

**CHAPTER 5:
PROPOSED WATER RIGHTS ATTRIBUTES
AND FUTURE USES**

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This HSR concludes by determining and describing ADWR's proposed water right attributes for past and present water uses on the Reservation (**Section 5.1**). This is followed by a summary of claimed future water uses on the Reservation (**Section 5.2**), which does not include proposed water rights attributes or descriptions or opinions of feasibility, profitability or practicability, and by a discussion of claimed water storage (**Section 5.3**).

For purposes of this HSR, ADWR took into consideration the decision of the Arizona Supreme Court in *Gila V*, and the orders of the LCR adjudication court filed on July 16, 2002, July 2, 2013 and November 10, 2015, which are discussed in **Chapter 1**. Copies may be found in **Appendix A**.

In **Chapter 3**, ADWR categorized the Hopi Tribe and United States Third Amended SOCs into 11 types of water uses. These SOCs are summarized in **Tables 3-1** and **3-2** respectively, and compared in **Table 3-3**. Some of the types of uses were based solely on past and present uses, future uses, or a combination of past and present uses and future uses, as indicated for the types of uses listed below:

- Domestic, Commercial, Municipal, and Industrial (DCMI) (future);
- Agricultural (Irrigation) (past/present);
- Evaporation from Irrigation Storage (past/present);
- Livestock and Water Storage for Stock (Stockponds) (past/present and future);
- Ceremonial and Subsistence Irrigation (future);
- Mining (past/present and future);
- Energy Resources Development (future);
- Tourism (future);
- Recreation (past/present);
- Subsurface Mineral Rights (past/present); and
- Aesthetic, Cultural and Ecological Flows (past/present).

ADWR is only proposing water right attributes for those types of uses that are based in whole or in part on past and present uses.



5.1 WATER RIGHTS ATTRIBUTES FOR PAST AND PRESENT USES

In the following sections, ADWR provides information and recommendations regarding the water right attributes listed below for past and present uses in the Third Amended Claims filed by the Hopi and the United States:

- Legal Basis;
- Priority Date;
- Types of Use;
- Water Source;
- Points of Diversion;
- Places of use; and
- Quantity of Use.

5.1.1 Legal Basis

The legal basis of the claims filed by the Hopi and the United States are described in **Sections 3.2.1** and **3.5.1** respectively. The legal basis of the claims is a matter for decision by the LCR adjudication court, and is beyond the scope of this HSR.

5.1.2 Priority Date

Based on historic occupancy and water use, the Hopi Tribe claims a water right with a time immemorial priority date, senior to that of any other claimant, Indian or non-Indian, to waters located on Hopi lands as well as water sources located outside the boundaries of the main reservation lands. The United States also claims a water right with a time immemorial priority date for the entire Reservation.

On July 31, 2013, the Special Master issued a report in which the Special Master concluded that the priority date for District 6 is time immemorial, for the Hopi Partitioned Lands is December 16, 1882, and for Moenkopi Island is June 14, 1934. Objections were filed and argued to Judge Brain on January 17, 2014. The matter is under consideration.

The priority dates for the water rights claimed by the Hopi and the United States are before the LCR adjudication court for decision. This is a legal matter that is beyond the scope of this HSR.



5.1.3 Types of Use

The Hopi Tribe and/or the United States claimed past and present and future uses for the following seven types of use:

- Agricultural (Irrigation) – Hopi and United States;
- Evaporation from Irrigation Storage – Hopi;
- Livestock and Water Storage for Stock – Hopi and United States;
- Mining – Hopi and United States;
- Recreation - Hopi;
- Subsurface Mineral Rights - Hopi; and
- Aesthetic, Cultural and Ecological Flows – Hopi and United States.

5.1.4 Water Source

ADWR evaluated the availability of surface water and groundwater for the Reservation, both of which had been claimed by the Hopi and the United States. ADWR’s review of water resources is set forth in **Chapter 2**. The Hopi Tribe additionally claims off-reservation surface water sources from the Blue Springs Complex located on the Navajo Reservation. The availability of surface water and groundwater sources are affected variously by drought, location, and water quality considerations.

