OVERVIEW – VILLAS OF ARDEN MILLS DOMESTIC WATER SYSTEM

The Pa. American Water Co. (PAWC) delivers service via a 12-inch main line on the south side of Main Street, which has a tap for Villas of Arden Mills and a 6" feeder line to the meter and other equipment which are located inside a covered pit to the right of the entryway. The Association owns all piping that connects from the meter to each building or fire hydrant. This 8-inch PVC main water line has a tap for each building which connects via 1 ½-inch PVC to a curb stop (top painted blue) which is located near each building. The curb stop contains a shutoff valve for the building. From the curb stop a 1-inch soft copper line enters the building in the utility closet for the master unit. Water service is then distributed from the master unit to each of the other unit utility closets for this building, each with their own individual shutoff valve. All piping from the unit shutoff valve within the unit is the responsibility of the unit owner. In addition to its own shutoff valve, the master unit may also have a master shutoff valve for the building.

General Information

There are 2 as-built drawings in engineering detail located in the Clubhouse office that show the path of the main water line, the location of the building tap lines, the location of the curb stops, and the various gate valves to assist in Community section isolation (later section of this document). One drawing is for Phase I and is labeled: Villas of Arden Mills Water Plan Sheet 13 of 17. The other drawing is labeled: Villas of Arden Mills Phase II Water Plan Sheet 11 of 16. A list of curb stop locations is stored on the web site for most buildings, but we have been unable to locate 4 curb stops. The T-Bar and key for Building curb stop access and shutoff are located inside the Clubhouse utility room. The T-Bar for gate valve shutoff on the main water line is located there as well. All water issues must be reported to the Management Co., as they are the resident of record with PAWC.

Meter Pit Detail

The Pit is a pre-cast cement structure whose physical dimensions inside are a 6-foot depth, by 6 ½ foot width, by 19-foot length. The entry cover has two 32 X 64-inch lids sitting on top which are cantilevered to assist opening & closing and have a safety latch to keep the lids open when access is required. To open the lid, there is a set screw in the top right lid that must be removed with a screwdriver. To close the cover, lift the red handled latch and push each lid down separately. Replace the set screw. Sometimes the pit will have water buildup in the bottom. Note the clothesline rope wound around the red handle on the right. By pulling this rope you will activate the sump pump, which will drain the pit. See Picture 1.

Picture 1 – Pit Access and Covers opened. Pond 1 in background.

The entire inside of the pit is as follows: Entry PAWC 6-inch service line, 2-inch meter bypass line, Gate valve #1, Meter apparatus, Bleeder Valve, Gate valve #2, Gate valve #3, Backflow Protection apparatus, Gate valve #4, Exit 6-inch service line to VOAM Water System. Other items: Sump Pump and Tap for local Entry Area shrub & plant watering. See Picture 2.

Picture 2 – The major components of the Pit are shown from the exit end looking back toward the entry end.

The PAWC 6-inch water service line has a gate valve installed on each side of the meter to facilitate meter replacement, when needed. There is also a 2-inch meter bypass line to enable service to continue during meter replacement. This bypass line has a shutoff valve which is closed during normal use. The meter face details are shown in Picture 3.

Picture 3 – New meter face.

Upstream from the meter, there is a bleeder valve installed to enable the removal of air from the line during meter replacement and other maintenance activities. Moving upstream there are 2 more gate valves installed in conjunction with the backflow protection apparatus. The backflow protection apparatus keeps water from flowing back into the PAWC system should they have an interruption in service. See Picture 4.

Picture 4 – Backflow Protection Apparatus.

This apparatus must be tested annually by a certified plumber. The PAWC notifies the Management Co. when this is to be scheduled. The Management Co. notifies the plumber & Buildings & Roads. The plumber will test the backflow protection apparatus and fill out and submit the required paperwork to PAWC. PAWC technicians have recommended that in conjunction with this annual test, all gate valves in the pit be operated to the full open and full closed positions. The plumber is also requested to report any gate valve leaks discovered during this inspection. Buildings & Roads personnel have been able to repair all leaks to date by opening the gate valve to its fullest extent, and tightening the packing nuts, if leaking continues. A more elaborate process to replace the packing is the next step, and finally replacing the valve may be required. A local distributor is Cox, in Bethel Park for O-rings & packing. Attachment 1

has the full documentation for repair & maintenance for our gate valves. It states: “The Kennedy Valve Resilient Wedge Gate valve requires no routine maintenance, except that the valve must be operated at least once a year to prevent stem binding due to rust and encrustation”. A sump pump is installed sitting on the bottom to keep the pit relatively dry. It nearly empty’s the pit, and is float activated. It discharges onto the bank of Pond 1. There is also a tap for a service PVC line to enable watering of plants & shrubs in the Entry area. This must be disconnected at the union to drain it for the winter and reconnected in the spring.

