AGENDA
Borrego Water District Board of Directors
Special Meeting
July 19, 2016 9:00 a.m.
806 Palm Canyon Drive
Borrego Springs, CA 92004

I. OPENING PROCEDURES

A. Call to Order
B. Pledge of Allegiance
C. Roll Call
D. Approval of Agenda
E. Comments from Directors and Requests for Future Agenda Items
F. Comments from the Public and Requests for Future Agenda Items (comments will be limited to 3 minutes)
G. Correspondence: Letter From Ratepayer Steering Committee (3-4)

II. CURRENT BUSINESS MATTERS

A. Review of Special Assessments and Administration Report for Fiscal Year 2016-2017 prepared by David Taussig and Associates, Inc. for CFD No. 2007-1 presented by Andrea Roess. (5-6)

B. Discussion and possible approval of ***RESOLUTION #2016-07-01 RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT RESTATING AND ADOPTING A STATEMENT OF INVESTMENT POLICY*** (7-9)

C. Consideration of ***RESOLUTION NO. 2016-07-02 RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, SAN DIEGO COUNTY, CALIFORNIA, LEVYING STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS TO DEFRAY THE COST OF OPERATIONS AND MAINTENANCE OF THE DISTRICT AND REQUESTING THE LEVY AND COLLECTION OF SAID STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS ON LAND WITHIN THE DISTRICT FOR THE FISCAL YEAR 2016-2017*** (10-11)

D. Consideration of ***RESOLUTION NO. 2016-07-03 RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, SAN DIEGO COUNTY, CALIFORNIA, LEVYING STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS TO DEFRAY THE COSTS OF OPERATIONS AND MAINTENANCE OF THE DISTRICT, AND TO PAY COSTS OF OPERATIONS AND MAINTENANCE FOR IMPROVEMENT DISTRICT NO. 1 AND REQUESTING THE LEVY AND COLLECTION OF SAID STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS ON CERTAIN LAND IN IMPROVEMENT DISTRICT NO. 1 FOR THE FISCAL YEAR 2016-2017*** (12-14)

E. Consideration of ***RESOLUTION NO. 2016-07-04 RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, SAN DIEGO COUNTY, CALIFORNIA, LEVYING CHARGES AND/OR ACREAGE ASSESSMENTS TO DEFRAY THE COST OF PROVIDING PEST CONTROL SERVICES BY THE DISTRICT AND REQUESTING LEVY AND COLLECTION OF SAID CHARGES AND/OR ACREAGE ASSESSMENTS FOR THE FISCAL YEAR 2016-2017*** (15-16)

F. Consideration of ***RESOLUTION NO. 2016-07-05 RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, SAN DIEGO COUNTY, CALIFORNIA, LEVYING STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS TO DEFRAY THE COST OF OPERATING AND MAINTAINING THE WATER FACILITIES***

WITHIN IMPROVEMENT DISTRICT NO. 3 OF THE DISTRICT AND REQUESTING THE LEVY AND COLLECTION OF SAID STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS FOR THE FISCAL YEAR 2016-2017 (17-19)

G. Consideration of ***RESOLUTION 2016-07-06 RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT ACTING AS THE LEGISLATIVE BODY OF COMMUNITY FACILITIES DISTRICT NO. 2007-1 OF THE BORREGO WATER DISTRICT AUTHORIZING THE LEVY OF SPECIAL TAXES WITHIN COMMUNITY FACILITIES DISTRICT NO. 2007-1 FOR THE FISCAL YEAR 2016-2017*** (20-22)

H. Consideration of ***RESOLUTION 2016-07-07 RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, TEMPORARILY SUSPENDING THE IMPLEMENTATION AND ENFORCEMENT OF ORDINANCE NO. 16-01 (WATER CONSERVATION MEASURES)*** (23-24)

I. Discussion and possible action on Christmas Circle Park

J. Discussion of Groundwater Sustainability Agency Status (GSA) and Stakeholder review and Comments of Memorandum of Understanding (MOU) with the County of San Diego. (25-35)

K. Discussion of draft brief regarding the question of whether there are adequate sustainable production units (allowable acre-feet per year [AFY] withdrawals from the basin) available in 2040 under the Sustainable Groundwater Management Act (SGMA) constraints in order for the District to serve its existing customers and future customers (i.e. un-built lots approved under the County's existing zoning). (36)

L. Discussion regarding the question of whether the US Geological Survey's (USGS) proposal for depth dependent water quality sampling is the best (least cost, quickest, most predictive) means for assessing whether the SGMA 2040 deadline for reaching a sustainable use of the basin and the Borrego Water Coalition's proposed recommendation for the speed at which this target AFY withdrawals by 2040 is achieved provides the least risk for avoiding *undesirable results* for water quality changes that would necessitate the District to invest in advanced water treatment in order to continue to deliver potable water to its customers in the future. (37-56)

M. Discussion of response from JPIA in regards to the Hypalon Bladder Claim. (57-58)

N. Discussion of potential agenda items for July 27nd board meeting

III. INFORMATIONAL ITEMS

A. Water Fact Sheet (59)

B. Letter from Board to Harry Ehrlich (60)

C. Draft SGMA Questions & Answers (61-67)

D. Draft Presentation Deck from Director Brecht for discussion purposes regarding District – related business risk management issues occasioned by SGMA (68-84)

E. Summary of DUDEK's work for the District to Date (85-88)

IV. CLOSING PROCEDURE

The next Regular Meeting of the Board of Directors is scheduled for July 27, 2016 at the Borrego Water District

Teleconference site available: 7815 Rush Rose Drive #302 Carlsbad, CA 92009

Received June 28, 2016 via email

To: Borrego Water District
From: Ratepayer Steering Committee
Re: Letter

Jerry. Please pass this along to the Board. Will it be included in their package for the next meeting for discussion?

> As our rate payers group begins to provide input into the work of the BWD and BWC to address Borrego's overdraft, we have put together some comments and questions about the process. We realize this is a work in progress and that a response to the issues we raise will be shaped as the work moves forward. We support the work that is being done and we want to assist in the process to develop an effective overdraft plan that represents the interests of the residents and businesses in Borrego Springs.
>
> With that in mind, here are our questions and comments:
>
> What kind of approval will be needed to enact the new plan? Can the BWD board of directors simply vote and approve it? Will it need to be approved by the county or state? Will the farmers or other land owners need to form groups or associations?
>
> The percentage allocation for user groups that is being talked about in town (based on historical use - 70% for farmers, 20% for golf courses, 10% for the BWD) appears misguided. The reality of this is that it penalizes residents for being frugal with their past water usage and it does not represent the best interests of the community. There also needs to be a priority of water use, with domestic use having the highest priority. It makes little sense to allocate just 10% of the water for 95% of the population. Borrego Springs has many elderly people, low income families, and adequate water is essential for health, safety, and generally accepted standards of living. Borrego's population, the actual number of people living in Borrego Springs, needs to be an important part of the equation.
>
> With or without an overdraft plan it is highly likely that the agricultural industry in the Borrego Valley is going to diminish. Why would a community obligate 70% of its water to a declining industry? From a community planning perspective this makes little sense. Why should recreational golf courses get more water than people in their homes? Assuming that restaurants and hotels will also be sharing in the 10% of water that BWD rate payers receive, why would we put these businesses, which are central to the most logical economic future of Borrego Springs, at such a disadvantage?
>
> It should also be recognized that essentially all of the costs thus far, in studies, plans, alternatives, millions of dollars over the years, have been funded by ratepayers of the BWD. Rate payers deserve more than 10% of the water.
>
> If the plan being produced does not adequately address the needs of rate payers/residents, might the residents fare better under a state mandated plan which could consider the needs of the residents, along with health, safety, and general living standards? Perhaps formal adjudication would give us a better plan? Don't misinterpret this; we are really hoping that a local plan created by the BWC comes to fruition, because it is the fastest way to solve the problem, and that is absolutely critical. But residents will question why they should accept a plan in which they collectively are placed in the very worst position from day one.

>
> Taking a step forward into the process, water will need to be bought and sold in the valley. In a marketplace with so few buyers and so few sellers how can we know that rate payers will not be held hostage, with extreme prices demanded by those with water to sell? Who exactly would the BWD negotiate with to buy water: individual farmers, individual land owners, or some association of sellers?
>
> Most ratepayers will be willing to pay higher prices for water in return for a guaranteed supply, and Borrego's economy will benefit if we can lift this cloud of overdraft that hangs over us, but it would be foolish to place ourselves into a situation where the sky is the limit on pricing. There needs to be a rate structure, perhaps long-term contracts agreed upon in advance. It might be beneficial to get someone with experience in commodity contracts to assist with this part of the process.
>
> There also needs to be some kind of enforcement. Well metering can tell us how much water any one user is pumping but what will happen if well owners over-pump? Fines won't do us any good. We will need water, not the revenue provided by fines. Where will this enforcement authority lie? Who would do on-the-ground monitoring and enforcement?
>
> The issue of residential and business growth in Borrego Springs needs to be addressed. The bottom line is that the BWD may simply not have the water to service development on the thousands of empty lots and other tracts of land that exist in the Borrego Valley today. Just like the enforcement issue, fees can be used to influence development, but we don't need the money from those fees; we need water. The idea of using water credits, in which a user sells his right to pump, is a possible route to take, but there will still be only so many credits to trade around.
>
> We look forward to becoming more involved in the planning process.
>

DAVID TAUSSIG & ASSOCIATES
Public Finance and Urban Economics
5000 Birch Street, Ste. 6000, Newport Beach, CA 92660
Phone: 949.955.1500 / Fax: 949.955.1590

MEMORANDUM
July 13, 2016

TO: Jerry Rolwing, Borrego Water District

FROM: Andrea Roess, David Taussig & Associates, Inc.

SUBJECT: Borrego Water District Fiscal Year 2016-2017 Levy

Below is a summary of the preliminary Fiscal Year ("FY") 2016-2017 fixed charge levies for Borrego Water District as well as the FY 2015-2016 levies for comparison.

Fixed Charge	FY 15-16 Parcels Taxed	FY 15-16 Tax per Parcel	FY 15-16 Levy	FY 16-17 Parcels Taxed	FY 16-17 Tax per Parcel	FY 16-17 Levy
Water Availability Standby Charge	3,616	$22.80	$82,444.80	3,616	$22.80	$82,444.80
ID No. 1 – Water, Sewer, and Flood Control	706	$66.00 [1]	$106,211.55	706	$66.00 [1]	$106,211.55
Pest Control Standby Charge	4,718	$2.50 [2]	$17,882.50	4,718	$2.50 [2]	$17,882.50
ID No. 3 – Water Standby Charge	361	$37.70 [3]	$33,722.00	361	$37.70 [3]	$33,722.00
Total	**NA**	**NA**	**$240,260.85**	**NA**	**NA**	**$240,260.85**

[1] Twenty-seven parcels are taxed at varying rates. Remaining parcels are taxed at $66.00/parcel. Based on rates indicated in memorandum provided by Raftelis Financial Consultants.
[2] Three golf course parcels taxed at a total $6,095.00. Remaining parcels taxed at $2.50/parcel.
[3] Two parcels owned by "LCDZ Investors, LLC" taxed at a total $20,150.00. Remaining parcels taxed at $37.70/parcel.

Please see below for a brief explanation for each of the charges shown in the table above. For each charge, the same rates and methodology that were applied in Fiscal Year 2015-2016 were used this year to determine the FY 2016-2017 charges. This memorandum is based on Fiscal Year 2015-2016 parcel and ownership data as the final Fiscal Year 2016-2017 County of San Diego Assessor's Roll is not yet available. We will update our analysis with Fiscal Year 2016-2017 data prior to submitting the charges to the County in August. In addition, please refer to the annual administration report for information regarding the FY 2016-2017 levy for Borrego Water District CFD No. 2007-1.

Please see Exhibits A through D enclosed, which lists the assessor's parcel numbers and levy amounts for each of the charges shown in the table above.

WATER AVAILABILITY STANDBY CHARGE (FUND 6415-01)

The funds raised by the Water Availability Standby Charge are used to pay for a share of the general administrative costs of the Borrego Water District. The levy is a per parcel charge applied to each parcel within the District except parcels within ID No. 1 (Ram's Hill) and ID No. 3 (Deep Well and La Casa del Zorro). The ID No. 1 share of administrative costs is collected

through the ID No. 1 charge (Fund No. 6415-02) while ID No. 3 has a separate standby charge (Fund 6415-04).

The amount to be levied for the Water Availability Standby charge this year is calculated as follows: 3,616 parcels all of which are charged at $22.80 per parcel for a total of $82,467.60.

ID NO. 1 - WATER, SEWER AND FLOOD CONTROL (FUND 6415-02)

The funds raised by the ID No. 1 Water, Sewer, and Flood Control charge are used to pay for administration costs and water, sewer, and flood control services.

The amount to be levied for the ID No. 1 Water, Sewer, and Flood Control charge this year is calculated as follows: 679 parcels all of which are charged at $66.00 per parcel for a total of $44,814.00 and 27 other parcels charged at varying rates based on a study prepared by Raftelis Financial Consultants ("RFC") dated May 2, 2014 for a total of $61,397.55.

The study describes the rationale for reducing the amount charged to certain non-residential parcels, golf course parcels, and other undeveloped parcels based on the current land use classifications of the parcels versus what was originally anticipated at the point of time that the availability charge was created.