Legal issues also affect the availability of certain water sources. *See e.g.* LCR adjudication court Minute Entry order dated March 2, 2009, discussed in **Chapter 1** and included in **Appendix A** where the court held that the Hopi are precluded from claims to water from surface streams that do not abut or traverse Hopi lands. Also see *Gila III*, in which the Arizona Supreme Court stated “[a] reserved right to groundwater may only be found where other waters are inadequate to accomplish the purpose of a reservation.”¹ Whether the Hopi and United States are entitled to groundwater in order to accomplish the purpose of the Reservation is matter for the LCR adjudication court, and is beyond the scope of this report.

¹ *In re the General Adjudication of All Rights to Use Water in the Gila River System and Source*, 195 Ariz. 411, 420, 989 P.2d 739, 748, ¶ 28(1999).



5.1.5 Points of Diversion

The Hopi Third Amended SOC does not identify any points of diversion *per se*, but instead references locations of point sources listed and depicted in certain appendices of the United States Third Amended SOC. The United States Amended SOC also does not identify any points of diversion *per se*, but instead references locations of point sources listed in certain appendices of the its claim.

5.1.6 Places of Use

The places of use claimed by the Hopi and the United States include District 6, Hopi Partitioned Land, and Moenkopi Island. ADWR's proposed water right attributes are presented separately for each place of use where appropriate. For example, the quantity of water use for Agricultural (Irrigation) was divided among the three places of use based on where each field is located.

5.1.7 Quantity of Use

As discussed in **Chapter 4**, ADWR evaluated the seven types of claimed past and present uses in order to quantify the water right attribute for each type of use. A discussion of the water right attributes quantification proposed for each type of water use, based on the review and findings from **Chapter 4**, follows below. **Table 5-1** includes ADWR's proposed quantities of use for past and present water uses on the Reservation.

5.1.7.1 Agricultural (Irrigation) – Hopi and United States

In its Third Amended SOC and Supplement, the Hopi Tribe claims a total water use of 102,303 AFA for irrigation purposes on 26,921.9 acres of land. In its Third Amended SOC, the United States claim a total water use of 28,417 AFA for irrigation purposes on 13,032 acres of land.

As discussed in **Chapter 4**, ADWR reviewed the claimed acreages and verified 26,271 acres claimed by the Hopi and 13,022 acres claimed by the United States. However, the verified acres represent a composite of the lands that are believed to have been irrigated at any time during approximately the last 80 years. Instead of the composite acreage claimed by the Hopi and the United States, ADWR recommends that the water right attribute for agricultural uses be based on



the maximum acreage believed to have been irrigated in any single year, which is 9,553 acres as claimed by the United States and Hopi in their Second Amended SOC's.

ADWR further believes that an appropriate water right attribute for lands irrigated on the Hopi Reservation must recognize that both modern and traditional farming practices have been and continue to be in use. ADWR calculated that the water duties for modern acres and traditional acres are 4.33 and 0.93 acre-feet per acre, respectively. Applying these water duties to 424 acres using modern farming practices and 9,129 acres using traditional farming practices, as claimed in the Second Amended SOC's of the Hopi and United States, results in a total water use of 10,325 AFA. Based on these calculations, ADWR proposes a water right attribute for agricultural use of 10,325 AFA.

ADWR determined the location of the claimed acreages so that the total proposed water right attribute of 10,325 AFA could be presented separately for each of the three places of use, District 6 lands, Hopi Partitioned Lands (HPL), and Moenkopi Island. For each of these places of use, ADWR determined the total number of modern and traditionally farmed acres and their associated quantity of use. The results are presented below (acres and volumes have been rounded to the nearest whole number) as well as in **Table 5-1**:

District 6	82 modern acres	353 AFA water use
	6,211 traditional acres	<u>5,776</u> AFA water use
	Sub-total	6,129 AFA water use
HPL	0 modern acres	0 AFA water use
	2,625 traditional acres	<u>2,442</u> AFA water use
	Sub-total	2,442 AFA water use
Moenkopi	342 modern acres	1,481 AFA water use
	293 traditional acres	<u>273</u> AFA water use
	Sub-total	1,754 AFA water use

5.1.7.2 Evaporation from Irrigation Storage – Hopi Tribe

In its Third Amended SOC, the Tribe claims 192 AFA for evaporation losses from two reservoirs, Pasture Canyon and Lower Lagoon, based on a net evaporation rate of 4 feet per year.



