COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF	**)**	
MCCREARY COUNTY WATER DISTRICT	**)**	
PURSUANT TO 807 KAR 5:071, SECTION 7(4)	**)**	**CASE NO. 2017-00246**
FOR APPROVAL OF PROPOSED	**)**	
INSPECTION PROCEDURES	**)**	

APPLICATION

Pursuant to 807 KAR 5:071, Section 7(4), McCreary County Water District ("McCreary District") applies to the Public Service Commission for an Order approving its proposed procedures for the inspection of its sewage collection and treatment operations that will permit inspections of certain mechanic equipment and facilities on a non-daily basis.

In support of its Application, McCreary District states:

Introduction

1. The full name and post office address of McCreary District is: McCreary County Water District, Post Office Box 488, Whitley City, Kentucky 42653. Its e-mail address is mcwd@highland.net.

2. McCreary District is not a corporation, limited liability company or limited partnership. It has no articles of incorporation or partnership agreements.

3. McCreary District is a water district created under the provisions of KRS Chapter 74.

4. McCreary County Court created McCreary District pursuant to an order entered November 16, 1962. A copy of this Order and a subsequent Order modifying McCreary District's territory is attached at **Tab 1** of this Application.

5. Copies of all orders, pleadings and other communications related to this proceeding should be directed to:[1]

Stephen T. Owens
General Manager
P.O. Box 480
Whitley City, KY 42653
(606) 376-2540
mcwd@highland.net

Gerald E. Wuetcher
Stoll Keenon Ogden PLLC
2100 West Vine Street, Ste 2100
Lexington, KY 40507-1801
(859) 231-3017
gerald.wuetcher@skofirm.com

6. McCreary District's Board of Commissioners, which manages McCreary District's business and affairs pursuant to KRS 74.070(2), has authorized the filing of this application. A copy of its Resolution authorizing this Application is attached at **Tab 2** of this Application.

McCreary District's Sewer Operations

7. McCreary District owns and operates facilities that are used in the collection, transmission, or treatment of sewage for the public, for compensation, and that provide sewer service to the public in McCreary County, Kentucky. Pursuant to KRS 278.015 and KRS 278.040, these facilities are subject to the Kentucky Public Service Commission's jurisdiction and regulation.

8. McCreary District currently provides sewer service to approximately 1,139 customers, including 859 residential customers, 150 commercial customers, five industrial customers, and 124 institutional or non-classified customers, including the United States

[1] On June 21, 2017, McCreary District gave to the Commission notice of its intent to file this Application and filed with the Commission a Notice of Election of Use of Electronic Filing Procedures for this proceeding.

Penitentiary McCreary, which is located at Pine Knot, Kentucky and which has a total inmate population of 1,467.[2] It has a serviceable population of 1,927 households and approximately 4,276 persons.[3]

9. McCreary District began its sewer operations in 1984 with the acquisition of a 40,000 gallons per day package sewage treatment facility in Pine Knot, Kentucky.[4] In 1994 it constructed additional facilities to expand its total daily treatment capacity to 140,000 gallons. In 2001, McCreary District obtained Kentucky Public Service Commission approval to construct additional sewage treatment facilities that increased its daily treatment capacity to 900,000 gallons[5] and completed construction of these facilities in 2004.[6]

10. McCreary District currently operates a sewage treatment facility that has a total daily treatment capacity of 900,000 gallons and is located outside Sterns, Kentucky. The facility uses an extended aeration treatment process and consists of two 450,000 gallons oxidation ditches, two clarifiers and two digesters. McCreary District operates approximately 278,000 feet of sewer main, 39 manholes and 9 major lift stations. The general location of these facilities is shown on the maps at **Tab 3 and Tab 4** of this Application.

11. Because of its territory's topography and low customer density, McCreary District uses a pressurized system rather than a conventional gravity collection system to transport

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[2] Federal Bureau of Prisons, https://www.bop.gov/locations/institutions/mcr/ (last visited June 16, 2017).

[3] Kentucky Water Resource Information System (WRIS), Waste Water System Information on McCreary County Water District, https://wris.ky.gov/portal/WwSysData/KY0097837 (last visited June 16, 2017)

[4] *Application of the McCreary County Water District for Authority to Acquire and Operate the East Pine Knot Estates Waste Water Collection and Treatment Plant Now Operated by D.H. Campbell and Joan Campbell, A Partnership, in Pine Knot, McCreary County, Kentucky*, Case No. 9334 (Ky. PSC Aug. 28, 1985). For a detailed description of the plant's operations, see *The Application of D.H. Campbell and Joan Campbell, Partnership, for an Order Establishing Initial Rates for a Waste Water collection and Treatment System to Serve the Residents of East Pine Knot Estates Subdivision in McCreary County, Kentucky*, Case No. 8888 (Ky. PSC Jan. 13, 1984).

[5] *The Application of McCreary County Water District For A Certificate of Public Convenience and Necessity to Construct, Finance and Increase Rates Pursuant to KRS 278.023*, Case No. 2001-00338 (Ky. PSC Nov 15, 2001)

[6] *Report of McCreary County Water District (Sewer Operations) to the Kentucky Public Service Commission for the Year ending December 31, 2004* at Ref Page 11.

wastewater to its sewage treatment facility. For most McCreary District customers, sewage from the customer's home or business flows to a storage tank located on the customer's property which is equipped with a grinder/pump. The grinder/pump grinds the solids into slurry and then discharges the sewage into a pressurized pipe system. The sewage is then forced to a major pump station that pumps the sewage through force mains to the sewage treatment facility. McCreary District currently has 1139 active simplex grinder/pump stations and 75 active duplex grinder/pump stations that pump wastewater from the customer's residence or business to McCreary District's main lift stations.[7] The sewage for larger customers, such as the United States Penitentiary McCreary, flows directly into a main lift station.

12. McCreary District currently employs three persons for its sewer operations, including a master electrician and a certified wastewater treatment plant operator.

13. McCreary District currently inspects its facilities on the following schedule:

Facility/Equipment	Minimum Frequency
Manholes	Annually
Main Lift Stations	Daily
Sewage Treatment Facility	Daily

It does not inspect its grinder/pump stations on a daily basis. Between July 2014 and November 2015, McCreary District conducted a one-time inspection of all grinder/pump stations using one of its sewer operations employees and a contractor. It has not attempted another system-wide inspection of all grinder/pump stations since then. At **Tab 5** of this Application is the inspection report form that McCreary District uses to record inspections of its grinder/pump stations. This

[7] A simplex grinder/pump station has one pump with a grinding mechanism and controls for one pump. A duplex grinder/pump station has two pumps with grinder mechanisms and two sets of controls. A duplex grinder/pump has two advantages over the simplex grinder/pump. First, the redundancy reduces the likelihood of service disruptions. If one pump fails, the other pump can continue to provide service. Second, because the two pumps in the duplex grinder/pump station alternate service, the wear on the pumps is more even and the station is likely to have a longer useful service life.

report form shows the features of the grinder/pump station that are examined during an inspection.

PSC Inspection Requirements and Their Consequences

14. 807 KAR 5:006, Section 26(8) provides:

> Sewage utility inspection. Each sewage utility shall make systematic inspections of its system in the manner established in 807 KAR 5:071 to ensure that the commission's safety requirements are being met. The inspections shall be made as often as necessary but not less frequently than established in 807 KAR 5:071.

15. 807 KAR 5:71, Section 7(4) provides:

> Each sewage utility shall adopt procedures for inspection of its sewage treatment facilities to assure safe and adequate operation of its facilities and compliance with commission rules. These procedures shall be filed with the commission. Unless otherwise authorized in writing by the commission, the sewage utility shall make inspections of collecting sewers and manholes on a scheduled basis at intervals not to exceed one (1) year, unless conditions warrant more frequent inspections and **shall make inspections of all mechanical equipment on a daily basis.** The sewage utility shall maintain a record of findings and corrective actions required, and/or taken, by location and date. [Emphasis added.]

16. McCreary District's grinder/pump stations are mechanical equipment. The technical specifications of these grinder/pump stations are attached to this Application at **Tab 6**.

17. The Public Service Commission has not authorized McCreary District to inspect its sewer facilities on a schedule that differs from that set forth in 807 KAR 5:071, Section 7(4).

18. 807 KAR 5:006, Section 26(8) and 807 KAR 5:071, Section 7(4) require McCreary District to inspect its 1214 active grinder/pump stations daily.[8] In the report of its most recent inspection of McCreary District's Sewer Facilities, Public Service Commission Staff

[8] McCreary District has a total of 1334 grinder/pump stations. Of these stations, 117 simplex grinder/pump stations and 3 duplex grinder/pump stations are not currently active.

expressly noted that McCreary District must perform daily inspections on these grinder/pump stations and McCreary District was not in compliance with 807 KAR 5:071, Section 4 as a result of its failure to do so. A copy of this report is attached at **Tab 7** to this Application.

19. Performing daily inspections of its grinder/pump stations is expensive and likely to place a significant financial burden on McCreary District and its customers.

a. McCreary District currently lacks the personnel to conduct daily inspections of its grinder/pump stations. McCreary District estimates that 303.5 man-hours are required to inspect all grinder/pump stations. On an annual basis, performing daily inspections will require hiring an additional 58 employees at an estimated annual cost of $2,525,727. It will also require an initial expenditure of $570,000 to purchase vehicles for these employees and will result in additional annual depreciation expense of $114,000 related to these vehicles. The total annual cost to daily inspect the grinder/pump stations is approximately $2,639,727. The calculations for this estimate are found at **Tab 8** to this Application.

b. McCreary District estimates that the annual cost of daily inspections of all grinder pumps would be $6,728,775 if a contractor performs the inspections. The calculations for this estimate are found at **Tab 9** to this Application and assume the same contract inspection fee paid when McCreary District performed its only system wide inspection of grinder/pump stations.

20. The expense to perform daily inspections of grinder/pump stations will significantly burden McCreary District's sewer operations and require very large increases in its rates for sewer service. For the year ending December 31, 2016, McCreary District's sewer

operations had total operating revenues of $922,631 and total operating expenses of $1,496,804.[9] The estimated annual expense to perform daily inspections is equal to 176 percent of McCreary District's 2016 operating expenses and almost three times its total operating revenues in 2016. It would require McCreary District to almost quadruple its rates for sewer service. For a customer using 5,000 gallons of water monthly, his or her monthly bill would increase from $39.63 to $158.52.

21. The sewer rates necessary to support daily inspections will impose significant financial burdens on McCreary District's customers, who are presently ill-equipped to bear such burdens. The medium household income for households in McCreary District's territory is $18,245.[10] The required rate to support daily inspections would consume approximately 10.4 percent of their annual income.

Proposed Alternative Inspection Schedule

22. McCreary District proposes to inspect its facilities on the following schedule:

Facility/Equipment	Minimum Frequency
Simplex Grinder/Pump Stations	Three Years
Duplex Grinder/Pump Stations	Annually
Manholes	Annually
Main Lift Stations	Daily
Sewage Treatment Facility	Daily

23. Except as it relates to the inspection of grinder/pump stations, the proposed inspection schedule is consistent with the requirements of 807 KAR 5:071, Section 4.

24. The proposed inspection schedule for grinder/pump stations will enable McCreary District to perform periodic inspections of those stations with its current workforce, eliminate the need to hire additional employees or contractors, and avoid the significant expense associated

[9] *Report of McCreary County Water District (Sewer Operations) to the Kentucky Public Service Commission for the Year ending December 31, 2016* at Ref Page 8.
[10] Kentucky WRIS, *supra* note 3.

with daily inspections. McCreary District has assigned an employee who is a master electrician to its sewer operations staff to inspect all electric equipment in grinder/pump stations. The other employees on its sewer operations staff have been trained to perform inspections. If necessary, employees from McCreary District's water operations will also be trained to conduct the inspections.

25. McCreary District has implemented the following measures to reduce the need for daily inspections, maintain a high level of service quality and reliability, and ameliorate the consequences of any mechanical failure or malfunction:

a. All grinder/pump stations have been equipped with visual and audio alarms that activate when high water levels are reached in the storage tank. When activated, these alarms can easily be seen and heard by persons a considerable distance away from the grinder/pump station.

b. All grinder/pumping stations have been designed to prevent any sewage backup into a customer's home or business. In the event of overflow, the station will retain any solid waste in the tank and will bypass water to the area surrounding the station. Furthermore, McCreary District has placed sewer relief valves on the sewer cleanout of each station. If the water level rises within the station's tank and the station's bypass system is not sufficient to prevent water from backing up into the pipe running from the structure to the station, these relief valves will automatically open and allow water to bypass through the cleanout.

c. McCreary District has adopted a rapid response policy that requires an on-duty employee to report to McCreary District's offices within 30 minutes of McCreary District's receipt of the complaint or trouble call. Given the central location of these offices, a McCreary

District employee should be onsite at the location of any mechanical equipment failure or malfunction within of 45 minutes of receipt of the trouble call.

d. McCreary District requires at least one employee to be on call at all times and has established an emergency number through which the on-call employee can be reach by the public, law enforcement, or other government officers or agents.

e. McCreary District has installed an advanced telemetry system that provides real-time information on the operation of its sewage treatment facility, its major lift stations and other operations. This system may be accessed through the internet by authorized McCreary District personnel. In the event of any emergency or unusual conditions, the system will alert by text message or e-mail designated McCreary District personnel.

26. The Public Service Commission has previously noted that the purpose of 807 KAR 5:071, Section 4, is to assure the safe and adequate operation of sewer utility facilities, the prevention of equipment malfunctions and failures, and the detection of "failures or malfunctions within a reasonable period of time."[11] It has also recognized that use of technology to alert a sewer system operator to mechanical equipment malfunctions and failures may serve as a substitute for daily inspections of such equipment.[12]

27. 807 KAR 5:071 was promulgated in 1982. At that time, virtually all public sewer systems were gravity systems. Few, if any, pressurized systems using a grinder/pump station for each customer were present in Kentucky in 1982. Therefore, this regulation was likely intended to address only gravity systems with mechanical equipment located at a few locations, not pressurized systems having mechanical equipment at each customer location. Nothing in the

[11] *Springcrest Sewer Company, Inc. Request for Deviation from 807 KAR 5:071, Section 7(4),* Case No. 2014-00277 (Ky. PSC Dec. 16, 2014) at 4.

[12] *Id.* ("remote monitoring technology through which the system operator can be alerted to a failure or malfunction of the mechanical equipment could provide a level of assurance concerning the safe and adequate operation of the sewer facilities above that of a daily visual inspection.").

regulation's language or administrative history suggests that the Public Service Commission, when promulgating the regulation, considered or recognized the financial and resource implications of the daily inspection requirement on pressurized systems.

28. Good cause exists to authorize the proposed inspection schedule. McCreary District's existing equipment and procedures will quickly alert McCreary District's sewer system operator of any mechanical equipment malfunctions or failures arising in its grinder/pump stations. They serve as an adequate substitute for daily inspections of such equipment and render daily inspections unnecessary. Authorization of the proposed inspection schedule will not lessen the quality or reliability of the sewer service that McCreary District provides. Authorization of the proposed inspection schedule, furthermore, prevents unnecessary inspections that do little to enhance the public health or safety and would cause significant increases in McCreary District's rates for sewer service.

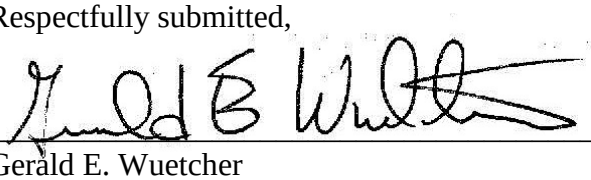
WHEREFORE, McCreary County Water District requests that the Commission:

1. Authorize the proposed inspection schedule for its sewer collection and treatment operations; and,

2. Grant any and all such other relief to which McCreary District may be entitled.

Dated: June 30, 2017

Respectfully submitted,



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Counsel for McCreary County Water District

COMMONWEALTH OF KENTUCKY)
) SS
COUNTY OF MCCREARY)

The undersigned, Stephen T. Owens, being duly sworn, deposes and states that he is the General Manager of McCreary County Water District, the Applicant in the above proceedings; that he has read this Application and has noted its contents; that the same is true of his own knowledge, except as to matters which are therein stated on information or belief, and as to those matters, he believes same to be true.

IN TESTIMONY WHEREOF, witness the signature of the undersigned on this June 30, 2017.

Stephen T. Owens
General Manager
McCreary County Water District

Subscribed and sworn to before me by Stephen T. Owens, General Manager, McCreary County Water District, on this June 30, 2017.