As indicated in the study, RFC concluded that based on benefit, the amount charged to the parcels being charged $66.00 per parcel should be increased and that the amount charged to the remaining 27 parcels should be decreased. However, since the District cannot increase a parcel's charge without going through a Proposition 218 ballot proceeding, the District has kept the $66.00 per parcel charge unchanged from prior years and decreased the charge for the remaining 27 parcels beginning in FY 2015-2016.

PEST CONTROL STANDBY CHARGE (FUND 6415-03)

The funds raised by the Pest Control Standby charge are used to pay for eye gnat control services (not the biting gnat).

The amount to be levied for the Pest Control Standby charge this year is calculated as follows: 4,715 parcels all of which are charged at $2.50 per parcel for a total of $11,787.50 and three golf course parcels charged varying rates for a total of $6,095.00.

ID NO. 3 WATER STANDBY CHARGE (FUND 6415-04)

The funds raised by the ID No. 3 Water Standby charge are used to establish reserves for system improvements related to the water wells and system storage. The amount to be levied for the ID No. 3 Water Standby charge this year is calculated as follows: 360 parcels all of which are charged at $37.70 per parcel for a total of $13,572.00 and one parcel owned by "LCDZ Investors" (formerly owned by "Copley Press") charged for a total of $20,150.00.

If you have any questions regarding these charges, please do not hesitate to contact me at (949) 955-1500.

BORREGO WATER DISTRICT
POLICY STATEMENT

SUBJECT: STATEMENT OF INVESTMENT POLICY

NO: 1994-03-01

ADOPTED: March 16, 1994
AMENDED: December 20, 1995
AMENDED: January 22, 1997
AMENDED: September 23, 1998
AMENDED: January 27, 1999
AMENDED: March 29, 2000
AMENDED: January 29, 2003
AMENDED: February 26, 2004
AMENDED: February 23, 2005
AMENDED: February 22, 2006
AMENDED: February 28, 2007
AMENDED: February 27, 2008
AMENDED: February 25, 2009
AMENDED: July 22, 2009
AMENDED: July 28, 2010
AMENDED: July 27, 2011
AMENDED: June 27, 2012
AMENDED: June 26, 2013
AMENDED: June 25, 2014
AMENDED: June 24, 2015
AMENDED: July 19, 2016

RESOLUTION NO. 2016-07-01

RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT RESTATING AND ADOPTING A STATEMENT OF INVESTMENT POLICY

WHEREAS, the Board of Directors ("Board") of the Borrego Water District (the "District") desires to rescind Resolution No. 2012-6-3 dated June 27, 2012 and adopt an Annual Statement of Investment Policy;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Borrego Water District that the following is the investment policy of the Borrego Water District:

INVESTMENT POLICY:

1. **Annual Statement of Investment Policy:**

   In accordance with the California Government Code, the District Treasurer will render an annual statement of investment policy to the Board of Directors. The Board will review and affirm or amend the policy at that time.

2. **Investment Objectives:**

   a. **Safety:** It is the primary duty and responsibility of the Treasurer to protect, preserve and maintain the cash and investments placed in his trust on behalf of the citizens of the community.

b. **Liquidity:** an adequate percentage of the portfolio should be maintained in liquid short-term securities, which can be converted to cash if necessary to meet disbursement requirements.

c. **Yield:** Yield should become a consideration only after the basic requirements of safety and liquidity have been met.

3. **Investment Policy:**

a. **Collateralization:** The District requires banks or savings and loans to collateralize investments in excess of FDIC amounts, currently insured up to $250,000, with government securities valued at 110% of the amount of deposit with said bank or savings and loan. Said collateral is to be held in an independent safekeeping account in the District's name.

b. **Authorized Investments and Portfolio Limits:**

1) Local Agency Investment Fund: District money may be invested in the Local Agency Investment Fund (LAIF) in accordance with Section 16429.1 of the Government Code. Such deposits shall not exceed 98% of the District's total available investment capital. Total investment capital is defined to be all bank accounts plus the District's Direct Investments with the Local Agency Investment Fund.

2) FDIC Insured Institutions' Certificates of Deposit and Savings Accounts: District investments shall not exceed 95% of the District's total investment capital or more than 75% in a single FDIC-insured financial institution unless provision 4), below is used.

3) U.S. Government Bills, Notes, Bonds and Overnight Money Market Funds which invest entirely in U.S. Government Bills, Notes and Bonds: The limit in the amount of the investment portfolio in these instruments is 20%, maturity will be limited to a maximum of five years.

4) Certificates of Deposit, Account Registry Services (CDARS): The Board may divert 95% of its' investments to a financial institution which provides CDARS. All of the CDARS investments shall be FDIC insured.

c. **Treasurer's Reports:** The Treasurer shall provide a quarterly report showing the type of investment, issuer, maturity, par and dollar amount, market value of portfolio and source of the valuation. The Quarterly Report may list Money Market Funds and funds in the State of California Local Agency Investment Fund (LAIF) as cash. The Quarterly Report shall state the compliance of the portfolio with the Statement of Investment Policy and the Borrego Water District's ability to meet its expenditure requirement for the next six months.

ADOPTED, SIGNED AND APPROVED by the Board of Directors of the Borrego Water District this 19th day of July, 2016.

_____

Beth Hart, President Board of Directors of Borrego Water District

ATTEST:

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Joseph Tatusko, Secretary Board of Directors of Borrego Water District

STATE OF CALIFORNIA)

)

COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the foregoing Resolution No. 2016-07-01 was duly adopted by the Board of Directors of said District at the Regular Meeting of the Board of Directors held on July 19, 2016 and that it was so adopted by the following vote:

AYES:	DIRECTORS:
NOES:	DIRECTORS:
ABSENT:	DIRECTORS:
ABSTAIN:	DIRECTORS:

_____

Joseph Tatusko, Secretary
Board of Directors Borrego Water District

(SEAL)

STATE OF CALIFORNIA)

) ss.

COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the above and foregoing is a full, true and correct copy of RESOLUTION NO. 2016-07-01 of said Board, and that the same has not been amended or repealed.

Dated: July 19, 2016

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Joseph Tatusko, Secretary
Board of Directors Borrego Water District

(SEAL)

RESOLUTION NO. 2016-07-02

RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, SAN DIEGO COUNTY, CALIFORNIA, LEVYING STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS TO DEFRAY THE COST OF OPERATIONS AND MAINTENANCE OF THE DISTRICT AND REQUESTING THE LEVY AND COLLECTION OF SAID STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS ON LAND WITHIN THE DISTRICT FOR THE FISCAL YEAR 2016-2017

WHEREAS, *Section 35470* of the Water Code of the State of California provides that a California Water District may in lieu, in whole, or in part, of raising funds for District purposes by ad valorem assessments, levy standby charges and/or acreage assessments on land to defray the cost of operations and maintenance and for any lawful district purpose; and

WHEREAS, the Board of Directors has determined that it is deemed advisable and necessary to fix and levy standby charges and/or acreage assessments for the purpose of defraying certain operations and maintenance costs for the Fiscal Year 2016-2017;

NOW, THEREFORE, the Board of Directors of Borrego Water District **DOES HEREBY RESOLVE, DETERMINE AND ORDER** as follows:

SECTION 1. There is hereby fixed standby charges and/or acreage assessments in the amounts on land within the District as shown on Exhibit A attached hereto and made a part hereof to defray the cost of operations and maintenance for the Fiscal Year 2016-2017. This Board of Directors hereby determines that said standby charges and/or acreage assessments in an amount not exceeding the assessments set forth in Exhibit A was existing prior to July 1, 1997 and that said assessments are exempt from the provisions of Article XIIID of the Constitution of the State of California. After adoption of this Resolution, the General Manager, or designee, may make any necessary modifications to these charges to correct any errors, omissions or inconsistencies in the listing or in the amount to be charged based on changes from the final 2016 County of San Diego Assessor's Roll.

SECTION 2. Pursuant to *Section 35479* of the Water Code, the Board of Supervisors of the County of San Diego is hereby requested at the time and manner of levying other County taxes to make levies in the amounts on land within the District, as shown on Exhibit A, and cause to be collected the amounts specified therein.

SECTION 3. The Secretary of the District is hereby directed to submit to the Board of Supervisors and the Auditor/Controller of the County of San Diego a certified copy of this Resolution along with other documents as may be required.

ADOPTED, SIGNED AND APPROVED this 19th day of July, 2016.

President of the Board of Directors of
Borrego Water District

ATTEST:

Secretary of the Board of Directors of
Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the foregoing resolution was duly adopted by the Board of Directors of said District at a regular meeting held on the 19th day of July, 2016, and that it was so adopted by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

ABSTAIN: DIRECTORS:

Secretary of the Board of Directors of Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the above and foregoing is a full, true and correct copy of RESOLUTION NO. 2016-07-02, of said Board, and that the same has not been amended or repealed.

Dated: July 19, 2016

Secretary of the Board of Directors of Borrego Water District

RESOLUTION NO. 2016-07-03

RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, SAN DIEGO COUNTY, CALIFORNIA, LEVYING STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS TO DEFRAY THE COSTS OF OPERATIONS AND MAINTENANCE OF THE DISTRICT, AND TO PAY COSTS OF OPERATIONS AND MAINTENANCE FOR IMPROVEMENT DISTRICT NO. 1 AND REQUESTING THE LEVY AND COLLECTION OF SAID STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS ON CERTAIN LAND IN IMPROVEMENT DISTRICT NO. 1 FOR THE FISCAL YEAR 2016-2017

WHEREAS, Improvement District No. 1 of the Borrego Water District was formed for the purpose of providing water, sewer and flood control service to the lands and inhabitants of the Improvement District and for said purpose water, sewer and flood control systems have been constructed for the benefit of said Improvement District; and

WHEREAS, by reason of the construction of said water, sewer and flood control systems, water, sewer and flood control service is now and will be available to lands therein and said water, sewer and flood control systems are a benefit to the lands lying within said Improvement District; and

WHEREAS, *Section 35470* of the Water Code of the State of California provides that a California Water District may in lieu, in whole, or in part, of raising funds for District purposes by ad valorem assessments, levy standby charges and/or acreage assessments on land, to defray the cost of operations and maintenance and for any lawful district purpose; and

WHEREAS, matters have been presented to and considered by the Board of Directors relating to the financial requirements of said Improvement District; and

WHEREAS, the Board of Directors has determined that it is deemed advisable and necessary to fix and levy standby charges and/or acreage assessments within Improvement District No. 1 for the purpose of paying certain operations and maintenance costs and the payment of a portion of the debt service on bonds of Improvement District No. 1 for the Fiscal Year 2016-2017;

NOW, THEREFORE, the Board of Directors of the Borrego Water District hereby **RESOLVE, DETERMINE AND ORDER** as follows:

SECTION 1. There is hereby fixed standby charges and/or acreage assessments in the amounts on land within Improvement District No. 1 as shown on Exhibit A attached hereto and made a part hereof for the payment of the cost of operation and maintenance for said Improvement District No. 1 for the Fiscal Year 2016-2017. This Board of Directors hereby determines that said standby charges and/or acreage assessments in an amount not exceeding the assessments set forth in Exhibit A was existing prior to July 1, 1997 and that said assessments are exempt from the provisions of Article XIIID of the Constitution of the State of California. After adoption of this Resolution, the

General Manager, or designee, may make any necessary modifications to these charges to correct any errors, omissions or inconsistencies in the listing or in the amount to be charged based on changes from the final 2016 County of San Diego Assessor's Roll.

SECTION 2. Pursuant to *Section 35479* of the Water Code, the Board of Supervisors is requested at the time and manner of levying other County taxes to make levies in the amounts on said lots within Improvement District No. 1 as shown on Exhibit A and cause to be collected the amounts specified therein.

SECTION 3. The Secretary of the District is hereby directed to submit to the County Board of Supervisors and the County Auditor/Controller a certified copy of this Resolution along with other documents as may be required.

ADOPTED, SIGNED AND APPROVED this 19th day of July, 2016.

_____

President of the Board of Directors of
Borrego Water District

ATTEST:

_____

Secretary of the Board of Directors of
Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the foregoing resolution was duly adopted by the Board of Directors of said District at a regular meeting held on the 19th day of July, 2016, and that it was so adopted by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

ABSTAIN: DIRECTORS:

_____

Secretary of the Board of Directors of Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the above and foregoing is a full, true and correct copy of RESOLUTION NO. 2016-07-03, of said Board, and that the same has not been amended or repealed.

Dated: July 24, 2016

_____

Secretary of the Board of Directors of Borrego Water District

RESOLUTION 2016-07-04

RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, SAN DIEGO COUNTY, CALIFORNIA, LEVYING CHARGES AND/OR ACREAGE ASSESSMENTS TO DEFRAY THE COST OF PROVIDING PEST CONTROL SERVICES BY THE DISTRICT AND REQUESTING LEVY AND COLLECTION OF SAID CHARGES AND/OR ACREAGE ASSESSMENTS FOR THE FISCAL YEAR 2016-2017

WHEREAS, *Section 35565.5* of the Water Code of the State of California provides that a California Water District may, in the manner as provided in Section 35470 of the Water Code, in lieu, in whole or in part, of raising funds for District purposes by ad valorem assessments, levy charges and/or acreage assessments on land within the District to defray the cost of mosquito abatement and vector control services; and

WHEREAS, the Board of Directors has determined that it is deemed advisable and necessary to fix and levy charges and/or acreage assessments for the purpose of defraying the cost of providing mosquito abatement and vector control services for the Fiscal Year 2016-2017.

