\_\_\_\_

COMPANY NAME: \_\_\_\_\_

**COMPANY INFORMATION**  
**RFQ #2069-A: Flint River Raw Water Pump #1 Repairs**

**A. COMPANY**

Company Name: \_\_\_\_\_

Physical Address: \_\_\_\_\_

\_\_\_\_\_

Mailing Address (if different): \_\_\_\_\_

\_\_\_\_\_

Website (if applicable): \_\_\_\_\_

**B. AUTHORIZED REPRESENTATIVE**

Signature: \_\_\_\_\_

Printed or Typed Name: \_\_\_\_\_

Title: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

**C. PROJECT CONTACT PERSON**

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Office Number: \_\_\_\_\_ Cell Number: \_\_\_\_\_

E-mail Address: \_\_\_\_\_



## REFERENCES

### RFQ #2069-A: Flint River Raw Water Pump #1 Repairs

Please list three (3) references for current or recent customers who can verify the quality of service your company provides. Projects of similar size and scope are preferable.

1. Government/Company Name \_\_\_\_\_

City & State \_\_\_\_\_

Work or Service Provided \_\_\_\_\_

Approximate Completion Date \_\_\_\_\_

Contact Person and Title \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

2. Government/Company Name \_\_\_\_\_

City & State \_\_\_\_\_

Work or Service Provided \_\_\_\_\_

Approximate Completion Date \_\_\_\_\_

Contact Person and Title \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

3. Government/Company Name \_\_\_\_\_

City & State \_\_\_\_\_

Work or Service Provided \_\_\_\_\_

Approximate Completion Date \_\_\_\_\_

Contact Person and Title \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

**COMPANY NAME:** \_\_\_\_\_

**Contractor Affidavit under O.C.G.A. § 13-10-91(b)(l)**

The undersigned contractor ("Contractor") executes this Affidavit to comply with O.C.G.A § 13-10-91 related any contract to which Contractor is a party that is subject to O.C.G.A. § 13-10-91 and hereby verifies compliance with O.C.G.A. § 13-10-91, attesting as follows:

- a) The Contractor has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program;
- b) The Contractor will continue to use the federal work authorization program throughout the contract period, including any renewal or extension thereof;
- c) The Contractor will notify the public employer in the event the Contractor ceases to utilize the federal work authorization program during the contract period, including renewals or extensions thereof;
- d) The Contractor understands that ceasing to utilize the federal work authorization program constitutes a material breach of Contract;
- e) The Contractor will contract for the performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the Contractor with the information required by O.C.G.A. § 13-10-91(a), (b), and (c);
- f) The Contractor acknowledges and agrees that this Affidavit shall be incorporated into any contract(s) subject to the provisions of O.C.G.A. § 13-10- 91 for the project listed below to which Contractor is a party after the date hereof without further action or consent by Contractor; and
- g) Contractor acknowledges its responsibility to submit copies of any affidavits, drivers' licenses, and identification cards required pursuant to O.C.G.A. § 13-10-91 to the public employer within five business days of receipt.

\_\_\_\_\_  
Federal Work Authorization User Identification Number

\_\_\_\_\_  
Date of Authorization

\_\_\_\_\_  
Name of Contractor

#2069-A Flint River Raw Water Pump #1  
Name of Project

Fayette County, GA  
Name of Public Employer

**I hereby declare under penalty of perjury that the foregoing is true and correct.**

Executed on \_\_\_\_\_, \_\_\_\_\_, 2022 in \_\_\_\_\_ (city), \_\_\_\_\_ (state).

\_\_\_\_\_  
Signature of Authorized Officer or Agent

\_\_\_\_\_  
Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME  
ON THIS THE \_\_\_\_\_ DAY OF \_\_\_\_\_, 2022.

\_\_\_\_\_  
NOTARY PUBLIC  
My Commission Expires: \_\_\_\_\_

**SCOPE AND SPECIFICATION**  
**RFQ #2069-A: Flint River Raw Water Pump #1 Repairs**

**INTRODUCTION**

Fayette County Water System is seeking quotes from qualified vendors for the repair of one raw water vertical turbine pump at the Flint River Pump Station. The Flint River Pump Station located at 437 Hampton Rd, Fayetteville, GA 30215. The quote is for the removal, repair, installation of pump and motor.

**BACKGROUND**

Flint River Pump Station – Pump 1 is a 400 HP vertical turbine pump with regular duty motor using soft starter. The motor has been removed and vibration analysis completed. The motor will be provided for installation when vendor has finished pump work and is ready to install for completion of project. Excessive vibration in the pump has been detected. Pump specification noted below:

Pump 1 – 18TKM-2STAGE Floway Vertical Turbine Pump, S/N 24150-1-1

Chain hoists are available at pump station.

Additional information attached includes the pump and motor nameplate photos, pump specifications, pump curves, motor Meggar tests for Flint River pump #1 along with pump station drawings and photos (Attachment 1)

**SCOPE OF WORK**

**Flint River Pump Station**

**Pump 1:**

1. Travel to Flint River Pump Station
2. Pull Floway 18 TKM 2-stage Vertical Turbine pump (utilize overhead lifting in building)
3. Return pump to service facility
4. Disassemble pump complete
5. Measure and record all critical dimensions
6. Sandblast and clean all parts to be reused
7. Provide, machine or manufacturer the following parts:
  - a. 1 ea. bronze stuffing box bearing
  - b. 4 ea. line shaft bearings
  - c. 1 ea. 416 SS Bowl shaft
  - d. 3 ea. bronze bowl bearings
  - e. 2 ea. bronze bowl wear rings
  - f. 2 ea. Skim cut impeller wear ring to reclaim wear ring fit



- g. 4 ea. Line shaft couplings
- 8. Provide rebuild kit for Chesterton 442 Mechanical seal
- 9. Polish and flip top shaft and 4 ea. line shafts
- 10. Clean and stack pump
- 11. Dynamically balance rotating assembly to ISO G1.0 Specification
- 12. Prime and paint per specification below
- 13. Assemble pump complete
- 14. Provide miscellaneous gaskets, fasteners, and packing
- 15. Prep pump for delivery
- 16. Travel to site Flint River pump station
- 17. Motor will be provided for reinstallation
- 18. Install pump and motor
- 19. Wire in motor
- 20. Startup pump and verify operation
- 21. Perform vibration analysis on motor and pump after installation and provide report to owner

#### **Strainer Basket:**

If existing strainer basket is not stainless steel or missing, or existing stainless steel strainer basket is damaged, replace with new stainless steel strainer basket having a net inlet area equal to at least 10 times the pump suction area. If the existing strainer is reused the contract amount shall be reduced by the amount of the deductive alternate on the provided Pricing Sheet. The maximum opening shall be not more than 75% of the minimum opening of the water passage through the bowls and impellers.

