



State Water Resources Control Board



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Agency Secretary

Division of Water Rights
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Arnold Schwarzenegger
Governor

APPLICATION NO. _____
(Leave blank)

UNDERGROUND STORAGE SUPPLEMENT to APPLICATION TO APPROPRIATE WATER BY PERMIT

1. State amount of water to be diverted to underground storage from each point of diversion in item 5 of form APP.

- a. Maximum Rate of diversions (1) _____ (2) _____*_____ (3) _____*_____ cfs
- b. Maximum Annual Amount (1) _____ (2) _____*_____ (3) _____*_____ acre-feet

(*) The maximum rate of diversion to underground storage is 1,130 cfs and the maximum annual amount is 328,000 acre-feet, each of which is the combined maximum amount for the two points of diversion, inasmuch as the distribution between the two points of diversion varies. This does not include the maximum rate of diversion or maximum annual amount of underground storage through use of the existing spreading area in the Kern River channel, which is variable and currently under investigation.

2. Describe any works used to divert to offstream spreading grounds or injection wells not identified in item B2 of form APP.

N/A

3. Describe spreading grounds and identify its location and number of acres or location of upstream and downstream limits if onstream.

See Table 1 (attached) and Map 2

4. State depth of groundwater table in spreading grounds or immediate vicinity:

See Table 1 (attached)

_____ feet below ground surface on _____ 19 _____ measured at a point located within the _____ ¼ of _____ ¼ of Section _____, T _____, R _____, _____ B&M

5. Give any historic maximum and or minimum depths to the groundwater table in the area.

See Table 1 (attached)

Location _____ Maximum _____ feet below ground surface on _____ (date)
Location _____ Maximum _____ feet below ground surface on _____ (date)

Additional copies of this form and water right information can be obtained at www.waterrights.ca.gov.

6. Describe proposed spreading operation. Whenever there is water available in excess of current demand (e.g., irrigation) or available surface storage space in Isabella Lake Reservoir, then water is diverted into the spreading areas for underground storage and subsequent extraction and beneficial use.

7. Describe location, capacity and features of proposed pretreatment facilities and/or injected wells. _____

N/A

8. Reference any available engineering reports, studies, or data on the aquifer involved.

(1) United States Geological Survey, Water Supply Paper 1618, Use of Ground-Water Reservoirs for Storage of Surface Water in the San Joaquin Valley, California (1964).

(2) United States Geological Survey, Water Supply Paper 1469, Groundwater Conditions and Storage Capacity in the San Joaquin Valley, California (1959).

(3) United States Geological Survey, Water Supply Paper 1999-H, Subsurface Geology of the Late Tertiary and Quaternary Water-Bearing Deposits of the Southern Part of the San Joaquin Valley, California, (1972).

(4) United States Geological Survey, Hydrologic Investigations Atlas HA-489, Base of Fresh Ground Water in the San Joaquin Valley, California, (1973).

(5) United States Geological Survey, Professional Paper 1401-C, Geology of the Fresh Ground-Water Basin of the Central Valley, California, with Texture Maps and Sections, (1986).

9. Describe underground reservoir and attach a map or sketch of its location. _____
See references listed in Item 8 (above).

10. State estimated storage capacity of underground reservoir. _____
USGS WSP No. 1618 (listed in Item 8) includes estimates of the capacity of various groundwater "storage units". North Kern lies within two of these units: the White-Poso Unit and the Kern River Unit. North Kern principally lies within the 289,000-acre White-Poso Unit, for which the storage capacity was estimated at almost 5 million acre-feet in the 10 to 200 foot depth interval. The remaining portion of North Kern lies within the 446,000-acre Kern River Unit, for which the storage capacity was estimated at about 10.8 million acre-feet over the same depth interval. Over 40 years ago, this same report stated that "One of the largest and best recorded water-spreading projects in the San Joaquin Valley is that of the North Kern Water Storage District."

11. Describe existing use of the underground storage reservoir and any proposed change in its use. _____

Spreading areas within North Kern's boundaries used to store and recover Federal (CVP), State (SWP), or local water (e.g., Kern River) for agricultural, municipal, industrial, domestic, recreational and other purposes (see Application, Section B.1.).