NOW, THEREFORE, the Board of Directors of Borrego Water District **DOES HEREBY RESOLVE, DETERMINE AND ORDER** as follows:

SECTION 1. There is hereby fixed charges and/or acreage assessments in the amounts on land within the District as shown on Exhibit A attached hereto and made a part hereof to provide pest control services for the Fiscal Year 2016-2017. This Board of Directors hereby determines that said standby charges and/or acreage assessments in an amount not exceeding the assessments set forth in Exhibit A was existing prior to July 1, 1997 and that said assessments are exempt from the provisions of Article XIIID of the Constitution of the State of California. After adoption of this Resolution, the General Manager, or designee, may make any necessary modifications to these charges to correct any errors, omissions or inconsistencies in the listing or in the amount to be charged based on changes from the final 2016 County of San Diego Assessor's Roll.

SECTION 2. Pursuant to Section 35479 of the Water Code, the Board of Supervisors of the County of San Diego is hereby requested at the time and manner of levying other County taxes to make levies in the amounts on land within the District, as shown on Exhibit A, and cause to be collected the amounts specified therein.

SECTION 3. The Secretary of the District is hereby directed to submit to the Board of Supervisors and the Auditor/Controller of the County of San Diego a certified copy of this Resolution.

ADOPTED, SIGNED AND APPROVED this 19th day of July, 2016.

President of the Board of Directors of
Borrego Water District

ATTEST:

Secretary of the Board of Directors of
Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the foregoing resolution was duly adopted by the Board of Directors of said District at a regular meeting held on the 19th day of July, 2016, and that it was so adopted by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

ABSTAIN: DIRECTORS:

Secretary of the Board of Directors of Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the above and foregoing is a full, true and correct copy of RESOLUTION NO. 2016-07-04, of said Board, and that the same has not been amended or repealed.

Dated:

Secretary of the Board of Directors of Borrego Water District

RESOLUTION NO. 2016-07-05

RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, SAN DIEGO COUNTY, CALIFORNIA, LEVYING STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS TO DEFRAY THE COST OF OPERATING AND MAINTAINING THE WATER FACILITIES WITHIN IMPROVEMENT DISTRICT NO. 3 OF THE DISTRICT AND REQUESTING THE LEVY AND COLLECTION OF SAID STANDBY CHARGES AND/OR ACREAGE ASSESSMENTS FOR THE FISCAL YEAR 2016-2017

WHEREAS, Improvement District No. 3 of the Borrego Water District was formed for the purpose of providing water service to the lands and inhabitants of the Improvement District; and

WHEREAS, by reason of the acquisition of the water system, water service is now and will be available to lands therein and said water system is a benefit to the lands lying within said Improvement District; and

WHEREAS, *Section 35470* of the Water Code of the State of California, provides that a California Water District may in lieu, in whole, or in part, of raising funds for District purposes by ad valorem assessments, levy standby charges and/or acreage assessments to defray the cost of operations and maintenance and for any lawful district purpose; and

WHEREAS, matters have been presented to and considered by the Board of Directors relating to the financial requirements of said Improvement District; and

WHEREAS, the Board of Directors has determined that it is deemed advisable and necessary to fix and levy standby charges and/or acreage assessments within Improvement District No. 3 of the District to defray the cost of operations and maintenance of the water facilities within Improvement District No. 3 for the Fiscal Year 2016-2017.

NOW, THEREFORE, the Board of Directors of Borrego Water District **DOES HEREBY RESOLVE, DETERMINE AND ORDER** as follows:

SECTION 1. There is hereby fixed standby charges and/or acreage assessments in the amounts on land within Improvement District No. 3 as more fully described in Exhibit A attached hereto and made a part hereof to defray the cost of operations and maintenance for Improvement District No. 3 for the Fiscal Year 2016-2017. This Board of Directors hereby determines that said standby charges and/or acreage assessments in an amount not exceeding the assessments set forth in Exhibit A was existing prior to July 1, 1997 and that said assessments are exempt from the provisions of Article XIIID of the Constitution of the State of California. After adoption of this Resolution, the General Manager, or designee, may make any necessary modifications to these charges to correct any errors, omissions or inconsistencies in the listing or in the amount to be charged based on changes from the final 2016 County of San Diego Assessor's Roll.

SECTION 2. Pursuant to *Section 35479* of the Water Code, the Board of Supervisors of the County of San Diego is hereby requested at the time and manner of levying other County taxes to make levies in the amounts on land within Improvement District No. 3, shown on Exhibit A, and cause to be collected the amounts specified therein.

SECTION 3. The Secretary of the District is hereby directed to submit to the Board of Supervisors and the Auditor/Controller of the County of San Diego a certified copy of this Resolution along with other documents as may be required.

ADOPTED, SIGNED AND APPROVED this 19th day of July, 2016.

_____
President of the Board of Directors of
Borrego Water District

ATTEST:

_____
Secretary of the Board of Directors of
Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the foregoing resolution was duly adopted by the Board of Directors of said District at a regular meeting held on the 19th day of July, 2016, and that it was so adopted by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

ABSTAIN: DIRECTORS:

_____
Secretary of the Board of Directors of Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the above and foregoing is a full, true and correct copy of RESOLUTION NO. 2016-07-05 of said Board, and that the same has not been amended or repealed.

Dated: July 19, 2016

_____

Secretary of the Board of Directors of Borrego Water District

RESOLUTION NO. 2016-07-06

RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT ACTING AS THE LEGISLATIVE BODY OF COMMUNITY FACILITIES DISTRICT NO. 2007-1 OF THE BORREGO WATER DISTRICT AUTHORIZING THE LEVY OF SPECIAL TAXES WITHIN COMMUNITY FACILITIES DISTRICT NO. 2007-1 FOR THE FISCAL YEAR 2016-2017

WHEREAS, the Borrego Water District (the "District") previously established Community Facilities District No. 2007-1 of the Borrego Water District ("CFD No. 2007-1") pursuant to the terms and provisions of the Mello-Roos Community Facilities Act of 1982, as amended; and

WHEREAS, the Board of Directors of the District acting as the legislative body of CFD No. 2007-1 is authorized pursuant to Resolutions Nos. 2007-3-1 and 2007-3-2 adopted March 14, 2007 (the "Resolutions of Formation") and Ordinance No. O2007-2 adopted by the Board of Directors of the District on May 9, 2007 (the "Ordinance"), to levy a special tax sufficient to pay principal, interest, other periodic costs and administrative expenses with respect to bonds of CFD 2007-1 and any bonds and/or certificates of participation proposed to be issued to finance the Facilities (the "Bonds") and to pay certain costs of the Facilities (as defined in the Resolutions of Formation); and

WHEREAS, it is now necessary and appropriate that this Board levy and collect the special taxes for the Fiscal Year 2016-2017 for the purpose specified in the Ordinance, by the adoption of a resolution as specified by the Act and the Ordinance; and

WHEREAS, the special taxes being levied hereunder are at the same rate or at a lower rate than provided by the Ordinance;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, ACTING IN ITS CAPACITY AS THE LEGISLATIVE BODY OF COMMUNITY FACILITIES DISTRICT NO. 2007-1, DOES HEREBY RESOLVE, DETERMINE AND ORDER AS FOLLOWS:

SECTION 1. The above recitals are true and correct. After adoption of this Resolution, the General Manager, or designee, may make any necessary modifications to these charges to correct any errors, omissions or inconsistencies in the listing or in the amount to be charged based on changes from the final 2016 County of San Diego Assessor's Roll.

SECTION 2. The special tax ("Special Tax") is imposed without regard to property valuation and is levied in compliance with the Mello-Roos Community Facilities Act of 1982, as amended, commencing with Government Code Section 53311 (the "Act") and the Ordinance.

SECTION 3. In accordance with the Act and the Ordinance, there is hereby levied upon the parcels within the District which are not otherwise exempt from taxation under the Act or the

Ordinance the special taxes for the Fiscal Year 2016-2017 at the tax rates set forth in the report prepared by David Taussig and Associates for CFD No. 2007-1 entitled "Administration Report Fiscal Year 2016-2017" (the "Report") submitted herewith, which rates do not exceed the maximum rates set forth in the Ordinance. After adoption of this Resolution, the General Manager of the District, or his designee, may make any necessary modifications to these special taxes to correct any errors, omissions or inconsistencies in the listing or categorization of parcels to be taxed or in the amount to be charged to any category of parcels; provided, however, that any such modifications shall not result in an increase in the tax applicable to any category of parcels and can only be made prior to the submission of the tax rolls to the San Diego County Auditor or prior to delivery of direct billings, as applicable.

SECTION 4. All of the collections of the special tax shall be used only as provided for in the Act and the Resolutions of Formation. The special tax shall be levied only so long as needed to accomplish the purposes described in the Resolutions of Formation.

SECTION 5. The special tax shall be collected in the same manner as ordinary ad valorem taxes are collected, provided, however, that CFD No. 2007-1 may directly bill the special tax, may collect special taxes at a different time or in different manner if necessary to meet its financial obligations, and the special tax shall be subject to the same penalties and the same procedure and sale in cases of delinquency as provided for ad valorem taxes as such procedure may be modified by law or this Board from time to time.

SECTION 6. As a cumulative remedy, if any amount levied as a special tax for payment of bond interest or principal, together with any penalties and other charges accruing under this Resolution, are not paid when due, the Board of Directors may, not later than four years after the due date of the last installment of principal on the Bonds, order that the same be collected by an action brought in the superior court to foreclose the lien of such special tax.

SECTION 7. The General Manager is hereby authorized and directed to transmit a certified copy of this Resolution and the Report to the San Diego County Auditor, together with other supporting documentation as may be required to place said special taxes on the secured property tax roll for the Fiscal Year 2016-2017, and/or arrange for the direct billing of the special taxes, and to perform all other acts which are required by the Act, the Ordinance, or by law in order to accomplish the purpose of this Resolution.

ADOPTED, SIGNED AND APPROVED this 19th day of July, 2016.

_____

President of the Board of Directors of
Borrego Water District

ATTEST:

_____

Secretary of the Board of Directors of
Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the foregoing resolution was duly adopted by the Board of Directors of said District at a regular meeting held on the 19th day of July, 2016, and that it was so adopted by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

ABSTAIN: DIRECTORS:

_____

Secretary of the Board of Directors of Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the above and foregoing is a full, true and correct copy of RESOLUTION NO. 2016-07-06 of said Board, and that the same has not been amended or repealed.

Dated: July 19, 2016

_____

Secretary of the Board of Directors of Borrego Water District

RESOLUTION NO. 2016-07-07

RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT, TEMPORARILY SUSPENDING THE IMPLEMENTATION AND ENFORCEMENT OF ORDINANCE NO. 16-01 (WATER CONSERVATION MEASURES)

WHEREAS, the Board of Directors has previously adopted Ordinance No. 16-01, which mandates certain water conservation efforts through the regulation of irrigation of outdoor landscapes and turf during drought conditions; and

WHEREAS, the necessity of such water conservation efforts are no longer necessary; and

WHEREAS, the Board of Directors desire that Ordinance No. 16-01 remain in effect, but should not be enforced during such period where water conservation efforts are no longer necessary; and

WHEREAS, a temporary suspension of the implementation and enforcement of Ordinance No. 16-01 can be implemented by resolution of the Board of Directors, from time to time.

NOW, THEREFORE, the Board of Directors of the Borrego Water District does hereby resolve, determine and order as follows:

Section 1. The implementation of water conservation efforts mandated by Ordinance No. 16-01, is hereby suspended effective immediately, and shall not be enforced by the District until this suspension is lifted by resolution of the Board.

Section 2. The District will continue to monitor drought conditions in the District, provide courtesy warnings to customers whose practices might otherwise violate water conservation rules and regulations of the District, and shall continue to assist in the education of the customers in how to reduce water waste and usage at all times.

ADOPTED, SIGNED AND APPROVED this 19th day of July 2016.

_____

President of the Board of Directors
of Borrego Water District

ATTEST:

_____

Secretary of the Board of Directors
of Borrego Water District

{Seal}

STATE OF CALIFORNIA)

) ss.

COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the foregoing resolution was duly adopted by the Board of Directors of said District at a regular meeting held on the 19th day of July, 2016, and that it was so adopted by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

ABSTAIN: DIRECTORS:

_____

Joseph Tatusko, Secretary of the Board of Directors of Borrego Water District

STATE OF CALIFORNIA)

) ss.

COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the above and foregoing is a full, true and correct copy of RESOLUTION NO. 2016-07-7, of said Board, and that the same has not been amended or repealed.

Dated: July 19, 2016

_____

Joseph Tatusko, Secretary of the Board of Directors of Borrego Water District

MEMORANDUM OF UNDERSTANDING
DEVELOPMENT OF A GROUNDWATER SUSTAINABILITY PLAN
FOR THE BORREGO VALLEY GROUNDWATER BASIN

This Memorandum of Understanding for the Development of a Groundwater Sustainability Plan ("Plan") for the Borrego Valley Groundwater Basin ("MOU") is entered into and effective this __ day of _____, 2016 by and between the Borrego Water District ("District") and the County of San Diego ("County"). The District and the County are each sometimes referred to herein as a "Party" and are collectively sometimes referred to herein as the "Parties."

