Questions and answers regarding the request for the designation of an Irrigation Non-expansion Area in Hualapai Valley Groundwater Basin

1) What is an Irrigation Non-Expansion Area ("INA") and what does it mean to the Hualapai Valley Groundwater basin?

Answer:

In response to concerns from the community regarding the long-term supply of groundwater, the Mohave County Board of Supervisors requested that the Director consider whether to establish an irrigation non-expansion area in the Hualapai Valley Groundwater Basin.

Information about the INA process for the Hualapai Valley Groundwater Basin can be found on ADWR's website here: https://new.azwater.gov/hualapai-valley-ina-request . Further, you can watch the public meeting which describes the regulatory features of an INA and the hydrologic conditions of the Hualapai Valley Groundwater Basin. The direct link to the recording of the public meeting can be found here: https://www.youtube.com/watch?v=SVxu6oeozQQ .

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2) What changes occur with the establishment of an INA?

Answer:

- Pursuant to A.R.S. § 45-437(A), the irrigation of new acres is prohibited. Only acres that have been irrigated within the five years preceding the initiation of the procedures to designate an INA may be irrigated after the INA is formed. This prohibition does not impact fields under two acres in size or lands where a "substantial capital investment" was made to bring the land into cultivation during the five years preceding the initiation of the procedures to designate an INA.
- Most non-exempt wells (equipped to pump over 35 gallons per minute) will require metering.
- Owners withdrawing groundwater from non-exempt wells are required to file annual water use reports.

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3) Are there well drilling or groundwater withdrawal restrictions in Arizona for companies owned and operated outside of the United States?

Answer:

Outside the Active Management Areas, there are no restrictions on drilling a well, so long as the necessary forms are completed and filed with ADWR, requirements are met, and an Arizona-licensed well driller drills the well.

4) ADWR has issued water adequacy determinations for the Hualapai Valley Groundwater basin. What has changed since those determinations were issued?

Answer:

All water adequacy determinations in the Hualapai Valley basin that groundwater would be physically available for 100 years were issued prior to the release of the USGS numerical models. The USGS numerical models provide more accurate information about the likely effects of additional pumping.

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5) Can you describe what determinations ADWR has made for the Hualapai Valley groundwater basin?

Answer:

Specifically, the Department has issued the following determinations the Hualapai Valley Groundwater basin:

· 53 Water Reports. 53 water reports determining 100-year water adequacy have been issued to landowners for proposed subdivisions. Of those 53 water reports, 46 were issued as inadequate water supply reports and seven were issued as adequate water supply reports. The most recently issued adequate water supply report was issued in 1981 based on hydrologic information presented to ADWR at that time.

· One Analysis of Adequate Water Supply. Analyses of adequate water supply are typically obtained by applicants to reserve a specific volume of groundwater for a proposed development for 10 years until water reports are obtained, with opportunities for additional five-year extensions. An analysis of adequate water supply was issued in 2006 for Mardian Ranch based on a hydrology study completed in 2006, prior to the release of the USGS numerical models. In 2021, ADWR granted a second five-year extension for this analysis. Under ADWR rules, ADWR may not consider hydrologic information in determining whether to grant the first and second five-year extensions of an analysis. *See* A.A.C. R12-15-712(H).

· Two Designations of Adequate Water Supply. Two designations of adequate water supply were issued to City of Kingman and Cerbat Water Company for demands within their service areas. Those designations were issued in 1973 and 1998, respectively, based on hydrologic information available at the time.

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6) Are there reporting requirements, or reporting agreements, in Mohave County for water uses?

Answer:

ADWR does not have the authority to require reporting of water use outside of an Active Management Area. Water use data for the Hualapai Valley basin is either voluntarily reported through ADWR's Community Water Systems program or is estimated by the USGS under contract with ADWR.

7) Does ADWR monitor agricultural best practices, such as pH levels in soil, in Mohave County?

Answer:

ADWR does not collect data on agricultural best practices implemented outside the Active Management Areas. Several representatives of Mohave County agriculture who spoke at the recent meeting in Kingman offered to provide information and/or tours of their operations. Alternatively, the Mohave County University of Arizona Cooperative Extension might have information regarding local soil amendment practices.

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8) What is the source of the agricultural pumping numbers that ADWR used in the preliminary modeling that was presented at the public meeting in Kingman on September 20, 2022?

Answer:

Those values came from the following USGS dataset:

Read, A.L., Cadogan, A.F., and Mayo, J.P., 2022, Estimated crop irrigation water use withdrawals in Hualapai Valley Groundwater Basin, Arizona for 2021: U.S. Geological Survey data release, https://doi.org/10.5066/P9GY1WFR

The net irrigation demand in the model is 25,805 acre-feet per year.

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9) Can ADWR provide a breakdown and source of the inflow and outflow input numbers used for the modeling that was presented?

