

Separate Canal seepage story from Vegetation story

Palo verdes exhibit several adaptations to the desert environment. They have tiny leaves that help lower water loss through transpiration. Palo verde leaves drop off during dry periods, further reducing the need for water. In extreme drought, even some of the small branches may die. However, after good rains, new leaves and branches grow. The green bark also enables the tree to continue photosynthesis even during its leafless stage.

Palo verde (*Cercidium floridum* or *microphyllum*), with the above characteristics, dominates washes similar to that of the Whitewater River and is one of the only native trees on the lower plain. These environment adaptive plants will be found in an abrupt widening or bend in the watercourses; plants will be spread across the wash or cluster in the elbow of the bend. Typically, Palo verde trees line the main watercourses and extend across broader portions of the washes where they apparently are sustained by runoff that accumulates there.



The California Fan Palm prefers desert Riparian washes. The larger canyons can often focus substantial rainfall runoff into the palm oases. *Washingtonia filifera* is the large trunked variety associated with U.S. deserts. *Filifera* is found in two desert springs in Arizona, about 11 springs in Southern Nevada, and numerous isolated springs encircling the Salton Sea basin in South eastern California deserts.



The portion of salt creek east of the canal is a major drainage wash that flows only when carrying runoff from rainstorms. The canal alignment also crosses numerous dry washes that flow only during heavy rains, usually thunderstorms in the summer. After the canal began operation, seepage water appeared, which is now evident from the increased vegetative area between the canal and the Salton Sea. These water sources have contributed to flows in Salt Creek, and they have also created many small creeks and trickles that support linear tracts of vegetation downslope of the unlined portion of the canal. Some canal seepage is ultimately discharged into the Salton Sea through the Salt Creek (see fig. #).

The average annual amount of water lost to seepage has been average at about 32, 000 acre-feet. Many desert washes and runoff channels, all of which are dry except when carrying runoff from winter rain and/or torrential downpours or thunderstorms in the summer, cross the canal. The reductions in flow would affect local biological resources.

Summary

The Conventional Lining Alternative would not result in significant impacts related to surface water; however, impacts to biological resources would result from the reduction in surface flows to Salt Creek. There are mitigation measures being addressed.

Soils that contain a high percentage of clay will allow only a very small amount of seepage. On the other hand, sand and gravelly sand found in desert wash deposits allows for significant seepage. This seepage supports phreatophytes down slope from these locations.

Phreatophytes are long rooted plants that absorb water from the water table or directly above it. Golden tamarisk and mesquite are phreatophytes.

Phreatophytes are plants that have adapted to arid environments by growing extremely long roots, allowing them to acquire moisture at or near the water table.

Phreatophytes, like the mesquite tree, have adapted to desert conditions by developing extremely long root systems to draw water from deep underground near the water table. The mesquite's roots are considered the longest of any desert plant and have been recorded as long as 80 feet. Botanists do not agree on the exact classification of the three mesquite trees: the Honey Mesquite, Screwbean Mesquite and the Velvet Mesquite, but no one disputes the success of their adaptation to the desert environment. Mesquites are abundant throughout all the southwestern deserts.

The [Creosote Bush](#) is one of the most successful of all desert species because it utilizes a combination of many adaptations. Instead of thorns, it relies for protection on a smell and taste wildlife find unpleasant. It has tiny leaves that close their stomata (pores) during the day to avoid water loss and open them at night to absorb moisture. Creosote has an extensive double root system -- both radial and deep -- to accumulate water from both surface and ground water.

GLOSSARY OF BOTANICAL TERMS

- Arrowweed** (*Tessaria sericea*) An upright, slender-stemmed, narrow-leafed shrub that reaches 3-13 feet in height. The plant is native to the project area and ranges from North Santa Barbara County (California) to Mexico.
- Bulrush** (*Scirpus acutus*) also (*Scirpus occidentalis*) A member of the sedge family. Usually perennial with stout, erect, cylindrical stems. Reaches a height of 16 feet. The plant occurs in wet areas below an elevation of 5000 feet. It ranges from southern California to British Columbia.
- California fan palm** (*Washingtonia filifera*) A column-shaped palm tree that reaches 50 feet in height with a straight erect unbranched trunk. The leaves are fan-like, circular, and 3-5 feet in length. The trees are native to the project site.
- Cattail** (*Typha domingensis*) Tall marsh plants that reach 5-10 feet in height, with narrow reedlike leaves and long, brown, fuzzy, cylindrical flower spikes.
- Cottonwood** (*Populus fremontii*) Also known as Fremont cottonwood. A tall tree that reaches up to 100 feet in height, with a broad open crown and a short trunk. The bark is thick, rough, and splitting. The trees are native to the Southwestern United States.
- Evapotranspiration** The process of water loss from plants and soils to the atmosphere.
- Honey mesquite** (*Prosopis juliflora glandulosa*) Also known as glandular mesquite. Spiny shrubs or small trees that reach about 26-33 feet in height, with a slightly spreading, rounded crown. Often occurs in thickets. The trees are native to the project area and range from southern California to Mexico.
- Hydrophyte** A plant that requires water or very wet soil for its growth (i.e., cattail, pondweeds, salt cedar).
- Marsh** Areas of emergent vegetation (see hydrophytes) and terrestrial vegetation (see phreatophytes) interspersed with open water.
- Mesically-adapted** Plants that adapted to moist soil conditions.
- Natural succession** The slow, regular sequence of changes in the regional development of communities of plants and associated animals, culminating in a climax characteristic of a specific geographical environment.
- Pampas grass** (*Cortaderia seloana*) One of several giant South American grasses grown for their large, plume-like, silvery or pinkish, irregularly branched, flower cluster.
- Phreatophyte** A plant that draws its water supply from ground water.

Reed	Any of a group of various tall, slender grasses (especially <i>Phragmites australis</i>) with plume-like flower clusters, growing in wet or marshy land.
Riparian	Living on or adjacent to a water supply such as a riverbank, lake, or pond.
Salt cedar	(<i>Tamarix chinensis</i>) A shrub or small tree that reaches 16 feet in height. The branches are upright or spreading with a narrow or rounded crown. The plant is naturalized to southwest Nebraska west to Nevada and south to southern California and southern Texas.
Sawgrass	(<i>Cyperaceae</i>) Grass-like plants often found on wet ground or in water.
Screwbean mesquite	(<i>Prosopis pubescens</i>) A small, thorny, shrub or small tree that reaches 33 feet in height. The plant is native to the project area and ranges from southern Nevada to Mexico.
Sueda	(<i>Suaeda torreyana</i>) A low herb or shrub that reaches 2-16 inches in height. The plant is native to the project area.
Willow	(<i>Salix gooddingii</i>) Also known as Goodding willow. A medium size tree that reaches 60 feet in height. It commonly forks at the base to form a loosely spreading, irregular crown. The tree is native to the project area and ranges from Utah to Texas and Mexico.
Wolfberry, desert thorn	(<i>Lycium Torreyi</i>) Gray, shrubby, and usually spiny plants. They commonly grow along washes and on dry slopes, in desert and semidesert areas. The plants are native to the project area and range from western Texas to southern Nevada, southeastern California and northwestern Mexico.
Xerically-adapted	Plants that are adapted to dry soil conditions.