RECITALS

WHEREAS, on September 16, 2014, Governor Jerry Brown signed into law Senate Bills 1168 and 1319 and Assembly Bill 1739, known collectively as the Sustainable Groundwater Management Act (Act);

WHEREAS, Act went into effect on January 1, 2015;

WHEREAS, Act seeks to provide sustainable management of groundwater basins, enhance local management of groundwater; establish minimum standards for sustainable groundwater management; and provide local groundwater agencies the authority and the technical and financial assistance necessary to sustainably manage groundwater;

WHEREAS, the Parties have each declared to be a Groundwater Sustainability Agency (GSA) overlying portions of Borrego Valley Groundwater Basin (Borrego Basin), identified as Basin Number 7.24, a Bulletin 118 designated (medium-priority) basin;

WHEREAS, each Party has statutory authorities that are essential to groundwater management and Act compliance;

WHEREAS, Section 10720.7 of Act requires all basins designated as high- or medium-priority basins designated in Bulletin 118 be managed under a Plan or coordinated Plans pursuant to Act;

WHEREAS, Section 10720.7 of Act requires all critically over drafted basins be managed under a Plan by January 31, 2020;

WHEREAS, the California Department of Water Resources (DWR) has identified the Borrego Basin as critically over drafted;

WHEREAS, the Parties intend to eliminate overlap of the Parties by collectively developing and implementing a single Plan to sustainably manage Borrego Basin pursuant to section 10727 et seq. of Act;

WHEREAS, the Parties wish to use the authorities granted to them pursuant to the Act and utilize this MOU to memorialize the roles and responsibilities for developing the Plan;

WHEREAS, it is the intent of the Parties to complete the Plan as expeditiously as possible in a manner consistent with Act and its implementing regulations;

WHEREAS, it is the intent of the Parties to cooperate in the successful implementation of the Plan not later than the date as required by the Act for the Borrego Basin;

WHEREAS, the Parties wish to memorialize their mutual understandings by means of this MOU; and

NOW, THEREFORE, in consideration of the promises, terms, conditions, and covenants contained herein, the Borrego Water District and the County of San Diego hereby agree as follows:

I. Purposes and Authorities.

This MOU is entered into by the Parties for the purpose of establishing a cooperative effort to develop and implement a single Plan to sustainably manage the Borrego Basin that complies with the requirements set forth in the Act and its associated implementing regulations. The Parties recognize that the authorities afforded to a GSA pursuant to Section 10725 of the Act are in addition to and separate from the statutory authorities afforded to each Party individually. The Parties intend to memorialize roles and responsibilities for Plan implementation during preparation of the Plan.

II. Definitions.

As used in this Agreement, unless context requires otherwise, the meanings of the terms set forth below shall be as follows:

1. "Act" refers to the Sustainable Groundwater Management Act.
2. "Advisory Committee" refers to the stakeholder group created in Section III of the MOU.
3. "Core Team" refers to the working group created in Section III of the MOU.
4. "County" refers to the County of San Diego, a Party to this MOU.
5. "District" refers to the Borrego Water District, a Party to this MOU.
6. "DWR" refers to the California Department of Water Resources.
7. "Effective Date" means the date on which the last Party executes this Agreement.
8. "Governing Body" means the legislative body of each Party: the District Board of Directors and the County Board of Supervisors, respectively.
9. "Groundwater Sustainability Plan (Plan)" is the basin plan for the Borrego Basin that the parties to this MOU are seeking to develop and implement pursuant to the Act.
10. "Memorandum of Understanding (MOU)" refers to this agreement.
11. "Party" or "Parties" refer to the County of San Diego and Borrego Water District.
12. "Plan Funding" is the funding necessary for the preparation and implementation of the Plan.
13. "Plan Schedule" includes all the tasks necessary to complete the Plan and the date

scheduled for completion.

14. "State" means the State of California.
15. "SWRCB" refers to the State Water Resources Control Board.
16. "Undesirable Result" shall be defined as in the Act Section 10721(x) 1-6

III. Agreement.

This section establishes the process for the Borrego Basin Plan Core Team and the Advisory Committee.

1. Establishment and Responsibilities of the Plan Core Team (Core Team).
    a. The Core Team shall jointly develop a coordinated Plan. The Plan shall include, but not be limited to, enforcement measures, a detailed breakdown of each Parties responsibilities for Plan implementation, anticipated costs of implementing the Plan, and cost recovery mechanisms (if necessary).
    b. The Core Team will consist of representatives from each Party to this MOU working cooperatively together to achieve the objectives of the Act. Core Team members serve at the pleasure of their appointing Party and may be removed/changed by their appointing Party at any time. A Party must notify all other Parties to this MOU in writing if that Party has removes or replaces Core Team members.
    c. Each member of the Core Team shall be responsible for keeping his/her respective management and governing board informed of the progress towards the development of the Plan and for obtaining any necessary approvals from management/governing board. Each member of the Core Team shall keep the other member reasonably informed as to all material developments so as to allow for the efficient and timely completion of the Plan.
    d. Each Core Team member's compensation for their service on the Core Team is the responsibility of the appointing Party.
    e. The Core Team shall develop and implement a stakeholder participation plan that involves the public and area stakeholders in an Advisory Committee role to aid in developing and implementing the Plan.
    f. The Core Team will cooperatively work with the Advisory Committee to develop bylaws for the governance of the Advisory Committee. These bylaws are subject to approval by the Core team prior to adoption by the Advisory Committee. The Core Team may establish an appointment process and other administrative procedures for the Advisory Committee, in accordance with District and County policies intended to promote active participation in local government, and requirements to include stakeholders in the development of the Plan as established in the Act.
    g. The Core Team will be the primary liaison with the Advisory Committee; and

will guide Advisory Committee activities.

2. Core Team Meetings.

   a. The Core Team will establish a meeting schedule and choice of locations for regular meetings to discuss Plan development and implementation activities, assignments, milestones and ongoing work progress.

   b. The Core Team may establish and schedule meetings of the Advisory Committee to coordinate development and implementation of the Plan.

   c. Attendance at all Core Team meetings may be augmented to include staff or consultants to ensure that the appropriate expertise is available.

3. Establishment and Role of the Advisory Committee

   a. The Parties shall establish an Advisory Committee. The Advisory Committee will provide input to the Core Team on Plan development, including providing recommendations on basin sustainability measures, and the planning, financing, and implementation of the Plan. The Parties will agree on the composition of the Advisory Committee and acknowledge that the Advisory Committee must meet the requirements established in the Act.

   b. Advisory Committee members will not be compensated for activities associated with the Advisory Committee, Plan development or any activity conducted under this agreement.

   c. The Advisory Committee that is formed through this process shall be subject to and abide by the California open meeting laws under Government Code sections 54950 et seq., otherwise known as the "Brown Act," in order for the Parties to accept an Advisory Committee's recommendations.

   d. Meetings of the Advisory Committee shall be held in Borrego Springs, CA.

IV. Interagency Communication.

1. To provide for consistent and effective communication between parties, each Party agrees that a single member from each Party's Core Team will be their central point of contact on matters relating to this MOU. Additional representatives may be appointed to serve as points of contact on specific actions or issues.

2. The Core Team shall appoint a single representative to communicate actions conducted under this agreement to DWR. The appointee shall not communicate formal actions or decisions without prior written approval from the Core Team. This is not intended to discourage informal communications between the Parties and DWR.

V. Roles and Responsibilities of the Parties.

1. The Parties are responsible for developing a coordinated Plan that meets the

requirements of the Act.

2. The Parties will jointly establish their roles and responsibilities for implementing a coordinated Plan for the Borrego Basin in accordance with the Act.

3. The Parties will jointly work in good faith and coordinate all activities to meet the objectives of this MOU. The Parties shall cooperate with one another and work as efficiently as possible in the pursuit of all activities and decisions described in the MOU.

4. Each of the Parties will provide expertise, guidance, and data on those matters for which it has specific expertise or statutory authority, as needed to carry out the objectives of this MOU. Further development of roles and responsibilities of each Party will occur during Plan development.

5. After execution of this MOU as soon as reasonably possible, the Core Team shall mutually develop a timeline that describes the anticipated tasks to be performed under this MOU and dates to complete each task (Plan Schedule); and scope(s) of work and estimated costs for Plan development. The Plan Schedule will allow for the preparation of a legally defensible Plan acceptable to the Parties and include allowances for public review and comment, and approval by governing boards prior to deadlines required in the Act. Due to the critical nature of the Borrego Basin overdraft, both Parties shall make every effort to complete the draft Plan as soon as possible but no later than July 1, 2019. The Plan Schedule shall become part of this MOU through reference. The Plan Schedule will be referred and amended as necessary to conform to developing information, permitting, and other requirements. Therefore, this Plan Schedule may be revised from time to time upon mutual agreement of the Core Team. Costs shall be funded and shared as outlined in Section VI.

6. The Parties recognize that they may disagree as to the composition of the Plan and/or the timelines/methods for implementing the Plan. In the event that the Parties have attempted, in good faith, to resolve the matter on their own and are unsuccessful, the Parties agree to jointly seek to use the non-binding mediation services provided by the DWR to address disputes arising under the Act, to the extent that such services are available. If non-binding mediation from the DWR is not available or if either Party believes it would be more useful to consult with the State Water Resources Control Board ("SWRCB"), the Parties agree to request non-binding mediation from the Chair of the SWRCB or another Member designated by the Chair who is acceptable to both Parties. The Parties recognize that the failure to timely complete a Plan or to achieve any of the other milestones in the Act may result in intervention by the SWRCB.

VI. Contracting and Funding for Plan Development.

1. The Parties shall mutually develop a scope of work, budget, cost sharing agreement and cost recovery plan ("Plan Funding") for the work to be undertaken pursuant to this MOU. The Plan Funding shall be included and adopted in the final Borrego

Basin Plan. Both the budget and cost sharing agreement shall be determined prior to any substantial financial expenditures or incurrence of any financial obligations related to consultant costs.

2. Specifically, to fulfill the requirements of the Act, the Core Team will jointly prepare and agree upon a scope of work for the consultants needed to prepare the Plan. The Parties agree that any work contracted for the purpose of developing the Plan shall be a cooperative effort.
3. The County shall hire consultant(s) to complete required components of the Plan. The contracting shall be subject to the County's competitive bid process and be subject to auditing by the County's Auditor and Controller.
4. Within the parameters of the County's contracting regulations, policies and procedures, the Core Team will be cooperatively involved in the evaluation, selection and oversight of the consultant(s).
5. Each Party is free to retain other consultants for its own purposes and at its own cost, *provided that* each Party consults with the other Party before conducting such work. The scope of any such work may not conflict with or duplicate work performed under this MOU. Nothing in this agreement prohibits either Party from exercising its statutory authorities afforded to each Party individually.
6. The Parties agree that each Party will bear its own staff costs to develop the Plan.

VII. Approval.

1. The Parties agree to make best efforts to adhere to the required Plan Schedule and will forward a final Borrego Basin Plan to their respective governing boards for approval and subsequent submission to DWR for evaluation as provided for in Act.
2. Approval and amendments will be obtained from the District Board of Directors prior to submission to the County Board of Supervisors.
3. Each Governing Board retains full authority to approve, amend, or reject the proposed Plan, provided the other Governing Board subsequently confirms any amendments, but both Parties also recognize that the failure to adopt and submit a Plan for the Basin to DWR by January 31, 2020 risks allowing for state intervention in managing the Basin.
4. The Parties agree that they will use good-faith efforts to resolve any issues that one or both Governing Boards may have with the final proposed Plan for the Basin in a timely manner so as to avoid the possibility of state intervention. An amendment to this MOU is anticipated upon acceptance of the Borrego Basin Plan by both Governing Boards.

VIII. Staffing.

Each Party agrees that it will devote sufficient staff time and other resources to actively participate in the development of the Plan for the Basin, as set forth in this MOU.

IX. Indemnification.

1. Claims Arising From Sole Acts or Omissions of County.
   The County of San Diego (County) hereby agrees to defend and indemnify the District, its agents, officers and employees (hereinafter collectively referred to in this paragraph as "District"), from any claim, action or proceeding against District, arising solely out of the acts or omissions of County in the performance of this MOU. At its sole discretion, District may participate at its own expense in the defense of any claim, action or proceeding, but such participation shall not relieve County of any obligation imposed by this MOU. The District shall notify County promptly of any claim, action or proceeding and cooperate fully in the defense.

2. Claims Arising From Sole Acts or Omissions of the District.
   The District hereby agrees to defend and indemnify the County of San Diego, its agents, officers and employees (hereafter collectively referred to in this paragraph as 'County') from any claim, action or proceeding against County, arising solely out of the acts or omissions of District in the performance of this MOU. At its sole discretion, County may participate at its own expense in the defense of any such claim, action or proceeding, but such participation shall not relieve the District of any obligation imposed by this MOA. County shall notify District promptly of any claim, action or proceeding and cooperate fully in the defense.

3. Claims Arising From Concurrent Acts or Omissions.
   The County of San Diego ("County") hereby agrees to defend itself, and the District hereby agrees to defend itself, from any claim, action or proceeding arising out of the concurrent acts or omissions of County and District. In such cases, County and District agree to retain their own legal counsel, bear their own defense costs, and waive their right to seek reimbursement of such costs, except as provided in paragraph 5 below.

