



DRAFT WORK PRODUCT



**Borrego Valley Groundwater Basin  
Borrego Springs Subbasin**

**Water Transfers**

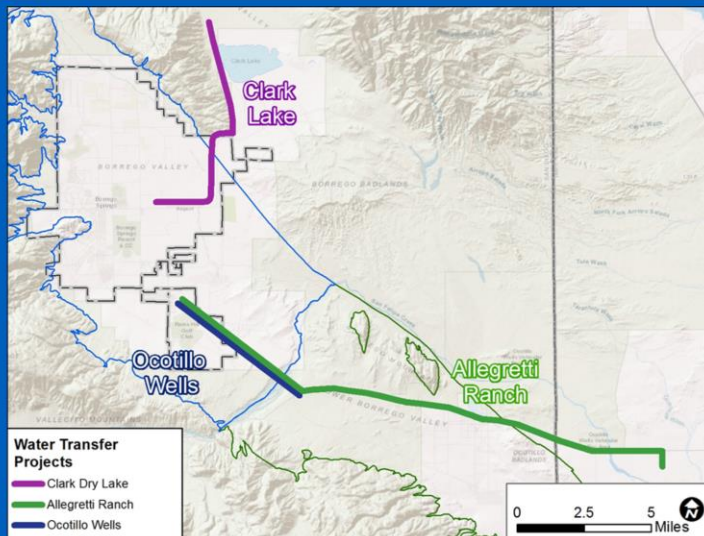
**March 29, 2018**



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As per Agenda Packet Item III.C: Technical and Policy Issues this part of the presentation introduces the Projects and Management Actions to be considered.

## Previously Studied Inter Basin Water Transfers

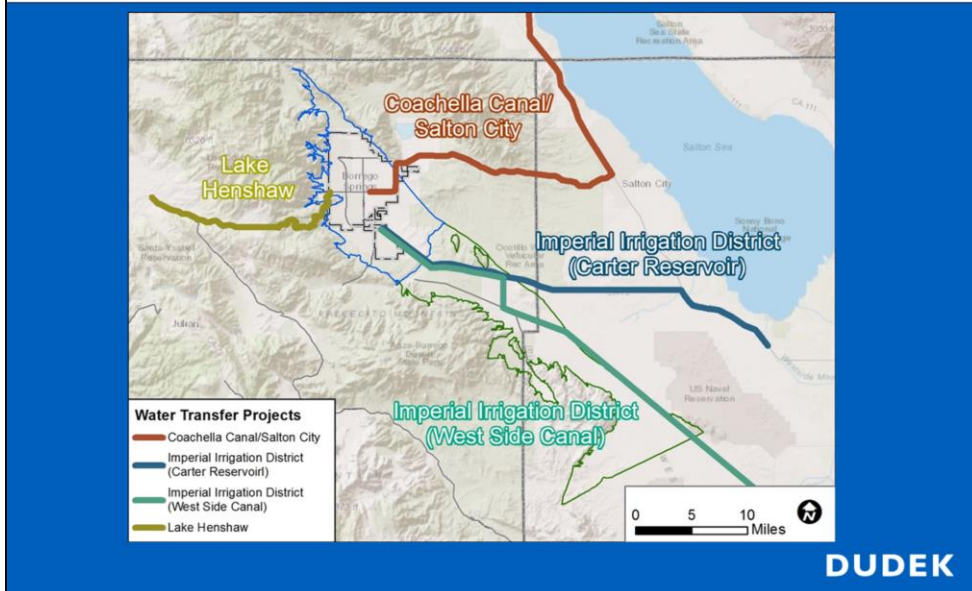


Clark Dry Lake Project (Ocotillo-Clark Valley Groundwater Basin). An 8-mile pipeline was proposed to export water from the Ocotillo-Clark Valley Groundwater Basin. Test hole drilling by the BWD in 1990 indicated that the lower portion of the aquifer sediments contained high salinity water while the upper portion of the aquifer north of Clark Dry Lake had better water quality that was historically used for one residence and a small sand and gravel operation. The sustainable quantity of water available for export was never quantified and it was anticipated that the exported water would eventually require desalination to remove salts. The cost for wells and pipeline was estimate at \$7M in 2006. A cost per acre-foot of water was never estimated as the sustainable yield from the well field was never determined. Project is currently not economically feasible.

Ocotillo Wells Subbasin (Dr. Nel Property). The District drilled an 850 foot test well in 1995 at the Dr. Nel property south of the “Texas Dip”. The pump test indicated the formation was typical of the Lower Aquifer and the well yield was low. This would require drilling many wells in a widely spread area to extract an unknown quantity of water. A 7-mile pipeline would be required to be constructed in order to convey the water. The cost for wells and pipeline was estimate at \$7.25M in 2006. A cost per acre-foot of water was never estimated as the sustainable yield from the well field was never determined. Project is currently not economically feasible.