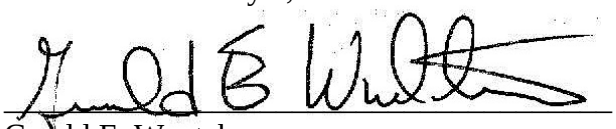
Notary Public

Notary ID: 514600

My Commission Expires: 7/13/18

CERTIFICATE OF SERVICE

In accordance with 807 KAR 5:001, Section 8, I certify that McCreary District's June 30, 2017 electronic filing of this Application is a true and accurate copy of the same document being filed in paper medium; that the electronic filing was transmitted to the Commission on June 30, 2017; that there are currently no parties that the Commission has excused from participation by electronic means in this proceeding; and that an original and six copies of the Application in paper medium will be delivered to the Commission on or before July 5, 2017.



Gerald E. Wuetcher

EXHIBITS

TABLE OF EXHIBITS

EXHIBIT 1

ORDERS } McCreary COURT

Special Term, November Day, 5 Day of November 1962

McCreary County Court
Special Term
November 5, 1962

The said Will of John Brooks, having lain over for a period of thirty days for exceptions, none being filed same was this day approved by the Court, and same was ordered to record.

Whereupon the said Will was duly recorded on the 5 day of November 1962.

/s/ Prince L. Stephens, Judge

McCfeary County Court
Special October Term
October , 1962

IN RE: MATTER OF THE ESTATE OF M. NEAL, DECEASED

ORDER APPOINTING ADMINISTRATRIX

On the application filed by Sallie Neal on the 29th day of October 1962, for the appointment as administratrix as required by law, administration of the estate of M. Neal, late of this county, is granted Sallie Neal, whereupon the said Sallie Neal took the necessary fiduciary's oath and qualified as required by law and filed herein the executed bond in the sum of $1540.00, the amount fixed by the Court with Arnold Davenport as surety, all of which is approved by the Court and said administratrix shall hereafter assume the administration of the estate of M. Neal.

This 29th day of October 1962.

/s/ Prince L. Stephens, Judge
McCreary County Court

Special November Term

November 16, 1962

In Re: Order Establishing and Creating the McCreary County Water District:

In accordance with Chapter #74 of the Kentucky Revised Statutes, Section #74.010 thereof, a petition was filed with this Court on October 5, 1962, containing more than seventy-five (75) names of resident freeholders of the hereinafter described water district in McCreary County, Kentucky, and in said petition said free holders have prayed for the creation and establishment of the hereinafter water district in McCreary County, Kentucky,

The Court finds and determines that said petition has been filed in this Court more than thirty days, that a notice to the public has been given by publication in the McCreary County Record, a news paper published in McCreary County, Kentucky and in three issues of said paper, that no objections have been made to this Court against the creation and establishing of said water district and the time of more than thirty days having expired for objections, the Court finds and adjudges as follows:

1. The Court hereby sustains the allegations of the petition filed herein and by authority of the Sections of Chapter #74 of the Kentucky Revised Statutes hereby establishes a water district in McCreary County, Kentucky to be known and designated as "McCreary County Water District" and described as follows, to-wit:

540

ORDERS McCreary COURT

Special Term, November Day, 16 Day of November 19 62

Form O-7T

Beginning at a point in McCreary County, Kentucky in the center of old Highway #27, one-half mile north of Sand Hill Road and said old U. S. Highway #27 intersection and extending directly eastward for a distance of three miles; thence following a line southward and parallel to the meanders of old U. S. Highway #27 to a point two miles south of the intersection of Highway #92, east of Pine Knot, Kentucky, thence westward directly to and crossing U. S. Highway (old) #27 for a distance of three miles west of Highway #27; thence northward following a line parallel with the meanders of old U. S. Highway #27 to a point three miles directly west of the beginning point; thence turning eastward, a straight line to the beginning point, thus including an area designated as the McCreary County Water District.

In so far as this Court has authority to act, all former established water districts of McCreary County, Kentucky are hereby superseded and included in the area hereby established in the description set out herein and agreements and obligations heretofore made or entered into by reason of former water districts should be legally honored by the Commissioners hereinafter named.

The Court hereby appoints the following named as members of the McCreary County Water District, Dr. M. A. Winchester, appointed for a term of 4 years; for a term of three years, A. W. Holmes; and Eldred Musgrove for a term of 2 years who have taken oath to faithfully perform the duties of his position and executed a Bond for the faithful performace of their duties which bond is approved by the Court.

Given under my hand as Judge of McCreary County, Kentucky, this November 16, 1962.

/s/ Prince L. Stephens, Judge
McCreary County, Kentucky

McCREARY COUNTY COURT

RE: ESTATE OF JOHN JOSEPH RILEY, DECEASED

TO: ORDER APPOINTING LORA WOOD ADMINISTRATRIX

This day came Lora Wood, in open Court, and offered to file and, was by the Court, permitted to file her petition for letters of administration and for appointment as Administratrix of the Estate of John Joseph Riley and, it being shown that Evadene Wood Riley, the surviving widow of decedent, has heretofore been declared incompetent and has never been restored, and that said surviving widow is the sole surviving heir of John Joseph Riley, deceased, it is now ordered by the Court that Lora Wood be, and she is hereby appointed Administratrix of the estate of John Joseph Riley, deceased. The said applicant, Lora Wood, being in open Court accepted said trust, executed bond in the penal sum of none required at present, with Dewey Spradlin as her surety, and took the oath of office and otherwise qualified as Administratrix of said estate, as required by law, and the bond offered by the said Lora Wood, with Dewey Spradlin as surety, is now and hereby approved by the Court, and Lora Wood having fully qualified, she is now and hereby appointed Administratrix of the estate of John Joseph Riley, deceased.

Witness my hand this 28 day of November 1962.

/s/ Prince L. Stephens, Judge
McCreary County Court

McCREARY COUNTY WATER DISTRICT by Eldred E. Musgrove, Chairman of Its Board of Commissioner, and R. H. Anderson and O. O. Duncan, Members of the Board.

PETITIONERS

VS.

JUDGMENT

ENLARGING THE TERRITORIAL LIMITS OF THE McCREARY COUNTY WATER DISTRICT BY ANNEXATION.

This cause came on for a hearing on the 11th day of July, 1969, in the McCreary County Court Room at the Court House, Whitley City, Kentucky, at the hour of 10:00 A. M., with the Hon. A. W. Holmes, Judge of the McCreary County Court, presiding.

It appearing to the Court that the petition of the McCreary County Water District by Eldred E. Musgrove, Chairman of its Board of Commissioners, and R. H. Anderson and O. O. Duncan, Members of the Board, to enlarge the territorial limits of the McCreary County Water District by annexation contained a description of the territory to be annexed, setout the reasons for said annexation and otherwise met and complied with the law setout in KRS 74.110; and it further appearing that notice of the filing of the petition, containing a description of the proposed annexation, together with a notification to the public that they had 30 days in which to file objections and exceptions to the petition, and including a notice that a hearing on the petition and upon the objections would be held at the time and place setout in the first paragraph hereof was placed in the McCreary County Record, a newspaper of general circulation in McCreary County, Kentucky, in its june 19, 17 and 24; 1969, publicions, pursuant to KRS. 424.130-160 on legal notices; and it further appearing that the McCreary County Water District is located in McCreary County, Kentucky, and the territory to be annexed adjoins and encompasses said district and is located exclusively in said county and state; that no defense, objection or remonstrance has been made to the petition by anyone; and that the Court has heard the testimony of the petitioners in support of their petition for annexation that the annexation was reasonably necessard for the public health, convenience, fire protection and comfort of the residents thereof and would materially enhance the economic development of the district as a whole and would benefit and profit the owners of property and the inhabitants of the area, IT IS, THEREFORE, ORDERED AND ADJUDGED THAT:

1. The proposed annexation be, and it is hereby ,created, established and annexed; that the territorial limits of said annexation, which is inclusive of and contains within its perimeter the original McCreary County Water District, is described as follows:

Situate, lying and being in McCreary County, Kentucky, and more particularly described as follows:

The geographical area and political entity of McCreary County, Kentucky, and all the lands contained within its territorial boundaries.

The entire County of McCreary of the Commonwealth of Kentucky be, and is hereby, denominated as and known by its official, corporate and busess name of McCreary County Water District.

Given under my hand as Judge of the McCreary County Court, this 11th day of July, 1969.

/S/ A. W. Holmes
McCreary County Court
Whitley City. Kentucky.

STATE OF KENTUCKY

COUNTY OF McCREARY

I, Carl Barnett, Clerk of the Court and State aforesaid, certify that the foregoing Judgment ____ is a true and correct copy as appears of record here in my office in

witnessed
21st day of August, 1973

EXHIBIT 2

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF MCCREARY COUNTY WATER DISTRICT AUTHORIZING AN APPLICATION TO THE KENTUCKY PUBLIC SERVICE COMMISSION FOR APPROVAL OF AN ALTERNATE INSPECTION SCHEDULE FOR SEWER FACILITIES

WHEREAS, McCreary County Water District owns and operates a sewage collection and treatment system that provides sewer service to the residents of McCreary County, Kentucky;

WHEREAS, McCreary County Water District's sewer operations are subject to the jurisdiction and regulation of the Kentucky Public Service Commission;

WHEREAS, the Kentucky Public Service Commission has promulgated 807 KAR 5:071, Section 7(4), which requires a sewer utility to inspect all mechanical equipment on a daily basis unless the Kentucky Public Service Commission authorizes in writing a different inspection schedule;

WHEREAS, McCreary County Water District currently lacks sufficient personnel to perform daily inspections and to comply with the daily inspection requirement of 807 KAR 5:071, Section 7(4) must hire an additional 58 employees at an additional annual labor expense of $2,525,727;

WHEREAS, if McCreary County Water District is required to comply with the daily inspection of 807 KAR 5:071, Section 4, its financial condition will be severely affected and McCreary County Water District will be force to implement large and burdensome increases in its rates for sewer service;

WHEREAS, McCreary County Water District has determined that, given the operating characteristics of its sewer operations and the features of its equipment, the inspection schedule appended to this Resolution can be undertaken at a much lower expense without reducing the quality and reliability of sewer service and without weakening any protections to public safety; and

WHEREAS, the Kentucky Public Service Commission's regulations permit a sewer utility to apply for authorization to make inspections on a schedule that differs from that provided in 807 KAR 5:071;

NOW, THEREFORE, IT IS HEREBY RESOLVED BY THE BOARD OF COMMISSIONERS OF MCCREARY COUNTY WATER DISTRICT AS FOLLOWS:

Section 1. The facts, recitals, and statements contained in the foregoing preamble of this Resolution are true and correct and are hereby affirmed and incorporated as a part of this Resolution.

Section 2. The General Manager, all appropriate Staff, and McCreary County Water District's attorney are hereby further authorized and directed to take any and all other actions to apply to the Kentucky Public Service Commission for authorization to make inspections of

McCreary County Water District's sewage collection and treatment facilities in accordance with the schedule appended to this Resolution.

Section 3. This Resolution shall take effect upon its adoption.

ADOPTED BY THE BOARD OF COMMISSIONERS OF MCCREARY COUNTY WATER DISTRICT at a meeting held on June 27, 2017 signed by the Chairman, and attested by the Secretary.

Chairman

ATTEST:

Secretary

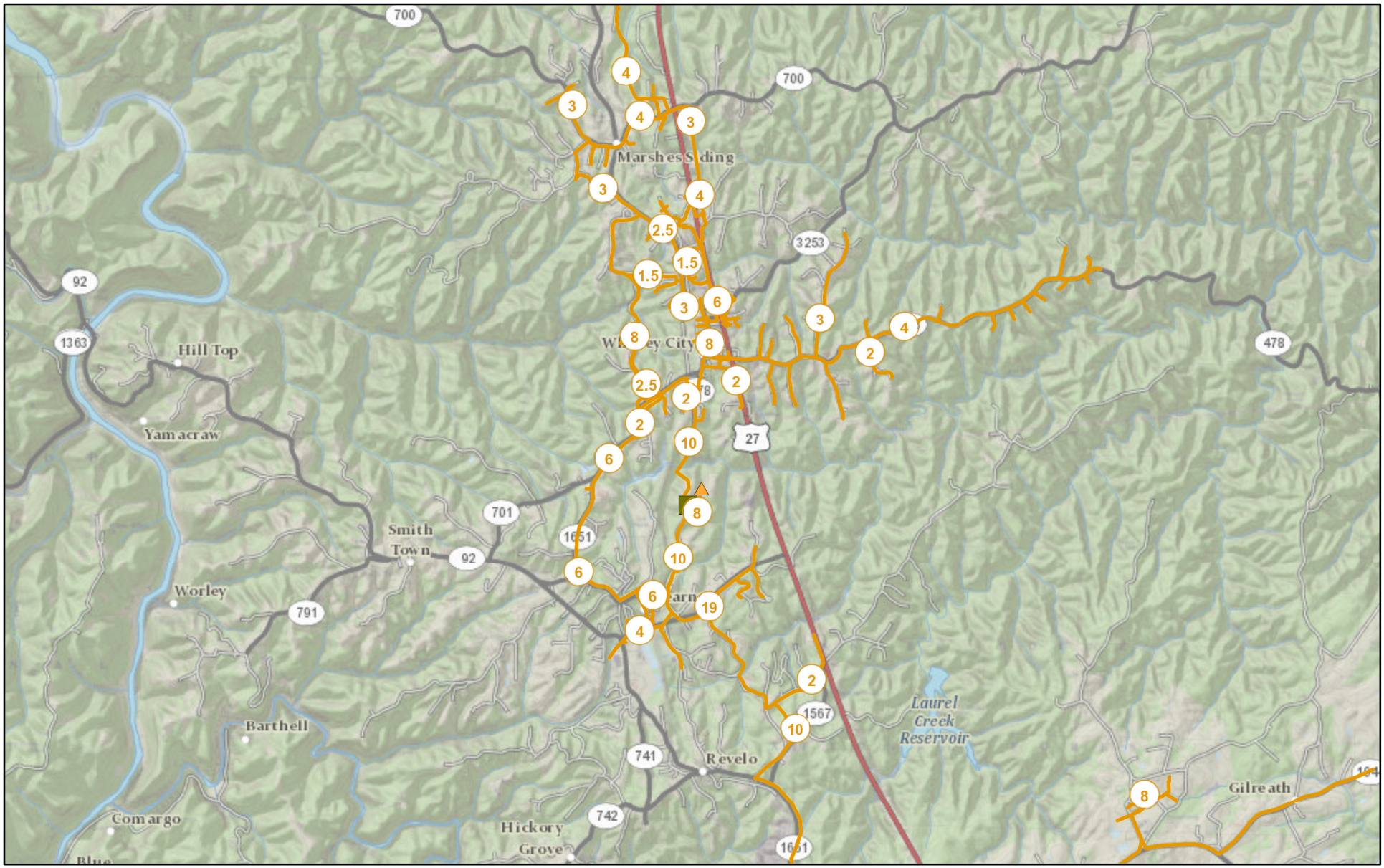
APPENDIX A
APPENDIX TO A RESOLUTION OF THE BOARD OF COMMISSIONERS OF MCCREARY COUNTY WATER DISTRICT

INSPECTION SCHEDULE FOR SEWER FACILITIES

Facility/Equipment	Minimum Frequency
Simplex Grinder/Pump Station	Every Three Years
Duplex Grinder/Pump Stations	Annually
Manholes	Annually
Main Lift Stations	Daily
Sewage Treatment Facility	Daily

EXHIBIT 3

McCreary County Water District Sewer Facilities (Map View)



June 30, 2017

- Wastewater Treatment Plants
- Package Treatment Plants
- KISOP Points
- WWTP Outfalls
- Sewer Lines