4. Joint Defense.
   Notwithstanding paragraph 3 above, in cases where County and District agree in writing to a joint defense, County and District may appoint joint defense counsel to defend the claim, action or proceeding arising out of the concurrent acts or omissions of District and County. Joint defense counsel shall be selected by mutual agreement of County and District. County and District agree to share the costs of such joint defense and any agreed settlement in equal amounts, except as provided in paragraph 5 below. County and District further agree that neither party may bind the other to a settlement agreement without the written consent of both County and District.

5. Reimbursement and/or Reallocation.
   Where a trial verdict or arbitration award allocates or determines the comparative fault of the parties, County and District may seek reimbursement and/or reallocation of defense costs, settlement payments, judgments and awards, consistent with such comparative fault.

X. Litigation.

In the event that any lawsuit is brought against either Party based upon or arising out of the terms of this MOU by a third party, the Parties shall cooperate in the defense of the action. Each Party shall bear its own legal costs associated with such litigation.

XI. Books and Records.

Each Party shall have access to and the right to examine any of the other Party's pertinent books, documents, papers or other records (including, without limitation, records contained on electronic media) relating to the performance of that Party's obligations pursuant to this Agreement, *providing that* nothing in this paragraph shall be construed to operate as a waiver of any applicable privilege.

XII. Notice.

All notices required by this Agreement will be deemed to have been given when made in writing and delivered or mailed to the respective representatives of County and the District at their respective addresses as follows:

For the District:

General Manager
Borrego Water District
PO Box 1870
806 Palm Canyon Drive
Borrego Springs, CA 92004

With a copy to:

David Aladjem
Downey Brand LLP
621 Capitol Mall, 18th Floor
Sacramento, CA 95814

For the County:

San Diego County
Administrative Officer
San Diego County
1600 Pacific Highway
San Diego, CA 92101

With a copy to:

Justin Crumley, Senior Deputy
Office of County Counsel
1600 Pacific Highway, Rm 355
San Diego, CA 92101

Any party may change the address or facsimile number to which such communications are to be given by providing the other parties with written notice of such change at least fifteen (15) calendar days prior to the effective date of the change.

All notices will be effective upon receipt and will be deemed received through delivery if personally served or served using facsimile machines, or on the fifth (5^{th}) day following deposit in the mail if sent by first class mail.

XIII. Miscellaneous.

1. Term of Agreement**.** This MOU shall remain in full force and effect until the date upon which the Parties have both executed a document terminating the provisions of this MOU.
2. No Third Party Beneficiaries. This Agreement is not intended to, and will not be construed to, confer a benefit or create any right on a third party, or the power or right to bring an action to enforce any of its terms.
3. Amendments. This Agreement may be amended only by written instrument duly signed and executed by the County and the District.
4. Compliance with Law. In performing their respective obligations under this MOU, the Parties shall comply with and conform to all applicable laws, rules, regulations and ordinances.
5. Jurisdiction and Venue. This MOU shall be governed by and construed in accordance with the laws of the State of California, except for its conflicts of law rules. Any suit, action, or proceeding brought under the scope of this MOU shall be brought and maintained to the extent allowed by law in the County of San Diego, California.

6. Waiver. The waiver by either party or any of its officers, agents or employees, or the failure of either party or its officers, agents or employees to take action with respect to any right conferred by, or any breach of any obligation or responsibility of this Agreement, will not be deemed to be a waiver of such obligation or responsibility, or subsequent breach of same, or of any terms, covenants or conditions of this Agreement, unless such waiver is expressly set forth in writing in a document signed and executed by the appropriate authority of the County and the District.

7. Authorized Representatives. The persons executing this Agreement on behalf of the parties hereto affirmatively represent that each has the requisite legal authority to enter into this Agreement on behalf of their respective party and to bind their respective party to the terms and conditions of this Agreement. The persons executing this Agreement on behalf of their respective party understand that both parties are relying on these representations in entering into this Agreement.

8. Successors in Interest. The terms of this Agreement will be binding on all successors in interest of each party.

9. Severability. The provisions of this Agreement are severable, and the adjudicated invalidity of any provision or portion of this Agreement shall not in and of itself affect the validity of any other provision or portion of this Agreement, and the remaining provisions of the Agreement shall remain in full force and effect, except to the extent that the invalidity of the severed provisions would result in a failure of consideration or would materially adversely affect either party's benefit of its bargain. If a court of competent jurisdiction were to determine that a provision of this Agreement is invalid or unenforceable and results in a failure of consideration or materially adversely affects either party's benefit of its bargain, the parties agree to promptly use good faith efforts to amend this Agreement to reflect the original intent of the parties in the changed circumstances.

10. Construction of Agreement. This Agreement shall be construed and enforced in accordance with the laws of the United States and the State of California.

11. Entire Agreement**.**

    a. This Agreement constitutes the entire agreement between the County and the District and supersedes all prior negotiations, representations, or other agreements, whether written or oral.

    b. In the event of a dispute between the parties as to the language of this Agreement or the construction or meaning of any term hereof, this Agreement will be deemed to have been drafted by the parties in equal parts so that no presumptions or inferences concerning its terms or interpretation may be construed against any party to this Agreement.

IN WITNESS WHEREOF**,** the parties hereto have set their hand on the date first above written.

BORREGO WATER DISTRICT

By:_____
Beth A. Hart
President, Board of Directors

COUNTY OF SAN DIEGO,
a political subdivision of
the State of California

By**:**_____
Clerk of the Board of Supervisors

APPROVED AS TO FORM AND LEGALITY
BY COUNTY COUNSEL

By:_____
Senior Deputy

Agenda Items:

- Discussion and potential action for hiring a consultant to assess the District's potential potable water supply liability (water supply shortage over time under SGMA) and development of a schedule for acquiring new capacity for its existing customer base;
- Discussion and potential action for hiring a consultant to forecast the District's ability to provide municipal water for the inventory of present un-built lots under the County's current zoning, and any potential additional lots under the County's current up-zoning requests.

Discussion:

In 2011, the District's financial consultant indicated that there were 2,157 improved and 3,914 unimproved parcels in the District boundary. Under SGMA, the District needs another ~1,000 production credits for its existing customers and the basin needs to be able to support another 3,052 production credits for future demand from these un-built lots.[1] There are not that many available production credits for future residential development in the District's boundaries under SGMA constraints i.e. sustainability.

W/re to the County's present up-zoning requests (e.g. Rudyville, etc. that would add another 500 EDUs w/in the District's boundaries): Up-zoning to approve additional lots may not be supportable under SGMA. To our knowledge, the County has never taken physical water limits into account in its land use decisions for the Valley. Under SGMA, my understanding from DWR is that this posture would not be acceptable under SGMA, which both the County and District are required to abide by since January 1, 2015 as the Borrego Basin is a medium priority, critically over-drafted DWR designated basin.

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[1] For example: if a platted lot = 1 EDU, and the average direct usage per EDU is ~0.55 AFY and the indirect usage/reserve is ~0.23 AFY (includes public space, commercial usage based on population + reserve from broken pipes, changes in consumption, etc.; essentially a safety amount), then the amount of physical water the District must be ready to provide at some time in the future is a reserve of # of un-built EDUs x 0.78 AFY. The District needs another ~1,000 production credits for its existing customers and the basin needs to be able to support another 3,052 production credits for future demand based on presently platted and County-approved lots. There are not that many available production credits available for future residential development under SGMA, assuming golf courses will also require additional supply under SGMA.

Scope of Work

Use of Vertical Flow and Chemistry Profiles to Determine Vertical Gradients of Groundwater Quality in Support of Groundwater Management Plan Development, Borrego Valley, CA

Michael T. Wright, Claudia Faunt, Allen Christensen
and Matthew Landon
U.S. Geological Survey, California Water Science Center

Problem: Groundwater is virtually the sole source of water supply in Borrego Valley, California (fig. 1). Groundwater in the Borrego Valley basin has been developed for agricultural, recreational and municipal uses. Because there is relatively little groundwater recharge in the basin, pumping for anthropogenic purposes have resulted in a groundwater-level declines (Moyle, 1982; Mitten and others, 1988; Henderson, 2001; and Netto, 2001). The recent development and calibration of a three-dimensional (3D) integrated hydrologic flow model, the Borrego Valley Hydrologic Model (BVHM), indicates that water levels are likely to continue decline in the foreseeable future (Faunt and others, in review). Model simulations indicate that if current (2010) stresses on the groundwater basin are constant over a 50-year period, groundwater-level decline will be > 125 ft in the largely agricultural northern portion of the basin and 25 - 125 ft in middle portion of the basin where the majority of municipal pumpage occurs. In the most drastic, but realistic, management scenario where municipal and recreational pumpage are reduced by 50 percent and agricultural pumpage by 40 percent over a 20-year period, water levels are still predicted to decline 25-50 ft in the northern and middle portions of the basin.

As groundwater levels decline, there is the potential to change the distribution of flow from the underlying aquifers to wells. Lowering the water table in shallow aquifers may draw chemical constituents (e.g. nitrate and totals dissolved solids) from anthropogenic sources present near the water table into a well. Declining water levels also cause a decrease in the saturated thickness of shallow aquifers, which may result in a larger proportion of the groundwater withdrawn from a well perforated in deeper aquifers and may have poorer water quality. Groundwater from deeper aquifers is typically older, has been in contact with aquifer materials longer, and may can contain more dissolved chemical constituents (e.g. arsenic and fluoride), resulting in the degradation of the water quality.

To ensure long-term dependability of groundwater resources in the Borrego Valley, a groundwater management plan will need to consider how water quality will change over time with corresponding declines in water level. Because the vertical distribution groundwater chemistry will likely vary systematically across the basin, and because little is known about the vertical distribution of water quality in the Borrego Valley basin, collecting detailed profiles of wellbore flow and water quality in select wells will be important for understanding how the quality of groundwater withdrawn from supply wells may change over time. In addition, the installation of an unsaturated zone (UZ)/water table well site to determine rate of movement and water quality of water within the unsaturated zone, and near the water table, would be an important measure of how water quality may change in the future as water moves through unsaturated zone and is recharged at the water table. Data from these analyses, can be used in conjunction with the BVHM particle-tracking simulations to provide groundwater managers with the necessary information on

expected timing and changes in groundwater quality and extremely useful when making informed groundwater management decisions.

Objectives: The purpose of this work is to determine the vertical distribution of groundwater flow and chemistry within the perforated intervals of selected wells and to use this data with the particle tracking capabilities of the BVHM to simulate changes in the quality of groundwater withdrawn from supply wells associated with declines in groundwater levels. The UZ well site will provide information about the rate of vertical movement and quality of water that is moving through the thick unsaturated zone. Understanding the rate of movement and quality of the water in the unsaturated zone is needed component for a better understanding of future changes in water level and water quality. These analyses will provide for the identification of chemical constituents, if any, which may be of concern for the management of usable groundwater resources in the Borrego Valley basin.

Science Plan:

Downhole-flow Profile and Vertical Distribution of Water Chemistry within Wells
Detailed data collection, analysis, and modeling of the vertical distribution of groundwater flow and chemistry in three wells will be used to inform groundwater managers on potential issues regarding the management of groundwater quality in the Borrego Valley Basin. The primary analyses proposed are: (1) Examine wellbore flow under ambient (unpumped) conditions to determine if groundwater from different aquifer zones is mixing when wells are not being pumped; (2) Determine wellbore flow under pumping conditions to determine which depths of the aquifer system are contributing water and what the relative contributions are; (3) Determine the vertical distribution of water-quality constituents and isotopic tracers in the aquifer systems being tapped. Based on the vertical distribution of constituents, determine what aquifer zones, if any, have chemical concentrations near, or above, health-based or aesthetic water-quality benchmarks; (4) The BVHM will be used in conjunction with the particle tracking program MODPATH to simulate how concentrations of water quality constituents of interest may change over time in groundwater being pumped by production wells in response to declining water levels.

Monitoring Well Construction (Proposed for Federal Fiscal Year 2017)
The USGS is proposing to construct monitoring well(s) in Borrego area based on land use. The site(s) instrumentation includes a well screened at the water table, matric-potential sensors for determining the direction and magnitude of water movement, and suction-cup lysimeters to collect water samples in the unsaturated zone. Data collected from the proposed monitoring site(s) will be used to determine the vertical rate of movement of water, and to monitor changes in water chemistry from the land surface through the unsaturated zone to the water table. These data will be used to construct profiles of water content and soil water chemistry within the unsaturated zone. Location for monitoring sites should include areas where land use activities may have contributed to the build up of nitrate and other salts in the unsaturated zone and in groundwater near the water table. Possible well locations to consider are areas with agricultural land use, areas where septic tank effluent in discharged to the subsurface and undeveloped areas where natural recharge occurs. Comparison of the vertical rates of water and chemical movement between undeveloped and agricultural land can help determine the effects of agricultural land use on water in the unsaturated zone and in the upper most portion of the water table. This data can also be used to help predict future changes in water quality in the aquifer(s) as water moves through unsaturated zone to the water table.