- 1. Wire mesh shall be 304 SS with a wire diameter of 0.148" and one (1) inch square openings.
- 2. Frame shall be 304 SS with a top ring, bottom ring, 6 supports up the sides and 3 supports (diameter length) across the bottom to support the wire mesh. The bottom and side supports shall be 1/4" thick X 1" wide and installed with the narrow edge facing the wire mesh. Note: A stock basket from a third party that meets the wire mesh requirements may be customized with side and bottom supports.
- 3. Basket shall be held to the pump with stainless steel clips bolted to the top frame ring.

Note: Any work outside the above scope of work will not be performed without approval of changes by Fayette County.

#### **Coatings**

##### **Painting Materials:**

- A. Products manufactured by Carboline, Tnemec, or Sherwin Williams are acceptable for use on this project.
- B. Provide products for all specified coatings from single manufacturer. Pump repair vendor shall be responsible for compatibility of prime coats with finish coats.

- C. Equivalent products by other manufacturers may be used if approved by the Water System.

**Application:**

- A. Apply precoats, primers, binder coats, sealer coats or other coats not specifically mentioned, as recommended by the coating manufacturer for the specific application.
- B. Apply coatings from shop to final field coating in accordance with time restrictions on recoatings as recommended by the coating manufacturer.

**Schedule:**

- A. Submerged ferrous metal - discharge head interior, wetted surface of the packing box, column pipe ID and OD, and bowl assembly exterior shall be cleaned and blasted per SSPC-SP-10. Carboline Carboguard 891 or equal shall be applied in three (3) coats of 4 - 5 mils dry film thickness (DFT) not to exceed 17 mils DFT total thickness.
  - a. **Color shall be Safety White.**
- B. Non-submerged ferrous metal (paint removed to bare metal) - discharge head exterior shall be cleaned and blasted per SSPC-SP-6. Carboline Carboguard 890 or equal shall be applied in two (2) coats of 4 - 5 mils DFT.
  - a. **Color shall be Dark Olive Green (Tnemec Balsam).**
- C. Non-submerged ferrous metal (previously painted surfaces) - pump base plate. Rusted areas shall be cleaned to SSPC-SP-2 (Hand Tool Cleaning) or SSPC-SP-3 (Power Tool Cleaning) to remove loose corrosion to solid surface. Painted areas shall be cleaned and lightly sanded or abraded to roughen surface and degloss the surface. Apply one of the following - Carboline Carboguard 890 or equal applied in one coat of 4 - 5 mils DFT or Carboline Carbocrylic 3359 DTM or equal applied in one coat of 3 - 5 mils DFT.
  - a. **Color shall be Dark Olive Green (Tnemec Balsam).**

**Additional Work**

Vendor shall report to owner any additional work needed not covered above. Vendor shall allow owner to visit vendor's shop to see worn or damaged parts if additional work is needed.

Vendor agrees that the Contingency Allowance is for the sole use of Owner to cover unanticipated costs. Use of the contingency allowance shall be approved by the County in the form of an approved change order.

## PRICING SHEET

### RFQ #2069-A: Flint River Raw Water Pump #1 Repairs

Responder agrees to perform all the work described in the Contract documents for the following prices:

Quote Flint River PS Pump #1 Repair and Pump/Motor Install: \$ \_\_\_\_\_

Contingency Allowance\* \$ 1,500.00

**Total Quote, Including Contingency** \$ \_\_\_\_\_

Deductive Alternate for Reuse of Existing Strainer Basket < \_\_\_\_\_ >

\*To be used only with prior written authorization by the County.

#### NOTES:

1. All applicable charges shall be included in your total quoted amount, including but not limited to materials, equipment, installation, labor, and any other amounts. No additional charges will be allowed after the quote received by date.
2. All warranties shall be included in your total quoted amount.

State time needed to commence work after notice to proceed is issued \_\_\_\_\_ Days.

State length of time needed to complete project \_\_\_\_\_ Days.

State, List or Attach the terms of your warranty, if applicable: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**COMPANY'S NAME** \_\_\_\_\_



## RFQ #2069-A: Flint River Raw Water Pump #1 Repairs

Please list below any exceptions or clarifications to the specifications of this bid. Explain any exceptions in full.

