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Holiday Giving

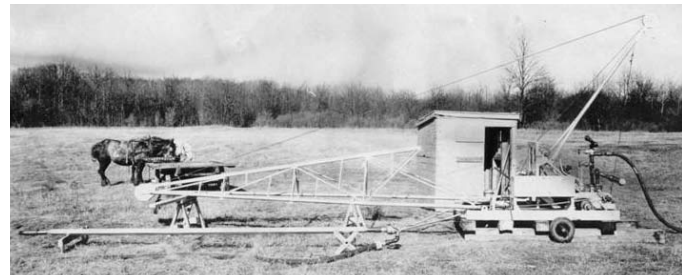
Layne / Verti-Line had the honor to take part in the Barrie Food Bank Raffle hosted by our Canadian Distributor, International Water Supply (IWS). Various items from our company were donated as prizes to be raffled off. Proceeds from ticket sales, IWS employees, and a matching contribution from IWS raised a total of \$950.38. IWS was proud to deliver the cheque to the Barrie Food Bank on the Friday before Christmas. IWS and Layne / Verti-Line know we have made a difference for those who need it.

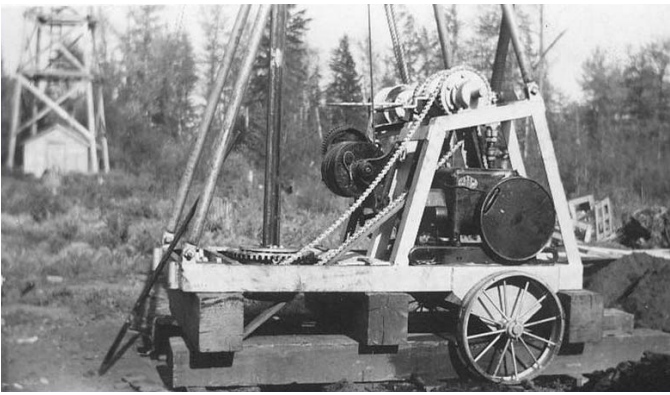


International Water Supply

Celebrates 80+ years as a Layne Distributor
By Bruce Wilson, VP of IWS

International Water Supply Ltd. (IWS) is a complete Groundwater development organization, specializing in the assessment, engineering design, construction, management and maintenance of groundwater supplies. We are headquartered in Barrie, Ontario, Canada, about one hour north of Toronto. We have been a proud distributor of Layne pumps for more than 80 years.





International Water Supply Ltd. began operations in the early to mid 1920's as Layne Canadian Co., a subsidiary of one of the American-based Layne Companies that were active in the development of Groundwater on a world-wide basis and were part of the original Layne & Bowler pump company founded in 1904. Layne Canadian Co. was re-organized and chartered as International Water Supply Ltd. in 1933, under the laws of the Dominion of Canada. Since 1961, International Water Supply Ltd. has been wholly owned and controlled in Canada by its employees.



During the past 75 years, IWS has developed more Groundwater in Canada for municipal and industrial use than any other Canadian group. Our clients include all levels of government, industry and private developers. The entire Groundwater supply requirements of many of these clients have been entrusted to IWS since the 1930's. Today our clients include major municipalities in Central Ontario such as The City of Barrie, Regional Municipality of Durham, Regional Municipality of Halton, Regional Municipality of Kitchener-Waterloo and the Regional Municipality of York as well as many smaller municipalities in Ontario and across Canada.



Throughout our history we have maintained complete construction records for pumps we have sold to clients, providing a valuable resource of servicing information as well as providing interesting reading at times. One of the first pumps we sold was in May 1925 and the first pump we sold as IWS was in October 1933. International Water Supply Ltd. was actively involved with the war effort during World War II. IWS drilled and equipped wells for many bases developed for the British Commonwealth Air Training Program throughout Canada. Most of these bases are now local municipal airports and the wells drilled by IWS are still in service. An interesting entry in our records of pumps shows that IWS sold six pumps to the US Navy on December 22, 1941. Why is this so interesting? The pumps were destined for Pearl Harbor and were obviously required for the repairs after the December 7 attack. Unfortunately the details of this sale are lost to history so we do not know why a Canadian company sold pumps to the US Navy.



Throughout its history, IWS has maintained its leadership in Groundwater development by research, discovery, and adopting and improving procedures for evaluating, designing, constructing and maintaining Groundwater supplies. Our staff includes Professional Engineers, Hydrogeologists, technicians, superintendents, drillers and equipment maintenance personnel. IWS provides complete well and pump maintenance service and maintains a fleet of crane-equipped service trucks. We maintain a large inventory of replacement parts at our main shop in Barrie, Ontario so we can provide timely repair of pumps.

As we begin our 76th year we look forward to continuing to provide our clients with the best equipment and service possible. Quality Layne pumps have been and will remain part of our commitment.



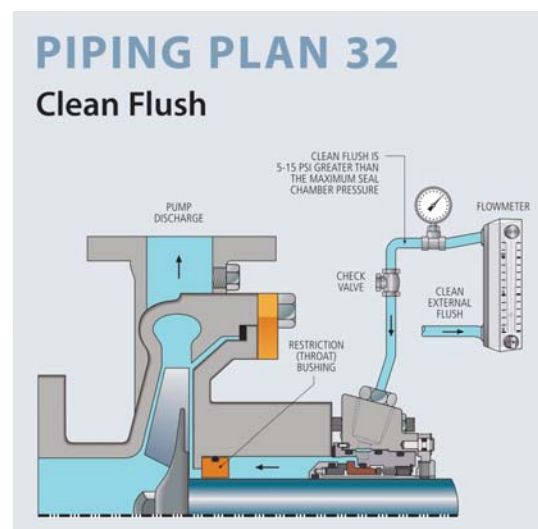
Seal Flushing

A few issues back, we focused on pros and cons of employing mechanical seals on vertical turbines, and noted that some applications required external flushing to protect the seal from premature failure. The question has come up - *what flow or pressure do we provide the flush water?*

The answer? *Whatever is required to maintain 15 feet per second velocity past the throttle bushing.* 15 fps is the velocity required to keep abrasive material in the pumped media from getting past the throttle bushing and entering the seal cavity. Line pressure must be adequate to provide 15 fps flow at all pumping conditions including shutoff.

Flow will depend on the shaft size and bearing clearance at the throttle bushing in the seal housing. Based on nominal throttle bushing bearing clearances used by Layne / Verti-Line, the approximate flows required for a specified shaft size are:

| Shaft Size / Sleeve Diameter | Flow Rate (GPM) |
|------------------------------|-----------------|
| 1" | 3/4 to 1 1/4 |
| 1 1/4" | 1 to 1 1/2 |
| 1 1/2" | 1 1/4 to 1 3/4 |
| 1 11/16" | 1 1/4 to 1 3/4 |
| 1 15/16" | 1 1/2 to 2 1/4 |
| 2 3/16" | 1 3/4 to 2 1/2 |
| 2 7/16" | 2 to 2 3/4 |
| 2 11/16" | 2 to 3 |





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