Task 1: Study Design FY 2016—

The USGS and the Borrego Water District (BWD) shall consult on selecting three production or other suitable wells for measuring profiles of well-bore flow and water quality. Considerations for selecting wells should include: 1) Areal location of a well in the basin. The selected wells should be located in areas where pumping, and water-level decline, is currently the greatest and is likely to remain so in the near future; 2) the depth of the wells. Perforated intervals of selected wells should be open to the aquifer system that is currently used, or planned use, for groundwater production. For example, a well sampled in the northern portion of the basin is likely perforated in the upper and middle aquifers and is important for groundwater extraction for irrigation, whereas in the middle portion of the basin the middle and some cases lower aquifer becomes important for domestic and municipal supply. However, wells that are perforated in all three aquifers, no matter the areal location, would be the most ideal; 3) Pumping water levels should also be considered since setting the temporary well pump above the upper-most well perforations will allow for the most robust analysis of well-bore flow and vertical distribution of water quality.

Task 2: Collection and interpretation of well-bore flow and chemistry, three production wells in FY 2016—

Well-Bore Flow: well-bore flow data, including fluid temperature, fluid resistivity, and well-bore velocity will be collected from the study wells under unpumped conditions using an electromagnetic (EM) flow meter. Prior to data collection, the thickness of any oil that is used to lubricate well pumps and that is floating on the surface of the water column must be measured and possibly removed, if other operational solutions cannot be devised, to avoid contaminating and/or damaging equipment and possibly biasing the data collected. Under some circumstances, it may be possible to work in wells with floating oil. These conditions will have to be assessed on a site by site basis. Costs for removing oil are not included in this proposal.

The EM flow meter has a large dynamic range capable of measuring both unpumped and pumped flows (Newhouse and others, 2005). Fluid temperature and fluid resistivity sensors embedded within the EM flow meter will be used to confirm measurements of unpumped flow. These data will be used to assess redistribution of water having potentially different quality through wells under unpumped conditions. Wellbore flow data will also be collected under pumped conditions using the EM logging tool. The EM flowmeter is typically able to measure flow more accurately than a spinner-type flowmeter, particularly at low flow rates. The velocity measurements will be collected at several different EM flow meter drop rates to check the calibration of the instrument and evaluate the reproducibility of the velocity profile. The velocity profile will be converted to a volumetric flow rate using the cross-sectional area of the wellbore. The flow rates determined from the EM flow meter will be compared to the flow rates measured on the discharge line of the temporary pump using an acoustic flow meter as an additional quality-assurance step.

A temporary pump will be installed by a well services company contracted through the BWD. The well should be pumped at a rate similar to normal or anticipated groundwater pumping rates used for municipal, agricultural or recreation supply. If the temporary pumping rate is less than the expected pumping rate under normal operating conditions, and as long as the induced flow under pumped conditions exceeds ambient flow under un-pumped conditions, the relative contributions of flow and contaminants from different depths is expected to be similar to those measured under normal operating conditions with higher flow rates. The effects of different pumping rates on the system can also be assessed using the groundwater flow modeling analysis (see below). These depth-dependent techniques have been used in many wells throughout California (Izbicki and others, 1998; 2003; 2005a; 2005b;

2006; 2008).

Prior to setting the pump it may be prudent to video log the well casing. A video log will confirm the exact location of well openings and their condition. If well openings are compromised by encrustation then the well should be rehabbed, which would be optimal for well production and obtaining well-bore flow data. The relative cost of well rehab would be small compared to the total cost of removing the dedicated pump and setting a temporary pump in place. The BWD could contract with a well pump company to have this service completed. The USGS can provide the video logging services if needed and a cost for this service would be provided upon request.

Water-quality sampling: Depth-dependent water samples will be collected from the surface discharge and five selected depths within the well. These samples will be analyzed for a wide array of constituents as discussed below, except that age-dating parameters which may only be collected from the surface discharge and two depths in the well. The depth-dependent samples will be collected by installing 2-inch diameter PVC casing in the well to the target depth of the sample and then lowering a submersible pump (Bennett) suitable for sampling for dissolved gases into the PVC pipe. Because the samples will be collected under pumping conditions with the temporary pump intake above or near the top of the perforated interval, there will be upward flow in the well, similar to typical well operating conditions. The sample from each depth integrates the contributions of flow and chemistry from all perforated intervals below the sample point. The chemical composition of water for each depth interval, between sampling depths, is calculated from the wellbore flow data and measured concentrations samples using a mixing calculation (Izbicki et al., 1999). Sample depths will be selected based on the flow log. Five sampling depths in the well perforations are planned, which is expected to provide suitable vertical chemical resolution for the perforated intervals of the wells sampled. Samples will be collected and processed by USGS personnel according to the USGS National Field Manual (USGS, variously dated). Sampling equipment will be cleaned before samples are collected at each depth to prevent cross-contamination between sample points (U.S. Geological Survey, variously dated). Field blanks and replicate samples will be utilized as part of this study to assess the quality of data collection procedures and laboratory results. Approximately 10 percent of the analytical budget within each task has been reserved for quality assurance samples. The nature of samples to be analyzed for quality assurance purposes will vary for each constituent and laboratory to meet project data quality objectives.

Samples will be analyzed for major and minor ions, selected trace elements, and nutrients (table 1) at the USGS National Water Quality Laboratory, Denver, CO. Samples will also be analyzed for the following:

1) Field parameters, including dissolved oxygen, specific conductance, pH, and water temperature using calibrated instruments in a flow-through chamber, and hydrogen sulfide using portable instruments, at the well site during well purging;

2) Delta oxygen-18 and delta deuterium isotopic values in water ($\delta^{18}O$ and δD, respectively), can be used to determine the source of groundwater (local recharge versus agricultural return) Differences in isotopic composition can also be used to help determine general atmospheric conditions at the time of precipitation and the effects of evaporation before water entered the groundwater system These samples will be analyzed at the USGS stable isotope laboratory (RSIL) in Reston, VA (table 2);

3) $\delta^{18}O$ and nitrogen-15 ($\delta^{15}N$) isotopic values of dissolved nitrate (table 2), used to determine sources of nitrate such as from fertilizers used for agricultural versus septic return water. These samples will also be analyzed at USGS RSIL;

4) Radiological analysis for gross alpha and beta radiation (table 3) will be collected and processed on selected samples. Based on recent analysis of water quality data in the basin that indicated gross alpha radiation exceeded the California MCL in two wells (10S/05E-36A1 and 10S/6E-15D4S) located in different parts of the Borrego Valley basin (fig.1). These samples will be analyzed at Test America Laboratory which has a contract through the USGS NWQL;

5) Groundwater age-dating tracers, tritium (recent recharge), and carbon-14 (old water), to determine the time-since recharge of recent (less than 50 years) and older (greater than 50 to more than 20,000 years before present) groundwater, respectively (table 2); Tritium samples will be analyzed at either the USGS Menlo Park Tritium Laboratory or the University of Miami (UOM) which contracts through the USGS NWQL. Carbon-14 samples will be analyzed at the Woods Hole Oceanographic Institute located in Woods Hole, MA.

Task 3: Monitor Well Construction (Proposed for Federal Fiscal Year 2017)

The monitoring well will be constructed by the ODEX drilling method (air rotary with outer casing) to the water table or to a depth not to exceed 500 feet or 25-50ft below the water table. Drilling operations will be conducted on a 12-hour-per-day basis by USGS personnel. Soil cores will be collected at changes in lithology, and if feasible, the bottom of the hole. The borehole will be instrumented with six heat dissipation probes, 3 lysimeters, and one 2-inch PVC piezometer perforated at the water table. All construction equipment and supplies needed for the well construction and instrumentation of the site will be provided by the USGS. A USGS hydrologist will be onsite during the entire construction process to analyze and log the drill cuttings, interpret the borehole geophysical logs, and provide the final monitoring-site design. Most of the instruments will be programmed to collect data on an almost continuous basis, and these data will be stored on site in data loggers. The USGS will visit the site on a quarterly basis to download the data and manually collect data as needed.

Task 4: Model simulation using the BVHM and Modpath particle tracking-FY17

Once the vertical profiles of well-bore flow and water quality are known and data collected from the UZ monitoring site are processed, the BVHM (Faunt and others, in review) can be used to help predict how water quality may change in response to declining water levels and changes in flux from the unsaturated zone. This task would be done using output from the model coupled with MODPATH particle-tracking software. The flowpaths of groundwater having specified water-quality parameters of interest based on measured data can be tracked (forward or backward) between aquifer zones of origin and well screens with MODPATH. These MODPATH simulations can be used to estimate water-quality conditions being contributed to groundwater withdrawn from supply wells from each of the different aquifer zones, based on the measured well-bore flow, depth-dependent water-quality profiles, and data collected in the unsaturated zone. By analyzing the distribution of chemical concentrations, indicated as particles coming from different zones of the aquifer(s) to pumping wells, and how the particle concentration distributions change over time as water levels change, the simulations can be used to understand how changes in groundwater levels and groundwater source zones will affect the quality of water withdrawn from wells.

Task 5: Reporting –FY16/17

Study results will be presented to the BWD in interim presentations or written communications as necessary to inform decisions on groundwater management with respect to water quality in the Borrego Valley Basin. Final results of the study will be described in a USGS report series fact sheet. Data from the project will be publically available in the U.S. Geological Survey's on-line data base NWIS-Web

(http://waterdata.usgs.gov/nwis) and will also be made available on the USGS's Borrego Valley project website (U.S. Geological Survey, in review) that was recently developed for the BWD by the USGS.

Budget: The costs for the project, by task, are shown in the following table, along with a breakdown by major expense category. For studies done with non-federal public agencies, the U.S. Geological Survey has Federal Matching Funds (FMF) to share costs for certain expenses, such as labor and travel, to a maximum of 25 percent of the cost for that expense. These FMF cannot be used to match funds from private entities.

Task	Work	Year	BWD Funds	USGS Federal Matching Funds	Total
1	**Study Design**	FFY16[1]			
	Labor		$7,050	$2,100	$9,150
2	**Well Bore Flow and Sample Collection**	FFY16[1]			
	Labor		$48,500	$13,250	$61,750
	Travel, vehicles, shipping		$16,300	$4,800	$21,100
	Equipment, supplies, equipment rental		$35,250	$0	$35,250
	Laboratory analyses		$33,700	$0	$33,700
	Subtotal		**$140,800**	**$20,150**	**$160,950**
3	**Monitoring Well Construction**	FFY17[2]	**$300,000**	**$50,000**	**$350,000**
4	**Modeling**	FFY16[1]			
	Labor		$17,500	$5,100	$22,600
5	**Reporting**	FFY16/17[1,2]			
	Labor		$40,850	$9,050	$49,500
	Total		**$499,150**	**$84,300**	**$583,050**
	Total (Excluding task 3)		**$199,150**	**$34,300**	**$233,050**

[1]Federal Fiscal Year 2016 (Oct 1, 2015 - Sept. 30, 2016)
[2]Federal Fiscal Year 2017 (Oct 1, 2016 - Sept. 30, 2017)

Work Plan: Tasks 1, 2, and 4, will be conducted during Federal Fiscal Year (FFY) 2016 (October 1, 2015 – September 30, 2016). Task 5 is planned for FFY2016/17 (October 1, 2015 – September 30, 2017), after well bore flow logs, depth dependent water quality and modeling data has been collected. Task 3 (If funded) would be completed in late FFY2017 (October 1, 2016 – September 30, 2017)

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Figure 1. Select groundwater wells and potential areas for selecting sites for well bore flow and water chemistry sampling in the Borrego Valley basin.

Table 1. Major and minor ions, trace elements, and nutrients to be measured at selected wells, Borrego Valley, CA.

[milligrams per liter, mg/L; micrograms per liter, mg/L; uS/cm, microsiemen per centimeter; CAS, Chemical Abstracting Service; na, not available]

Constituent[1]	USGS parameter code	CAS number	Reporting level	Reporting units
Alkalinity, laboratory	29801	471-34-1	4.6	mg/L
Aluminum	01106	7429-90-5	2.2	ug/L
Arsenic	01000	7440-38-2	0.10	ug/L
Barium	01005	7440-39-3	0.3	ug/L
Boron	01020	7440-42-8	2.0	ug/L
Bromide	71870	24959-67-9	0.03	mg/L
Calcium	00915	7440-70-2	0.022	mg/L
Chloride	00940	16887-00-6	0.02	mg/L
Chromium	01030	7440-47-3	0.3	ug/
Fluoride	00950	16984-48-8	0.01	mg/L
Iodide	71865	7553-56-2	0.001	mg/L
Iron	01046	7439-89-6	4.0	ug/L
Lithium	01130	7439-93-2	0.1	ug/L
Magnesium	00925	7439-95-4	0.011	mg/L
Manganese	01056	7439-96-5	0.20	ug/L
pH, laboratory	00403	na	0.1	pH
Potassium	00935	7440-09-7	0.03	mg/L
Total Dissolved Solids	70300	na	20	mg/L
Silica	00955	7631-86-9	0.018	mg/L
Sodium	00930	7440-23-5	0.06	mg/L
Specific conductance, laboratory	90095	na	5	uS/cm
Strontium	01080	7440-24-6	0.2	ug/L
Sulfate	00945	14808-79-8	0.02	mg/L
Uranium	22703	7440-61-1	0.014	ug/L
Vanadium	01085	7440-62-2	0.08	ug/L
Nitrogen, nitrite + nitrate	00631	na	0.04	mg/L
Nitrogen, nitrite	00613	14797-65-0	0.001	mg/L

[1]U.S. Geological Survey National Water Quality Laboratory, Denver, Colorado

Table 2. Isotopes, groundwater age tracers and reporting information for laboratory analyses.