Main Water Line & Building Tap Line Detail

There are 2 drawings in engineering detail located in the Clubhouse office that show the exact path of the main water line, the location of the building tap lines, the location of the curb stops, and the various gate valves to assist in section isolation (later section of this document). Notations on each drawing give the distances from such items as the curb to assist in locating the main line. The main line itself is 8-inch C-900 plastic and is approximately 8 feet deep. It is surrounded by gravel and backfilled. Approximately 3 feet below street level there is a 6-inch french drain, which will be encountered first in any excavation. See Picture 5.

Picture 5 –Main Water Line surroundings at the Clubhouse repair site.

A saddle tap is used to interface the main line to the building tap line. See Picture 6.

Picture 6 – Saddle Clamp interface from main water line to building tap line. Broken one from the Clubhouse repair is pictured.

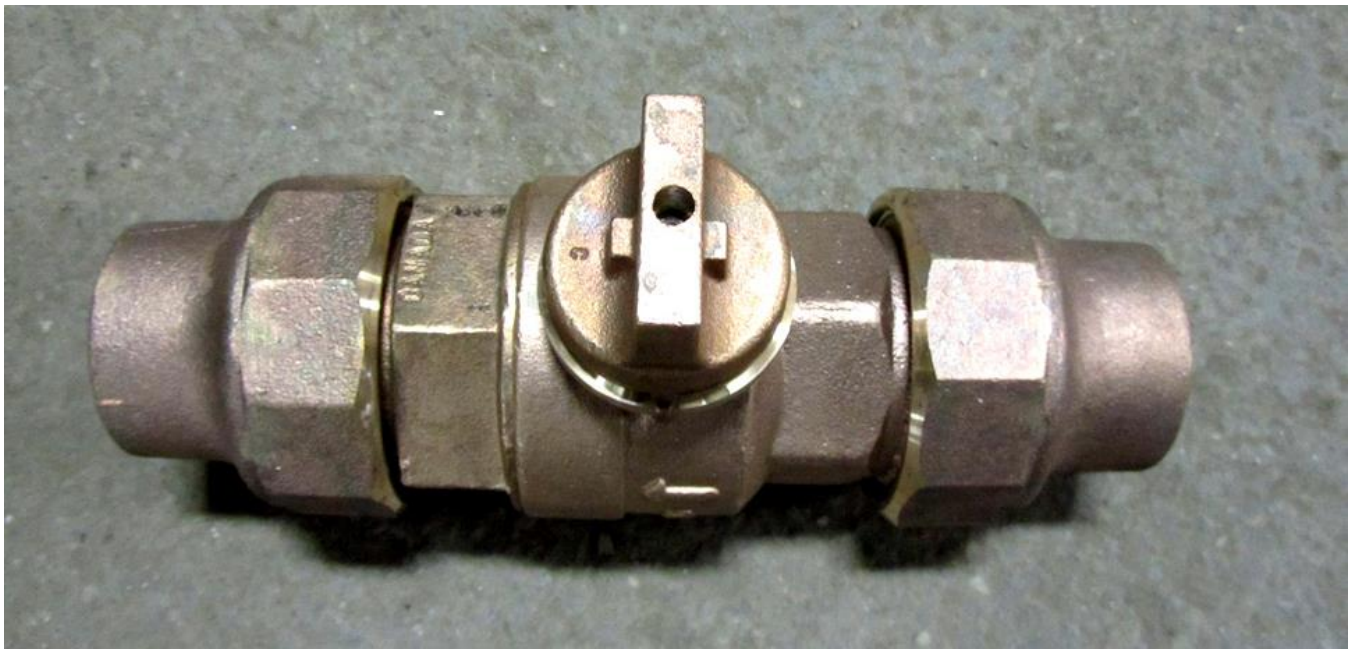
The building tap line (1 ½ inch SDR21) extends from the main line saddle tap to the curb stop. The building tap line starts at the same depth as the main line and then runs to the depth of the curb valve, which differs for each building. See Picture 7.

Picture 7 – PVC building tap line to Building 1 on left, middle. To Clubhouse on right following the repair and new saddle valve install.

