ADDENDUM NUMBER 4

LAKE HARTWELL RAW WATER PUMP STATION IMPROVEMENTS

FOR

ARJWS

GMC PROJECT NO. CGRE250033

1. Revisions to the Project Manual

a. Due to weight and fitment concerns, the 600 hp pump has been replaced with a new model 31EKL. There is no change to cost or expected delivery schedule.

2. Clarifications to Questions

a. Flowserve 31EKL data

Criteria	Pump 1 (Alternate #1)
Pump Model	**31 EKL**
Design point	11,500 GPM @ 156-FT TDH
MCSF (gpm)	3,920
Stages	1
Speed (RPM)	1185
Fit (33" x 38") (Inches)	30.56
Efficiency (%)	82.8
NPSHr (FT)	23.7
Pump Weight - Ton (Lb)	6.9 (13,771)
Est. Motor Weight - Ton (Lb)	3.4 (6,700)
Combined Weight - Ton	10.3

3. Acknowledgement

3.1 Receipt of Addendum No. 4 shall be acknowledged in the following way.

3.1.1 Note on Bid Form of the Project Manual – Bidder acknowledges receipt of "Addendum No. 4" and date of "December 23rd, 2025".

4. Attachments

a. 31EKL Data Sheet from Flowserve

5. Conclusion

5.1 This is the end of Addendum Number 4, dated Tuesday, December 23rd, 2025.

John Raiford, PE

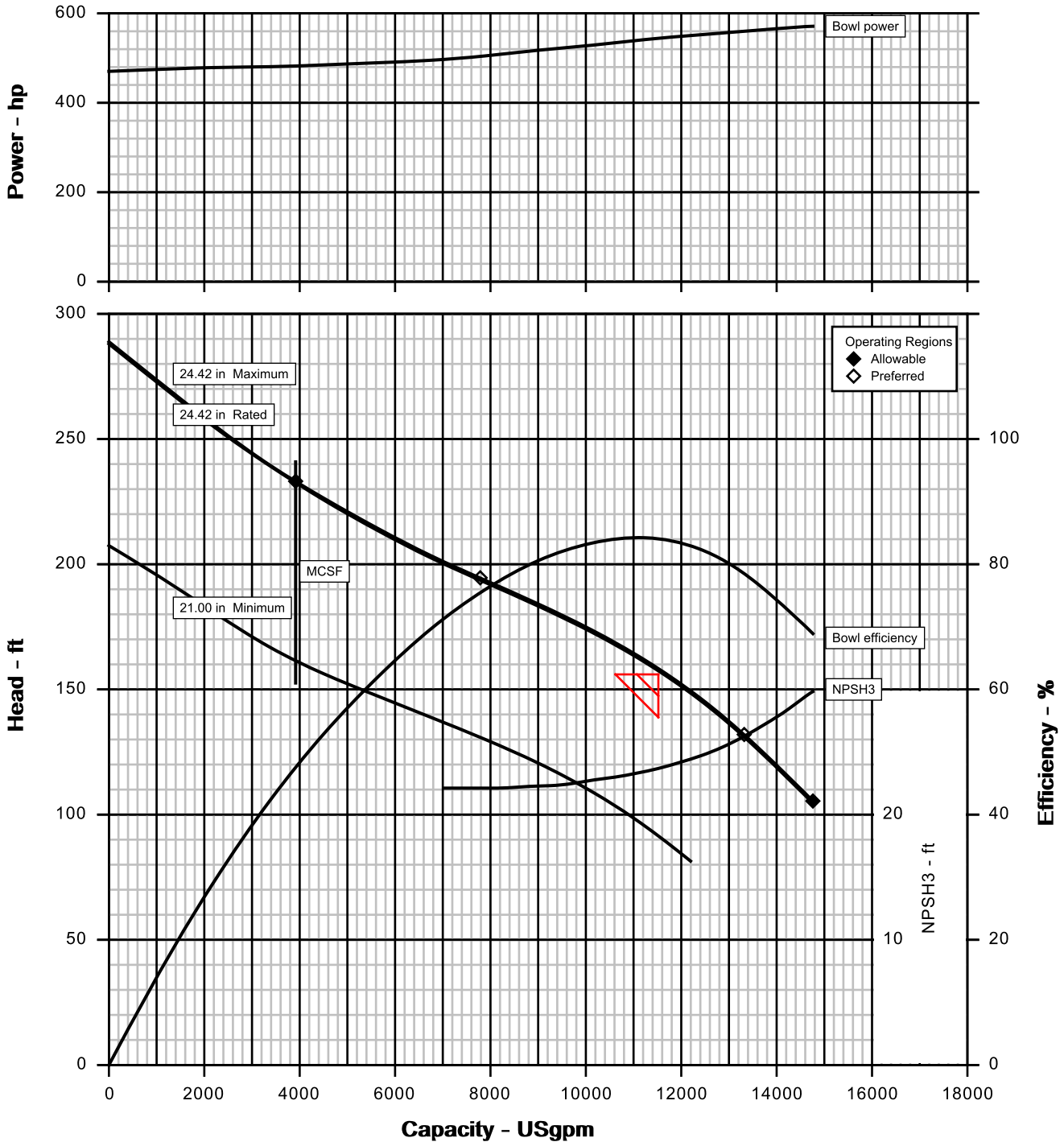
NOTE THIS IS THE PRELIMINARY SUBMITTAL AND IS NOT APPROVED AT THIS TIME

Pump size & type / Stages	: 31EKL	/ 1
Based on curve no.	: EC-1753	
Impeller diameter	: 24.42 in	

Customer	: PREMIER WATER LLC	Capacity	: 11,500.0 USgpm
Item number	: Alternate Pump 2 31EKL	Head	: 156.00 ft
Service	: - Pump 1	Density / Specific gravity	: - / 1.000
Flowserve reference	: 5302832946	Pump speed	: 1,185 rpm
Date	: December 8, 2025	Ns / Nss (per eye)	: 3,190 / 11,790 (US)
		Test tolerance	: ANSI/HI 14.6 Grade 1U

CURVES ARE APPROXIMATE, PUMP IS GUARANTEED FOR ONE SET OF CONDITIONS; CAPACITY, HEAD, AND EFFICIENCY.

Bowl performance shown below is corrected for materials, viscosity and construction.



Bowl head of 158.67 ft corresponds with 156 ft head at low liquid level adjusted for elevation and friction losses.

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Hydraulic Datasheet