In **Chapter 4**, ADWR determined that the claimed annual evaporation rate of 4 feet was less than the range of 4.5 to 6.1 feet calculated by ADWR. In addition, ADWR verified the existence of Pasture Canyon and Lower Lagoon in Moenkopi Island. Based on these findings, ADWR proposes a water right attribute of 192 AFA for past and present evaporation from irrigation storage.

5.1.7.3 Livestock and Water Storage for Stock – Hopi Tribe and United States

In its Third Amended SOC and Supplement, the Hopi Tribe claim a total water use of 6,184 AFA for livestock purposes based on the capacities of 1,012 past and present impoundments. In its Third Amended SOC, the United States claims a total water use of 3,388 AFA for livestock purposes based on the capacities of 1,001 past and present surface impoundments.

As described in **Chapter 4**, the impoundments claimed by the Hopi and United States almost completely overlapped. The United States provided both water surface areas and capacities for all of its claimed impoundments. The Hopi Tribe only provided the capacity of each impoundment. ADWR evaluated the claimed capacities and concluded that the United States claimed capacity of 3,388 AF for livestock purposes is more representative of actual historical and current conditions.

As further discussed in **Chapter 4**, ADWR identified eight (8) impoundments that do not meet the criteria to be classified as an impoundment for livestock purposes and, therefore, the associated storage volume should be subtracted from the United States claimed volume of 3,388 AF. Seven (7) of the impoundments claimed by the United States, with a total volume of 9.015 AF, did not have visible evidence of water storage to be classified as a water storage impoundment (see **Section 4.4.3.2**). In addition, the United States and the Hopi claimed Pasture Canyon reservoir, with a capacity of 212 AF, as a water storage impoundment for livestock purposes. ADWR concluded that the primary purpose is storage for agricultural purposes and therefore it should not be classified as a water storage impoundment for livestock purposes. ADWR subtracted the claimed volumes of the eight impoundments (221 AF) from the claimed total volume which resulted in a water right attribute of 3,167 AFA for past and present water storage for livestock purposes.



ADWR determined the location of each of the 993 impoundments so that the total proposed water right attribute of 3,167 AFA could be presented separately for each of the three places of use, District 6 lands, HPL, and Moenkopi Island. For each of these places of use, ADWR determined the total number of impoundments and associated volume within each of the three places of use. The results are presented below (the volumes have been rounded to the nearest whole number) as well as in **Table 5-1**:

District 6	542 impoundments	1,391 AFA capacity
HPL	439 impoundments	1,749 AFA capacity
Moenkopi	12 impoundments	27 AFA capacity

5.1.7.4 Mining – Hopi Tribe and United States

In their Third Amended SOCs, the Hopi Tribe and the United States claim 1,255 AFA of water use for current coal mining purposes. In **Chapter 4**, ADWR determined that the quantity claimed was supported by data contained in a USGS report. Based on this finding, ADWR proposes a water right attribute of 1,255 AFA for past and present mining.

5.1.7.5 Recreation – Hopi Tribe

In its Third Amended SOC, the Hopi Tribe claims 41 AFA of water use for recreational purposes at Keams Lake. The Hopi claim the right to continuously fill Keams Lake to its maximum capacity of 27.8 AF and also claim evaporative losses of 12.8 AFA.

ADWR reviewed aerial imagery and verified the existence of Keams Lake with a visible water surface within the Hopi Partitioned Lands. Since the lake is currently filled, the water required to maintain Keams Lake is limited to replenishment due to evaporative losses. In **Chapter 4**, ADWR determined that the claimed annual evaporation rate of 4 feet was less than range of 4.5 to 6.1 feet calculated by ADWR. In addition, ADWR determined that the claimed surface area of 3.2 acres was reasonable. Based on these findings, ADWR proposes a water right attribute of 13 AFA (rounded) for past and present recreation. ADWR is not proposing a separate water right attribute related to continuous fill of Keams Lake.