Curb Stop Box Detail

A curb stop box (top painted blue) is located near each building. This can be a standard top, a domed top, or a slotted top. A blue line has been painted on the curb to indicate the general location of the curb stop box. These must be repainted periodically. The curb stop box contains a curb valve for the building. This curb valve can turn the water on and off to a building. See Picture 8.

Picture 8 – Curb Valve



A list of curb stop locations, containing distances from each building corner and street curb, is stored on the web site for most buildings, including a picture of where it is located. (Attachment 2). (We have been unable to locate 4 curb stops.) Locate the curb stop external to the building either visually or using the pictures or measurements from the web site. For standard curb stop boxes, Insert the five-sided key onto the five-sided nut. Turning the key counterclockwise will permit the removal of the threaded access plug. For domed or slotted top boxes, just remove the top. Insert the T-Bar into the vertical access pipe until it reaches the curb valve. Turn the T-Bar until it slides into place on the notched top of the curb valve. A curb valve only needs 1/4 of a turn to open or close it fully. Like all valves it should never be jerked or operated with excessive force, even pressure must always be applied. Should you need to excavate to find the curb valve, we have also recorded the depth of each curb valve on the web site (future addition). We have unearthed 3 curb valves to date. Each have been approximately 8 feet deep. From the curb valve a 1-inch soft copper line runs underground and under the slab and enters the building in the utility closet for the master unit. The T-Bar and

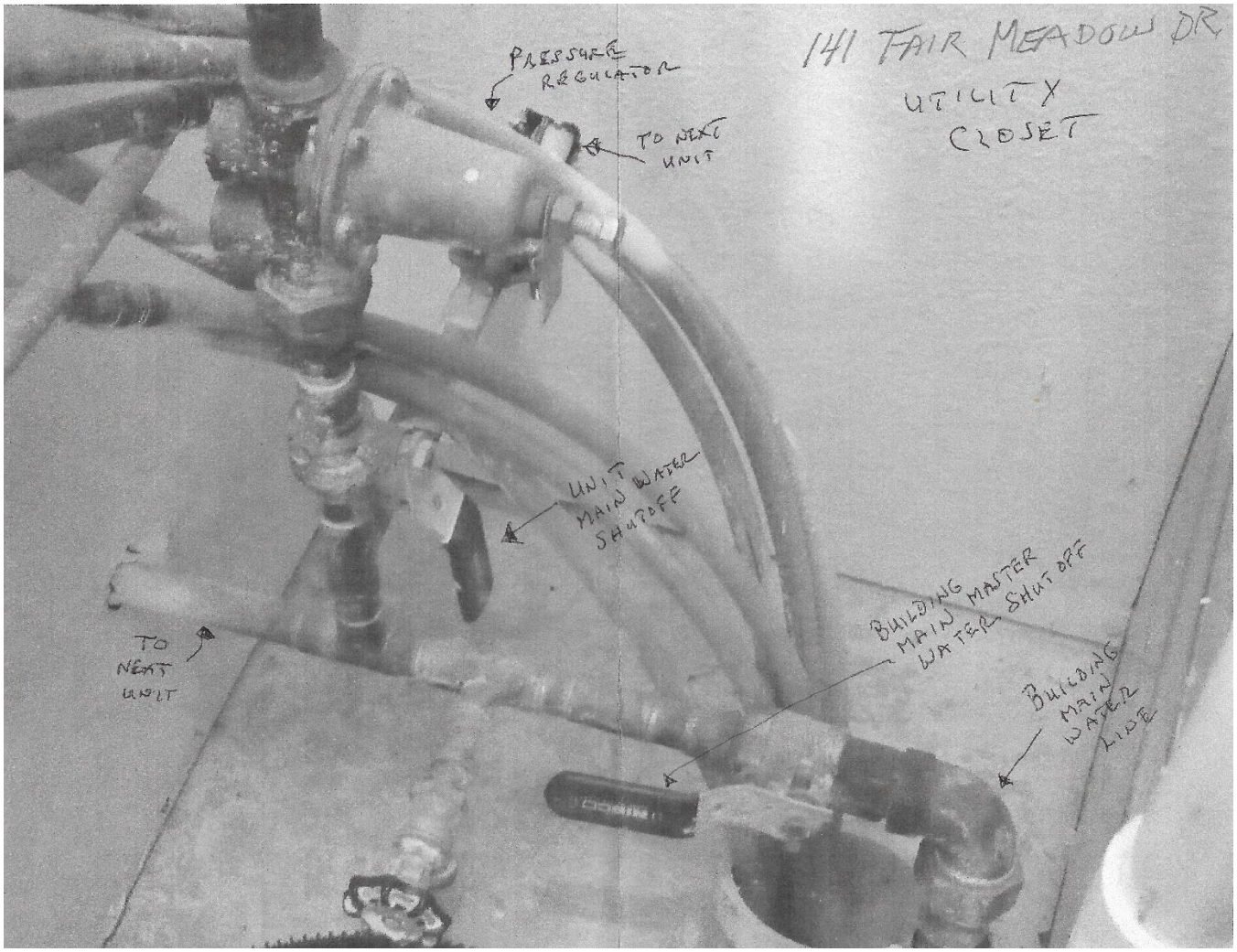
key for Building curb stop access and shutoff are located inside the Clubhouse utility room. See Picture 9.