[The five-digit USGS parameter code is used to uniquely identify a specific constituent or property. Elements: H, hydrogen; O, oxygen; C, carbon; N, nitrogen; Other abbreviations: CAS, Chemical Abstract Service; na, not available; pmc, percent modern carbon; pCi/L, picocuries per liter]

Constituent	USGS parameter code	CAS number	Method Uncertainty	Reporting units
Isotope ratios				
$\delta^{2}H$ in water [1]	82082	na	2	per mil
$\delta^{18}O$ in water [1]	82085	na	0.2	per mil
$\delta^{15}N$ in nitrate [1]	82690	na	0.2	per mil
$\delta^{18}O$ in nitrate [1]	63041	na	0.2	per mil
$\delta^{13}C$ in dissolved inorganic carbon [2]	82081	na	0.05	per mil
Age Tracers				
Tritium [3]	7000	10028-17-8	1	pCi/L
Carbon-14 [2]	49933	14762-75-5	0.0015	pmc
Carbon-14, counting error [2]	49934	na	na	pmc

[1] USGS Reston Stable Isotope Laboratory, Reston, Virginia (USGS-RSIL)

[2] Woods Hole Oceanographic Institute, National Ocean Sciences Accelerator Mass Spectrometry Facility, Woods Hole, Massachusetts

[3] USGS Isotope Tracer Laboratory, Menlo Park, California or University of Miami, Miami, Florida

Table 3. Gross alpha and beta radiation to be measured at selected wells, Borrego Valley, CA.

[pCi/L, picocuries per liter; CAS, Chemical Abstracting Service]

Constituent[1]	USGS parameter code	CAS number	Reporting level	Reporting units
Gross-alpha radioactivity, 72/hr	62636	12587-46-1	3	pCi/L
Gross-alpha radioactivity, 30/day	62639	12587-46-1	3	pCi/L
Gross-beta radioactivity, 72/hr	62642	12587-47-2	4	pCi/L
Gross-beta radioactivity, 30/day	62645	12587-47-2	4	pCi/L

[1] Test America Laboratories, Richland, WA

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

September 22, 2014

Mr. Jerry Rolwing
General Manager
Borrego Water District
806 Palm Canyon Drive
Borrego Springs, CA 92004
(Submitted via e-mail: jerry@borrego.org)

Subject: **Review of USGS Scope of Work – Use of Vertical Flow and Chemistry Profiles to Determine Vertical Gradients of Groundwater Quality in Support of Groundwater Management Plan Development, Borrego Valley, California dated September 4, 2014**

Dear Mr. Rolwing:

Dudek has reviewed the U.S. Geological Survey (USGS) proposal to evaluate vertical gradients of water quality within the Borrego Valley Groundwater Basin (BVGB). The work proposed by the USGS is designed to address whether continued water level decline in the BVGB is likely to cause degradation of the water quality in the Borrego Water District (BWD) supply wells. This question is of utmost concern to the BWD because of the potential economic consequences (i.e. need for treatment or targeting specific pumping zones for groundwater production) that accompany changes in water quality.

Review of Science Plan

Review of Study Objectives

The general objectives of the USGS's Science Plan - to delineate the vertical distribution of water quality in the BVGB and to model potential groundwater quality changes resulting from water level declines – will help address the question of what, if any, potential economic consequences may result from encountering aquifer zones with water quality that may require treatment to be used for potable supply.

Review of Study Design

The study design requires refinement to meet the proposal objectives. Specifically, the study design lacks details on how the hypothesis that water quality within the BVGB varies with depth will be tested. Dudek recommends using lithologic and geophysical logs to better target sampling of distinct aquifer zones. For instance, the geophysical logs recorded for three test holes recently drilled in the south BVGB suggest potential varying water quality with depth as supported by changes in the spontaneous potential (SP) logs (Victory Well Surveys 2014). Additionally, clay layers that separate the distinct water quality zones were noted in both the visual lithologic log and short and long normal resistivity logs. Composite wellhead water quality samples in the south BVGB exhibit a wide range in concentration of total dissolved solids (TDS): 340 to 1,300 milligrams per liter (mg/L), chloride 39 to 230 mg/L, and sulfate 32 to 570 mg/L that may be a result of varying water quality with depth (Dudek 2014).

Review of Data Collection

The proposed data collection methods are adequate to determine changes in water quality with depth. However, Dudek recommends that the USGS consider collecting dissolved gases from select wells as

considerable cost savings may be achieved by collecting depth discrete samples by methods other than the one proposed (e.g. hydro-booster or fluid sampler methods described in Izbicki 2004 and Pacific Surveys 2014).

Conclusions and Recommendations

Dudek offers the following recommendations based on review of the USGS proposal to evaluate vertical gradients of water quality within the BVGB:

1) Additional study design is warranted to better develop the hypothesis of varying water quality with depth in each of the three BVGB management zones identified in Figure 1 of the USGS proposal.

2) The study area should be limited to the north, middle or south BVGB (see Figure 1 of USGS proposal), or additional wells should be sampled in order to better correlate the study results between wells.

3) Depth discrete water quality samples could be collected at lower cost by use of the hydro-booster or fluid sampler methods (Izbicki 2004, Pacific Surveys 2014). One well in each management area could be sampled for dissolved gases with subsequent wells only sampled for major and minor ions, nutrients and radiochemistry.

The USGS proposal to evaluate vertical gradients of water quality within the BVGB is a critical next step to address potential economic consequences as a result of continued water level decline in the BVGB. Provided some additional clarification of the study design, Dudek recommends that, the BWD Board proceed with the USGS proposal. The data collected will be valuable to determine the potential requirement for water quality treatment and/or targeting discrete aquifer zones for future groundwater production. High-level costs for treatment and/or drilling future production wells completed in specific aquifer zones will be made based on the depth discrete water quality data and model results.

References

Dudek. 2014. Draft Aquifer Test Report for Wells ID-1 and ID1-2. July 2014.

Izbicki. J. A. 2004. A Small-Diameter Sample Pump for Collection of Depth-Dependent Samples from Production Wells Under Pumping Conditions. U.S. Geological Survey Fact Sheet 2004-3096. September 2004.

Pacific Surveys 2014. 1.38-inch Diameter 500 Milliliter Fluid Sampler. Available at: http://www.pacificsurveys.com/138DLFS_ts.html

Victory Well Surveys. 2014. Geophysical logs for Test Hole Nos. 10, 11 and 12.

Sincerely,
DUDEK

Trey Driscoll, PG No. 8511, CHG No. 936
Senior Hydrogeologist

USGS
science for a changing world

CALIFORNIA
Water Boards

U.S. Geological Survey and the California State Water Resources Control Board

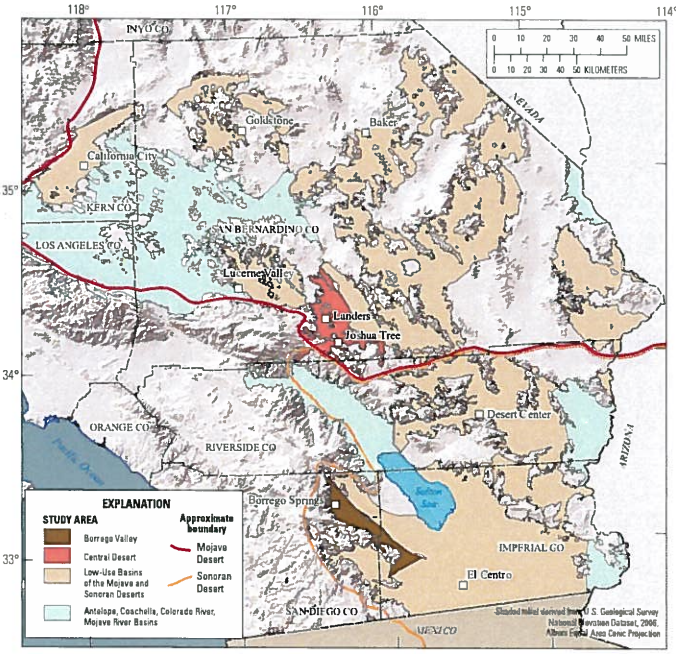
Groundwater Quality in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts, California

Groundwater provides more than 40 percent of California's drinking water. To protect this vital resource, the State of California created the Groundwater Ambient Monitoring and Assessment (GAMA) Program. The Priority Basin Project of the GAMA Program provides a comprehensive assessment of the State's untreated groundwater quality and increases public access to groundwater-quality information. Selected groundwater basins in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts constitute one of the study units being evaluated.

The Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts Study Unit

The Mojave and Sonoran Deserts include 57 groundwater basins (California Department of Water Resources, 2003). Basins in the Antelope, Mojave River, Coachella, and Colorado River Valleys were discussed by Dawson and Belitz (2012). The remaining 47 basins compose the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit (CLUB study unit) and were grouped into three study areas. Basins containing few or no public-supply wells are defined as low-use basins. Public-supply wells are sparse in the 12,103-square-mile area of the CLUB study unit, and this study focused on the 963-square-mile area that is within about 2 miles of a public-supply well.

The climate in the Mojave Desert is characterized as arid high desert, with hot, dry summers and cool winters with limited rainfall. The Sonoran Desert has an arid subtropical climate characterized by long, hot summers, mild winters, and summer and winter rainy seasons. Annual precipitation generally ranges from 0 to 10 inches. Several creeks, washes, and ephemeral streams drain the study unit, flowing into lakes and sinks.

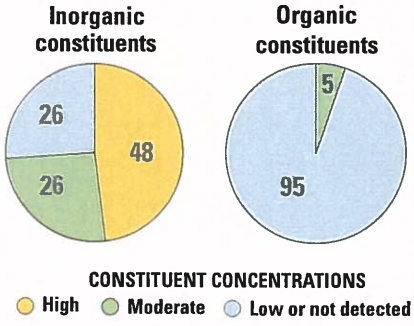


This study evaluated water quality in the part of the aquifer system used for public supply, the primary aquifer system. The primary aquifer system is defined as those parts of the aquifer corresponding to the perforated intervals of wells listed in the California Department of Public Health (CDPH) database. Public-supply wells in the study unit typically are drilled to depths between 350 and 600 feet, consist of solid casing from the land surface to a depth of about 200 to 400 feet, and are perforated below the solid casing. Water quality in the shallower and deeper parts of the aquifer system can differ from that in the primary aquifer system. The primary aquifer system consists of unconfined and confined Pleistocene- to Holocene-age Quaternary alluvium, and to a lesser extent, Tertiary alluvium and sedimentary deposits.

Land use in the CLUB study unit is approximately 91 percent (%) natural, 6% urban, and 3% agricultural. Natural lands are mostly shrubland and bare rock or sediment, with a small percentage of grassland and forest.

Sources of groundwater recharge include runoff from mountains surrounding the basins and infiltration of imported surface water and groundwater used for irrigation. The primary sources of groundwater discharge are water pumped for irrigation and for public supply, natural discharge to streams, and evapotranspiration.

Overview of Water Quality



Values are a percentage of the area of the primary aquifer system with concentrations in the three specified categories. Values on pie chart may not equal 100 due to rounding of percentages.

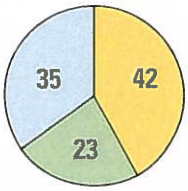
GAMA's Priority Basin Project evaluates the quality of untreated groundwater relative to human-health and aesthetic-based benchmarks established for drinking-water quality. Benchmarks and definitions of *high*, *moderate*, and *low* concentrations are discussed in the inset box on page 3.

Inorganic constituents in groundwater commonly are derived from natural sources and processes but also can be affected by human activities. In the CLUB study unit, one or more inorganic constituents were present at high concentrations in about 48% of the primary aquifer system and at moderate concentrations in about 26%.

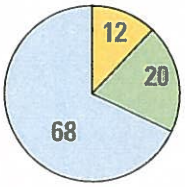
Human-made organic constituents can be found in products used in the home, business, industry, and agriculture, and can enter the environment through normal usage, spills, or improper disposal. In this study unit, organic constituents were not present at high concentrations in the primary aquifer system, and one or more organic constituents were present at moderate concentrations in about 5%.

RESULTS: Groundwater Quality in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts Study Unit

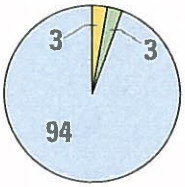
INORGANIC CONSTITUENTS



Trace and minor elements



Uranium and radioactive constituents



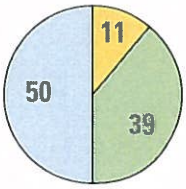
Nutrients

Inorganic Constituents with Health-Based Benchmarks

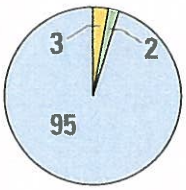
Trace and minor elements are naturally present in the minerals in rocks and soils, and in the water that comes into contact with those materials. In the CLUB study unit, trace and minor elements were detected at high concentrations in about 42% of the primary aquifer system, and at moderate concentrations in about 23% of the system. Fluoride, arsenic, molybdenum, boron, and vanadium were the elements that most frequently occurred at high and moderate concentrations. Chromium also was detected at high concentrations, but in less than 1% of the primary aquifer system.

Radioactivity is the release of energy or energetic particles during spontaneous decay of unstable atoms. Most of the radioactivity in groundwater comes from the decay of naturally occurring isotopes of uranium and thorium in minerals in the sediments of the aquifer. Uranium and (or) gross alpha radioactivity occurred at high levels in 12% of the primary aquifer system and at moderate levels in about 20% of the system.