[illegible]

COMPANY NAME: \_\_\_\_\_



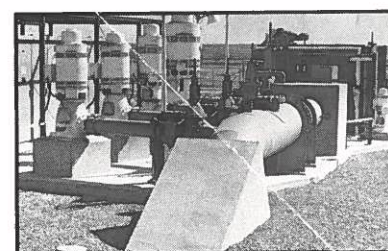
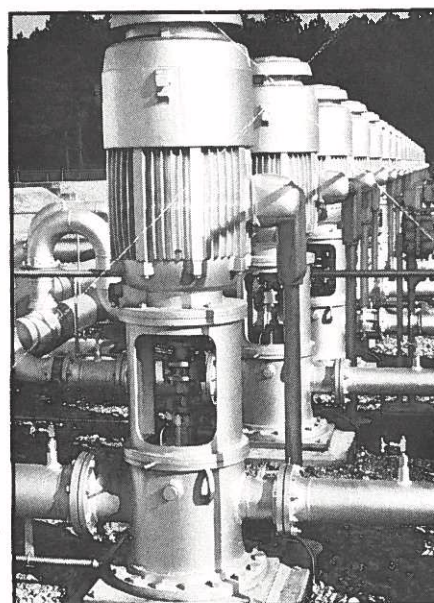
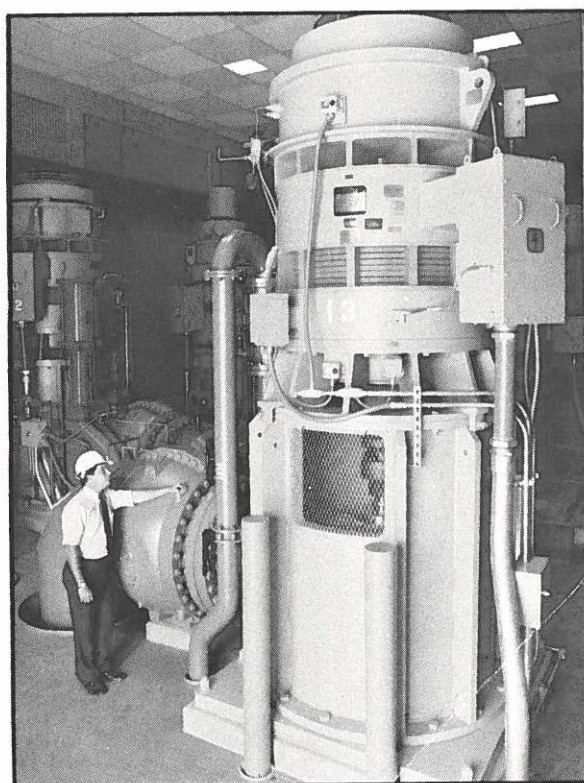
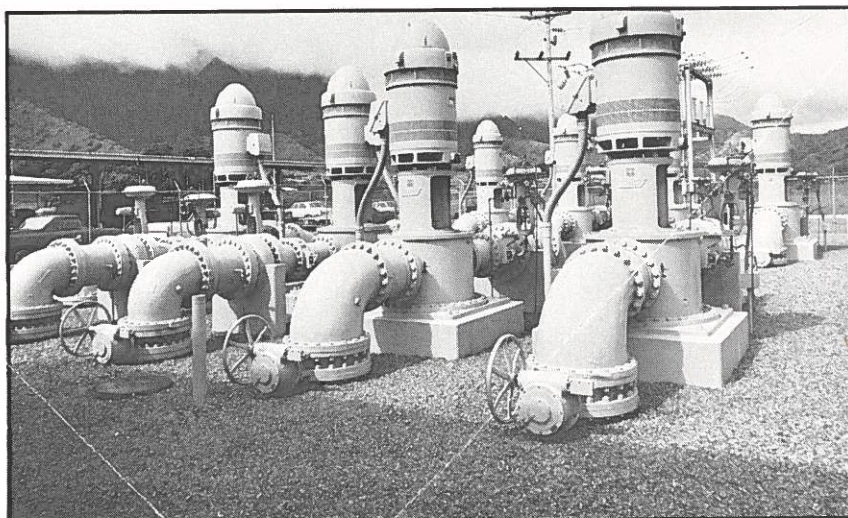
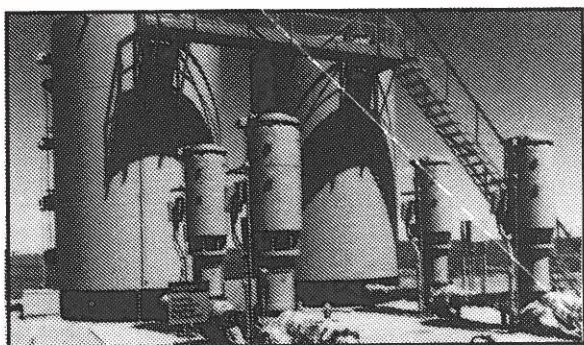
RECEIVED  
JAN 20

MALLET & ASSOCIATES, INC.

## FINAL DATA

WILLOW CONSTRUCTION, INC.  
JOB: FLINT RIVER R.W. PUMP STATION  
FAYETTEVILLE, GEORGIA  
CUSTOMER P.O. NO.: 2064-M-1  
FLOWAY C.O. NO.: 24150

