KENTUCKY-AMERICAN WATER COMPANY
CASE NO. 2021-00376
COMMISSION STAFF'S SECOND REQUEST FOR INFORMATION

Witness: Krista E. Citron

1. Regarding the State Street Phase I and II projects, explain why additional feet of main installation were necessary and what relationship that had to the explanation in the Application, Exhibit 2, in which it stated that the variance between actual and projects costs was due to valve that broke during construction.

Response:

The explanation in the Application, Exhibit 2, stated that both the additional feet of main installed and the broken valve were the causes of the variance between actual and projected costs.

State Street Phase I and II projects were constructed concurrently by the same contractor. KAW operates all the impacted valves prior to the start of a main replacement project. At that time, any valves noted to be broken or nonfunctional are included for replacement along with the water main. The 16" valve that operated prior to construction but was broken during project shutdown had to be replaced, affecting both phases, so the expense for the 16" replacement valve and 16" line stop were shared between the two phases.

State Street Phase I required additional footage of main be installed in two locations: approximately 100 feet to connect to a different water main on the far side of Waller Avenue and approximately 150 feet at the end of Crescent Avenue to replace water main that was not shown on the initial plans.

Originally, the new water main on Crescent Avenue was designed to terminate at the intersection of Waller Avenue and Crescent Avenue, without crossing Waller Avenue. This would have left approximately 100 feet of 1920s vintage 6-inch cast iron main to remain in operation between Waller Avenue and the new 8-inch main. Given the age of this main, it was determined that the most efficient and beneficial course of action for our customers would be to extend the new 8-inch main all the way across Waller Avenue to connect to the existing 8-inch main on the south side, completely eliminating the 1920s vintage 6-inch cast iron line.

Once construction began on Crescent Avenue, it was discovered that the four houses on the end of Crescent Avenue had undersized 3/4-inch lead service lines running from the houses to the end of the existing main at the intersection of Crescent Avenue and State Street, which was why this section of "main" was not originally indicated on the design plans. After the undersized lines were uncovered, an additional 150 feet of 8-inch ductile iron water main was required to be installed on the end of Crescent Avenue and the service lines reconnected to the appropriately sized main.

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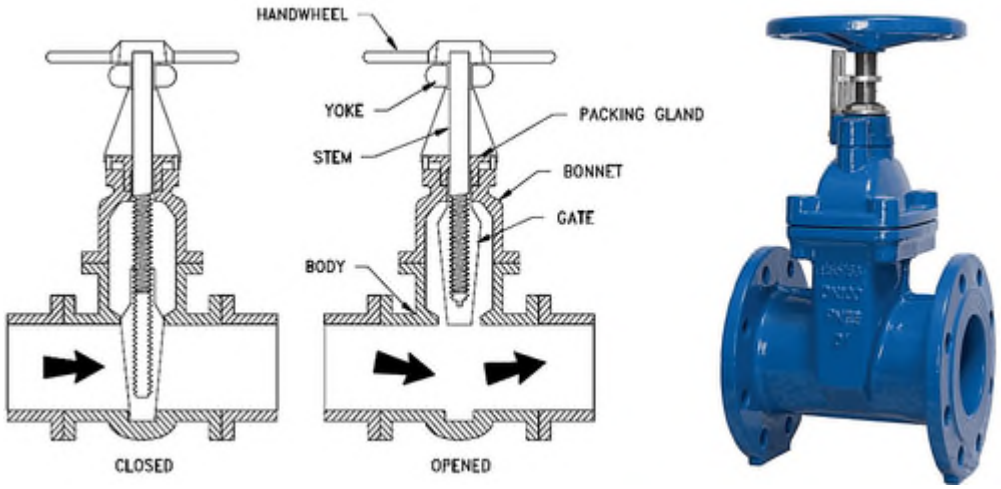
2. Regarding the State Street Phase I and II projects, explain what Kentucky-American meant that the existing valves that were replaced during the two phases were inoperable and explain why the valves were inoperable.