1:72,224

0 0.5 1 2 mi

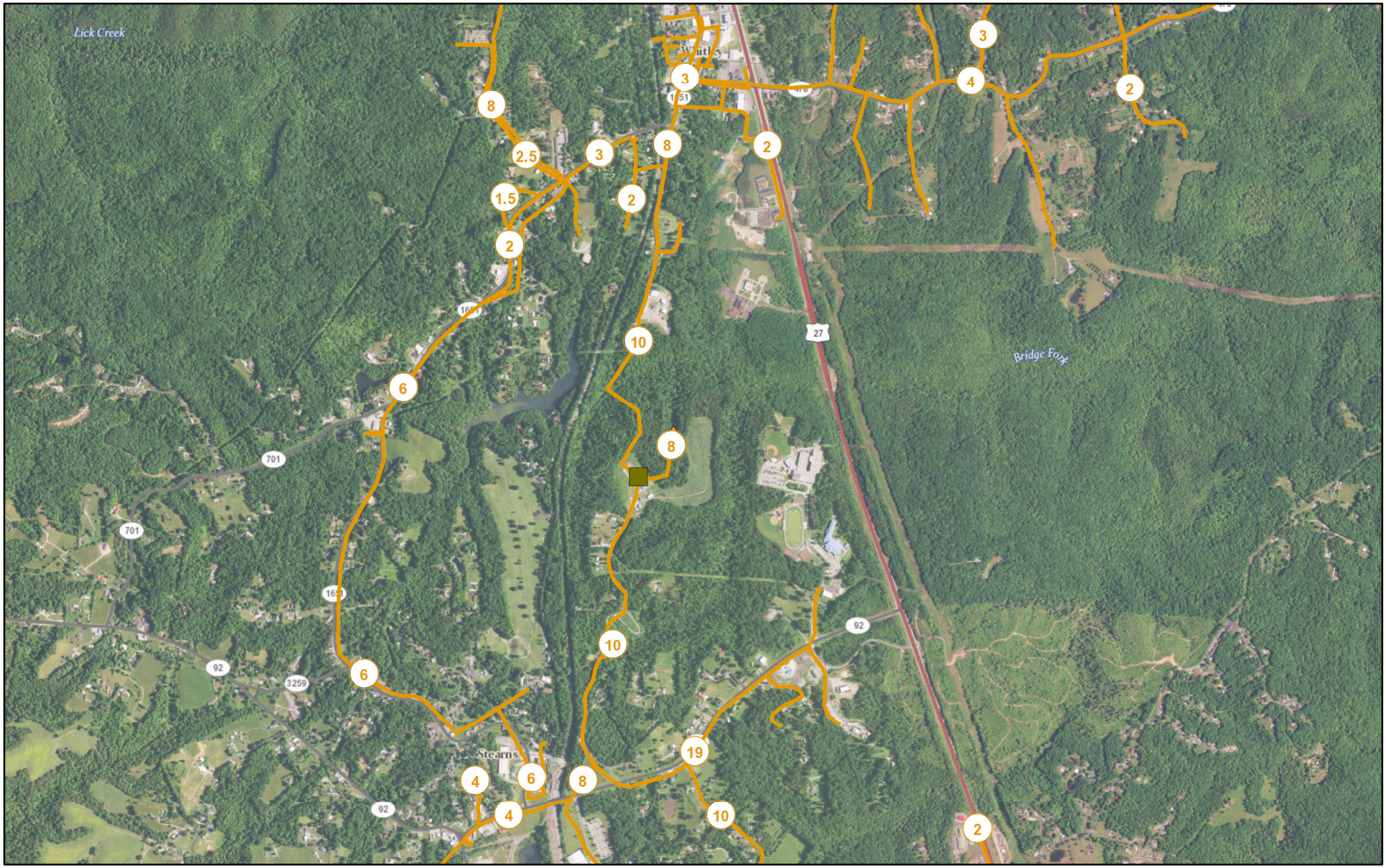
0 1 2 4 km

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

Ky Wastewater Web Map
http://kygeonet.ky.gov/disclaimer.htm

EXHIBIT 4

McCreary County Water District Sewer Facilities (Aerial View)



June 30, 2017

- Wastewater Treatment Plants
- Package Treatment Plants
- KISOP Points
- WWTP Outfalls
- Sewer Lines

1:27,000

0 0.225 0.45 0.9 mi

0 0.35 0.7 1.4 km

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

Ky Wastewater Web Map
http://kygeonet.ky.gov/disclaimer.htm

EXHIBIT 5

McCreary County Water District
Sewer Department

№ 10057

Cust. Account _____

Name _____

Address _____

_____

Date of Order _____

Phone # _____

Customer Expense ☐ District Expense ☐

Grease Pumping Required ☐ Not Required ☐

Resident ☐ Commercial ☐ Other ☐

Red Light ☐ Pump Operation: OK ☐ Failure ☐

Rails Condition: OK ☐ Failure ☐

Alarm: OK ☐ Failure ☐

Pump Amps #1_____ #2_____

#3_____ #4_____

S/N _____

Station #_____ Pump Type_____

HP_____ TDH_____ GPM_____

Station Type _____

Description of Work / or Trouble

Date Completed _____
Work Performed:

By Pass
Date _____
Date Repaired _____
Number of Est. Gal. Spillage _____
Date Reported to State _____

List All Parts Used Below

Total Material		
Total Equipment		
Total Labor		
Total		

Equipment on Job Hours ☐

Total Hours on Job ☐

Service Persons on Job ☐

Employees _____

EXHIBIT 5
Page 2 of 2

W.O.# _____

CONTACT INFO:	QTY.	PARTS/MATERIALS	PRICE	AMOUNT
NAME				
CELL NUMBER				
Bill To:				
Address:				
City State Zip				
REASON CALLED:				
S/N MODEL VOLTAGE				

UPON ARRIVAL

DESCRIPTION OF WORK

AMPS — Beginning Ending	LABOR	HOURS	RATE	AMOUNT	TOTAL MATERIALS		
CYCLE TIME					TOTAL LABOR		
STICKERS APPLIED Y N					TAX		
FOLLOW UP REQUIRED Y N SEE:							
WORK PERFORMED BY:							
DIRECTIONS:	TERMS:	TOTAL LABOR			TOTAL		
	DATE COMPLETED:	SIGNATURE:			PRINT		

EXHIBIT 6

TECHNICAL SPECIFICATIONS
MCCREARY COUNTY WATER DISTRICT
REVELO TO STEARNS – PHASE 1 SEWER SYSTEM EXTENSIONS
MCCREARY COUNTY, KENTUCKY

CONTRACT 2 – GRINDER PUMP STATIONS

PROJECT NO. 1141

APRIL 2015

TABLE OF CONTENTS

SECTION 1 – GRINDER PUMP STATIONS

1.1 Work Included. Under this item, the Bidder shall furnish a fully assembled grinder pump package consisting of fifty-three (53) grinder pumps and motors, basin assembly, internal discharge piping, check valves, shut-off valves, quick-disconnect, lift chains, level controls, stainless steel level control bracket, junction box, inlet fitting, control panel, and all other components necessary to provide a fully functional grinder pump station.

1.2 General Description. The manufacturer shall furnish complete factory-built and tested Grinder Pump Station(s), each consisting of a basin package, STEALTH Control Panel, or approved equal, Level Control Floats, grinder pump, and all necessary appurtenances to form a complete U.L. listed package system. Grinder pump shall be listed to U.L. 778 and CSA 108, basin package shall be listed to U.L. 1951, and control panel shall be listed to U.L. 508. All equipment in the wet well shall be capable of constant submergence in sewage to a minimum depth of ten feet without electrical power being energized.

1.3 Shop Drawings and Manuals. After receipt of notice to proceed, the manufacturer shall furnish the engineer a minimum of six (6) sets of shop drawings detailing the equipment to be furnished including dimensional data and materials of construction. The engineer shall promptly review this data, and return three (3) copies to the manufacturer as approved, or approved as noted. Upon receipt of accepted shop drawings, the manufacturer shall proceed with order entry and fabrication of the equipment. Prior to completion of equipment delivery, the manufacturer shall supply two (2) copies of Operation and Maintenance Manuals to the owner, and one (1) copy of the same to the engineer.

1.4 Manufacturer. The system design is detailed in the drawings. All manufacturers must have been in the business of manufacturing complete grinder pump stations for a minimum of five years. Manufacturer must demonstrate to the satisfaction of engineer that the proposed pump equipment will meet system flows and heads required. In addition, pre-submittal must also demonstrate to the satisfaction of the engineer that the equipment being proposed meets or exceeds all performance and safety requirements, materials of construction, and user benefits of the specified equipment. Grinder pump station shall be Crane Pumps & Systems, Inc., manufacturer of Barnes brand products, or approved equal.

1.5 Warranty. The grinder pump Manufacturer shall provide a part(s) and labor warranty on the complete station and accessories, including, but not limited to, panel and redundant check valve, for a period of sixty (60) months after notice of Owner's acceptance, but no greater than sixty-three (63) months after receipt of shipment. Any manufacturing defects found during the warranty period shall be reported to the Manufacturer by the Owner and shall be corrected by the Manufacturer at no cost to the Owner.

1.6 Corrosion Protection. All materials exposed to wastewater shall have inherent corrosion protection: i.e., painted cast iron, fiberglass, stainless steel, (C) PVC.

1.7 Safety. The Grinder Pump Station shall be free from electrical and fire hazards as required in a residential environment. As evidence of compliance with this requirement, the completely assembled station and grinder pump assembly shall be U.L. listed. Grinder pump stations not U.L. listed will not be acceptable.

1.8 Factory Wiring. All wiring in the grinder pump, level control, and panel shall be installed and functionally tested individually prior to shipment from the factory. No junctions, plugs, electrical quick disconnects (EQD's) etc. will be allowed between the pump motor housing or level control and the station control panel.

1.9 Redundant Check Valve. Each basin package shall require one (1) PVC flapper type check valve for installation by others in the service lateral between the grinder pump station and the low pressure sewer main. Valves shall be 1.25 inch NPT.

1.8 Level Detection. Level detection for controlling pump and alarm operation shall be accomplished by use of a detection mechanism specifically designed for use in a sewage grinder pump basin and shall be removable without the need to remove the pump. Individual level control floats, mechanical snap-action style, shall be provided to control operation of the pump and high-water alarm.

1.9 Shut-off Valve. The pump discharge shall be equipped with a factory installed, true union, manual ball valve. Ball valves shall be full ported, constructed of PVC, with a minimum rated pressure of 150 PSI (10.6 kgs/sq. meter). All valves shall be operable from ground level. Shut off valve must be replaceable without excavating basin exterior

1.10 Anti-Siphon Function. The pump shall be constructed with a positively primed flooded suction configuration. As added assurance that the pump cannot lose prime even under negative pressure conditions in the discharge piping system, the discharge piping system must include an anti-siphon capability. The design shall provide for a maximum bypass, under normal operating conditions, of no more than 1 GPM.

1.11 Basin Construction and Assembly. The basin shall be fiberglass reinforced polyester resin with a 3-inch ballast support flange. The basin shall be furnished with one SDR35 Flexible inlet flange (shipped loose to facilitate field location) to accept a 4-inch pipe. Inlet location can vary to accommodate ease of installation. (See installation instructions or consult factory for details.) Basin capacities and dimensions shall be as shown on the contract drawings or as specified herein.

The basin FRP wall laminate thickness shall vary with the wetwell depth to provide the aggregate strength to meet the tensile and flexural physical property requirements. The basin FRP wall laminate must be designed to withstand wall collapse or buckling based on a hydrostatic pressure of 62.4 pounds per square foot, a saturated soil weight of 120

pounds per cubic foot, a soil modulus of 700 pounds per square foot. Basin must comply with the pipe stiffness values as specified in ASTM D 3753. The basin laminate must be constructed to withstand or exceed 150% of the assumed loading on any depth. The finished FRP laminate will have a Barcol hardness of at least 90% of the resin manufacturer's specified hardness for the fully cured resin. The Barcol Hardness shall be the same for both interior and exterior surfaces. Manufacture must submit documentation including calculation and production certification that basin (s) on the project are in compliance with the above requirements.

All piping inside the basin silhouette shall be at a level in the station that is lower than the frost depth or depth of bury specified for the low pressure sewer piping, which ever is lowest.

Cover shall be a polyethylene, grass green color. The cover assembly shall be capable of providing adequate means of venting the basin.

Basin shall be UL Listed to Standard 1951.

All discharge piping shall be constructed of 300 Series Stainless Steel and/or Sch 80 PVC and terminate outside the bulkhead with a female NPT fitting. The manufacturer shall guarantee all bulkhead penetrations watertight.

1.12 Pump Removal System. A ½-inch (12.7 mm) diameter knotted polypropylene rope shall be supplied for pump removal. Pump removal system must not require the loosening of fasteners to facilitate pump removal. Pump replacement shall be accomplished while the basin is full of sewage without the need to de-water the basin.

1.13 Pump Design. A centrifugal submersible grinder pump designed to reduce all material found in normal domestic sewage, including plastic, rubber, sanitary napkins, and disposable diapers into a finely ground slurry. The resultant slurry is then pumped through small diameter piping, gravity interceptor, or treatment facility. The temperature limitation of the liquid being pumped is 160 °F intermittent and shall be capable of running dry for extended periods of time.

Pump(s) shall be manufactured in the United States and suitable for long-term submergence in sewage. Grinder pump(s) shall be U.L. Listed to Standard 778 and CSA Listed to Standard 108.

1.14 Performance. In order to ensure proper operation in all conditions, pump(s) must provide, without overheating in continuous operation, maximum head condition required by the system. Pump(s) must also be capable of operating at zero or negative heads without damage to the pump(s).

1.15 Construction. The volute, seal plates and motor housing shall be constructed of high quality ASTM class 30 minimum cast iron. The pump(s) shall be painted with air-dry enamel. All exposed hardware shall be 300 series stainless steel. Discharge connection shall be a standard 1.25-inch NPT in the vertical position using a threaded bolt on discharge flange.

The pump impellers shall be of the recessed, vortex design. Pumps with standard centrifugal semi-open impeller designs shall not be acceptable. The impellers shall be of cast iron or 85-5-5-5 bronze construction and machined such that the upper impeller is locked for positive rotation by a positioning sleeve threaded to the shaft and the lower is machined for threading directly to the motor shaft. Both impellers are dynamically balanced to ISO G6.3.

The pump shall be a two bearing design consisting of an upper angular contact ball bearing carrying the thrust loads, and lower angular contact ball bearing for the purpose of carrying the thrust loads and radial loads. Sleeve bearings for ball bearings will not be considered equal. Bearings shall operate in an oil bath atmosphere for superior life. Permanently lubricated bearings are not acceptable.

1.16 Grinder. The grinder mechanism shall be specifically designed for use in a grinder pump. Garbage disposal cutting mechanisms are not acceptable. The mechanism shall consist of a radial cutter threaded and locked on the motor shaft by a counter sunk washer in conjunction with a flat head cap screw, and a shredding ring containing a maximum of seven flow passages with cutting edges. Grinding shall be accomplished by a slicing action as opposed to a chopping action. Chopping-type cutter mechanisms will not be allowed. Grinder design shall be able to alternately engage cutters at start and shall exert a minimum cutting force of 30 pounds, thus eliminating the need for excessive motors. The shredding ring shall be reversible to provide twice the cutting life. All grinding mechanism components, including both the shredding ring and radial cutter and its impeller (if required), shall be constructed of 440C stainless steel hardened to a minimum Rockwell C55 and shall be finish ground for a fine cutting edge. Two stage cutter mechanisms and/or those requiring external adjustment for proper clearance shall not be acceptable.

The grinder shall be placed immediately below the pumping elements and shall be direct-driven by a single, one-piece, stainless steel motor shaft. The grinding assembly shall operate without objectionable noise or vibration over the entire range of recommended operating pressures. The grinder shall be constructed so as to eliminate clogging and jamming under all normal operating conditions including starting. In order to demonstrate adequate flow velocity and grinding capability, the grinder pump shall be capable of passing a series of stringy type solids (diapers, rags, feminine products, etc.) through the pump without roping or winding the material in or immediately below the pump suction.

1.17 Electric Motor. Single-phase motors shall be of the capacitor start, capacitor run design, 240 volt, and single phase, 2 HP. The motor shall meet the performance requirements of a NEMA L speed-torque curve. The motor shall be designed to be non-overloading throughout the entire pump curve. The motor shall be constructed with the open windings operating in a sealed housing, containing clean and non-hazardous dielectric oil for heat dissipation from the windings and for lubrication of the bearings, making it capable of operating in a totally, partially, or non-submerged condition for extended periods of time without damage. Air-filled motors shall not be acceptable. The rotor and stator assembly shall be of the standard frame design and secured to the pump seal plate by four threaded fasteners allowing for easy serviceability. Motor designs

incorporating shrink or press fit assemblies between the stator and motor housing shall not be considered acceptable. The motor shaft shall be constructed of 416 stainless steel.

An automatically resetting, heat sensing thermal device that interrupts current flow if excessive temperature and/or current is detected shall provide protection against excessive temperature. Such device shall be a part of the U.L. Listing.

The pumps shall be equipped with type SOW power cable. The power cable and motor shall be connected via quick disconnect pin terminals located within the motor housing. Pin receptacles shall be crimped and molded to the power cord in a PVC plug. The plug shall be secured with a stainless steel compression plate to prevent water from entering the motor housing and to provide strain relief at the point of cable entry. A polybutylene terephthalate terminal block with brass pin inserts shall connect the power cord leads with motor leads. The ground pin shall be longer than the other pins such that the ground connection is the first connection made and the last connection broken when the plug is inserted and removed, respectively. A Buna-N o-ring shall provide isolation sealing between terminal block and the motor housing. The plug assembly shall be guaranteed by the manufacturer to meet UL approval for submersion.

1.18 Mechanical Seal. The pump shall be equipped with double floating, self-aligning rotary shaft seal to prevent leakage between the motor and pump. The materials of construction shall be silicon-carbide for the rotating face and silicon-carbide for the stationary face, lapped and polished to a tolerance of one light band, with 300 stainless steel hardware, with all elastomer parts made of Buna-N.