Customer	: PREMIER WATER LLC	Pump / Stages	: 31EKL	/ 1
Customer reference	: -	Based on curve no.	: EC-1753	
Item number	: Alternate Pump 2 31EKL	Flowserve reference	: 5302832946	
Service	: -	Date	: December 8, 2025	

Operating Conditions

Capacity	: 11,500.0 USgpm
Water capacity (CQ=1.00)	: -
Normal capacity	: -
Rated head @ Low liquid level	: 156.00 ft
Water head (CH=1.00)	: -
NPSH available (NPSHa) @ Low liquid level	: 34.0 ft
NPSHa less NPSH margin @ Impeller eye	: -
Maximum suction pressure	: Not applicable
Rated suction pressure	: Not applicable

Liquid

Liquid type	: Other
Liquid description	: -
Temperature / Specific gravity	: 60 °F / 1.000
Viscosity / Vapor pressure	: 1.00 cSt / 0.00 psia

Materials / Specification

Material column code	: B30

Other Requirements

Hydraulic selection : No specification
Construction : NSF 61
Test tolerance : ANSI/HI 14.6 Grade 1U
Driver Sizing : Max Power + 3%
Seal configuration : Packing

Performance

Pump speed	: 1,185 rpm	Impeller diameter	: Rated / Maximum / Minimum
NPSH required (NPSH3) (CNPSH=1.00) @ Im...	: 23.7 ft		: 24.42 in / 24.42 in / 21.00 in
Minimum submergence	: 56.00 in	Impeller diameter ratio (rated/max)	: 100.0 %
Hydraulic power	: 453 hp	Maximum head at rated diameter	: 288.75 ft
Efficiency (Pump overall / Bowl) (CE=1.00)	: 82.8 % / 84.5 %	Head rise to shut off	: 82.0 %
Power (rated/max)	: 547 hp / 573 hp	Total head ratio (rated / max) / (max / rated)	: 100.0 % / 100.0 %
Driver power rating	: 600 hp / 447 kW	Flow at BEP	: 11,103.8 USgpm
Bowl pressure	: 125.0 psig	Flow as % of BEP	: 103.6 %
(based on shut off @ cut dia/rated SG)		Minimum continuous flow	: 3,920.0 USgpm
Maximum allowable	: 310.0 psig	Rated thrust (at Rated flow)	: 12,311.4 lbf
Bowl & column hydrotest	: 156.3 psig	Maximum thrust (at Shut off flow)	: 21,266.6 lbf
Dischg Head Dischg Region MAWP	: 285.0 psig	Min thrust - Runout flow / Max Suction	: 8,835.7 lbf
Ns / Nss (per eye)	: 3,190 / 11,790 (US)	(A negative thrust value indicates an upthrust condition)	