Response:

The primary function of a valve on a water main is to control the flow of water through the pipe. When the valve is closed, the water should be isolated to one side. When the valve is opened, water can flow through unimpeded. A fully functional valve can be fully closed with no water leaking past the valve's equipage. However, over time, parts of the valve may wear down or not operate correctly anymore, allowing some water to pass through. Other issues that can occur may include: the valve stem no longer turning well; the valve stem can occasionally break off completely during operation as the torque required to turn the valve apparatus puts a large amount of force on the stem; bolts can shear and the valve housing can separate; and, the operating nut or handwheel can break or strip so that it cannot be turned until it is replaced. Yearly inspections on large valves, while important and necessary, also put wear and tear on the stems and valves.



Typical gate valve diagram

The result of any of these occurrences is that the valve is no longer fully controlling the flow of water through the pipe. In order for main replacements or other work to take place, the water must be shut off. If valves are closed to isolate a section of main but water continues to leak out, work cannot continue. On larger diameter pipes this can mean a large quantity of water.

KAW operates all the impacted valves prior to the start of a main replacement project. At that time, any valves noted to be broken or nonfunctional are included for replacement along with the

water main. Some valves may be functional at the time of inspection but later break during construction. The State Street Phase I and II projects are located near the UK hospital, which is critical infrastructure. The hospital has multiple water feeds, but the 16-inch main on South Limestone is one of the vital supply mains and cannot be taken out of service for any long period of time. The new mains being installed as part of the State Street Phase I and II projects required connection to the 16-inch main. In order to do this quickly and efficiently to keep this main operational as much as possible, a new 16-inch valve and a new 16-inch line stop had to be installed when one 16-inch valve was broken.

Large valves are inspected and operated annually. At the time this 16-inch valve was last inspected, 2/24/2020, it successfully passed inspection although it was noted that the valve was difficult to operate. Once work on the State Street Phase I and II projects commenced, the valve was not able to fully control the flow of water, so it had to be replaced.

Smaller valves are inspected and operated once every five years. On the State Street Phase I and II projects, many of the 4-, 6-, and 8-inch valves were installed in the 1910s and 1920s. At their most recent inspections, ranging from 2018-2020, some were noted as leaking. These were also slated for replacement as part of these projects as they are incidental to the replacements of the existing cast iron mains.

A line stop is a method of short-term water shut off using a temporary plug inserted into the pipe. As part of the work described above, and in conjunction with the new 16-inch valve, a 16-inch line stop was utilized during construction, adding to the expense of the project.

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3. Regarding Versailles Road 1, explain why paving and restoration extents were greater than planned and why more fire hydrants were replaced than the initial design.

Response:

For this project, final paving extents were estimated based on a five-foot wide final pavement area detail as contained in LFUCG's Standard Drawings for Trenching (Drawings 201-1 through 201-4) for the full length of the project, plus additional estimated square yards of pavement for intersections or service line lateral cuts. However, LFUCG Ordinance Section 17C[1] is performance based (general guidelines with engineering analysis specific to each street cut) and LFUCG has declined to provide final paving extent requirements prior to construction. Final paving requirements are determined by LFUCG's inspector only after the mains and service lines are installed. The final required pavement restoration area for this project ended up covering full lane width (approximately eight feet wide) on roughly half of the project, with additional full street width (curb to curb) paving on areas where the service line lateral cuts were deemed to be "close together." The LFUCG inspector is the person who makes the determination as to how close the service lateral cuts can be before requiring curb to curb paving so this cost can vary from project to project and is not known until construction is nearly complete.

During the design phase of all main replacement projects, plans are shared with the Water Control Office at LFUCG's Division of Fire and Emergency Services. This office reviews the plans in regard to fire service and fire hydrant placement, and potential impacts. If fire hydrants need to be replaced or relocated, KAW seeks approval from this office. For Versailles Road Phase I, the officer in charge of plan review communicated that the plans and associated changes to hydrants were acceptable prior to construction beginning. During construction, however, KAW's inspector noted a large gap in available hydrants on Delmont Drive and asked the Water Control Office for further guidance. At this time, the Water Control Office recommended an additional hydrant installation for fire protection in the area.