1.19 Testing. Each grinder pump shall be submerged, operated and tested for performance compliance to its respective curve. Testing process and periodic inspection of testing process shall be conducted and approved by U.L.

1.20 Simplex Control Panel. A wall mounted control panel shall be supplied with each station. Control panel to be U.L. listed to meet Standard 508. Panel to be constructed with a non-metallic NEMA 4X enclosure and utilize stainless steel hardware and be provided with hasp(s) for locking. The control panel shall include as a minimum: circuit breakers, fuses, terminal strip, ground lug, capacitors when required, IEC rated motor starters, relays, alarm light and horn with pushbutton silence.

The alarm panel shall be equipped with a circuit breaker, ground lug and relays in order to facilitate pump operation and high-level alarm indication. Terminal strips to facilitate both input power and connection to the grinder station shall be provided.

1.21 High Water Alarm Indication. Each alarm panel shall include visual alarm only. The alarm circuit shall be separately fused from the motor control circuit. The visual indication shall be provided by a red fluted lens mounted to the top of the enclosure in such a manner as to maintain rainproof integrity. The visual alarm will remain on as long as the high water condition exists in the basin; visual alarm to automatically reset when the high water condition subsides.

1.22 Payment. Payment for the Packaged Grinder Pump will be made at the Contract Unit Price per each, which price shall constitute full compensation for furnishing all

valves, connections, gravel, concrete, electrical connection, control panel, and miscellaneous materials and for furnishing all labor, tools, equipment and incidentals and performing all operations essential to completing the installation of the Packaged Grinder Pump in accordance with these Specifications and Contract Drawings.

KEEN PUMP CO.
Your Premier Pump Choice
471 US Hwy 250 East, Ashland, Ohio 44805
PH: 419-207-9400 FX: 419-207-8031

"McCreary County, KY"
Simplex Residential Grinder Pump Stations

Nov. 5, 2015

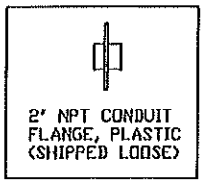
Submit to:

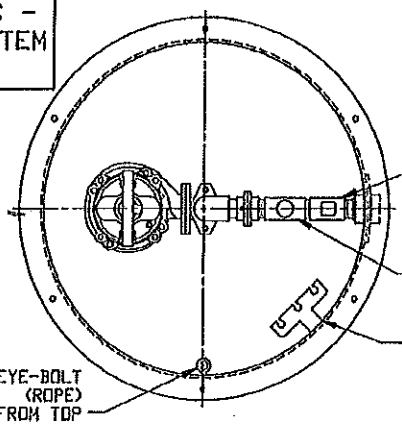
McCreary County Water District

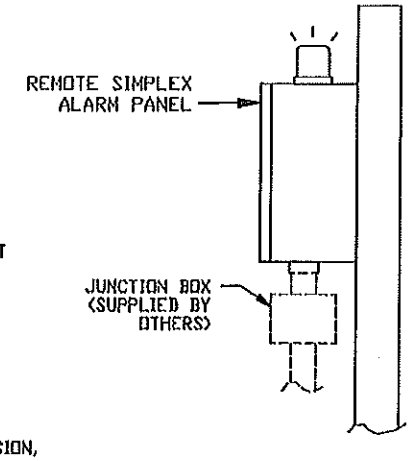
"McCREARY CO, KY"
REVELO TO STEARNS - PHASE 1 SEWER SYSTEM EXTENSIONS

TO CUSTOMER: EXAMINE THIS DRAWING CAREFULLY, VERIFY ALL DIMENSIONS, LOCATIONS, AND ELEVATIONS FOR ACCURACY. SIGN AND DATE AT LINE. ANY MODIFICATIONS OR CHANGES TO THIS DRAWING OR FINISHED PRODUCT, AFTER IT HAS BEEN SIGNED, MAY RESULT IN ADDITIONAL CHARGES AND SHIPPING DELAYS. NO JOB WILL BE STARTED UNTIL CONFIRMATION THROUGH SIGNATURE. CONFIRMATION THROUGH SIGNATURE RELEASES ORDER FOR PRODUCTION.

APPROVED BY: _____
DATE: _____







KEEN PUMP COMPANY
KEEN PUMP CO.
471 US HWY 250 EAST
ASHLAND, OHIO 44805
PHONE: 419-207-9400
FAX: 419-207-8031

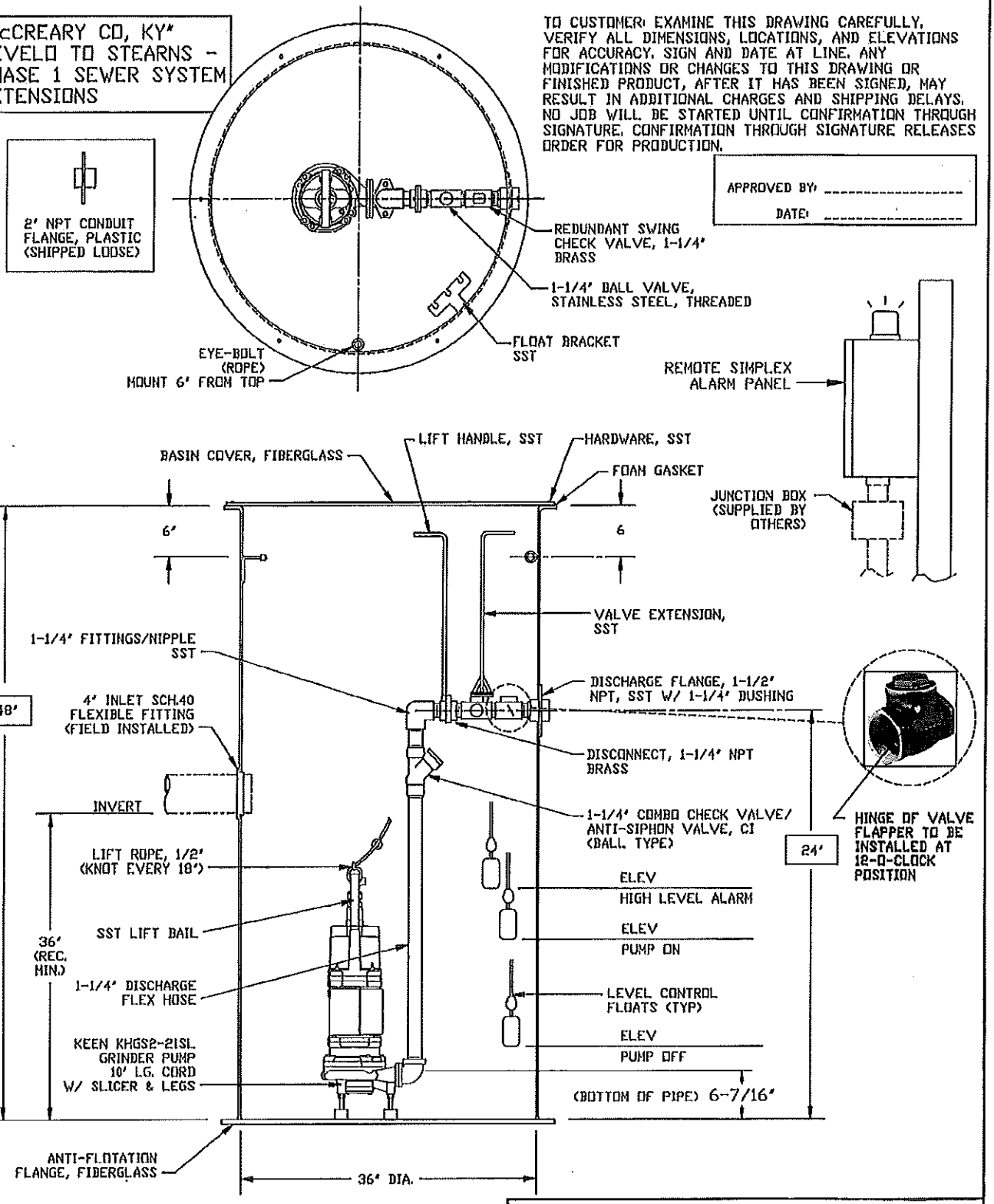
TITLE			
BASIN, 30X60, KHGS2-21 SLICER, SIM, HARD PIPED			
SCALE: NTS		DWG. #: KN-995	REV.: E
DWG. BY: DLM	DATE: 07-08-15		

NOTE: ALL DIMENSIONS FOR REFERENCE ONLY		
E	SE	11/02/2015
REV	BY/VIS	DATE

"McCREARY CO, KY"
REVELO TO STEARNS - PHASE 1 SEWER SYSTEM EXTENSIONS

TO CUSTOMER: EXAMINE THIS DRAWING CAREFULLY, VERIFY ALL DIMENSIONS, LOCATIONS, AND ELEVATIONS FOR ACCURACY. SIGN AND DATE AT LINE. ANY MODIFICATIONS OR CHANGES TO THIS DRAWING OR FINISHED PRODUCT, AFTER IT HAS BEEN SIGNED, MAY RESULT IN ADDITIONAL CHARGES AND SHIPPING DELAYS. NO JOB WILL BE STARTED UNTIL CONFIRMATION THROUGH SIGNATURE. CONFIRMATION THROUGH SIGNATURE RELEASES ORDER FOR PRODUCTION.

APPROVED BY: _____
DATE: _____



KEEN PUMP COMPANY
KEEN PUMP CO.
471 US HWY 250 EAST
ASHLAND, OHIO 44805
PHONE: 419-207-9400
FAX: 419-207-8031

TITLE			
BASIN, 36X48, KHGS2-21 SLICER, SIM, HARD PIPED			
SCALE: NTS		DWG. #: KN-996	REV.: B
DWG. BY: DLM	DATE: 07-08-15		

NOTE: ALL DIMENSIONS FOR REFERENCE ONLY

REV	INITIALS	DATE
B	SE	11/02/2015
A	SE	10/21/2015

Grinder Pumps

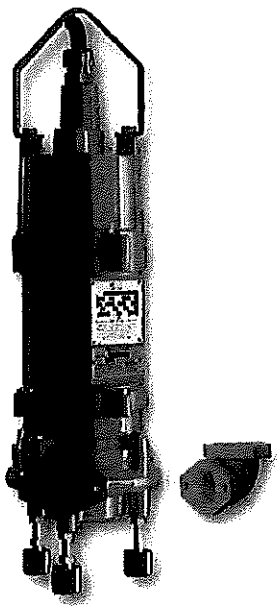
KEEN PUMP

KHGS(X)2

FM APPROVED

2HP Semi-Open, High Head Centrifugal Grinder (Class 1, Div. 1, Groups C & D Hazardous Location)

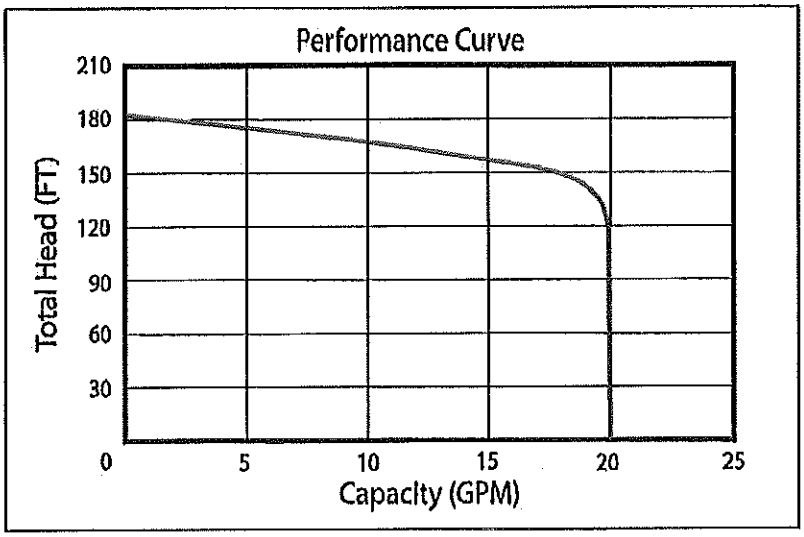
The KEEN PUMP **KHGS(X)2** series centrifugal pumps easily handle residential, light commercial or industrial waste, reducing it to a fine slurry. The **KHGS(X)2** pump is designed for use in pressure sewer applications or any piping network.



The **KHGS(X)2** grinder pump retrofits into many existing competitive pump installations. The **KHGS(X)2** pump operates with the same control panel and installation piping/rail system. The **KHGS(X)2** produces up to 20 GPM with Heads to 183 feet!

The **KHGS(X)2** series pump features:

- Extreme High Head Capability!
- Class 1, Division 1 "Explosion-proof" Construction
- True Anti-Wicking Ability w/ Potted Cord Cap
- Dual Silicon-Carbide Mechanical Seals
- Dual Seal Leak Detection
- 3-Bearing Shaft Support
- Durable 2hp Motor Design
- Optional "Slicer" Plate Cutting Design!



REV 04/07/15

2HP Grinder Pump
Semi-Open, High Head
KHGS(X)2

Features and Benefits

1. Watertight Cable Entrance
Agency-approved, watertight strain relief cord grip with compression grommet protects outer cord jacket. Epoxy-filled inner cord cap provides anti-wicking moisture protection to the motor even if powercable is cut or damaged. O-Ring for additional sealing.

2. Heavy-Duty Castings
Minimal amount of parts required for servicing. Heavy-duty ASTM A48, Class 30 cast iron components.

3. Strong Motor
Powerful high-torque motor for reliable pump operation. Pressed in stator securely holds motor and efficiently transfers heat. Class F insulation with overload protection in oil-filled chamber for cool operation and long motor life.

3a. Oil
KEEN I.C.E. ensures industry-low operating temperatures. Synthetic blend with wear-additives, specifically engineered for submersible pump motors.

4. 3-Bearing Support
Motor / Pump shaft securely held with upper and lower ball bearing plus additional sleeve bearing in lower seal chamber. Long 100,000 hour L-10 bearing life.

5. Double Mechanical Seal Protection
Dual silicon carbide mechanical shaft seals provide twice the moisture protection for the motor. Dual seals are housed in a secondary oil-filled seal chamber. Tougher silicon carbide seals better handle sand, grit and abrasive materials.

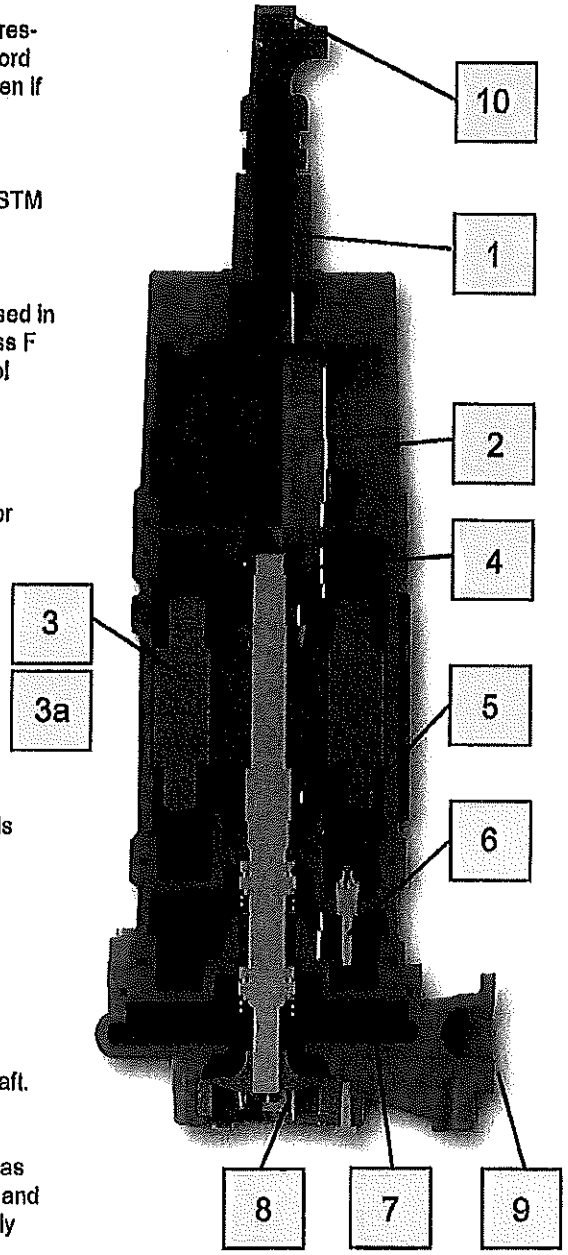
6. Moisture Detection
Seal leak probe signals alarm in control panel for scheduled maintenance.

7. Semi-Open Hydraulic Design
SST impeller with pump-out vanes on back shroud to prevent pump media from entering seal cavity. Impeller threaded to shaft.

8. Proven Grinder Assembly
Hardened (Rockwell 58-60) stainless steel grinder assembly has 30+ years proven field experience. The reversible grinder ring and grinder impeller effectively reduce solids into a fine slurry, easily passable in a piping system without concerns of clogging.