Allegretti Farms Project (Ocotillo-Clark Valley Groundwater Basin). Contemplated pumping poor quality, non-potable water with total dissolved solids in excess of 1,200 mg/L through 32 miles of pipeline at an estimated cost of \$26.8M in 2000. Project is not economically feasible.

## Previously Studied Inter Basin Water Transfers



Lake Henshaw. The U.S Bureau Reclamation 2015 Study contemplated a water supply from Lake Henshaw but this alternative was not studied in detail. This alternative would require construction of a 30+ mile pipeline from Lake Henshaw to Borrego Springs through the Anza-Borrego Desert State Park. Water rights from Lake Henshaw are adjudicated through the San Luis Rey Indian Water Rights Settlement Act and there is likely no additional water available for export outside of the San Luis Rey watershed. This project is not considered economically feasible.

Coachella Canal. USBR evaluated a 56-mile pipeline alignment from Borrego Springs to the Coachella Canal. For the approximate 12-inch pipeline and low-use, 13,392 acre-feet per year, the cost was \$530M. This project was determined by USBR to not be economically viable.

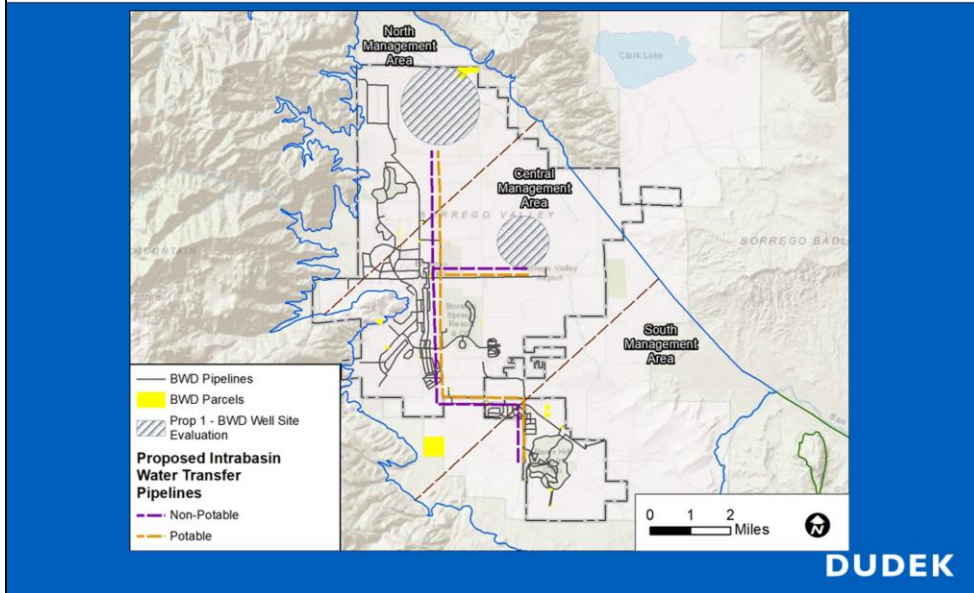
Imperial Irrigation District (Carter Reservoir). USBR evaluated a 43-mile pipeline from Borrego Springs to the IID's Carter Reservoir near the intersection of SR78 and 86. Project not economically feasible. For the approximate 12-inch pipeline and low-use, 13,392 acre-feet per year, the cost was \$504M. This project was determined by USBR to not be economically viable.

Imperial Irrigation District (West Side Canal). USBR evaluated a 50-mile pipeline from Borrego Springs to the IID's West Side Canal. For the approximate 12-inch pipeline and low use, 13,392 acre-feet per year, the cost was \$509M. This project was determined by USBR to not be economically viable.

Importing Water from the San Diego County Water Authority. BWD's Groundwater Management Plan prepared in 2000 included an analysis of the

cost to join the San Diego County Water Authority. The analysis indicated that a unit cost would be about \$7,675 per acre-foot to construct an importation pipeline excluding water \$.