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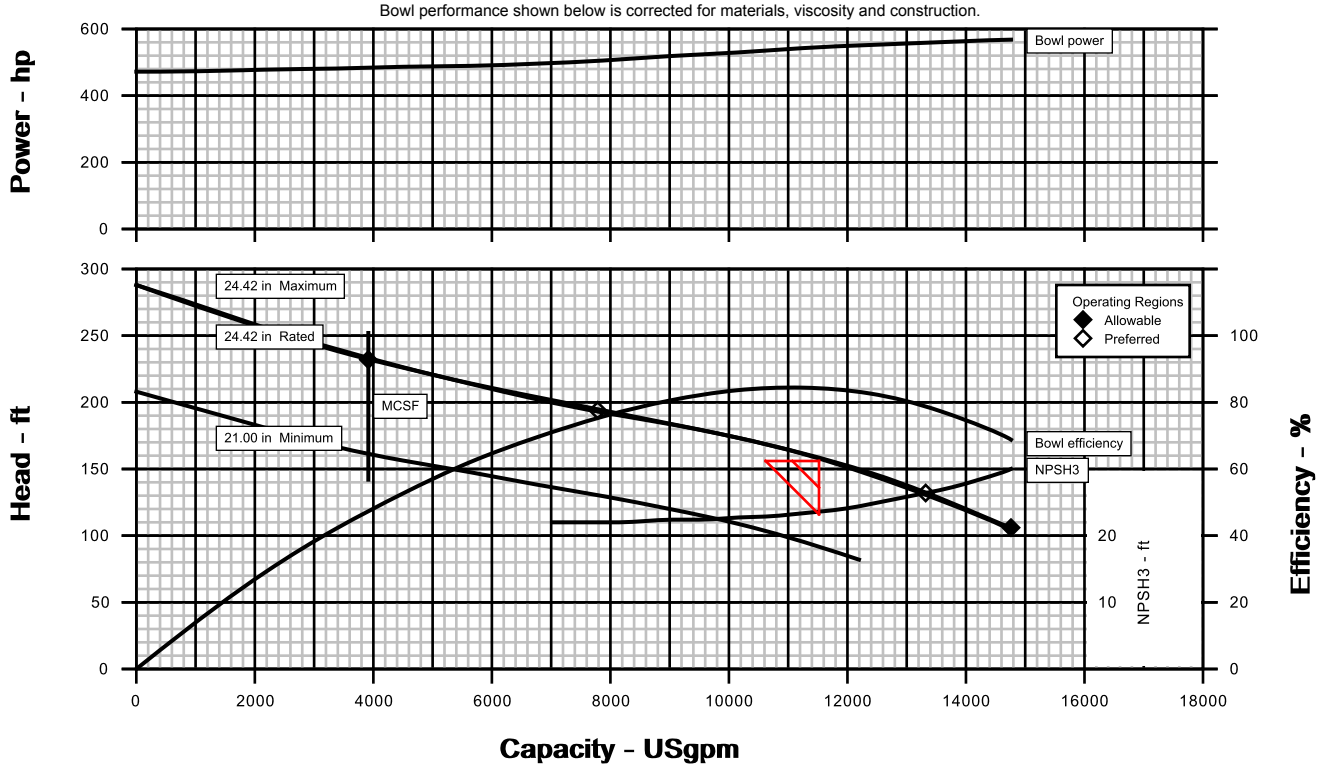
Bowl performance shown below is corrected for materials, viscosity and construction.