# VERTICAL PUMPS



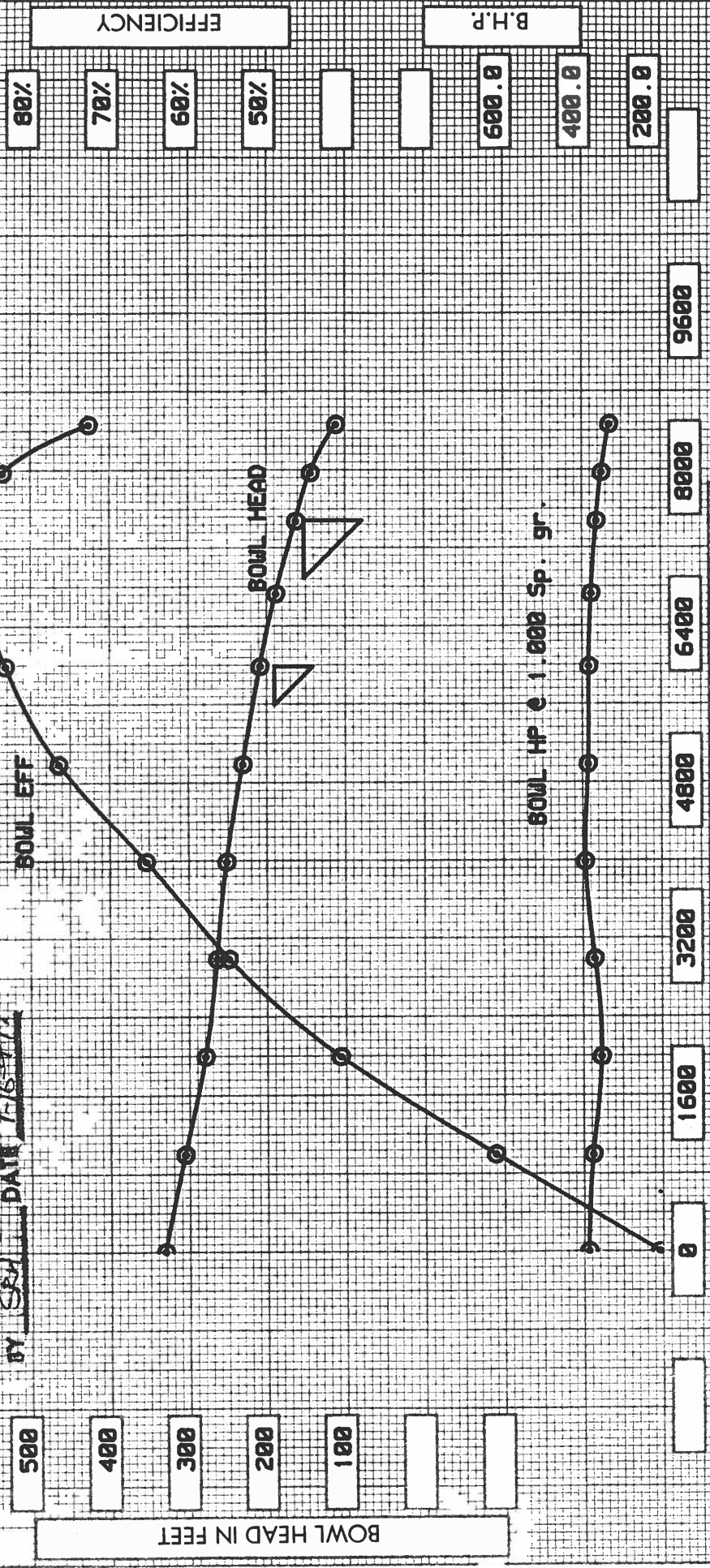
"There's A Difference..."



FLINT RIVER R.W. PUMP STATION  
 FAYETTEVILLE GEORGIA  
 400 HP CLOSE COUPLED PUMP  
 RAW WATER PUMPING UNIT NO. #--1  
 PUMP TEST: PC # 21735

CEIFIED CORRE  
 FOR

OUR ORDER NO. 24150  
 CUST. ORDER NO. 2069-M-1  
 BY SEN DATE 1-16-97



TYPE 18 TKM  
 NO. OF STAGES 2  
 R.P.M. 1775  
 PUMP SERIAL NO. 24150-1-1



WILLOW CONSTRUCTION INC  
 2440 CHURCH ROAD S.E.  
 SMYRNA GA 30080

DWG. NO. 24150-1-1-T1  
 DWN. BY B.M.S. DATE 15-Jan-97

A **WU** COMPANY



TEST NUMBER PC#: 21735      S.O. # : 24150-1-1      DATE: 15-Jan-97  
 CONDITION POINT: GPM= 7500      TDH= 150      RPM =1775  
 CALCULATED BY: B.M.S.      DRAWING No. = 24150-1-1-T1  
 PUMP TYPE (Bb\$): 18 TKM      IMPELLER TRIM DIA. = 10.958 inch  
 MANOMETER CONSTANT (Mc) = 1.0060      IMPELLER FINAL DIA. = 10.958 inch  
 GAGE HEIGHT (Ght) = 4.710      NUMBER OF STAGES TESTED (Ds) = 2  
 NUMBER OF STAGES(Stages) = 2  
 SPECIFIC GRAVITY (SPG) = 1.0000      SPECIFIC WEIGHT = 62.324 Lbs/Cu Ft.  
 WATER TEMPERATURE = 65 DEGREES (F)  
 COLUMN SIZE = 20  
 MOTOR NUMBER (Mno) = 13

RUN	RPM	GPM	PRESS	GA COR	S LOSS	C-LOS	DH-LOS	VEL	HD	HP RDG.	B LOS
1	1785	0.0	140.10	2.20	0.00	0.00	0.00	0.00	0.00	412.80	0.00
2	1786	1000.0	128.90	2.20	0.00	0.00	0.00	0.02	0.02	400.40	0.00
3	1787	2000.0	117.60	2.10	0.00	0.00	0.00	0.08	0.08	376.80	0.00
4	1786	3000.0	110.80	2.10	0.00	0.00	0.00	0.17	0.17	394.70	0.00
5	1785	4000.0	105.10	2.10	0.00	0.00	0.00	0.30	0.30	419.80	0.00
6	1785	5000.0	96.40	1.40	0.00	0.00	0.00	0.47	0.47	410.10	0.00
7	1785	6000.0	86.50	1.40	0.00	0.00	0.00	0.68	0.68	407.70	0.00
8	1786	6750.0	77.70	1.38	0.00	0.00	0.00	0.86	0.86	401.10	0.00
9	1787	7500.0	66.50	1.32	0.00	0.00	0.00	1.06	1.06	387.10	0.00
10	1787	8000.0	58.20	1.30	0.00	0.00	0.00	1.21	1.21	372.60	0.00
11	1788	8500.0	44.00	1.25	0.00	0.00	0.00	1.37	1.37	351.80	0.00