9. Dual Option Piping Connection
Removable 1-1/4"NPT connection "vertical" flange for simple and easy connection to discharge piping. *Optional "horizontal", 2-bolt flange built into volute casting for replacement applications.

10. Accessories
Stainless steel lifting handle included. Anti-vibration mounting feet **OPTIONAL.**



NOT SHOWN: Mounting Feet, Removable Elbow, Optional Slicer Cutting Mechanism

KEEN PUMP
471E State Route 250 East · Ashland, Ohio 44805
419.207.9400 fax 419.207.8031
www.keenpump.com
REV 04/07/15

KEEN PUMP

2HP SUBMERSIBLE GRINDER PUMP

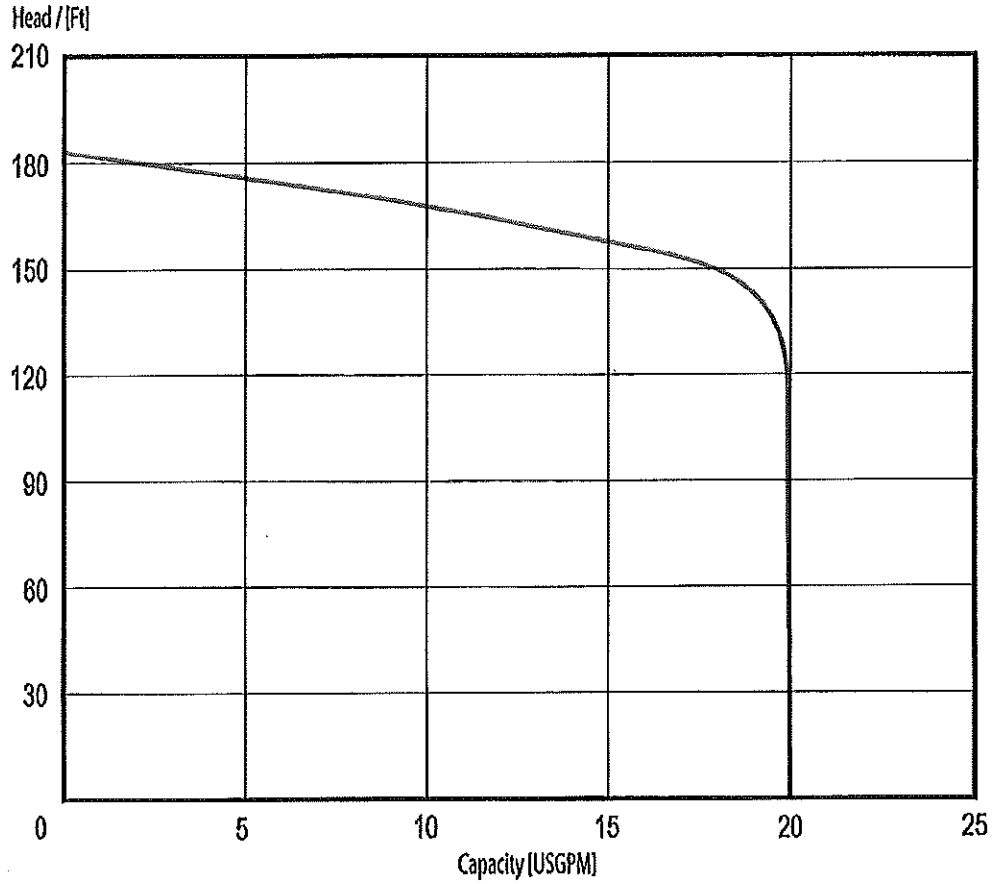
GENERAL	KHGS(X)2
Pump Model	
PUMP DATA	
Date	03/26/2015
Discharge Flange	1-1/4" NPT, Horizontal or Vertical
Grinder Construction	Stainless Steel
Grinder Hardness	58 - 60 Rockwell
Impeller Type	Semi - Open

Single Phase

START KIT SK-2A Includes: Start & Run Capacitors, Relay, and Mounting Hardware

MOTOR DATA	
HP / Power Supply	2HP / 1 ϕ, 60 Hz
Full Load Amps 208V	Call Factory
Start Amps 208V	Call Factory
Full Load Amps 230V	20 Amps
Start Amps 230V	100 Amps
Start / Run Amps 240V	Call Factory
Poles / Rated Speed	2 P / 3450 rpm
Insulation Class	F Class
Start Capacitor	216 ufd, 250 VAC
Run Capacitor	20 ufd, 370 VAC

PERFORMANCE CURVE



MODEL	HP	Phase	Volts
KHGS(X)2-2001	2	1	208
KHGS(X)2-2301	2	1	230
KHGS(X)2-2401	2	1	240

* Performance with clear water and ambient temp 20°C (68°F)

Rev. 10/12/15

KEEN PUMP

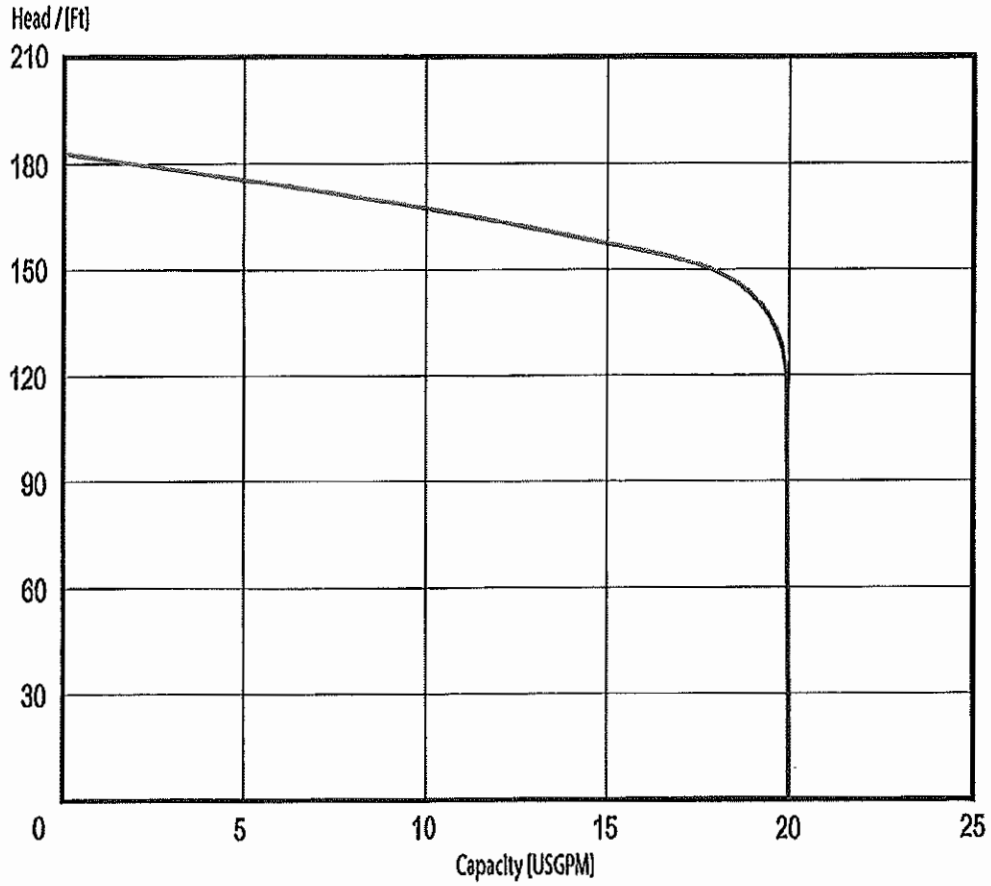
2HP SUBMERSIBLE GRINDER PUMP

GENERAL	KHGS(X)2
Pump Model	
PUMP DATA	
Date	03/26/2015
Discharge Flange	1-1/4" NPT, Horizontal or Vertical
Grinder Construction	Stainless Steel
Grinder Hardness	58 - 60 Rockwell
Impeller Type	Semi - Open

Three Phase

MOTOR DATA	
HP / Power Supply	2HP / 3 ϕ, 60 Hz
Full Load Amps 208V	Call Factory
Start Amps 208V	Call Factory
Full Load Amps 230V	Call Factory
Start Amps 230V	Call Factory
Full Load Amps 460V	Call Factory
Start Amps 460V	Call Factory
Poles / Rated Speed	2 P / 3450 rpm
Insulation Class	F Class

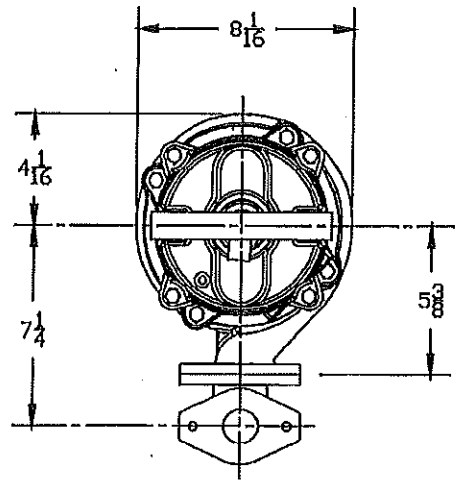
PERFORMANCE CURVE

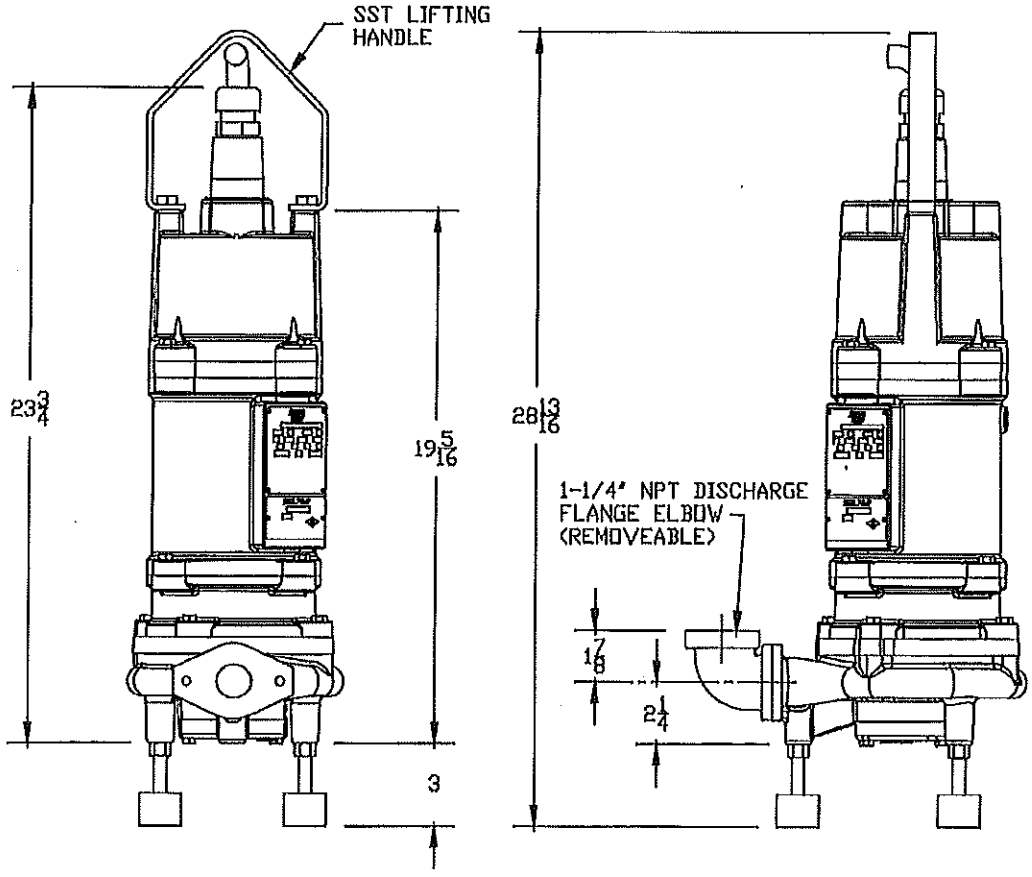


MODEL	HP	Phase	Volts
KHGS(X)2-2003	2	3	208
KHGS(X)2-2303	2	3	230
KHGS(X)2-4603	2	3	460

* Performance with clear water and amblent temp 20°C (68°F)

Rev. 10/12/15





KEEN PUMP
471E ST ROUTE 250 EAST
ASHLAND, OHIO 44805
PHONE: 419-207-9400
FAX: 419-207-8031

TITLE	K(H)GS(X)2 2HP GRINDER PUMP DIMENSIONS		
SCALE: NTS		DWG. #: KN-964	REV.: -
DWG. BY: SE	DATE: 01/26/2015		

KEEN PUMP

SPECIFICATIONS

2 HP Grinder Pumps — KGS(X)2 / KHGS(X)2

Pump Model – Pump shall be of the centrifugal type, **KGS2** (High Flow) or **KHGS2** (High Head), with an integrally built-in grinder unit and submersible type motor. The grinder unit shall be capable of macerating all material in normal domestic and commercial sewage, including reasonable amounts of foreign objects such as sanitary napkins, disposable diapers, thin rubber, small wood, plastic and the like to fine slurry that will easily pass through the pump and 1-1/4" NPT discharge. **KGSX2 or KHGSX2 Series** pump and motor assembly shall be FM3615 listed for Class 1, Division 1, Groups C & D hazardous location service.

Operating Conditions – The pump shall have a non-overloading maximum capacity of ___GPM, a maximum total dynamic head of ___ feet, and shall use a motor rated at 2 HP and 3450 RPM.

Construction – Major pump components shall be of gray cast iron, ASTM A-48, Class 30, with smooth surfaces devoid of blowholes or other irregularities. All exposed nuts or bolts shall be 304 stainless steel. All metal surfaces coming into contact with the pumpage, other than stainless steel, shall be protected by a factory applied spray coating of primer and an air dry enamel paint finish to the exterior of the pump.

Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with O-rings, designed and constructed to meet FM3615 for Class 1, Division 1, Groups C & D standards. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides (rabbet joint construction) without the requirement of a specific torque limit. **No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.**

Pump Impeller – Pump impeller shall be 300 series stainless steel and threaded onto an AISI 416 stainless steel shaft. The impeller shall be of the semi-open type to provide an unobstructed passage through the volute for the ground solids. Impeller must be dynamically balanced to specification ISO 1940G 6.3 standard.

Grinder Construction – Both grinder impeller and shredding ring shall be of 440 stainless steel hardened to 58-60 Rockwell C. The grinder assembly shall consist of a grinder impeller and shredding ring mounted directly below the volute passage. The grinder impeller is threaded to a stainless steel shaft, locked with a stainless steel screw and washer. The shredding ring shall be secured by a retaining ring which is bolted into the cast iron volute for easy removal. All grinding of solids shall be from the action of the grinder impeller against the shredding ring. There shall be 24,000 cuts / second.

OPTIONAL: Slicer Grinder Construction – Maceration is accomplished by a combination of a rotary slicer and stationary slicer plate. Rotary slicer shall consist of (4) blades which protrude away from the inlet. Rotary slicer shall be bolted to shaft within close tolerance of grinding slicer plate. The stationary slicer plate shall consist of engineered-shaped holes for optimum cutting of debris. A slicer plate shall contain grooved slots to eject pump media away from underneath rotary cutter. Slicer plate shall be fastened with countersunk head screws that are flush with surface of plate. **Pumps with protruded or exposed head fasteners shall be considered not equal.** Both rotary slicer and slicer plate shall be 440C stainless steel hardened to 58-60 Rockwell C.

Seals – Type 21, domestic manufactured, dual mechanical seal construction mounted in tandem, shall protect the motor. Standard construction of primary seal shall be silicon / carbide. Standard construction of secondary seal shall be silicon / carbide. The seal face shall be lapped to a flatness of one light band. Dual electrodes with 330k ohm resistor shall be mounted in the seal chamber to detect water entering the chamber through the lower seal. Water in the chamber shall cause a red light to turn on at the control box. This signal shall not stop the motor, but shall act as a warning only, indicating service is required. **Lip seal arrangements shall not be considered equal.**

KEEN PUMP

Motor – The pump motor construction shall be per NEMA MG-1 1.15 standard and shall be of the submersible type, rated 2 HP, 3450 RPM. The motor shall be for 60 Hz, either 200 or 240 volt, single-phase operation. Three-phase operation shall be 200, 240 or 480 volt. Single-phase motors shall be capacitor start, capacitor run type for high starting torque. Start & run capacitors, and electronic relay for operating the motor will be found in the control box. Major motor operating temperature must not exceed Class B ratings.