Bowl head of 158.67 ft corresponds with 156 ft head at low liquid level adjusted for elevation and friction losses.
** denotes rejection criteria

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Construction Datasheet

Customer	: PREMIER WATER LLC	Pump / Stages	: 31EKL / 1
Customer reference	: -	Based on curve no.	: EC-1753
Item number	: Alternate Pump 2 31EKL	Flowserve reference	: 5302832946
Service	: -	Date	: December 8, 2025

Construction

Bowl construction / lined	: Flanged - Std Wall / Unlined bo...
Impeller type	: Enclosed spec'd as semi-open
Impeller fastening	: Keyed
Suction strainer	: Basket strainer
Column construction	: Flanged
Column flange spec'n	: Taneytown Specification
Column dia (nominal)	: 20.00 in
Column pipe length	: 56.00 ft
Column section length	: 60.00 in
Lineshaft brg spacing	: 60.00 in
Lineshaft diameter	: 2.44 in
Lineshaft coupling type	: Keyed coupling
Lineshaft bearings, qty	: 12
Lineshaft construction	: Open
Lineshaft lubrication	: Pumpage
Enclosing tube diameter	: -
Disch size/rating/face	: 20 in / 150 lb ANSI / RF
Pump/driver coupling	: No rigid coupling required
"UF" - Fabricated / Below Grade Discharge	

Driver Information

Manufacturer	: -
Power / SF (Req' / Act')	: 600 hp / 447 kW / 1.15 / 1.0
Vertical shaft type	: Hollow
Hollow shaft coupling	
Driver type	: NEMA Electric Motor
Frame size / Base dia	: -
Enclosure	: WP1
Duty type	
Efficiency type	
Hazardous area class	: -
Explosion 'T' rating	: -
Volts / Phase / Hz	: 4,160 V / 3 / 60 Hz
Amps-full load/locked rotor	: - / -
Motor starting	: Direct on line (DOL)
Insulation	: - spec'd as RVSS
Temperature rise	: -
Bearings / Lubrication	: - / -
Motor mounted by	: Customer
Motor Thrust rating down/up	: - / -

Materials

Bowl	: Cast Iron A48 CL30
Impeller	: 316LSS A743 GR CF-3M
Bowl bearing	: Thermoplastic Composite
Bowl shaft	: 416SS A582 Gr 416
Bowl wear ring	: None supplied
Impeller wear ring	: None supplied
Suction strainer	: Galvanized Steel spec'd as 304SS
Column	: Steel A53 Type E GrB
Lineshaft	: 416 stainless steel
Lineshaft bearing	: Thermoplastic Composite
Lineshaft sleeve	
Discharge head	: Steel A53 Gr B/A36
Support plate	: None supplied

Seal Information

Arrangement	: Open Lineshaft Packed Box
Size	: -
Manufacturer / Type	: - / Packing
Material code (Man'f/API)	: Graphite Fiberglass / -
Gland material	: Cast iron
Auxiliary seal device	: -
Seal flush plan	: None
Seal flush construction	: -

Paint and Package

Pump paint	: -
Support plate paint	: -
Shipment type	: -

Weights (Approx.)

Complete pump	: 1,460.0 lb
Mounting plate	: -
Driver (net)	: -

Additional information

Pit / sump depth	: 63.50 ft
Pump length	: 63.13 ft
mounting surface to bell/strainer bottom	
Available well diameter	: 33.00 in
Max dia below mtg surface	: 43.00 in