I	RPM	GPM	TDH	TDH/STAGE	BHP	BHP/STAGE	EFF	MTR	EFF
1	1775	0.0	329.77	164.88	380.58	190.29	0.00		0.9376
2	1775	999.8	303.86	151.93	368.59	184.29	20.81		0.9378
3	1775	1998.5	277.59	138.79	346.25	173.13	40.46		0.9377
4	1775	2999.4	262.47	131.24	363.37	181.68	54.71		0.9378
5	1775	4001.5	249.88	124.94	387.00	193.50	65.24		0.9375
6	1775	5001.8	228.57	114.28	378.11	189.05	76.35		0.9377
7	1775	6002.2	206.15	103.08	375.90	187.95	83.12		0.9377
8	1775	6748.7	185.97	92.99	369.23	184.62	85.84		0.9378
9	1775	7494.3	160.30	80.15	355.81	177.91	85.26		0.9379
10	1775	7994.0	141.48	70.74	342.30	171.15	83.43		0.9374
11	1775	8488.8	109.02	54.51	322.23	161.11	72.53		0.9362

DATE 1-15-97 TEST NO. PC-21,735 **FLOWAY, INC.** CUSTOMER WILLOW CONSTRUCTION SERIAL # 24150-1-1  
 PUMP DESCRIPTION 18 TCM NO. OF STAGES 2 STG'S COL. SIZE & LENGTH 20" x 10' L.S. SHAFT SIZE 2 7/16"  
 HEAD SIZE & TYPE 20" x 30" F BOWL (A.I. (PUMP)) IMPELLER (SEE ENCLOSED) #2 POLISH IMPELLER DIAMETER 10.958 U.F. STD. U.F. STD.  
 MOTOR DATA: MAKE LAB SERIAL NO. 13 H.P. 500 POLES 4 PHASE 3 CYCLE 60 VOLTS 460 TYPE V.H.S.  
 MOTOR EFF. (PUBLISHED/GUARANTEED) ~ % FULL LOAD AMPS 11A METER CONSTANT Kh = 113893 (50 HP-230 V) 80.43 (25 HP-460 V) 1158.18 (100 HP-460 V)  
 METER SIZE & TYPE 16" x 10 1/2" GAGE DESCRIPTION 300\* (TL-1197) Kh = 2779.8246 (400 HP-460V) 6949.0616 (1000 HP-2300 V)  
 MANIFOLD ADAPTOR: SIZE 20" x 16" OFFSET ☐ STRAIGHT ☒ AXIAL ADJUSTMENT 2 turns 8 TPI

TEST RPM	MANOMETER READING IN GPM	TOTAL GPM READING x 1.004	GPM @ 1775 RPM K =	PRESSURE GAGE	DISCHARGE GAGE READING IN PSI	DISCHARGE GAGE CORRECTION	TOTAL PSI	GAGE HEAD IN FEET (A)	SYSTEM LOSSES IN FEET (B)	GAGE ELEV. IN FEET (C)	VELOCITY HEAD IN FEET (D)	TOTAL HEAD IN FEET A+B+C+D	HEAD IN FEET @ 1775 RPM K <sup>2</sup> =	HEAD PER STAGE @ RPM	AVERAGE VOLTS	AVERAGE AMPS	YOKOGAWA INPUT HP.	FIELD HP.	F.H.P. @ 1775 RPM K <sup>2</sup> =	F.H.P. @ 1.000 SPEC. GRAVITY	F.H.P. PER STAGE @ RPM	OVERALL EFFICIENCY	PUMP EFFICIENCY
1785	0			300	140.1	+2.20				NO 4.71	YES						412.8						
1786	1000				128.9	+2.20											400.4						
1787	2000				117.6	+2.10											376.8						
1786	3000				110.8	+2.10											394.7						
1785	4000				105.1	+2.10											419.8						
1785	5000				96.4	+1.40											410.1						
1785	6000				86.5	+1.40											407.7						
1786	6750				77.7	+1.38											401.1						
1787	7500				66.5	+1.32											387.1						
1787	8000				58.2	+1.30											372.6						
1788	8500				44.0	+1.25											351.8						

FORMULAE: GAGE HEAD P.S.I. x 2.3105 INPUT HP. =  $\frac{\text{No. of Rev. x Kh}}{\text{Time}}$  or  $\frac{\text{AMPS x VOLTS x P.F.}}{431}$  FIELD HP. = INPUT HP. x MOTOR EFF. OVERALL EFF. =  $\frac{\text{TOTAL HEAD x GPM}}{\text{INPUT HP.}}$  PUMP EFF. =  $\frac{\text{OVERALL EFF.}}{\text{MOTOR EFF.}}$  K =  $\frac{\text{JOB RPM}}{\text{TEST RPM}}$