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[1] https://library.municode.com/ky/lexington-fayette_county/codes/code_of_ordinances?nodeId=COOR_CH17CPURI-W

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4. Regarding the Versailles Road II projects, when the final paving and restoration work is completed, does Kentucky-American expect that actual projects costs will be less than projected?

Response:

Final paving and restoration for this project has been completed since the date of KAW's September 22, 2021 balancing adjustment filing in this case. The actual project cost as of this response is $852,986.43, making the variance $12,986.43 above the projected cost.

For this project, final paving extents were estimated based on a five-foot wide final pavement area detail as contained in LFUCG's Standard Drawings for Trenching (Drawings 201-1 through 201-4) for the full length of the project, plus additional estimated square yards of pavement for intersections or service line lateral cuts. However, LFUCG Ordinance Section 17C[1] is performance based (general guidelines with engineering analysis specific to each street cut) and LFUCG has declined to provide final paving extent requirements prior to construction. Final paving requirements are determined by LFUCG's inspector only after the mains and service lines are installed. The final required pavement restoration area for this project ended up covering full lane width (approximately eight feet wide) on roughly half of the project, with additional full street width (curb to curb) paving on areas where the service line lateral cuts were deemed to be "close together." The LFUCG inspector is the person who makes the determination as to how close the service lateral cuts can be before requiring curb to curb paving so this cost can vary from project to project and is not known until construction is nearly complete.

Additionally, full pavement was required on several of the courts/cul-de-sacs on this project by the LFUCG inspector due to service line lateral cuts.

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5. Regarding the Castlewood Phase I and II projects, describe how often Kentucky-American finds unmarked and unplanned for storm and sanitary lines and what steps have been taken to address the issue.

Response:

Unmarked and unplanned for underground utility lines are not uncommon. Frequently, this occurs because the line is abandoned or out of service, and it is therefore unmarked or unclaimed by the owner utility during the locating process. On a typical main replacement project, utility locates are performed at least twice: once during the design phase and again before the construction contractor begins excavating. This process is not always exact, and KAW does encounter unmarked lines from time to time. Generally, these are not as impactful to the project because the conflicting line is perpendicular, and only requires an additional few fittings for the water main to go above or below the conflict point.

On Castlewood Phase I and II projects, however, the conflicting underground utility was in a parallel alignment and in close proximity to the proposed water main alignment on nearly all of the proposed streets: Avon, Burnett, Glenn, Arceme, Carlisle, and Devonia. Rather than incur an additional expense associated with a change order to excavate and remove the abandoned utility lines, KAW adjusted the alignment of the proposed water main to avoid the conflict. This required adjustment of several connection locations and the addition of many more fittings and bends.

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6. Regarding the Winchester Road project, explain why the erosion control expense was higher than projected, resulting in a contractor labor overage.

Response:

The Winchester Road project included a directional drill bore where the proposed water main crossed beneath a stream and another bore beneath Hume Road. Due to wet weather at the time of construction and the location of these crossings being in low elevation points near the stream, the surrounding ground areas were saturated at the time of construction. Because the ground area was saturated, the construction equipment created more disturbance that required more surface restoration than planned. Additional erosion control measures were used to help offset these disturbances, but due to weather, the construction contractor had to regularly ensure that the erosion control measures remained in place and effective. Erosion control can include straw matting, inlet covers/buffers, silt fences, rock, etc. Regular construction activity or heavy rainfall events can cause these devices to shift or fall out of place. Ongoing monitoring and adjustment were needed to ensure they remained properly installed and effective.

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7. Regarding the C line project, confirm that Kentucky-American experienced a greater number of actual main breaks, which increased the project cost.

Response:

The estimated annual cost for C line projects is based on five-year historical averages. Of the past five years, the number of main breaks in the past two years has increased compared to the three years prior to that. So, yes, KAW confirms that main breaks during QIP Year 1 (July 2020-June 2021) were higher than the five-year average.

July 2020-June 2021: 212 breaks
July 2019-June 2020: 230 breaks
July 2018-June 2019: 160 breaks
July 2017-June 2018: 113 breaks
July 2016-June 2017: 190 breaks