Testing

Hydrostatic test	: None
Performance test	: None
NPSH test	: None

Notes

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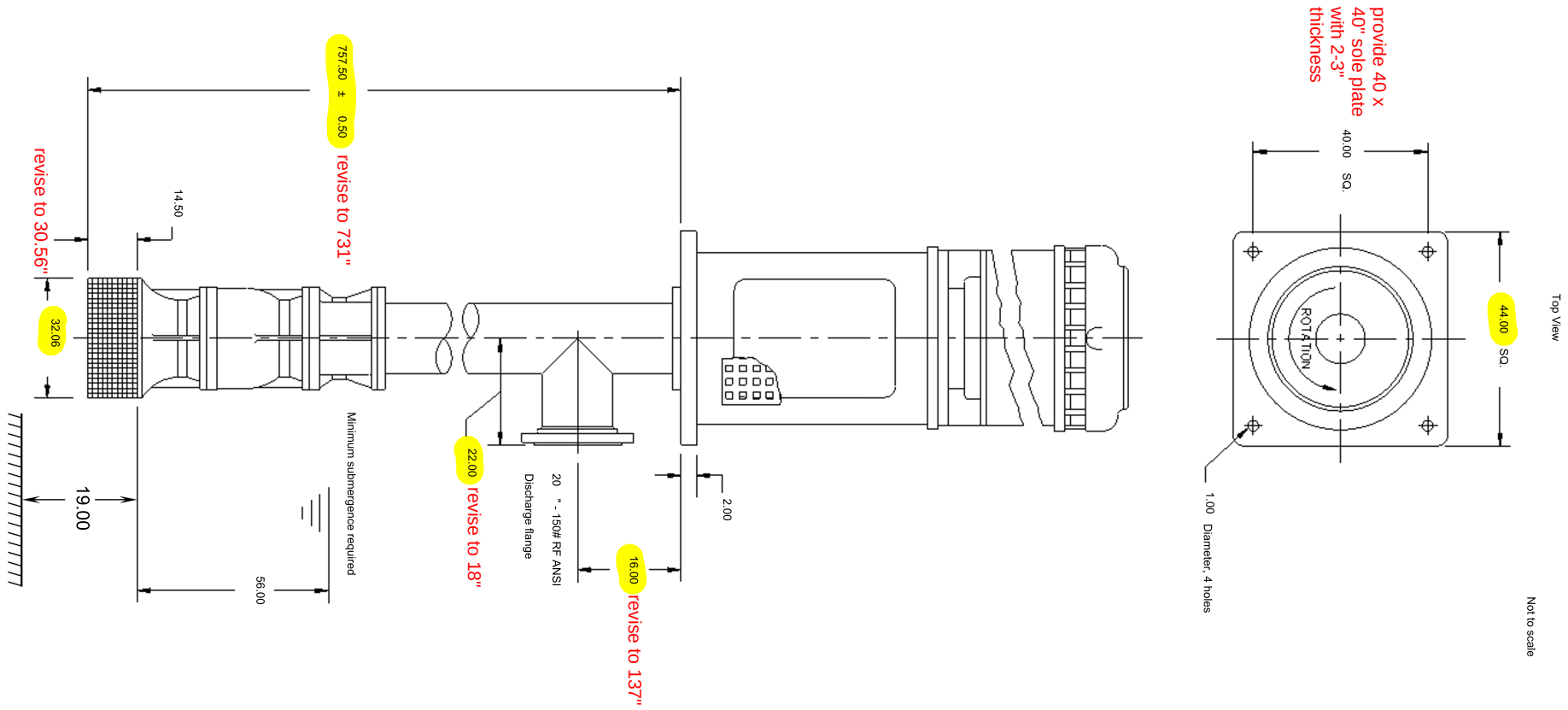

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Customer	: PREMIER WATER LLC	Pump size & type	: 31EKL	Drawing number	: -
Item number	: Alternate Pump 2 31EKL	Pump speed / Stages	: 1,185 rpm / 1	Date	: December 8, 2025
Service	: -	Flow / Head	: 11,500.0 USgpm / 156.00 ft	Certified by / Date :	: -
Customer PO #	: -	Driver power / Frame	: 600 hp / 447 kW / -	Seal type	: Packing
Flowserve reference	: 5302832946	Volts / Phase / Hz	: 4,160 V / 3 / 60 Hz	Seal flush plan	: None

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Customer	: PREMIER WATER LLC	Capacity	: 11,500.0 USgpm
Item number	: Alternate Pump 2 31EKL	Head	: 156.00 ft
Service	: -	Density / Specific gravity	: - / 1.000
Flowserve reference	: 5302832946	Pump speed	: 1,185 rpm
Pump size & type / Stages	: 31EKL / 1	Ns / Nss (per eye)	: 3,190 / 11,790 (US)
Based on curve no.	: EC-1753	Pump WR² at 1,185 rpm	: 190.66 lb-ft²
Impeller diameter	: 24.42 in	Date	: December 8, 2025