Picture 9 – Water System shutoff tools located in the Clubhouse utility room. On the left wall is the T-bar and access key for most curb stop boxes. The taller one in the middle is for deeper curb stop boxes. The rightmost one is the T-bar for gate valve shutoff on the main water line.

Utility Closet Detail

The 1-inch soft copper line from the curb valve enters the master unit in the utility closet. Water service is then distributed from the master unit to each of the other unit utility closets for this building, each with their own individual shutoff valve. See Picture 10.

Picture 10 – Typical Unit Utility Closet/Area Water Configuration



All piping from the unit shutoff valve within the unit is the responsibility of the unit owner. Between the unit shutoff valve and the distribution piping within the building is a pressure regulator. This pressure regulator should have been adjusted to 50 psi for the piping within our units. In addition to its own shutoff valve, the master unit may also have a master shutoff valve for the building. Issues with this arrangement have occurred in the past when a new resident is unaware that they are the master unit and have shutoff the master valve. We have tagged each unit water shutoff valve and master shutoff valve to avoid confusion. See Picture 11.

Picture 11 – Tags applied to the Master Shutoff Valve and the Unit Shutoff Valve.

Community Section/Building/Unit Leak Detection Procedures.

Identifying a leak in the main water line is usually determined by water surfacing in a section of the Community. However, the main water line should be the last choice when searching for a leak identified by an elevated water bill/usage. Start at the master unit utility closet and work backwards to the Building curb boxes and then the building access line to the curb box, and if you cannot locate a leak, then finally investigate the main line. This portion of the Water System Documentation assumes that there is an ongoing process to identify leaky toilets, running humidifiers, and valve leaks in resident units and that the increased water usage is associated to a leak in the system.

Unit Isolation Procedure

A water line issue in a unit is usually very evident. Turn the unit valve to the shutoff position. If the leak stops, the issue is within the unit and is the responsibility of the resident. If the leak does not stop, the leak may be in the line from the master unit to the leaking unit. A building master valve may be present, turn it off. If not, water will need to be turned off at the curb box. If there is no curb box identified for this building, the Community Section must be isolated. Once the water has been turned off, you now need the services of a licensed plumber. The Association is responsible for these repairs.

Building Isolation Procedure

Identifying a leak in the line from the curb box to the building master unit is the next step. This is a process of elimination. First issue a Community wide message that the water will be off in the Community for up to a 4-hour period starting at a specific time. Ask the residents to not use water during this time period. Station a person at the meter pit to watch the meter. Use cell phones to communicate. Isolate a section of the Community at a time (start with Phase II) by shutting off the curb boxes to all buildings in that section. If there is a continued flow, the leak is not in any building in this section. If the flow has stopped, turn each curb box on and see if there is a flow increase. Repeat this process for each curb box in this section. This will identify a leak to a specific building in a section. Turn all other curb boxes back on in this section. If there are multiple leaks identified in a section, or no leaks found after isolating each building in the entire Community, the leak is more likely main line related. If there are no leaks in a section, repeat this process for each of the other sections. When you have identified the building with the leak, leave the curb box turned off for the building and notify all residents of the building. You will now need the services of a licensed plumber. Remember – the plumber must call 811 “Dial before you dig” service.