Answer:

The following is the breakdown of input numbers used for the modeling that was presented: Inflows (AFY)
Agricultural - 2,634
Incidental - 2,990
Municipal - 2,324
Natural - 4,226
sum of inflows = 12,174

Outflows (AFY) Agricultural -
28,439
Domestic & Industrial - 3,208 Municipal -
8,787
Natural - 4,436
sum of outflows = 44,870

Notes:

AFY = acre-feet per year

Agricultural inflows & outflows from Read, A.L., Cadogan, A.F., and Mayo, J.P., 2022, Estimated crop irrigation water use withdrawals in Hualapai Valley Groundwater Basin, Arizona for 2021: U.S. Geological Survey data release, https://www.sciencebase.gov/catalog/item/62cf2c53d34e82ff904acb4a Municipal outflows from Mohave County, received by ADWR 2022

All other data from Knight, J.E., Gungle, B., and Kennedy, J.R., 2021, Assessing potential groundwater-level declines from future withdrawals in the Hualapai Valley, northwestern Arizona: U.S. Geological Survey Scientific Investigations Report, 63 p., https://pubs.er.usgs.gov/publication/sir20215077

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10) Can ADWR provide the breakdown and source of residential (domestic), commercial (industrial) and turf (golf course) uses?

Answer:

Because of the lack of required reporting, we are unable to break down the water uses further than what was presented in the public meeting. The source of the water is groundwater. For reference, those breakdowns are (in units of acre-feet for the year 2021):

1) Domestic & Industrial - 3,208
2) Municipal - 8,787
3) Agricultural - 28,439

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11) How did ADWR choose the wells that were presented at the public meeting?

Answer:

We chose three wells from ADWR's index line to present to the public, and the wells were chosen because they each have a long period of record and had been equipped with automated data recorders, so the data collection frequency is consistent for all three.

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12) How did ADWR calculate that agriculture is using 60% of groundwater?

Answer:

The 60% figure came from taking the total demand, which is the sum of domestic & industrial use, municipal use, and agricultural use, and comparing that total to each individual component. Domestic & industrial use estimates came from the USGS 2021 groundwater model. Municipal water use data were provided by Mohave County. Agricultural water use comes from the USGS field verification dataset, available online.

13) What is the total farming acreage that ADWR presented at the public meeting?

Answer:

The farmed area in the preliminary modeling results that ADWR presented at the public meeting was 13,936 acres. This represents the current (2021) area that is irrigated for agriculture. This translates to 22 inches of water per year (25,805 acre-feet / 13,936 acres * 12 inches to a foot) on the cultivated land in the model.

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14) What additional review did ADWR do of the modeling available?

Answer:

ADWR created the WEL_0024.dat file to plug into the publicly available USGS model of the Hualapai Valley Groundwater Basin (Knight et al., 2021) to produce a "current conditions" simulation to aid the Director with the decision to initiate procedures to designate the Hualapai Valley Groundwater Basin as an INA.
The process to create the file was as follows:

1. Project the wells from the USGS model (Knight et al., 2021) onto the model grid in ArcGIS
2. Overlay the USGS field verification dataset (Read et al., 2022) onto the model grid and wells in ArcGIS
3. Identify the wells that intersect the USGS mapped farm fields - these wells become the ag wells
4. Assign the pumping rates in the ag wells to match the estimates from Read et al., 2022
5. Zero out any presumed ag pumping that doesn't intersect active farm fields. "Presumed" ag pumping means pumping above 35 gpm, the exempt rate. The exception is the 7 municipal wells belonging to the City of Kingman; these were retained at 2021 rates provided by Mohave County.
6. All other wells stayed the same, including the presumed enhanced recharge projects from the City of Kingman, not all of which were confirmed to be operational. "Presumed" enhanced recharge means recharge above 35 gpm, the maximum domestic & industrial return flow rate.

ADWR ran the USGS model (hvhm_scenario_1) with the WEL package .dat files for stress periods 24 through 221 replaced with the WEL_0024.dat file. This has the effect of keeping agricultural and all other pumping the same as what was presumed to occur in 2021 and represents the continuation of current conditions in the model (please see the link under June 23, 2022 Mohave County Board of Supervisors Request letter https://new.azwater.gov/hualapai-valley-ina-request).

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15) Does ADWR know if the USGS study, SIR 2021-5077, was peer reviewed before publication?

Answer:

Please refer to the USGS to answer that question, as ADWR was not involved in the process of performing the SIR 2021-5077 study. However, the ADWR Groundwater Modeling Section reviewed the model documentation as part of the preliminary current conditions projection developed for the public meeting, and we did not identify any concerns with the model construction or calibration.

https://answers.usgs.gov/

16) Did the USGS do any stakeholder outreach for the hydrologic models they produced?

Answer:

This would be a question for the USGS team that performed the study. https://answers.usgs.gov/