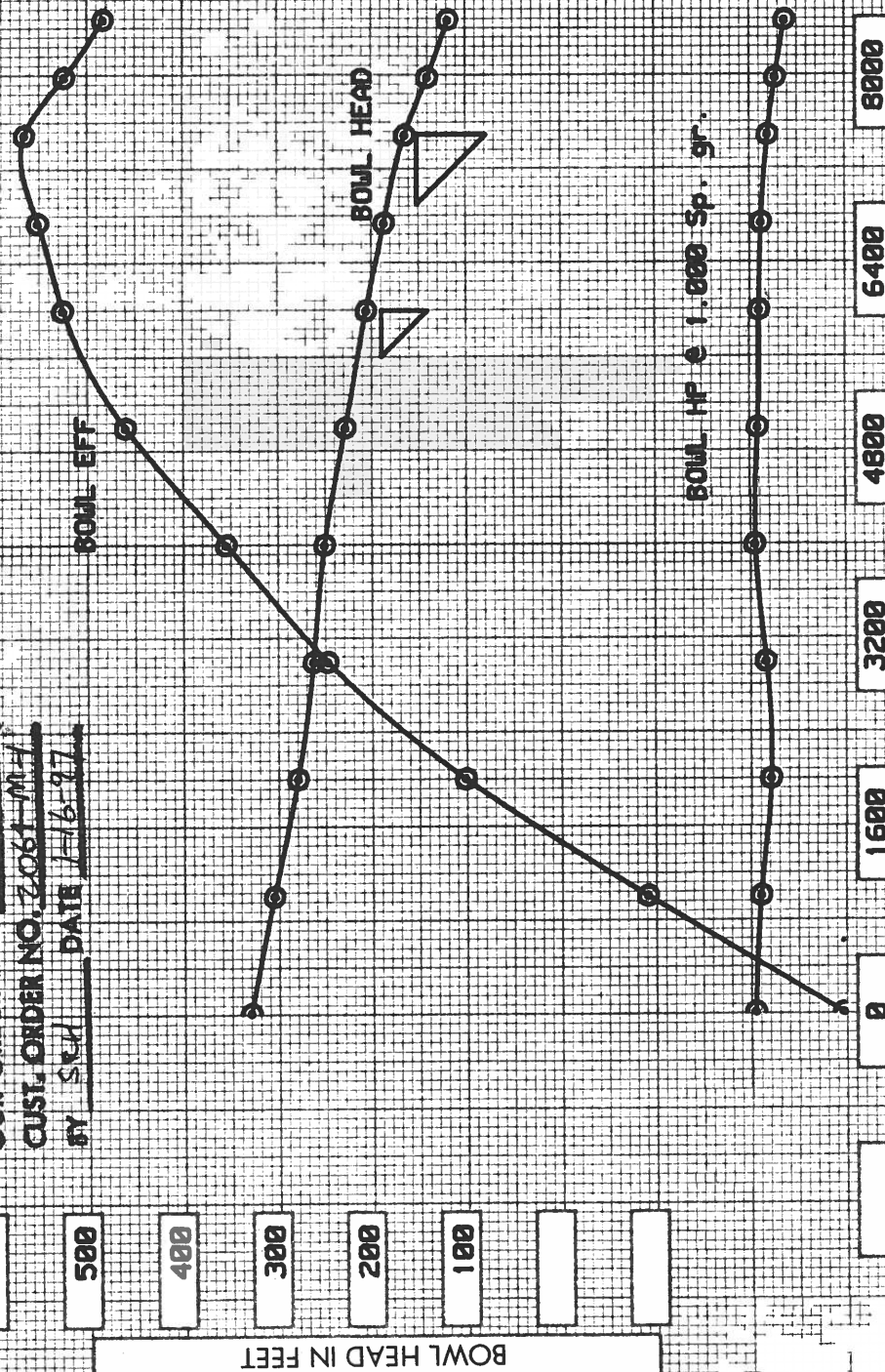
CONDITION POINT: 7500 GPM @ 150 T.D.H. @ 1775 RPM

TESTED BY: 4.4 DATE: 1-15-97 CALCULATED BY: \_\_\_\_\_ WITNESSED BY: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ PAGE 1 OF 1

FLINT RIVER R.W. PUMP STATION  
 FAYETTEVILLE GEORGIA  
 480 HP CLOSE COUPLED PUMP  
 RAW WATER PUMPING UNIT NO. #2  
 PUMP TEST: PC # 21738

CERTIFIED CORRECT  
 FOR

OUR ORDER NO. 24150  
 CUST. ORDER NO. 2061-MH  
 BY SKD DATE 1-16-97



WILLOW CONSTRUCTION INC  
 2440 CHURCH ROAD S.E.  
 SMYRNA GA 30080

**Flowway Pumps**  
 FRESNO, CALIFORNIA

DWG. NO. 24150-1-2-T1

A **WILLOW** COMPANY

TYPE 18 TKM  
 NO. OF STAGES 2  
 R.P.M. 1775  
 PUMP SERIAL NO. 24150-1-2

DWN. BY B.M.S. DATE 16-Jan-97



TEST NUMBER PC#: 21738 S.O. # : 24150-1-2 DATE: 16-Jan-97  
 CONDITION POINT: GPM= 7500 TDH= 150 RPM =1775  
 CALCULATED BY: B.M.S. DRAWING No. = 24150-1-2-T1  
 PUMP TYPE (Bb\$): 18 TKM  
 MANOMETER CONSTANT (Mc) = 1.0060 IMPELLER TRIM DIA. = 10.958 inch  
 GAGE HEIGHT (Ght) = 4.710 IMPELLER FINAL DIA. = 10.958 inch  
 NUMBER OF STAGES(Stages) = 2 NUMBER OF STAGES TESTED (Ds) = 2  
 SPECIFIC GRAVITY (SPG) = 1.0000  
 WATER TEMPERATURE = 65 DEGREES (F) SPECIFIC WEIGHT = 62.324 Lbs/Cu Ft.  
 COLUMN SIZE = 20  
 MOTOR NUMBER (Mno) = 13

RUN	RPM	GPM	PRESS	GA COR	S LOSS	C-LOS	DH-LOS	VEL	HD	HP RDG.	B LOS
1	1787	0.0	140.10	2.20	0.00	0.00	0.00	0.00	0.00	418.50	0.00
2	1787	1000.0	129.00	2.20	0.00	0.00	0.00	0.02	0.02	404.60	0.00
3	1788	2000.0	117.90	2.10	0.00	0.00	0.00	0.08	0.08	382.50	0.00
4	1788	3000.0	110.40	2.10	0.00	0.00	0.00	0.17	0.17	394.20	0.00
5	1786	4000.0	104.80	2.10	0.00	0.00	0.00	0.30	0.30	417.80	0.00
6	1786	5000.0	94.90	2.05	0.00	0.00	0.00	0.47	0.47	408.70	0.00
7	1786	6000.0	85.50	1.40	0.00	0.00	0.00	0.68	0.68	406.20	0.00
8	1787	6750.0	77.10	1.37	0.00	0.00	0.00	0.86	0.86	401.40	0.00
9	1787	7500.0	67.30	1.33	0.00	0.00	0.00	1.06	1.06	385.80	0.00
10	1788	8000.0	56.70	1.30	0.00	0.00	0.00	1.21	1.21	368.70	0.00
11	1789	8500.0	47.20	1.23	0.00	0.00	0.00	1.37	1.37	348.10	0.00