The stator winding shall be of the open type with Class F construction. Any other construction shall be considered not equal. The stator shall be pressed into the cast iron motor housing. Proprietary **KEEN I.C.E.** oil ensures industry-low operating temperatures. **KEEN I.C.E.** oil is a synthetic blend with wear-additives, specifically engineered for submersible pump motors. Winding housing shall be filled with clean, high dielectric oil that lubricates bearings and seals, transferring heat from windings and rotor to the outer cast housing. Maximum skin temperature of motor assembly shall not exceed a T-4 rating per FM3615 standards. **Any motor assembly T-code per FM3615 standard that exceeds a T-4 rating shall be considered not equal. Air-filled motors, which do not have the superior heat dissipating capabilities of oil-filled motors, shall not be considered equal.**

Single and three-phase motors shall have automatic reset overload protection attached to the top end of the motor windings to stop the motor if the motor winding temperature reaches 130 degrees C by way of (2) temperature sensors wired to the motor control center. **On-winding overload protection shall be considered not equal.** The high temperature shut-off will cause the pump to cease operation, should a control failure cause the pump to run in a dry wet well or any condition that may cause the pump to run outside of the specified operating temperature range.

Bearings / Shaft - The motor shall have two heavy-duty ball bearings and one sleeve bearing to support the pump shaft, taking radial and thrust loadings. Bearings shall be designed to an ABEC® System 1 or better.
The upper bearing shall be a Conrad type, single row, deep groove ball bearing designed to adequately handle the required radial loads. The lower bearing shall be a single-row angular contact ball bearing designed to adequately compensate for the axial loads and radial forces. Bearings shall be designed to deliver a minimum L-10 bearing life of 100,000 hours when operation is within the limitations of the manufacturer's performance curve. The bearings shall be lubricated in oil and will not require maintenance as described in ANSI/HI 1.4-2010 A.6.

Power Cord – Power/Control cable assembly shall conform to FM3615, Class 1, Division 1, Groups C & D construction. The cable jacket shall be sealed at the motor entrance by means of an agency-approved rubber compression washer and compression nut. An epoxy-filled cord cap seals the outer cable jacket and individual leads to prevent water from entering the motor housing. Cable leads shall be permanently attached to motor leads. **Compression fittings with quick disconnect molded pins shall not be considered equal.** Cord shall withstand a pull strain to meet FM3650 requirements.

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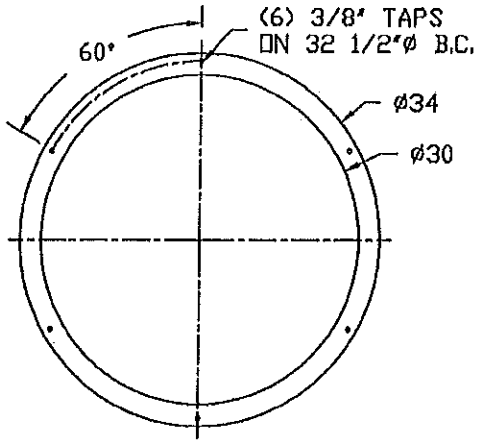
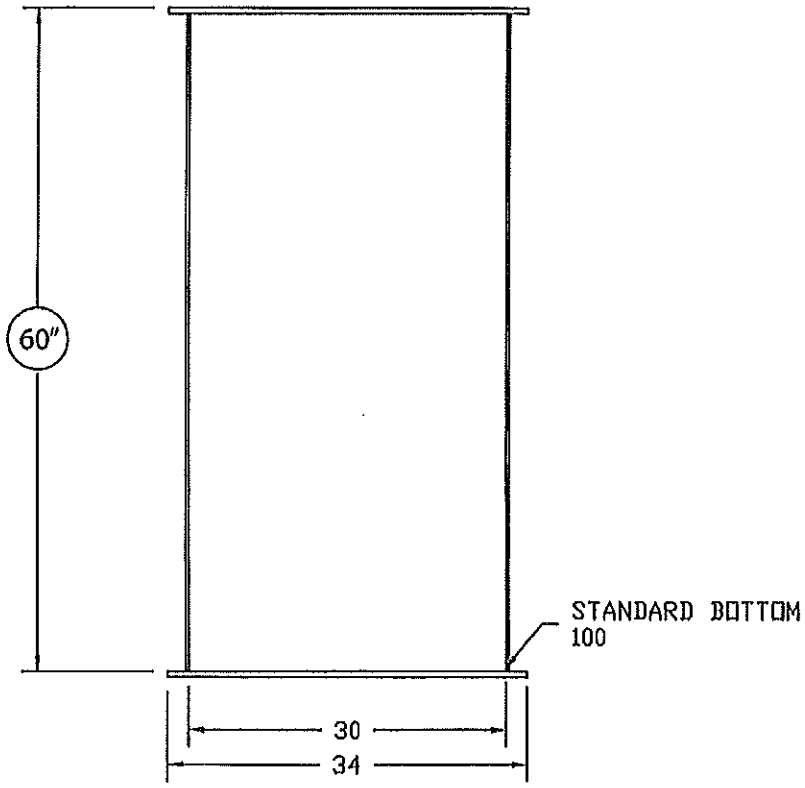
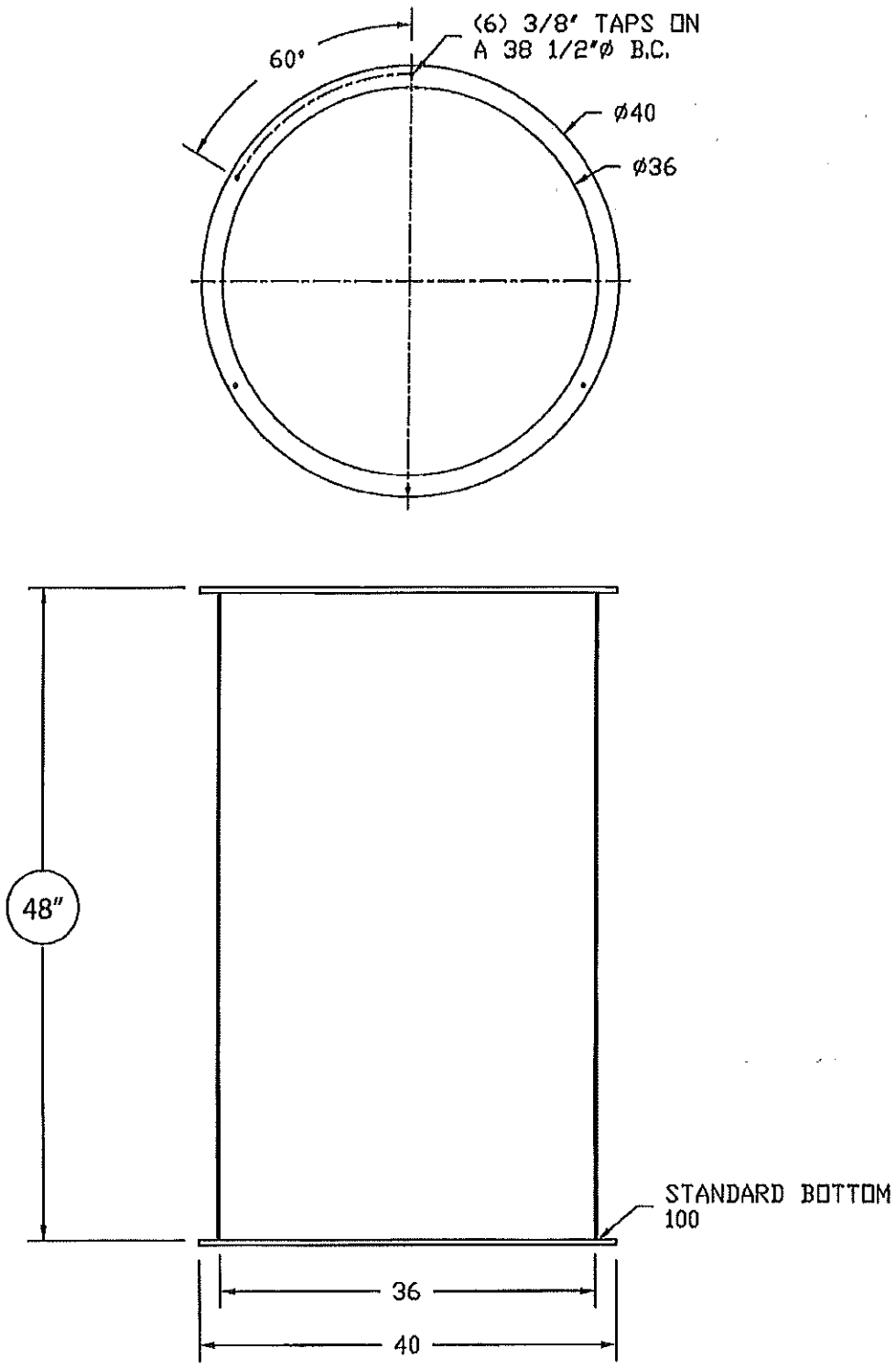
FIBERGLASS BASIN






(6) 3/8" TAPS ON
A 38 1/2"ø B.C.
60°
ø40
ø36
48"
STANDARD BOTTOM
100
36
40

KEEN PUMP CO.
Your Premier Pump Choice

Basin Specifications

Basin shall be made from a fiberglass reinforced polyester resin. Resins used shall be of commercial grade polyester and shall be evaluated as a laminate test or determined by previous service to be acceptable for the intended environment. The reinforcing material shall be a commercial grade of glass fiber having a coupling agent to provide a suitable bond between the glass reinforcement and the resin. The manufacturer may supply either (continuous strand, chopped-strand, continuous mat and/or non-continuous mat) or (non-continuous glass strands having fiber lengths from 0.5 to 2.0 inches). The completed material shall be inert and acceptable to the environment. The basin shall be water-tight.

Inner Surface – The inner surface shall be smooth and resin rich, free of cracks, exposed fibers, porosity and crazing.

Exterior Surface – The exterior surface shall be relatively smooth with no exposed fibers or sharp projections. If a pigment is added, color should be relatively equal throughout. Foreign inclusions, dry spots, pinholes or pits, de-laminations, large dimples not meeting thickness requirements, and air bubbles are not acceptable.

Tank Wall – Wall thickness shall vary with the basin height to provide the aggregate strength necessary to meet the tensile and flexural physical properties requirements. The basin wall laminate must be designed to withstand wall collapse or buckling based on:

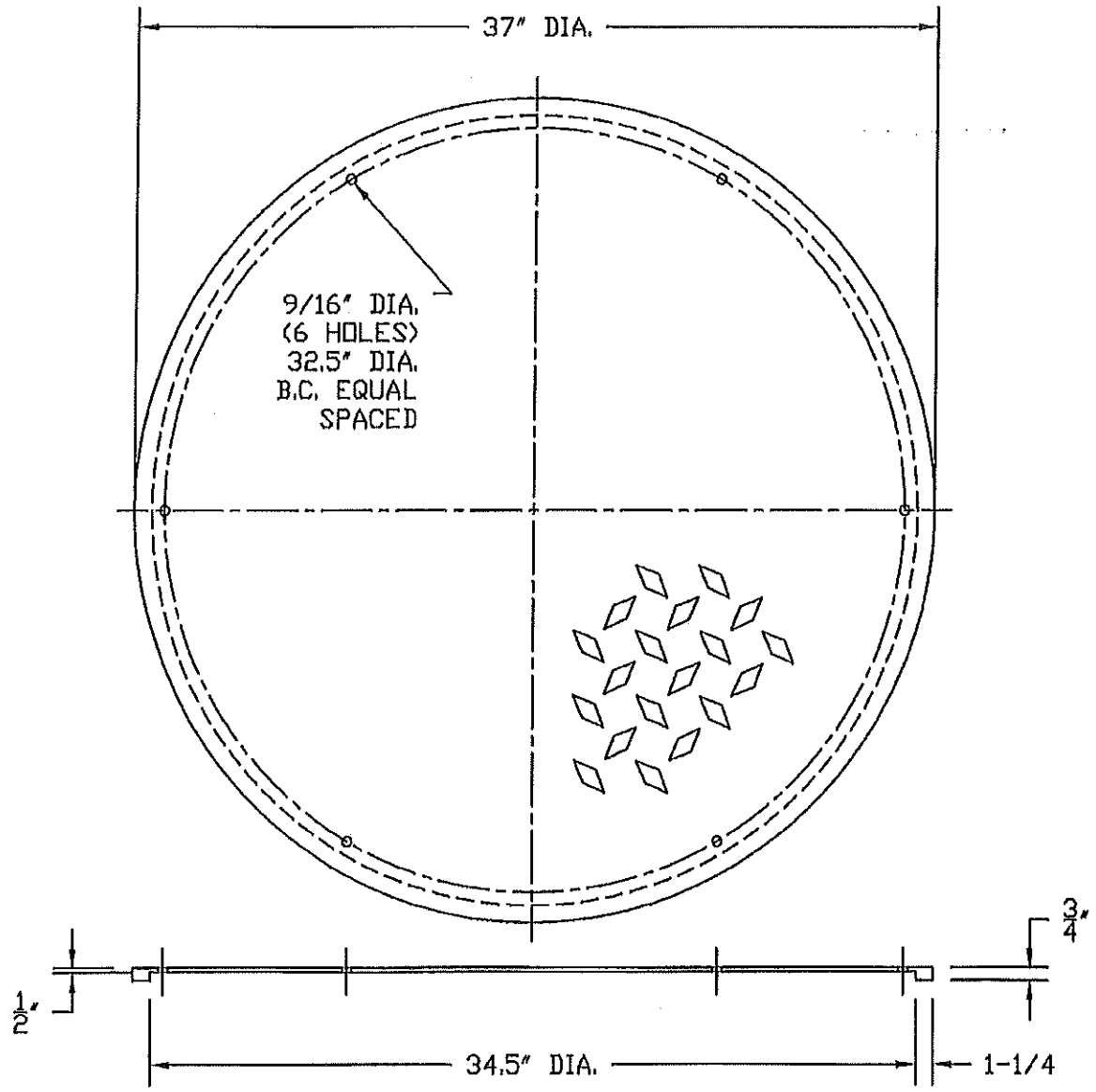
Wall thickness (see prior statement)
Hydrostatic pressure (62.4 lbs per square foot)
Saturated soil weight (120 lbs per cubic foot)
Soil Modulus (700 lbs per square foot)
Pipe stiffness values as specified (ASTM D3753)

Tank wall laminate must be constructed to withstand or exceed (2) two times the actual imposed loading on any depth of basin.

Tank Bottom – The basin bottom shall be of sufficient thickness to withstand applicable hydrostatic uplift pressure. In saturated conditions, the center deflection of the empty basin bottom shall be less than 3/8" (elastic deflection) and shall not interfere with bottom pump mounting requirements. Any mounting studs, plates, or cap screws in tank bottom shall be stainless steel and resin covered except for threads. Any inserts shall be stainless steel or brass and resin covered except for threads.

Tank Collar (Anti-Flotation) – A means to counteract buoyancy forces shall be provided on the tank bottom in the form of a ring, and shall extend a minimum of 2" beyond the O. D. of the basin wall. Wall and collar should be blended with a radius not to exceed 1 ½" beyond wall O.D.

Top Flange – The top flange shall be parallel to the tank bottom/collar and perpendicular to the tank wall. Corrosion resistant inserts shall be embedded in the top flange for securing the basin cover. The inserts shall be totally encapsulated to prevent turning (minimum turning torque shall not be less than 30 foot/lbs.) pullout.



