

MOAB WATER FACTS

City of Moab Water Conservation and Drought Management Advisory Board

Updated June 2019

Estimated Current and Future Water Use for Moab & Spanish Valley

Water Provider	Estimates of current groundwater use	Estimates of groundwater production potential	Estimates of projected groundwater requirements
Moab City	2,283 AF ²	5,401 AF ²	City at build-out: 9,434 AF ²
Grand Water & Sewer Services Agency (GWSSA)	830 AF ³	3,940 AF ³ (reported as 9,444 AF yet only 3,940 AF of water rights exist)	GWSSA by 2060: 1,550 AF ³
San Juan Spanish Valley Special Services District (SJSVSSD)	0 AF (residents currently use existing wells & springs)	500 AF ¹	SJSVSSD by 2060: 500 (5000 if full rights are developed as stated in the SJSVSSD 40-year water right plan) ¹
Private Wells for domestic use	400 AF ¹	400 AF ¹	If use stays the same: 400 AF ¹
Irrigation wells & springs (private)	700 AF ¹	700 AF ¹	700 AF ¹
Kens Lake Diversion (GCWCD & Moab Irrigation Co. at Sheley Tunnel)	3,100 AF ¹	3,100 AF ¹	3,100 AF ¹
Moab Lower Diversions	1,783 ⁴	1,783 AF ⁴	1,783 AF ⁴
	Estimated current total groundwater being diverted = 9,096 AF	Current groundwater production potential = 15,824 AF	Estimated total future water requirements = 17,467 AF

Sources:

1. Utah Division of Water Rights
2. Moab City 2016 Water Conservation Plan
3. GWSSA 2014 Water Conservation Plan
4. Moab Irrigation Company 2017 Water Distribution Plan

Moab Area Water Rights Overview

Paper Groundwater Rights:

Moab City: 10,091 AF ²

GWSSA: 3,940 AF ³

SJSVSSD: 500 AF ¹ (pending water right appropriation for 5,000 additional AF)

Estimated private well water rights currently in use: 400 AF ¹

Estimated irrigation well water rights currently in use: 700 AF ¹

Surface water rights that are "base flow" or groundwater:

GCWCD & MIC @ Sheley Tunnel: 3,100 AF ¹

MIC Lower Diversions: 1,783 AF ⁴

Total amount of groundwater currently considered appropriated:

Paper water rights (15,631 total) + base flow rights (4,883) = 20,514 AF

Other Details from Division of Water Rights

Spanish Valley is currently closed to new appropriation of surface water ¹

Current Spanish Valley groundwater appropriation limit is 6.73 AF ¹

Spanish Valley groundwater is open to transfer appropriations ¹

The adjudication process currently being administered by the Division of Water Rights will be ongoing for at least another year.

Conversions and Acronyms:

AF=Acre Foot or Acre Feet

1 AF=325,851 gallons

cfs=cubic feet per second

1 cubic foot=~7.5 gallons

1 cfs/year=236,000,000 gallons

1 cfs/year=724 AF

100 gallons per minute=161.41 AF

GWSSA=Grand Water and Sewer Service Agency

SJSVSSD=San Juan Spanish Valley Special Service District

UDWRi=Utah Division of Water Rights

GW=Groundwater

GCWCD=Grand County Water Conservancy District

MIC=Moab Irrigation Company

TNC=The Nature Conservancy

GCA=Glen Canyon aquifer

VF=Valley Fill aquifer

MAWP=Moab Area Watershed Partnership

Estimates of Annual Use:

single-family home with landscaping = 1.0 AF
condominium without landscaping = .45 AF
seasonal cabin without landscaping = .25 AF
hotel room = .36 AF

Overall Moab Usage:

Residential 50%
Nightly Accommodations 16%
Other commercial and Institutional 17%
Cemeteries & Parks 3%
Water Loss 6%
Other 8%

Common Household Uses of Drinking Water (Gallons per Capita per Day)

Bathing: 20
Toilet Flushing: 24
Lawn Watering and Pools: 25
Laundry: 8.5
Dishwasher: 4
Car Washing: 2.5
Drinking and Cooking: 2
Garbage Disposal: 1

Wastewater Treatment Quick View

Old plant averaged 1 Million Gallons per Day (MGD)
New Water Reclamation Facility (WRF) capacity 1.7 MGD
Old plant used 2 Million Gals of water per month.
New WRF uses 20,000 Gals of water per month.