12. Describe the proposed method and location of measurement of water placed into and withdrawn from underground storage. _____

Continuous stage recorders are the basis for flow measurements at both the Beardsley and Calloway Canal head gates at the points of diversion from the Kern River. Several miles downstream of the point of diversion, the Beardsley Canal is also subject to continuous measurement where it crosses Seventh Standard Road, which also serves to provide a check on the measurements at the point of diversion. The discharges at each of these locations with continuous recorders are also periodically checked with manual current meter measurements. All turnouts from these two canals, as well as subsequent turnouts from laterals, are manually measured and recorded by North Kern's ditch tenders. This includes the turnouts which deliver water into the various spreading areas. North Kern's Hydrographer is responsible for maintaining these records, which includes accounting for the disposition of all water that enters North Kern, i.e., the supplies must be reconciled with the uses, thereby providing another check on the overall water measurement program. Respecting recovery of water from underground storage, North Kern owns and operates deep wells for the recovery of previously stored water, which are rated on a monthly basis and equipped with time measurement meters to calculate production volumes.

TABLE 1

Summary of Spreading Areas

(Attachment to Underground Storage Supplement to Application to Appropriate Water by Permit of
North Kern Water Storage District and City of Shafter)

	Spreading Area	Long-Term Capacity (cfs)	Max Rate of Diversion (cfs)	Max Annual Amount (acre-feet)	Approx. Area (acres)	Location				Depths to Groundwater in Spreading Areas or Immediate Vicinity (in feet)								
										"Minimum"			"Maximum"					"Current"
							S	T	R	B&M	(Spring 1956)	(Fall 1977)	(Spring 2007)	Location				
													___ 1/4 of ___ 1/4	S	T	R	B&M	
(1)	Rosedale	150	300	109,000	602	Portions of Sec. 22 & 27	22 & 27	28S	26E	MD	125	245	223	NE 1/4 of the NE 1/4	27	28S	26E	MD
(2)	Calloway Canal	25	200	18,000	100	From Point of Diversion to Sec. 26 26/25	---	---	---	MD	170	300	289	NW 1/4 of the SE 1/4	16	27S	25E	MD
(3)	Minter Field	75	150	54,000	306	Portion of N 1/2 of Sec. 5 & 6	5 & 6	28S	26E	MD	190	325	291	NE 1/4 of the NE 1/4	6	28S	26E	MD
(4)	Wright Field	20	35	15,000	62	Portion of SW 1/4 of Sec. 18	18	27S	26E	MD	225	350	306	SE 1/4 of the SE 1/4	18	27S	26E	MD
(5)	Minter Pit	3	20	2,000	10	E 1/4 of the NE 1/4	16	27S	26E	MD	180	280	240	NE 1/4 of the NE 1/4	16	28S	26E	MD
(6)	Switchfield	40	75	29,000	334	Portion of Sec. 36, 26/25 and N 1/2 of Sec. 1 27/25	1	27S	25E	MD	195	315	286	SW 1/4 of the NE 1/4	1	27S	25E	MD
(7)	Poso Creek-East	40	150	29,000	80	From Sec. 6, 27/26 to Sec. 26, 26/25	---	---	---	MD	195	300	256	NW 1/4 of the SE 1/4	36	26S	25E	MD
(8)	Poso 27	75	150	54,000	459	Sec. 27 and portion of SW 1/4 of Sec. 26	26 & 27	26S	25E	MD	160	275	254	SE 1/4 of the SW 1/4	27	26S	25E	MD
(9)	Poso Creek-West	25	50	18,000	50	From Sec. 26, 26/25 to Sec. 10, 26/24	---	---	---	MD	120	300	192	SE 1/4 of the SE 1/4	11	26S	24E	MD
(10)	Kern River	(a)	(a)	(a)	(a)	From Sec. 35 28/28 to Sec. 32 30/25	---	---	---	MD	30	100 to 175	5 to 60	(b)	(b)	(b)	(b)	(b)

(a) Varies, but under investigation.

(b) Depths to groundwater reflect the entire length of the River within the boundaries of North Kern and are not point specific.