Community Main Line Section

Follow the Section isolation procedure to stop the flow of water. You now need the services of a professional licensed plumbing company. Remember – the plumber must call 811 "Dial before you dig" service. We have used McKean Plumbing. Locating the leak source can be tricky. Where the water surfaces may not be where the line is leaking. The most likely source for a leak is at the saddle tap for a building access line or the building access line itself, unless there has been a rupture in the main line due to earth movement such as mine subsidence. Use the blue street/curb markers and the pictures on the web site to locate the curb box for the building access line. The saddle clamp to the main line provides a 90-degree outlet for the building access line to the curb box. The PVC line from the saddle clamp can provide for some minimal bending, so start digging at the main line near where the water is surfacing. Always dig in dirt first, never asphalt. You will next encounter the 6-inch french drain. Turn the water back on to this section. If water is running in this drain pipe, a camera can be inserted in the direction of the water flow and you can see where the water is entering the pipe. This will be near the location of the leak. Turn the water back off for this section. Digging to the main line depth should start where the camera indicated. Always dig in dirt first, not the asphalt. Carefully uncover the saddle clamp and building access line. Turn the water back on momentarily to locate the leak source. Follow the plumbers recommended repair plan. Don't utilize off hour or weekend rates for these repairs. These are very expensive. The Community section will survive until the repair is completed. If absolutely necessary, arrange for a water buffalo.

Community Section Isolation Procedure

Refer to the engineering drawings for Phase I and Phase II.

There are a series of gate valves that enable the isolation of various sections of the Community. As the main water line exits the meter pit it travels toward the Clubhouse. In the parking lot in front of the Clubhouse, there are 2 gate valve access appliances. The water line has an 8" tee at this location. The right appliance as you face the Clubhouse contains the shutoff gate valve for the beginning of Glen Arden Circle. The left appliance is the shutoff gate valve for the beginning of Fair Meadow Drive. The water line for Glen Arden Circle traverses the left side of the road, crossing to the right side of the road between Building 10 and Building 5, and connects to an 8" X 8" Cross at the north corner of Glen Arden Circle and Fair Meadow Drive. Just prior to the Cross there is a gate valve access appliance which contains the shutoff gate valve for the end of Glen Arden Circle. By shutting off the gate valves at each end of Glen Arden Circle, all buildings within that section can be isolated. Water will flow to the rest of the Community thru the Fair Meadow Drive line.

The water line for Fair Meadow Drive from the Clubhouse traverses the right side of the road and connects to the Cross. Near the Stop Sign on Fair Meadow Drive there is a gate valve access appliance that contains the shutoff gate valve for the section of Fair Meadow from the Clubhouse to the Stop Sign. By shutting off the gate valves at the beginning of Fair Meadow Drive at the Clubhouse parking area and at the Stop Sign on Fair Meadow Drive, you can isolate that section of Fair Meadow Drive. Water will flow to the rest of the Community thru the Glen Arden Circle line.

The Cross enables the water line from Glen Arden Circle to continue toward Mill Creek Lane. The water line traverses the right side of Mill Creek Lane and ends at Building 31. Shortly after the water line crosses under Fair Meadow Drive there is a gate valve access appliance which contains the shutoff valve for Mill Creek Lane. By shutting off this gate valve, you isolate all of Mill Creek Lane. Water will flow to the rest of the Community thru both the Glen Arden Circle and Fair Meadow Drive lines.

The Cross enables the water line from the lower section of Fair Meadow Drive to continue up Fair Meadow Drive to the center of the traffic circle on Fair Meadow Drive. At this location there is an 8" Tee for the water line to continue toward Phase II and move to the right toward Pine Brook Court. The water line traverses the left side of Pine Brook Court and ends at Building 20. There is a gate valve access appliance located in the center of the traffic circle which contains the shutoff valve for Pine Brook Court. By shutting off this gate valve, you will isolate all of Pine Brook Court. Water will flow to the rest of the Community thru both the Glen Arden Circle and the Fair Meadow Drive lines.

The traffic circle Tee enables the water line to continue into Phase II. The water line traverses the right side of Fair Meadow Drive in Phase II and ends at Building 38. There is a gate valve access appliance located in the street where Fair Meadow Drive exits the traffic circle toward Phase II. By shutting off this gate valve, you can isolate all of Phase II and water service will continue to the rest of the Community.

Note: You cannot isolate the section of Fair Meadow Drive from the Cross to the shutoff for Phase II. To isolate this section, you must shut the water off just beyond the Cross, which will shut off the water to all of Phase II and Pine Brook Court as well. There is a gate valve access appliance just above the Glen Arden Circle intersection with Fair Meadow Drive. By shutting off this gate valve, you can isolate all upstream sections of the Community.

Draft submitted by Ron Richards on April 1, 2019
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