

**USGS National Groundwater Monitoring Network Cooperative Agreement  
Final Technical Report**

**Award Number:** G20AC00185

**Agency Name:** Missouri Department of Natural Resources, Missouri Geological Survey

**Title:** The Missouri Geological Survey proposal to perform maintenance on the Wildwood Observation Well.

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## Description of work done to support the NGWMN

The Missouri Geological Survey (MGS) has been collecting groundwater level data for over 60 years and is an existing data provider to USGS. MGS currently operates 150 groundwater observation wells. Under a previous NGWMN grant, MGS conducted downhole camera investigation of Missouri's groundwater observation wells. This investigation revealed two projects proposed for this grant period. A solid obstruction at the base of the casing in the Wildwood well which prevented the water level monitoring equipment (float and counterweight) from being removed from the well. MGS contracted with a permitted well driller to remove the obstruction to make maintenance of the well possible. Additionally, debris was found in the Akers well approximately 20 feet below the water level. This debris prevented the documentation of the casing and total depth of the well and also would inhibit the movement of the float should the water level drop below the debris. MGS staff conduct remediation activities to remove the debris and conducted a video inspection to verify the construction details of the well.

## Describe well maintenance activities

### Description of Wildwood Remediation Project

The Wildwood groundwater observation well was drilled in 2008 to a depth of 445 feet and has 166 feet of casing. The well monitors groundwater levels in the upper portion of the Ozark Aquifer from water residing in the St. Peter Sandstone. Downhole camera inspection, funded by previous NGWMN grant, revealed a blockage at the bottom of the casing which prevented groundwater monitoring equipment from being removed from the well and maintained.



Wildwood well blockage

On June 22, 2021 contractors arrived at the site to commence activities to remove the blockage. After the project was completed, staff conducted another video inspection to document that the obstruction had been removed (see video screen shot below). Monitoring equipment was reinstalled and the site was back on line later that same day recording and transmitting water level data.



Wildwood well  
after blockage  
removal

ADD SCREEN SHOT FROM CLEARED WELL

### Description of the Akers Remediation Project



Debris in Akers well

MGS staff conducted field work to remove debris in the Akers well. A device was lowered into the well that “snagged” the debris which could then be pulled to the surface and removed. After removal, the debris was identified as old monitoring equipment cables that had been dropped and lost down the hole. After the well was cleared of debris a new downhole camera video inspection was conducted. This inspection provided evidence that this well was originally completed with 95 feet of casing, which was previously unknown. The video log indicated that the geologic formations below the bottom of the casing were highly fractured and it was evident that pieces of the formation had fallen into the well. The video log also revealed the top of the pump drop pipe at a depth of 128 feet. Rock appeared to have been dislodged from above and had become wedged in the hole alongside of the pump pipe. While the total depth of the well is reported to be 425 feet, that could not be confirmed due to the pump pipe and blockage.

It was determined that while the well is not open to the total depth, it is still capable of monitoring the water level of the aquifer. The blockage prevents equipment from being lowered deeper into the well, but does not prevent communication of the water from above and below the blockage. At this site the Ozark Aquifer extends from the surface to an approximate depth of 500 feet. Water levels have been recorded at this site since 1971 and have never dropped below 68 feet. Therefore the blockage at 129 feet should not cause a problem with the continued use of this well to record water level changes in the Ozark Aquifer.

Data in the NGWMN portal has been updated to reflect the now confirmed 95 feet of casing in the Akers well.