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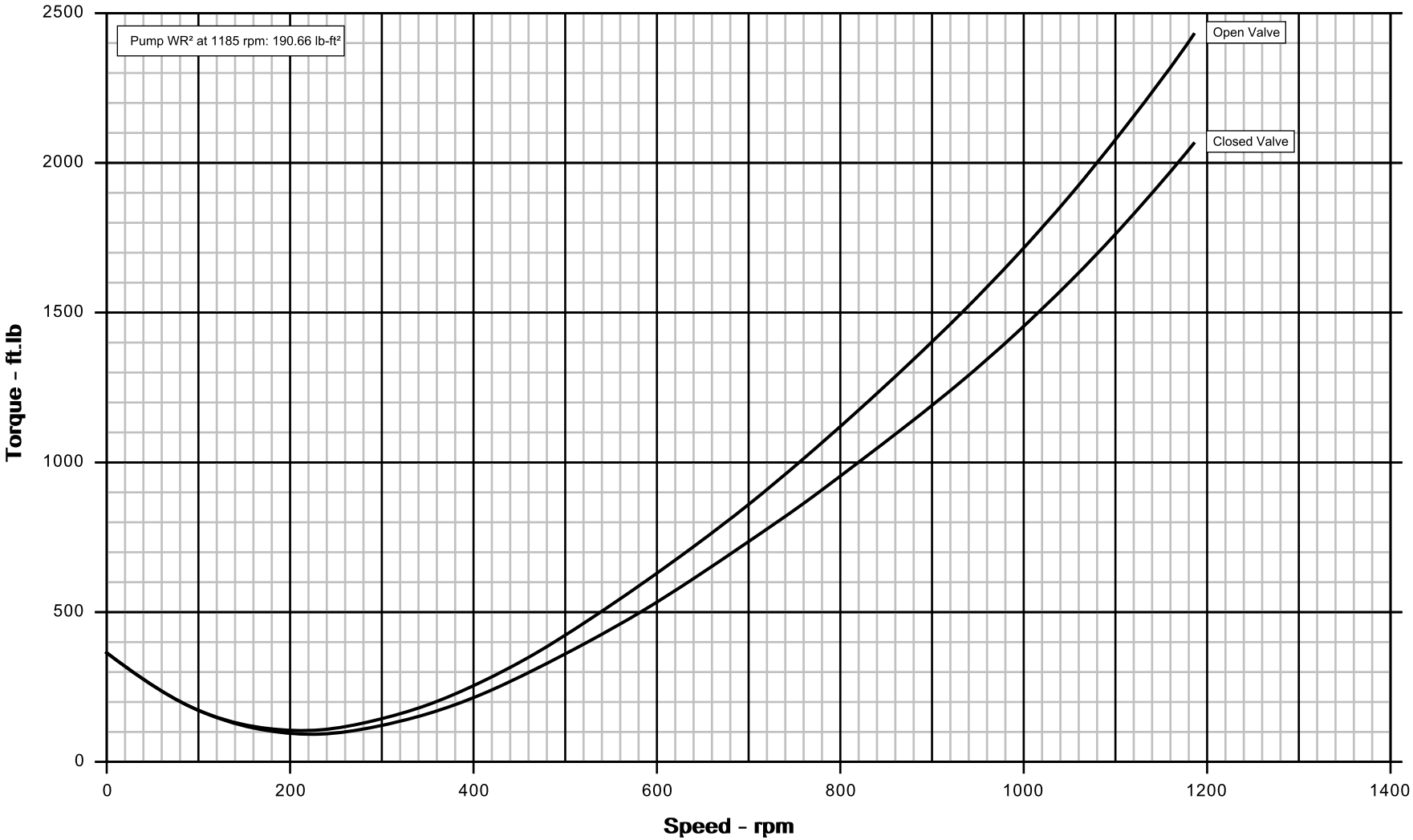
Bowl performance shown below is corrected for materials, viscosity and construction.