MATERIAL: FIBERGLASS WITH DIAMOND TREADPLATE DESIGN

NOTE: COVER TO BE DESIGNED FOR 300 PSF LIVE LOAD

NOTE: ALL DIMENSIONS FOR REFERENCE ONLY

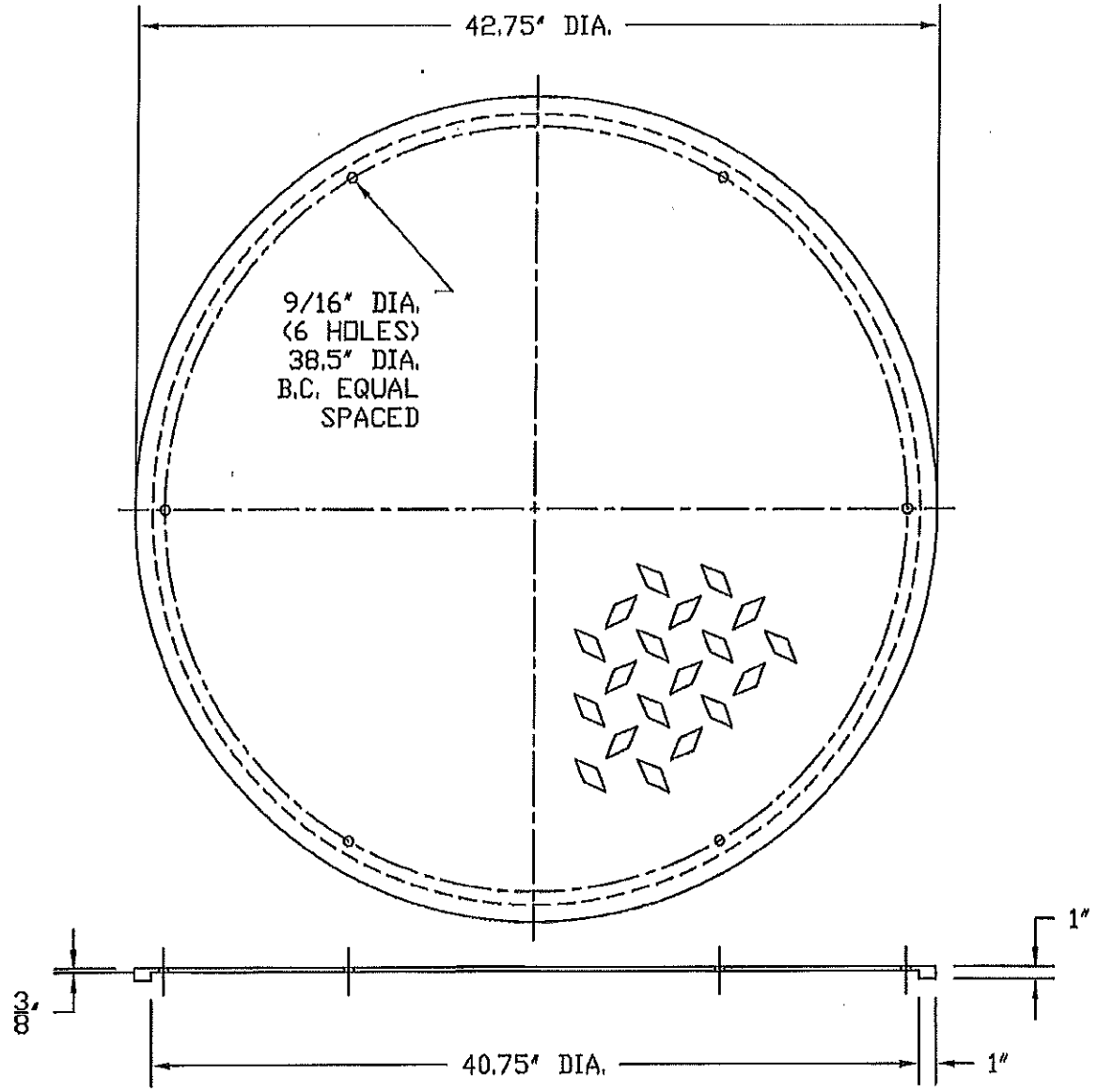
REV	INITIALS	DATE

KEEN PUMP COMPANY
KEEN PUMP CO.
471E STATE ROUTE 250 EAST
ASHLAND, OHIO 44805
PHONE: 419-207-9400
FAX: 419-207-8031

TITLE: BASIN COVER, SOLID FIBERGLASS, 30" DIA.

SCALE	DWG. # / PART NO.	REV.
NTS	C30F	

DWG. BY	DATE
SE	04/30/2014



MATERIAL: FIBERGLASS WITH DIAMOND TREADPLATE DESIGN

NOTE: COVER TO BE DESIGNED FOR 300 PSF LIVE LOAD

KEEN PUMP COMPANY
KEEN PUMP CO.
471E STATE ROUTE 250 EAST
ASHLAND, OHIO 44805
PHONE: 419-207-9400
FAX: 419-207-8031

TITLE			
BASIN COVER, SOLID FIBERGLASS, 36" DIA.			
SCALE: NTS		DWG. # / PART NO.: C36F	REV.
DWG. BY: SE	DATE: 04/30/2014		

NOTE: ALL DIMENSIONS FOR REFERENCE ONLY

REV	INITIALS	DATE

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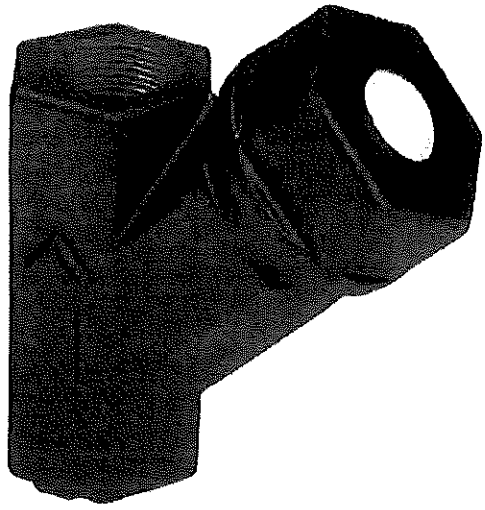
BCVA125 *Ball Check Valve w/ Anti-Siphon*



- 1-1/4" NPT Both Ends
- Cast Iron Construction
- Check Valve: Nitrile (Buna-N) "Sinking Ball"
- Anti-Siphon Valve: Polypropylene "Floating Ball"
- Thread to Thread Overall Length: 5-3/16"
- E-Z Access port for cleaning or backflushing
- 125 psi Pressure Rating Max.

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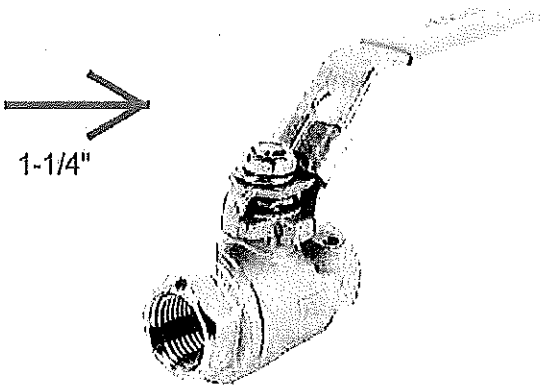
PLUMBING • INDUSTRIAL • COMMERCIAL • HYDRONICS

1-800-752-2082
www.legendvalve.com

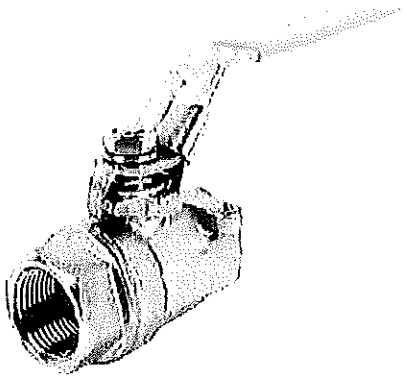
T-715 316 Stainless Steel Large Port Ball Valve



Heavy-duty two-piece investment cast body design, 316 stainless steel body & end adaptor. Bottom-loaded blowout-proof stem. Equipped with a latch-lock handle, 304 stainless steel trim, 316 stainless steel stem and ball. Ideal for commercial and industrial applications. Fiber reinforced, graphite impregnated seats maintain their shape in high pressure service. Integral, tapped mounting pad for actuation or panel attachment. Available in sizes & configurations: 1/4"- 2", FNPT x FNPT.

- Saturated Steam (WSP): 150 PSI
- Cold Working Pressure (CWP): 2000 PSI (1/4"- 1"); 1500 PSI (1-1/4"- 2").
- Conforms to MSS Standard Practice 110.
- Threaded end connections comply with ANSI/ASME B1.20.1
- Naturally lead free.

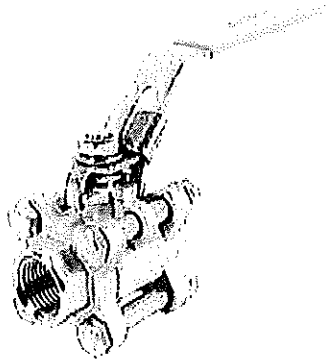
T-712 316 Stainless Steel Full Port Ball Valve



Heavy-duty two-piece investment cast body design, 316 stainless steel body & end adaptor. Bottom-loaded blowout-proof stem. Equipped with a latch-lock handle, 304 stainless steel trim, 316 stainless steel stem and ball. Ideal for commercial and industrial applications. Integral, tapped mounting pad for actuation or panel attachment. Sizes 2-1/2"- 4" are equipped with dual mounting pads. Available in sizes & configurations: 1/4"- 4", FNPT x FNPT.

- Saturated Steam (WSP): 150 PSI
- Cold working pressure (CWP): 1000 PSI
- Conforms to MSS Standard Practice 110.
- Threaded end connections comply with ANSI/ASME B1.20.1
- Naturally lead free.

T-717 316 Stainless Steel 3-Piece Full Port Ball Valve



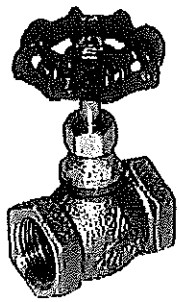
Heavy-duty three-piece investment cast body design, 316 stainless steel body & adaptors. Bottom-loaded blowout-proof stem. Equipped with a latch-lock handle, 304 stainless steel trim, 316 stainless steel stem and ball. Ideal for commercial and industrial applications. The body center section lifts or swings out to permit servicing without end adapter removal. Available in sizes & configurations: 1/4"- 2", FNPT x FNPT.

- Saturated Steam (WSP): 150 PSI
- Cold working pressure (CWP): 1000 PSI
- Conforms to MSS Standard Practice 110.
- Threaded end connections comply with ANSI/ASME B1.20.1
- Naturally lead free.

LEGEND VALVE

BRONZE GLOBE VALVE

I.P.S.



MODEL
T-421

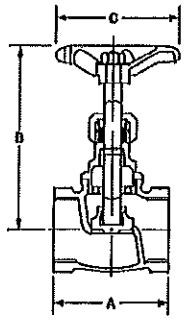
LEGEND MODEL T-421 bronze globe valves have a screwed bonnet, rising stem, integral seat and swivel disc for accurate throttling and flow control. The body and bonnet are constructed of heavy duty bronze. Recommended for heavy industrial use when the valve is to be operated frequently

MATERIAL SPECIFICATION	
PART	MATERIAL
BODY	BRONZE
BONNET	BRONZE
STEM	FORGED BRASS
PACKING NUT	BRASS
DISC	BRASS
HAND WHEEL	ALUMINUM
WHEEL NUT	BRASS
GLAND	BRASS
GLAND PACKING	GRAPHITE/TEFLON*

*DUPONT REG T.M.

PRESSURE RATING
200 W.O.G. NON-SHOCK
125 W.S.P.

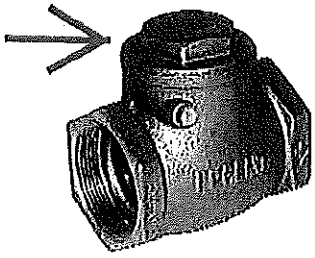
DIMENSIONS IN INCHES



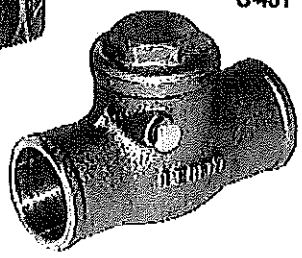
VALVE SIZE	A (IPS)	B	C
½"	1.96	2.81	1.97
¾"	2.18	3.27	2.21
1"	2.56	3.90	2.36
1¼"	2.92	4.30	3.23
1½"	3.29	4.94	3.34
2"	3.90	5.95	3.94

BRASS SWING CHECK VALVE

I.P.S. AND CxC



MODEL
T-451



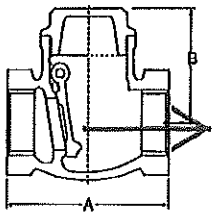
MODEL
S-451

LEGEND MODELS T-451/S-451 check valves are constructed of heavy duty brass. They have a screwed cap, swing type disc and integral seat. They prevent backflow while offering full flow performance with a minimum of turbulence or pressure loss. Recommended for residential and commercial applications.

MATERIAL SPECIFICATION	
PART	MATERIAL
CAP	BRASS
BODY	BRASS
DISC	BRASS
HINGE PIN	BRASS
SCREW	BRASS

PRESSURE RATING
200 W.O.G. NON-SHOCK

DIMENSIONS IN INCHES

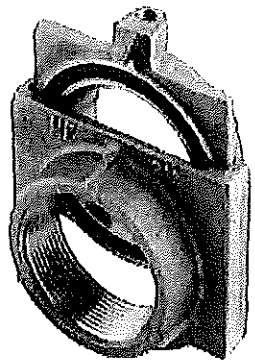


VALVE SIZE	A (IPS)	A (CxC)	B
⅜"	2.01		1.40
½"	2.01	2.44	1.34
¾"	2.29	3.03	1.42
1"	2.48	3.74	1.54
1¼"	3.15	4.37	1.89
1½"	3.47	5.12	2.17
2"	3.98	5.95	2.56
2½"	5.16	6.90	2.96
3"	5.79	7.60	3.82
4"	6.86		3.94

KEEN PUMP CO.
Your Premier Pump Choice

QD125

Pipe Quick-Disconnect



- *Brass Construction
- *1-1/4" NPT Size
- *PTFE Coated O-Ring
- *150 psi Pressure Rating
- *SST Lift handle Included

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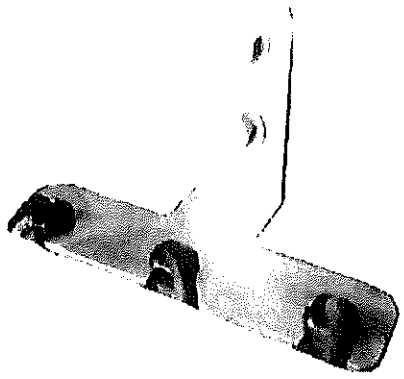
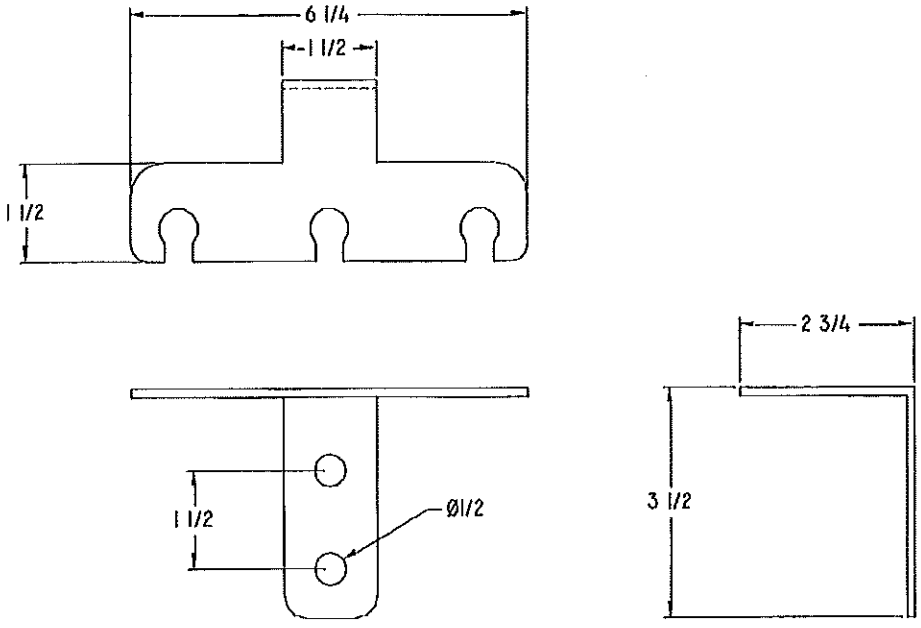
KP-3FB Float Bracket



*L-Shaped SST Construction

*3-holes accept (3) floats

*Includes plastic cord snubbers

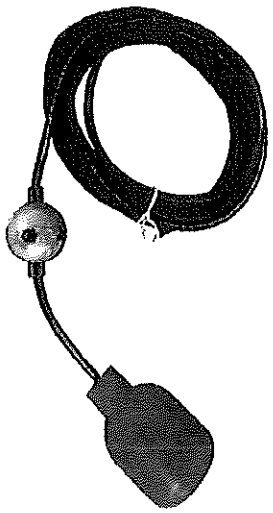


Controls

KEEN PUMP

KP-CF(M)

KEEN Control Duty Floats



"KP-CF10" (10 Ft. Lg)
Mercury Float.....CONTROL PILOT DUTY
Narrow Angle Operation
Normally Open w/Cord (10',15',20',30',50' Options)
18/2 SJOW-A Cord w/External Weight
2 Amp @ 120VAC

"KP-CF10M" (10 Ft. Lg)
Mechanical Float.....CONTROL PILOT DUTY
Narrow Angle Operation
Normally Open w/Cord (10',15',20',30',50' Options)
18/2 SJOW-A Cord w/External Weight
2 Amp @ 120VAC

Construction: (All Floats)

Outer Shell	ABS (Acrylonitril Butadiene Styrene), rated 105 deg. C, ultrasonically welded
Mercury Switch	Hermetically welded and sealed canistepr essurized pure argon gas for mercury Provides clean, spark extinguishing atmosphere for long life
Mechanical Switch	Snap-action switch, steel ball in switching tube
Cord	Flexible SJOW in lengths to 50'
	Epoxy potted and bonded to float for watertight seal
Weights	Provided (attached) with all float controls

KEEN PUMP
471E State Route 250 East · Ashland, Ohio 44805
419.207.9400 fax 419.207.8031
www.keenpump.com

KEEN PUMP

SPECIFICATIONS

CONTROL DUTY "CF" LIQUID LEVEL FLOAT CONTROLS

Pump ON, OFF and ALARM levels shall be controlled by mercury tube float switches.