## Intra Basin Water Transfers

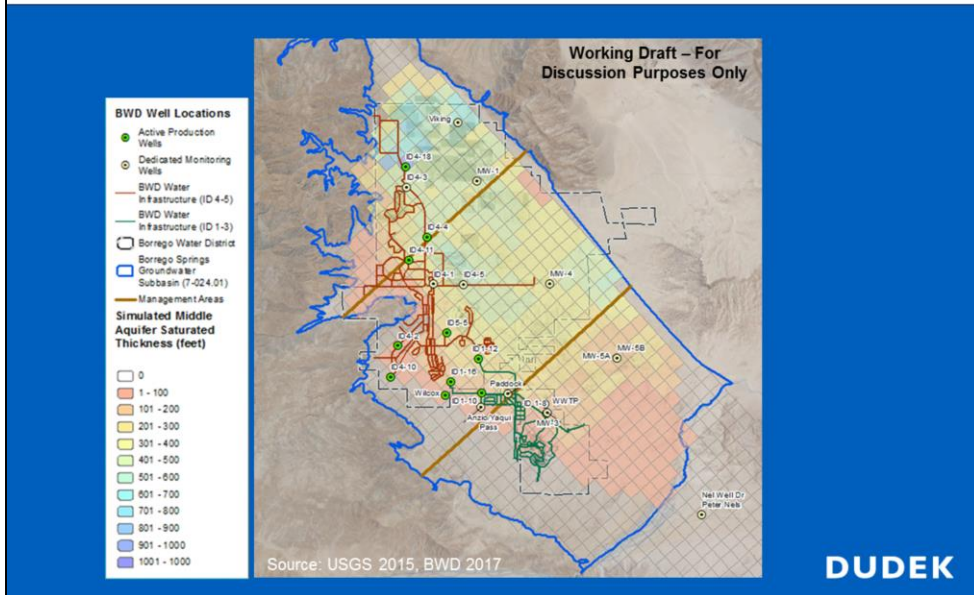


The GSA is considering development of an Intrabasin Water Transfer Plan for the Subbasin. Intrabasin water transfers involve potential transfer of water within the Subbasin among the North, Central and South Management Areas to manage groundwater resources sustainability. The purpose of the plan would be to mitigate existing and future reductions in groundwater storage and groundwater quality impairment by establishing conveyance of water from alternative areas in the Subbasin. This involves evaluation of both short-term and longer-term projects.

In the draft funding recommendations for the Proposition 1 Grant, there is funding available to complete a Water Vulnerability/New Well Site Feasibility Study including ranking of potential potable water well drilling targets and an update of the District's WaterCAD Model to evaluate existing hydraulic capacity of District pipelines and feasibility of proposed capacity improvements. The goal of the analyses will be to identify a drilling target for the installation of a monitoring well to characterize subsurface lithology and water quality for ultimate drilling of a new production well for the District. In addition to the single monitoring well included in the Proposition 1 grant, several other potential well locations will be located for future District production wells. In particular, several project alternatives will be evaluated to allow for transfer of water among the North, Central and South Management

Areas. This will include potential transfer of water for both potable and non-potable use.

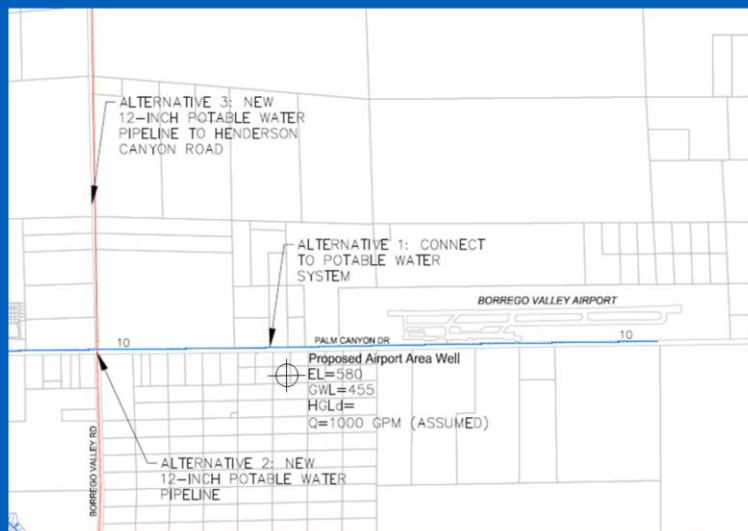
# Modeled Middle Aquifer Saturated Thickness and BWD Water Infrastructure



The District pipeline conveyance infrastructure currently comprised of five Improvement Districts and consists of four pressure zones. The District infrastructure is generally located in the western portion of the Subbasin where the saturated portion of the Middle Aquifer is relatively thin compared to the eastern portion of the Subbasin. Incorporating wells from the thicker saturated portions of the Middle Aquifer in lieu of the thinner portions may reduce likelihoods of undesirable results.



## Airport Area Well Alternative



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The Airport Well Alternative would evaluate the connection of a proposed water well in the vicinity of the Airport to the existing BWD transmission pipelines.

Alternative 1 would connect the proposed Airport Area well to the existing 10-inch transmission pipeline that runs along Palm Canyon Drive to the Airport. The WaterCAD model will be run to evaluate water velocity in the pipe and pipeline pressure as a result of pumping the proposed Airport Area well at a flow rate of 1,000 gallons per minute (GPM).

Alternative 2 consists of installing about 2 miles of new 12-inch transmission pipeline on Borrego Valley Road from Palm Canyon Road south to the existing 10-inch pipeline at Well ID1-12. This proposed 2 mile transmission pipeline would represent the first segment of a proposed north-south Intrabasin transfer pipeline. The preliminary capital cost estimate is \$1M for a 2-mile, 12-inch diameter pipeline.

Alternative 3 consists of installing about 3 miles of new 12-inch transmission pipeline on Borrego Valley Road from Palm Canyon Road north to Henderson Canyon Road. This proposed 3 mile transmission pipeline would represent the second segment of a proposed north-south Intrabasin transfer pipeline. The preliminary capital cost estimate is \$1.6 M for a 3-mile, 12-inch diameter pipeline.