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Additional Details

Customer	: PREMIER WATER LLC	Pump / Stages	: 31EKL / 1
Customer reference	: -	Based on curve no.	: EC-1753
Item number	: Alternate Pump 2 31EKL	Flowserve reference	: 5302832946
Service	: -	Date	: December 8, 2025

Duty Conditions

Quantity of pumps	: 1
Liquid description	: -
Liquid type	: Other
Frequency	: 60 Hz
Flammable	: No
Toxic	: No
H2S	: No
Rated flow	: 11,500.0 USgpm
Rated head	: 156.00 ft @ Low liquid level
NPSHa	: 34.0 ft @ Low liquid level
Viscosity	: 1.00 cSt
Specific gravity	: 1.000
Maximum suction pressure	: 0.0 psig @ -
Rated suction pressure	: 0.0 psig
Maximum liquid temperature	: 60 °F
Vapor pressure	: 0.00 psia
Altitude	: 0.00 ft
Static head	: 0.00 ft
Pump length strategy used	: Maximize length for sump depth

Performance

Hydraulic power	: 453 hp
Pump overall efficiency	: 82.8 %
NPSH3 @ Impeller eye	: 23.7 ft
Rated brake power	: 547 hp
Maximum brake power	: 573 hp
Motor rating	: 600 hp / 447 kW
Ns / Nss (per eye)	: 3,190 / 11,790 (US)
MCSF	: 3,920.0 USgpm
Rated impeller diameter	: 24.42 in
Maximum impeller diameter	: 24.42 in
Minimum impeller diameter	: 21.00 in
Maximum head	: 288.75 ft
Flow at BEP	: 11,103.8 USgpm
Flow as % of BEP	: 103.6 %
Rated/max diameter	: 100.0 %
Head rise to shut off	: 82.0 %
Rated/max head	: 100.0 %

Viscosity Correction Factors

Head (CH)	: 1.00	Capacity (CQ)	: 1.00
Efficiency (CE)	: 1.00	NPSH3 (CNPSH)	: 1.00

Selection status

Product line	: VTP Wet Pit	Booking location	: Taneytown
Pump speed	: 1,185 rpm	Supplying location	: Taneytown
		Selection status	: Near Miss

Working Pressure Limits

Bowl assembly MRWP	: 125.0 psig
Column assembly MRWP	: 125.0 psig
Discharge region of discharge head MRWP	: 101.3 psig
Bowl assembly MAWP	: 310.0 psig
Column assembly MAWP	: 354.0 psig
Discharge region of discharge head MAWP	: 285.0 psig

Flow Velocities and Nozzle Sizing

Nozzle sizing strategy based on	: Flanged - Std Wall
Discharge nozzle design flow	: 11,500.0 USgpm
Actual calculated discharge velocity	: 12.68 ft/s
Actual discharge inside diameter	: 19.25 in
Actual calculated column velocity	: 12.88 ft/s

Hydrostatic Test Pressures (when purchased)

Bowl / Column Assemblies HTP	: 156.3 psig / 156.3 psig
Discharge region of discharge head HTP	: 126.7 psig

Additional Performance

Torque rating (max power)	: 48.4 hp/100 rpm
Torque rating (rated power)	: 46.2 hp/100 rpm
Overall torque limit of pump shafts	: 64.1 hp/100 rpm
Pump WR² at 1,185 rpm	: 190.66 lb-ft²

Materials

Requested pump material	: B30
Selected pump material	: B30
Bowl material	: Cast Iron A48 CL30
First stage impeller material	: 316LSS A743 GR CF-3M
Upper stage impeller material	: 316LSS A743 GR CF-3M
Bowl wear ring material	: None
Impeller wear ring material	: None supplied
Bowl shaft material	: 416 stainless steel
Bowl bearing material	: Thermoplastic Composite
Column material	: Carbon steel
Lineshaft material	: 416 stainless steel
Open lineshaft bearing material	: Thermoplastic Composite Lineshaft...
Discharge head material	: Carbon Steel

Sump & Submergence

User defined well / sump opening	: 33.00 in
Required minimum well / sump opening	: 47.00 in
User defined pit depth	: 63.50 ft
Min req. pit depth for pump length	: -
Combined bowl & column assembly length	: 63.13 ft
Clearance from strainer/bearing hub to sump bottom	: 19.00 in
Available submergence above bell lip	: 71.00 in
Req. min. submergence above bell lip	: 56.00 in
User defined NPSHa	: 34.0 ft
User defined mounting surf. to LLL	: 56.00 ft
Max allowed LLL for pump length	: 57.25 ft
NPSHa at eye of impeller	: 38.8 ft
NPSH3 @ Impeller eye	: 23.7 ft