5.1.7.6 Subsurface Mineral Rights – Hopi Tribe

In their Third Amended SOC, the Hopi claim 40,295 AFA of water for the Tribe's proportional share of the Blue Springs complex. The Tribe's claim is for both instream flows and consumptive use and it asserts the right to "transfer" this claimed use for consumptive or non-consumptive purposes. The Blue Springs complex is located off Hopi Reservation in the lower Little Colorado River area. The Little Colorado River does not cross Hopi Reservation lands. The Hopi claim is based on the partitioning of the Joint Use Area between the Hopi Tribe and Navajo Nation according to the 1974 Settlement Act. This claim is also based on the Tribe's assertion that subsurface water conforms to the definition of a mineral and therefore is subject to the 1974 Act.

There are multiple legal issues associated with claimed water use for subsurface mineral rights as listed above. These legal issues are matters for decision by the LCR adjudication court, and therefore beyond the scope of this HSR.

5.1.7.7 Aesthetic, Cultural and Ecological Flows – Hopi Tribe and United States

In their Third Amended SOCs, the Hopi Tribe and the United States claim a maximum of 294 AFA of water use for riparian and wetland habitat in Pasture Canyon, which is located in Moenkopi Island. In **Chapter 4**, ADWR determined that the claimed amount fell within the range of 165.7 AFA to 317.0 AFA calculated by ADWR for the number of acres of riparian vegetation and wetlands claimed by the Hopi and United States. Based on this finding, ADWR proposes a water right attribute of 294 AFA for aesthetic, cultural and ecological flows in Pasture Canyon.

In its Third Amended SOC and Supplement, the Hopi claim 16 AFA (rounded) for flows in White Ruin Canyon Wash. As stated in **Chapter 4**, ADWR is unable to rely on the information provided in the draft report related to measurement of flows in White Ruin Canyon Wash and therefore presented no findings with regards to this claim. ADWR is not proposing a water right attribute related to flows in White Ruin Canyon Wash.

In addition, in its Third Amended SOC the Hopi claim a non-diversionary water right for instream flows in the lower Little Colorado River for aesthetic, cultural and ecological flows. ADWR is not proposing a water right attribute related to this claim because it is not quantified and it raises legal issues that are matters for decision by the LCR adjudication court, and therefore beyond the scope of this HSR.



5.2 SUMMARY OF FUTURE WATER USES

ADWR provided descriptive and technical information related to future water uses in **Chapters 2 and 4** of this HSR, but is not proposing water right attributes for those future water uses. The descriptive and technical information presented, including the estimated quantity of water to be used for each future use, was based on information provided to ADWR by the Hopi Tribe and the United States. The types of water use based in whole or in part on future water uses are listed below:

- Domestic, Commercial, Municipal, and Industrial (DCMI) – Hopi and United States;
- Livestock and Water Storage for Stock (Stockponds) – Hopi and United States;
- Ceremonial and Subsistence Irrigation – Hopi and United States;
- Mining – Hopi and United States;
- Energy Resources Development - Hopi; and
- Tourism – Hopi.

The total future water use claimed in the Hopi Tribe’s Third Amended SOC and Supplement is 46,355 AFA. The total future water use claimed in the United States Third Amended SOC is 21,220 AFA. **Table 3-3** provides the estimated quantity of water for each future use as claimed by the Hopi and United States.

5.3 CLAIMED WATER STORAGE

In its Third Amended SOC, the Hopi claim the right to store 333 AF of water in Pasture Canyon and Lower Lagoon Reservoirs. ADWR has assigned water right attributes for evaporation from these reservoirs and for the irrigated lands served by the water stored in these reservoirs. ADWR believes the right to store water in these reservoirs should be recognized, but that no quantity of use should be assigned to that right.