I	RPM	GPM	TDH	TDH/STAGE	BHP	BHP/STAGE	EFF	MTR EFF
1	1775	0.0	329.03	164.52	384.51	192.26	0.00	0.9376
2	1775	999.2	303.75	151.87	371.81	185.91	20.61	0.9377
3	1775	1997.4	277.96	138.98	351.01	175.51	39.94	0.9380
4	1775	2996.1	260.98	130.49	361.70	180.85	54.59	0.9379
5	1775	3999.2	248.91	124.46	384.52	192.26	65.37	0.9376
6	1775	4999.0	226.37	113.19	376.19	188.09	75.96	0.9377
7	1775	5998.8	203.64	101.82	373.90	186.95	82.51	0.9377
8	1775	6744.9	184.38	92.19	368.89	184.44	85.13	0.9378
9	1775	7494.3	162.14	81.07	354.62	177.31	86.53	0.9380
10	1775	7989.5	137.90	68.95	338.07	169.03	82.30	0.9372
11	1775	8484.1	116.13	58.07	318.23	159.11	78.19	0.9360

DATE 1-17-97 TEST NO. PC-21,738 **FLOWAY, INC.** CUSTOMER WILLIOW CONSTRUCTION SERIAL # 24150-1-2  
 PUMP DESCRIPTION 18 TKM NO. OF STAGES 2 STG'S 2 COL. SIZE & LENGTH 20" x 10' 4" SHAFT SIZE 2 7/16"  
 HEAD SIZE & TYPE 20" x 30" FROWL (GL. 1/2") IMPELLER ENCLOSED (BEZ) SHAFTEN ENTRANCE VANES 10.958 U.F. STD.  
 MOTOR DATA: MAKE LAB SERIAL NO. #13 H.P. 500 POLES 4 PHASE 3 CYCLE 60 VOLTS 460 TYPE V.H.S.  
 MOTOR EFF. (PUBLISHED/GUARANTEED) ~ % FULL LOAD AMPS ~ METER CONSTANT Kh = 13893 (50 HP-230 V) ☐ 8043 (25 HP-460 V) ☐ 1158.18 (100 HP-460 V)  
 METER SIZE & TYPE 1 1/2" x 10 1/2" GAGE DESCRIPTION 300 # 100 # (#1197) Kh = 1779.6246 (400 HP-460V) ☐ 6949.0616 (1000 HP-2300 V)  
 MANIFOLD ADAPTOR: SIZE 20" x 1 1/2" OFFSET ☐ STRAIGHT ☒ AXIAL ADJUSTMENT @ 2 turns 8 TPI

TEST RPM	MANOMETER READING IN GPM	TOTAL GPM	READING $\pm 1.0\%$	K = GPM @ 1775 RPM	DISCHARGE GAGE	DISCHARGE GAGE READING IN PSI	CORRECTION	TOTAL PSI	GAGE HEAD IN FEET	SYSTEM LOSSES IN FEET	GAGE ELEV. IN FEET	VELOCITY HEAD IN FEET	TOTAL HEAD IN FEET	IN FEET A+B+C+D	HEAD IN FEET @ 1775 RPM	HEAD PER STAGE @ RPM	AVERAGE VOLTS	AVERAGE AMPS	YOKO GAGE INPUT HP.	FIELD HP.	F.H.P. @ 1775 RPM	K <sup>2</sup> =	F.H.P. @ 1.00 SPEC. GRAVITY	F.H.P. PER STAGE @ RPM	OVERALL EFF.	PUMP EFF.	OVERALL EFF.	JOB RPM TEST RPM
1787	0					140.1 $\pm 2.20$					4.71								418.5									
1787	1000					129.0 $\pm 2.20$													404.6									
1788	2000					117.9 $\pm 2.10$													382.5									
1788	3000					110.4 $\pm 2.10$													384.2									
1786	4000					104.8 $\pm 2.10$													417.8									
1786	5000					94.9 $\pm 2.05$													408.7									
1786	6000					100 # 85.5 $\pm 1.40$													406.2									
1787	7500					77.1 $\pm 1.37$													401.4									
1788	8000					67.3 $\pm 1.33$													385.8									
1788	8500					56.7 $\pm 1.30$													368.7									
1789	8500					47.2 $\pm 1.23$													348.1									

FORMULAE: GAGE HEAD P.S.I.  $\times 2.3105$  INPUT HP. =  $\frac{\text{No. of Rev.} \times \text{Kh}}{\text{time}}$  or  $\frac{\text{AMPS} \times \text{VOLTS} \times \text{P.F.}}{431}$  FIELD HP. = INPUT HP.  $\times$  MOTOR EFF. OVERALL EFF. =  $\frac{\text{TOTAL HEAD}}{\text{INPUT HP.}}$  PUMP EFF. =  $\frac{\text{TOTAL HEAD}}{\text{INPUT HP.}}$  OVERALL EFF. =  $\frac{\text{TOTAL HEAD}}{\text{INPUT HP.}}$  K =  $\frac{\text{JOB RPM}}{\text{TEST RPM}}$