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Customer	: PREMIER WATER LLC	Pump / Stages	: 31EKL	/ 1
Customer reference	: -	Based on curve no.	: EC-1753	
Item number	: Alternate Pump 2 31EKL	Flowserve reference	: 5302832946	
Service	: -	Date	: December 8, 2025	

Performance Corrections

Head Corrections

Pump rated head at discharge flange	: 101.33 ft
Discharge pressure at discharge flange	: 43.9 psig
C/L discharge flange to mounting surface	: 16.00 in
Mounting surface to low liquid level	: 56.00 ft
Pump rated head at low liquid level	: 156.00 ft
Discharge head friction loss	: 1.24 ft
Column friction loss	: 1.43 ft
Bowl head	: 158.67 ft

Efficiency Corrections

Bowl efficiency after correction	: 84.5 %
Pump overall efficiency	: 82.8 %

Construction and Dimensions

Bowl Assembly Construction

Bowl construction	: Flanged - Std Wall
Bowl lining	: Unlined bowls
Impeller design	: Enclosed
Impeller fastening	: Keyed
Strainer type	: Basket strainer
Qty of unbalanced, std design impellers	: 1
Qty of balanced, std design impellers	: -
Qty of unbalanced, alt first stage impellers	: -
Qty of balanced, alt first stage impellers	: -

Bowl Assembly Dimensions

Bowl shaft diameter	: 3.50 in
Bowl O.D.	: 30.56 in
Bell O.D	: 30.56 in
Strainer O.D.	: 32.06 in
Bowl assembly length to bell lip	: 39.00 in
Bearing hub/strainer length below bell lip	: 14.50 in
Impeller eye to bell lip	: 13.50 in
Upper stages impeller rated diameter	: 24.42 in
First stage impeller rated diameter	: 24.42 in

Column Assembly Construction

Column construction	: Flanged
Column wall description	: Factory Default Wall Thickness
Lineshaft lubrication	: Open Lineshaft (Product Lube)
Column flange rating	: FLS "Standard"
Shaft split	: Separate bowl and lineshaft
Lineshaft coupling type	: Keyed coupling
Actual calculated column velocity	: 12.88 ft/s

Column Assembly Dimensions

Column nominal diameter	: 20.00 in
Column wall thickness	: 0.3750 in
Column length	: 56.00 ft
Max column segment length	: 60.00 in
Lineshaft diameter	: 2.44 in
Bearing span	: 60.00 in

Discharge Head Assembly Construction

Discharge head design	: "UF" - Fabricated / Below Grade Discharge
Discharge head size	: 20.00 in
Discharge head flange spec./rating	: 150 lb ANSI/ASME B16.5 or B16.47 Compliant
Discharge flange size	: 20 in
Head shaft sealing method	: Packing
Driver shaft type	: Hollow shaft driver
Solid shaft coupling type	: No rigid coupling required
Solid shaft coupling size	: N/A

Discharge Head Assembly Dimensions

Discharge position	: Below mounting surface
C/L shaft to discharge flange face	: 22.00 in
C/L head discharge to mounting surface	: 16.00 in
Shaft diameter through stuffing box	: 2.44 in

Thrust Data

Thrust bearing location	: Thrust bearing supplied in the driver
Thrust stand selection method	: Use rated head & max suction
Thrust stand size	: None supplied
Thrust used for stand sizing	: 12,311.4 lbf
Max thrust limit for this design	: 24,000.0 lbf
Min thrust limit for this design	: 0.0 lbf

Thrust with rated head/rated suction	: 12,311.4 lbf
Thrust with shutoff head/rated suction	: 21,266.6 lbf
Thrust with runout head/rated suction	: 8,835.7 lbf
Thrust with rated head/max suction	: 12,311.4 lbf
Thrust with shutoff head/max suction	: 21,266.6 lbf
Thrust with runout head/max suction	: 8,835.7 lbf

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Additional Details

Customer	: PREMIER WATER LLC	Pump / Stages	: 31EKL	/ 1
Customer reference	: -	Based on curve no.	: EC-1753	
Item number	: Alternate Pump 2 31EKL	Flowserve reference	: 5302832946	
Service	: -	Date	: December 8, 2025	

Additional Notes

Pump rejected because of:

- Minimum sump/well opening

User messages:
All possible upgrades to product line constraints were attempted.

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