Groundwater or Surface Water?

Surface water comes from snowmelt or rainwater runoff and is usually associated with rivers, lakes and streams. It also comes from groundwater discharging in springs or "gaining" reaches of streams. Groundwater comes from snowmelt or rainwater infiltrating the ground. It can also come from surface water (streams) infiltrating the ground in "losing" reaches of streams. Streams with water in them when there isn't any snowmelt or precipitation runoff contain groundwater that has discharged to the stream. This amount of water is called base flow. Surface water in streams generally moves quickly through an area whereas groundwater in aquifers generally moves very slowly. Surface water quality is determined by the geological strata it comes in contact with along with human-caused contaminants. Groundwater quality is determined by the geological strata it comes in contact with prior to infiltration. The law of groundwater resources is different from, but related to, surface water rights. Groundwater is extracted from underground aquifers (pumping from wells or flowing from springs), the geohydrological characteristics of which vary widely. Recharge rates can vary from year to year. In many cases, they are hydrologically interconnected to surface water resources, recharging from and discharging to water in streams and lakes.

Water Resources Key Terms

Aquifer: a geologic formation that is water bearing. A geological formation or structure that stores and/or transmits water, such as to wells and springs. Use of the term is usually restricted to those water-bearing formations capable of yielding water in sufficient quantity to constitute a usable supply for people's uses.

Build-out: the state of maximum population if all land is developed as zoned.

Discharge: outflow that is measured as the rate at which a volume of water passes a given point in a given period of time.

Flow System: bedrock controlled by topography, degree of dissection, continuity, and hydro structures; and alluvium controlled by collapsed anticlines/graben hydrostructures, topography, dissection, continuity, and deposit thickness.

Freshwater: Most of the water on earth is salty. Much of the global supply of freshwater is locked up in glaciers, ice caps, and elsewhere. This means that freshwater supplies for humans and ecosystems must come from the relatively small amounts that run off as surface water or are contained in accessible groundwater aquifers.

Instream flow protection: Relatively new principle that balances traditional demands for water withdrawals with services such as boating, fishing, ecosystem protection and scenic values.

Losing Stream: stream or reach of a stream that is losing water by seepage into the ground.

Prior appropriation water rights: Awards water rights to the first party to appropriate it and makes beneficial use of it. It is sometimes called "first in time, first in right." Riparian water rights are used in the East, where water is abundant. Municipal governments have certain protections under western water law. While riparian water law tends to arbitrate right holders as equal in status, prior appropriation creates primacies such as that first users have rights that take precedence over those coming later. It was developed because of the arid climate in the West. The first user is referred to as a senior right holder. Later users known as junior rights holders can gain access to the portion of the water not used by senior holders. Appropriation water rights are also "use it or lose it" rights. The rights exist only so long as the water is actually used; if use stops, the right is lost.

Per capita domestic supply: is the sum of public supply and domestic self-supply in relation to the population. U.S. domestic use averaged 123 gallons per person per day in 1960, 163 gallons in 1980, 164 in 2000 and 320 in 2016.

Recharge: introduction of surface or ground water into ground-water storage by natural or artificial means.

Safe yield: the amount of water that can be withdrawn from an aquifer without significant ecological impacts, which could result from reductions in streamflow where groundwater discharge to the stream provides baseflow. If the amount of groundwater withdrawn exceeds the safe yield amounts, the well can go dry. Safe yield is generally considered equal to the average replenishment rate of the aquifer from natural and artificial recharge.

Water withdrawals/consumption: Groundwater typically falls in the category of open-access resource, but in the West, groundwater laws tend to be consistent with prior appropriation. Groundwater management areas may be empowered to set and enforce rules, such as permitting, well spacing, well construction standards, allocation preferences, limited pumping rates, restrictions on place of use and water monitoring and reporting.

Water Terminology: <https://www.waterrights.utah.gov/wrinfo/glossary.asp>