CONDITION POINT: 7500 GPM @ 150' T.D.H. @ 1775 RPM

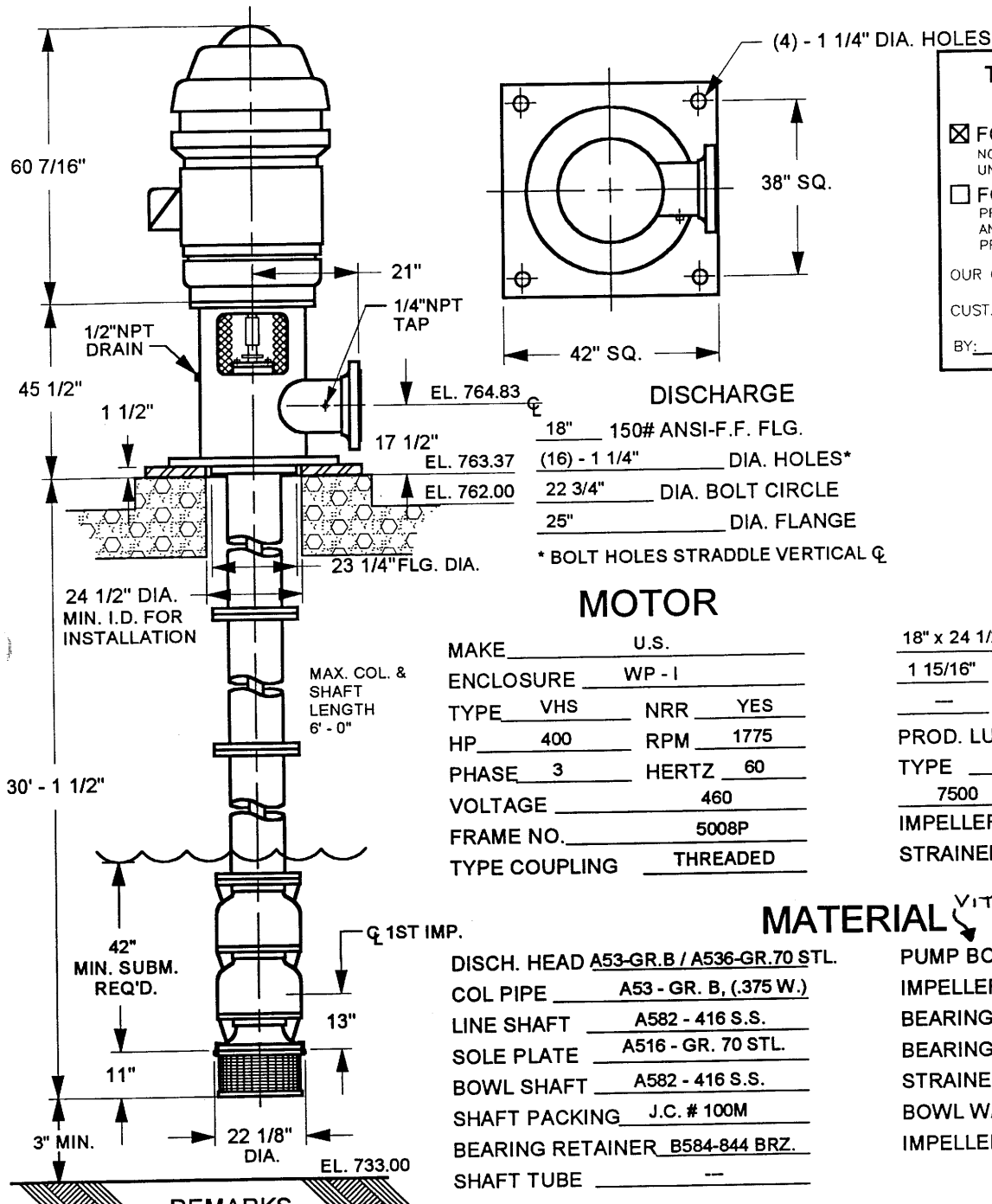
NOTES:

TESTED BY: Steve Smith DATE: 1-16-97 CALCULATED BY: Steve Smith WITNESSED BY: Steve Smith DATE: 1-16-97 TIME: 10:00 PAGE 1 OF 1



# VERTICAL TURBINE PUMP

TYPE "F"



## THIS DRAWING IS CERTIFIED

- ☒ FOR APPROVAL  
NO PRODUCTION WILL START  
UNTIL APPROVED IN WRITING.
- ☐ FOR CONSTRUCTION  
PRODUCTION HAS STARTED.  
ANY CHANGES MAY AFFECT  
PRICE AND DELIVERY.

OUR ORDER No.: 24150

CUST. ORDER No.: 2064-M-1

BY: MFC DATE: 8/26/96

## MOTOR

MAKE \_\_\_\_\_ U.S. \_\_\_\_\_

ENCLOSURE WP - I

TYPE VHS NRR YES

HP 400 RPM 1775

PHASE 3 HERTZ 60

VOLTAGE \_\_\_\_\_ 460

FRAME NO. \_\_\_\_\_ 5008P

TYPE COUPLING THREADED

## PUMP

18" x 24 1/2" "F" STL. DISCH. HD.

1 15/16" LINE SHAFT 18" COL

— SHAFT TUBE

PROD. LUBE YES OIL LUBE NO

TYPE 18 TKM STAGE 2

7500 GPM 150' BOWL HD

IMPELLER ENCLOSED

STRAINER YES

## MATERIAL <sup>Vitreous Enamel Lining</sup> Req'd

DISCH. HEAD A53-GR. B / A536-GR. 70 STL.

COL PIPE A53 - GR. B, (.375 W.)

LINE SHAFT A582 - 416 S.S.

SOLE PLATE A516 - GR. 70 STL.

BOWL SHAFT A582 - 416 S.S.

SHAFT PACKING J.C. # 100M

BEARING RETAINER B584-844 BRZ.

SHAFT TUBE —

PUMP BOWL A48 - CL. 30 C.I.E.

IMPELLER B584 - 838 BRZ.

BEARINGS (BOWL) B505 - 932 BRZ.

BEARINGS (LINESHAFT) NEOPRENE

STRAINER GALVANIZED STEEL

BOWL W/R —

IMPELLER W/R —

## REMARKS

NO. UNITS REQ'D. 2

CLOSE COUPLED PUMPS

FLUID WATER

SPEC. GRAVITY —

VISCOSITY —

TEMPERATURE AMB.

PH —

CUSTOMER FLINT RIVER RAW WATER PUMP STA.

FAYETTEVILLE, GEORGIA

ORDER NO. 2064 - M -1

SUPPLIER WILLOW CONSTRUCTION, INC.

2440 CHURCH ROAD S.E.

SMYRNA, GA. 30080

DWG. NO. 2415001B

SERIAL NO. 24150 - 1 - 1 & 2

NOT TO BE USED  
FOR CONSTRUCTION  
UNLESS CERTIFIED

By: MFC Date: 08/26/96

A WEB COMPANY