The mercury switch shall consist of a hermetically welded and sealed canister pressurized with a pure argon gas atmosphere. The argon gas provides a clean atmosphere, extinguishing any sparking action, resulting in long switch life.

The mercury switch shall be rated for a minimum 300,000 cycles.

The complete float control shall at a minimum be component recognized by Underwriters Laboratories or listed with UL and CSA.

The outer shell shall consist of a corrosion-resistant ABS (Acrylonitril Butadiene Styrene) material rated for sewage applications. The outer shell shall consist of an ultrasonically-welded construction, watertight for moisture protection.

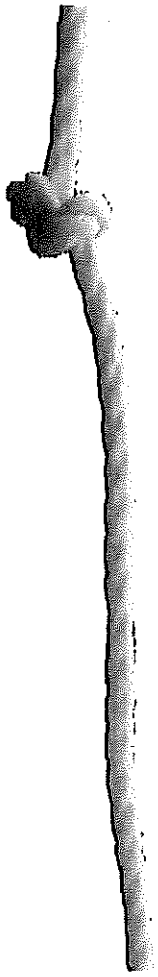
The electrical cord shall be a minimum 18 gauge, 2 conductor, SJOW-A jacketed cable. The cord shall be bonded with a steel ring and epoxy potted for a watertight seal at point of entry into the float housing. The cord shall meet and be rated for 120 VAC NEMA 5-15 / 240 VAC NEMA 6-15 standards.

The cable shall be of sufficient length to reach the ___ junction box or ___ control panel with no splices. The minimum cable length shall be 10 feet. If other than standard cable length is provided, the cable length shall be ___ feet.

The level controls shall be suspended from a stainless steel bracket, so adjustments or replacements may be done without the use of any tools or entry into the basin.

KEEN PUMP CO.
Your Premier Pump Choice

Lifting ROPE - 1/2"



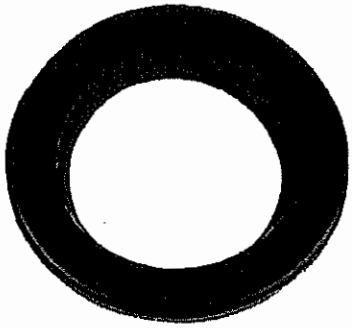
* 3-Strand, Polypropylene Rope – 3800 lb Tensile Strength (520 lb safe)

* 100% tested, resistant to rot, abrasion, mildew, marine growth and many chemicals

* All rope cut to appropriate length for system

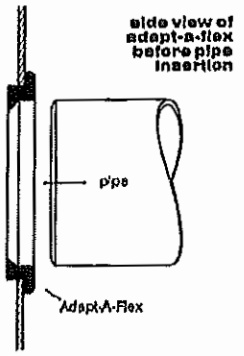
KEEN PUMP CO.
Your Premier Pump Choice

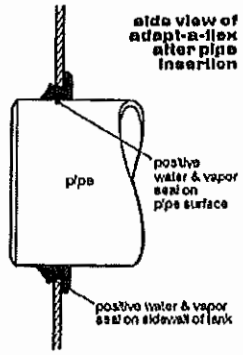
FLEXIBLE INLET FITTINGS



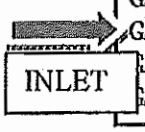
Instantly provides a water and vapor seal on either curved or flat surfaces!

- Ease of Installation -- No Tools Required
- Weather and Corrosion Resistant
- No Bolts or Gaskets Required
- Requires No Sealants
- Durable PVC Composition
- Available in 3/8" through 6" sizes
- Works with Steel Pipe, Schedule 35 and 40 Plastic Pipe





Number		A	B	C	Hole D	Saw Size
GA-375AAF	3/8"	.068	.200	.045	1.050	1"
GA-050AAF	1/2"	.086	.240	.630	1.310	1-1/4"
GA-075AAF	3/4"	1.040	.240	.820	1.310	1-1/4"
GA-100AAF	1"	1.300	.220	1.050	1.780	1-3/4"
GA-125AAF	1-1/4"	1.630	.230	1.350	3.050	3"
GA-150AAF	1-1/2"	1.870	.230	1.560	3.050	3"
GA-200AAF	2"	2.300	.250	2.000	3.050	3"
GA-300AAF	3"	3.450	.250	3.100	4.010	4"
GA-400AAF35	4" SDR 35	4.270	.250	3.800	5.025	5"
GA-400AAF40	4"	4.450	.250	4.120	5.060	5"
GA-600AAF35	6" SDR 35	6.200	.250	5.850	7.205	7"
GA-600AAF40	6"	6.450	.250	6.125	7.060	7"



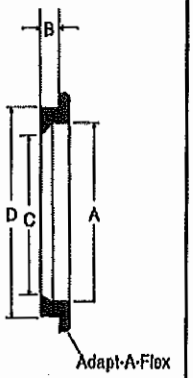


EXHIBIT 7

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615
Telephone: (502) 564-3940
Fax: (502) 564-3460
psc.ky.gov

August 9, 2016

Stephen T. Owens
McCreary County Water District
PO Box 488
Whitley City, KY 42653

Re: Periodic Waste Water Inspection
McCreary County Water District Waste Water System
McCreary County, KY

Dear Stephen T. Owens:

Public Service Commission staff performed a periodic inspection of the McCreary County Water District waste water system on November 2, 2015, reviewing utility operations and management practices pursuant to Commission regulations. The report of this inspection is enclosed with this letter.

Based on the inspector's observations, the following deficiencies were identified:

1. The utility is not performing daily inspections on all mechanical equipment as per 807 KAR 5:071, Section 7 (4).

2. During this inspection, no records were produced of the utility making inspections of collecting sewers and manholes as per 807 KAR 5:071, Section 7 (4).

For the two deficiencies listed above, an explanation of why these deficiencies occurred and how these deficiencies will be remedied and prevented in the future needs to be provided. A letter addressing the organization's actions regarding the deficiencies needs to be submitted within 30 days from the date of this letter.

No deficiencies were noted on the previous inspection on June 21, 2013.

Please review the enclosed inspection report in its entirety as you will find further information noted in regard to the inspection. If you have any questions regarding this inspection, feel free to contact Mark Rasche at 502-782-2614 or via email at Mark.Rasche@ky.gov.

Sincerely,

Talina R. Mathews

Talina R. Mathews
Executive Director
Public Service Commission

Enclosure(s)

COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION

UTILITY INSPECTION REPORT

Report Date: 11/02/2015

Report Number: McCrearyCWDSD-110215

BRIEF

Inspector: Brian L. Rice

Date of Inspection: 11/02/2015

Type of inspection: Periodic Regulatory Compliance Inspection

Type of Facility: Wastewater

Name of Utility: McCreary County Water District (Sewer Department)

Location of Facility: 19 Crit King Road, Whitley City, KY 42653

Send Report To: P.O. Box 488 Whitley City, KY 42653

Purpose of inspection: Periodic inspection of utility facilities and management practices to verify compliance with PSC regulations.

Applicable Regulations and Statutes: KRS 278 and 807 KAR Chapter 5

INSPECTION

Description of Utility: The utility consist of 900,000 gallons per day ("gpd") wastewater treatment plant ("wwtp").

Number of Customers: The utility provides sewer service to approximately 1086 customers.

Area of Operation: McCreary County

Collection Description: The utility consists of two 450,000 gpd oxidation ditches with two clarifiers and two digesters. This facility also has approximately 813 individual simplex grinder stations, approximately 65 duplex lift stations and 9 main lift stations.

Workforce Summary: The utility has one plant operator and two field employees.

Utility Reps in insp: Steve Owens/manager, Stephen Whitaker/assistance manager, Derrick Taylor/plant operator, and Jarod Miller/collection operator.

Date of Last Inspection: 06/21/2013

Number of Deficiencies Documented in Last Inspection: 0

Number of Deficiencies Not Cleared from Last Inspection: 0

Summary of items and facilities inspected: Observed the wastewater facility, 7 lift stations, inspection and office records.

FINDINGS

1. The utility is not performing daily inspections on all mechanical equipment as per 807 KAR 5:071, Section 7 (4).
2. During this inspection, no records were produced of the utility making inspections of collecting sewers and manholes as per 807 KAR 5:071, Section 7 (4).

ADDITIONAL INSPECTOR COMMENT

The utility has 9 main lift stations, approximately 65 duplex lift station and approximately 813 residential grinder stations. Jarred Miller, the collections operator responsible for inspecting the utility's lift stations and the utility's collecting system, stated that he does not make daily inspections of the lift stations, duplex lift stations and grinder stations. Mr. Miller stated that only monthly and quarterly inspections are being made. The utility stated that they use Jake Genoe Electric, to perform inspections on all lift stations on an annual basis.

Also the utility stated that most of their system consists of a low pressure system and a small part is gravity flow and has approximately 30 manholes. There were no records produced of the utility inspecting this small part of their collection sewers and manholes.

The following were observations of the utility's facility.

1. The exhaust fan in the de-chlorination room was not operating at the time of this inspection.
2. At the country store lift station, there was major grease build up in the wet well and the alarm light was not working.
3. At the Job Corp lift station, the operator was unable to turn on one of the pumps due to what appeared to be a bad contactor in the control panel.
4. At the Prison lift station, there was major grease build up in the wet well.

5. One of the aerators in the oxidation ditch was not operational. The utility stated that they are in the process of having it repaired.

McCreary County Water District was informed of the regulation change that states in 807 KAR 5:006, Section 26 (3) that appropriate records shall be kept by a utility to identify the inspection made, the date and time of inspection, the person conducting the inspection, deficiencies found, and action taken to correct the deficiencies.

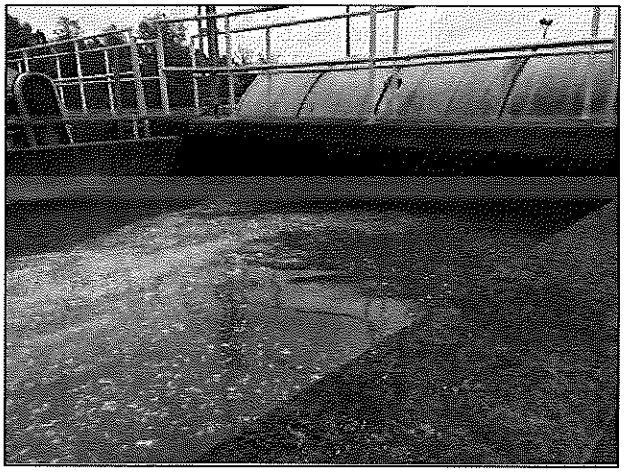
During this inspection the wastewater treatment plant appeared to be operating properly. The effluent was clear and there were no signs of solids leaving the plant.

Submitted by,

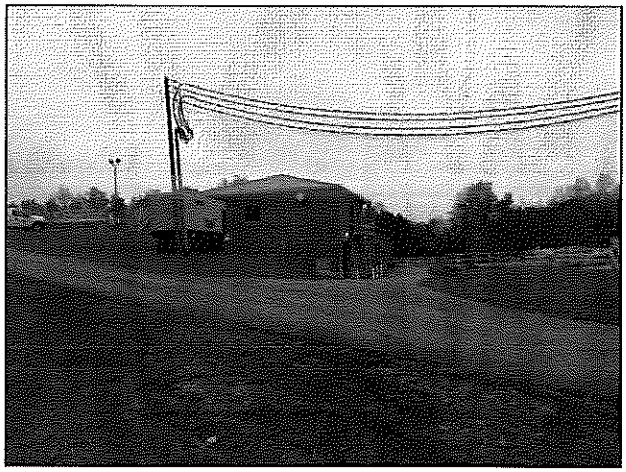
Brian L. Rice
Investigator III

McCreary County Water District

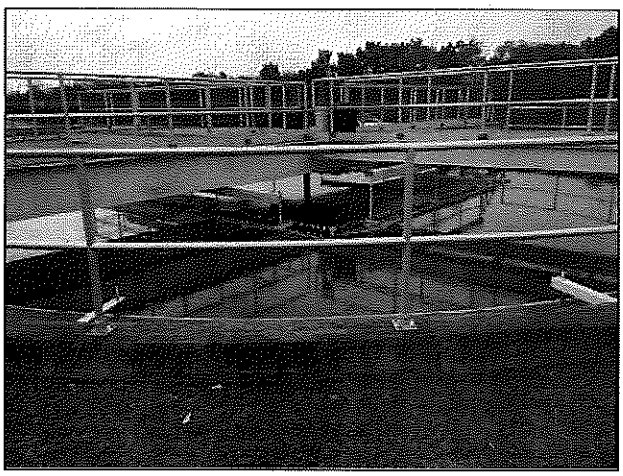
Country Store Lift Station



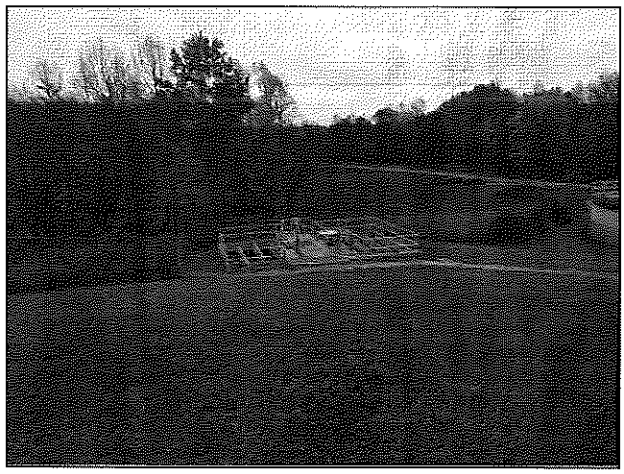
Oxidation ditch



Wastewater facility



Clarifier



Chlorine contact basin

EXHIBIT 8

Costs to Perform Daily Inspections of Simplex Grinder/Pump Stations and Duplex Grinder/Pump Stations (District Personnel and Equipment)

Assumptions

- Time to perform inspection and travel to next Grinder/Pump Station: 15 minutes
- Hourly wage for inspector: $15.00
- Cost Overhead for inspector: $7.80 per hour
- Total Hourly Employee Cost: $22.80
- Employee Work Day: 8 hours
- Employee Work Year: 240 days or 1,920 hours
- Each Employee performing inspection requires a vehicle
- Purchase cost of each vehicle $15,000
- Useful Life of Vehicle: 5 Years
- Annual Depreciation Expense: $3,000

Workhours To Perform Daily Inspection

1214 Grinder/Pump Units X 15 minutes = 18,210 minutes
18,210 minutes ÷ 60 minutes/hour = 303.5 hours

Number of Employees Required To Perform Daily Inspection

303.5 hours ÷ 8 hours per workday = 37.9 employees ≈ 38 employees

Number of Employees Required to Perform Daily Inspection on Annual Basis

303.5 hours/day X 365 days = 110,777.5 hours
110,777.5 hours ÷ 1,920 hours/employee = 57.7 employees ≈ 58 employees

Annual Labor Cost To Perform Daily Inspections

18,210 minutes x 365 days = 6,646,650 minutes
6,646,650 minutes ÷ 60 minutes/hour = 110,777.5 hours
6,646,650 hours X $22.80 = **$2,525,727**

Initial Expenditure for Vehicles for Inspectors

1 Vehicle/Employee X 38 Employees = 38 Vehicles
38 Vehicles X $15,000 = $570,000

Annual Depreciation Expense

$570,000 ÷ 5 years = **$114,000**

TOTAL ANNUAL COST: $2,525,727 + $114,000 **= $1,929,403**

EXHIBIT 9

Costs to Perform Daily Inspections of Simplex Grinder/Pump Stations and Duplex Grinder/Pump Stations (Contract Labor)

Assumptions

- Contract supplies transportation and equipment
- Contract Rate for Simplex Grinder/Pump Station: $15.00*
- Contract Rate for Duplex Grinder/Pump Station: $18.00*
- Number of Active Simplex Grinder/Pump Stations: 1139
- Number of Active Duplex Grinder/Pump Stations: 75

Cost To Perform Daily Inspection

1139 Simplex Grinder/Pump Units X $15 per unit = $12,195
75 Duplex Grinder/Pump Units X $18 per unit = $1,170
Total Daily Cost: $18,435

Annual Cost To Perform Daily Inspection

$18,435 X 365 Days = $6,728,775

*** These** rates are those that Genoe Electric, a local contractor, charged McCreary County Water District in 2014-15 to inspect its grinder/pump stations.