Nutrients, such as nitrate and nitrite, are naturally present at low concentrations in groundwater. Elevated concentrations generally occur as a result of human activities, such as applying commercial fertilizer or animal waste to land used for crops. Livestock, when in concentrated numbers, and septic systems also produce nitrogenous waste that can leach into groundwater. Nitrate was present at high concentrations in about 3% of the primary aquifer system and at moderate concentrations in about 3%.



Total dissolved solids



Iron or manganese

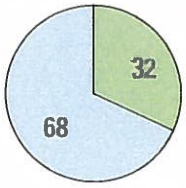
Inorganic Constituents with Non-Health Benchmarks

(Not included in water-quality overview charts shown on the front page)

Some constituents affect the aesthetic properties of water, such as taste, color, and odor, or may create nuisance problems, such as staining and scaling. The State of California has a recommended and an upper limit for total dissolved solids (TDS) in drinking water. Groundwater naturally contains TDS as a result of the weathering and dissolution of minerals in soils. In the CLUB study unit, TDS was present at high concentrations in about 11% of the primary aquifer system and at moderate concentrations (between the recommended and upper limit) in 39%.

Anoxic conditions (low amounts of dissolved oxygen) in groundwater may result in release of the naturally occurring elements manganese and iron from minerals into groundwater. Iron, or manganese, or both were present at high concentrations in about 3% of the primary aquifer system.

SPECIAL-INTEREST CONSTITUENT



Perchlorate

Constituent of Special Interest: Perchlorate

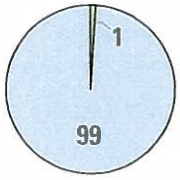
(Not included in water-quality overview charts shown on the front page)

Perchlorate is an inorganic constituent that has been regulated in California drinking water since 2007. It is an ingredient in rocket fuel, fireworks, safety flares and other products, may be present in some fertilizers, and also occurs at low concentrations under natural conditions in groundwater. Perchlorate was not detected at high concentrations, but was detected at moderate concentrations in about 32% of the primary aquifer system.

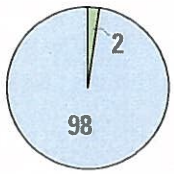
RESULTS: Groundwater Quality in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts Study Unit

ORGANIC CONSTITUENTS

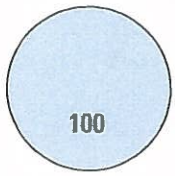
Gasoline hydrocarbons



Solvents



Trihalomethanes



Other VOCs

Herbicides and insecticides (including fumigants)

Organic Constituents

The Priority Basin Project uses laboratory methods that can detect volatile organic compounds (VOCs) and pesticides at low concentrations far below human-health benchmarks. VOCs and pesticides detected at these low concentrations can be used to trace water from the landscape into the aquifer system.

Volatile Organic Compounds with Human-Health Benchmarks

VOCs are in many household, commercial, industrial, and agricultural products and are characterized by their tendency to volatilize (evaporate) into the air.

Gasoline hydrocarbons are a component of gasoline and may be used as additives to make gasoline burn more efficiently, improve emissions quality, and clean engine parts. In the CLUB study unit, gasoline hydrocarbons were not detected at high concentrations and were present at moderate concentrations in about 1% of the primary aquifer system.

Solvents are used for a number of purposes, including manufacturing and cleaning. Solvents were not detected at high concentrations and were present at moderate concentrations in about 1% of the primary aquifer system.

Trihalomethanes may form during disinfection of drinking-water supplies and may enter groundwater by the infiltration of landscape irrigation water or leakage from distribution systems. Trihalomethanes were not detected at high concentrations and were present at moderate concentrations in about 2% of the primary aquifer system.

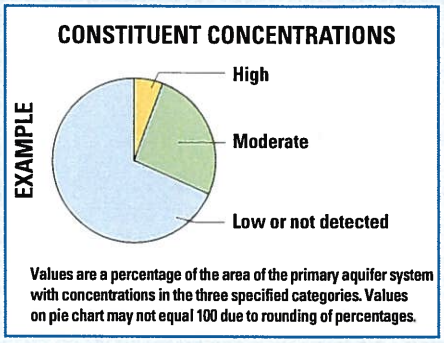
Other volatile organic compounds, including organic synthesis reagents, were not detected at either high or moderate concentrations.

Pesticides with Human-Health Benchmarks

Pesticides, which include herbicides, fumigants, and insecticides, are applied to crops, gardens, lawns, around buildings, and along roads to help control unwanted vegetation (weeds), insects, fungi, and other pests. Insecticides were not detected at high concentrations in the primary aquifer system and were detected at moderate concentrations in about 1% of the primary aquifer system. Herbicides and fumigants were not detected at either high or moderate concentrations.

BENCHMARKS FOR EVALUATING GROUNDWATER QUALITY

GAMA's Priority Basin Project uses benchmarks established for drinking water to provide context for evaluating the quality of untreated groundwater. After withdrawal, groundwater may be disinfected, filtered, mixed, and exposed to the atmosphere before being delivered to consumers. Federal and California regulatory benchmarks for protecting human health (Maximum Contaminant Level, MCL) were used for the evaluation when available. Otherwise, non-regulatory benchmarks for protecting aesthetic properties, such as taste and odor (Secondary Maximum Contaminant Level, SMCL), and non-regulatory benchmarks for protecting human health (Notification Level, NL, and lifetime Health Advisory Level, HAL) were used.

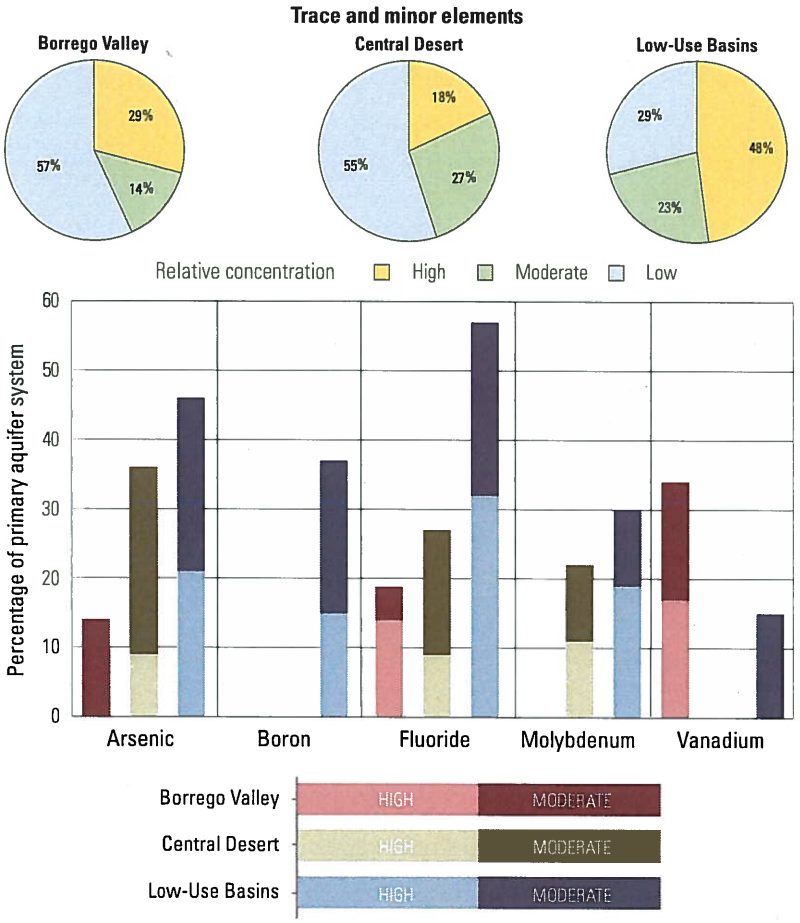


High, moderate, and low concentrations are defined relative to benchmarks

Concentrations are considered *high* if they are greater than a benchmark. For inorganic constituents (except perchlorate), concentrations are *moderate* if they are greater than one-half of a benchmark. For organic and special-interest constituents (including perchlorate), concentrations are *moderate* if they are greater than one-tenth of a benchmark; this lower threshold was used because organic constituents generally are less prevalent and have smaller concentrations relative to benchmarks than inorganic constituents. *Low* includes nondetections and values less than moderate concentrations. Methods for evaluating water quality are discussed in Parsons and others (2014).

Trace and Minor Element Concentrations in the CLUB Study Unit

In the CLUB study unit, trace and minor elements were present at high concentrations in 42% of the primary aquifer system. The proportion of the primary aquifer system having high concentrations was greatest in the Low-Use Basins study area (48%) and lower in the Borrego Valley (29%) and Central Desert (18%) study areas. For comparison, the proportion of the primary aquifer system having high concentrations in the four other Mojave and Sonoran Desert areas ranged from 32% to 40% (Dawson and Belitz, 2012). The main contributors to high and moderate concentrations of trace and minor elements in the CLUB and other Mojave and Sonoran Desert study units were arsenic, boron, fluoride, molybdenum, and vanadium; however, different elements were important in different areas (Dawson and Belitz, 2012; Parsons and others, 2014). All five elements were present at high or moderate concentrations in the Low-Use Basins study area, whereas, three were present at high or moderate concentrations in the Borrego Valley study area (arsenic, fluoride, and vanadium), and three were present in the Central Desert study area (arsenic, fluoride, and molybdenum).



By Mary C. Parsons and Kenneth Belitz

SELECTED REFERENCES

California Department of Water Resources, 2003, California's groundwater: California Department of Water Resources Bulletin 118, 246 p. Available at *http://www.water.ca.gov/groundwater/bulletin118/update2003.cfm.*

Dawson, B.J.M., and Belitz, Kenneth, 2012, Status of groundwater quality in the California Desert Region, 2006-2008—California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2012-5040, 110 p. Available at *http://pubs.usgs.gov/sir/2012/5040/.*

Mathany, T.M., Wright, M.T., Beuttel, B.S., and Belitz, Kenneth, 2012, Groundwater-quality data in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit, 2008–2010—Results from the California GAMA Program: U.S. Geological Survey Data Series 659, 100 p. Available at *http://pubs.usgs.gov/ds/659/.*

Parsons, M.C., Hancock, T.C., Kulongoski, J.T., and Belitz, Kenneth, 2014, Status of groundwater quality in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit, 2008–2010—California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2014-5001, 88 p. Available at *http://pubs.usgs.gov/sir/2014/5001/.*

Priority Basin Assessments

GAMA's Priority Basin Project (PBP) assesses water quality in that part of the aquifer system used for drinking water, primarily public supply. Water quality in shallower and deeper parts may differ from that in the primary aquifer system. GAMA's Domestic Well Project assesses water quality in the shallower parts of the aquifer system. Ongoing assessments are being conducted in more than 120 basins throughout California.

The PBP assessments are based on a comparison of constituent concentrations in untreated groundwater with benchmarks established for the protection of human health and for aesthetic concerns. The PBP does not evaluate the quality of drinking water delivered to consumers.

The PBP uses two scientific approaches for assessing groundwater quality. The first approach uses a network of wells to statistically assess the status of groundwater quality. The second approach combines water-quality, hydrologic, geographic, and other data to help assess the factors that affect water quality. In the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts study unit, data were collected by the PBP from 2008 to 2010 and from the CDPH database for 2005–2008. The PBP includes chemical analyses not generally available as part of regulatory compliance monitoring, including measurements at concentrations much lower than human-health benchmarks and measurement of constituents that can be used to trace the sources and movement of groundwater.

For more information

Technical reports and hydrologic data collected for the GAMA Program may be obtained from

GAMA Project Chief
U.S. Geological Survey
California Water Science Center
6000 J Street, Placer Hall
Sacramento, CA 95819
Telephone number: (916) 278-3100
WEB: http://ca.water.usgs.gov/gama

GAMA Program Unit Chief
State Water Resources Control Board
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PO Box 2231, Sacramento, CA 95812
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WEB: http://www.waterboards.ca.gov/gama

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Water Boards

Prepared in cooperation with the California State Water Resources Control Board

A product of the California Groundwater Ambient Monitoring and Assessment (GAMA) Program

Status of Groundwater Quality in the Borrego Valley, Central Desert, and Low-Use Basins of the Mojave and Sonoran Deserts Study Unit, 2008–2010: California GAMA Priority Basin Project

Scientific Investigations Report 2014–5001

U.S. Department of the Interior
U.S. Geological Survey

Excerpt

This document articulates policies the Borrego Water Coalition's (BWC; "the Coalition") members recommend to the Borrego Water District's (BWD; "the District") Board of Directors ("the Board").

The Coalition recommends the inclusion of the following policies in the Borrego Valley's Groundwater Sustainability Plan (GSP; Plan) required under the Sustainable Groundwater Management Act (SGMA; the Act; collectively SB 1168, SB 1319 and AB 1739, as amended):

(1) The Coalition recommends a Physical Solution of sufficient reductions in Basin withdrawals from the baseline in order to achieve a Sustainable Yield goal of approximately 5,600 acre-feet per year (AFY). These reductions shall be achieved at a minimum within a 20-year Plan period beginning no later than January 31, 2020, with 5-year minimum interim reduction targets of:

No Later Than February 1, ____:

a. 2025: about 20% from the Baseline

b. 2030: about 40% from the Baseline

c. 2035: about 60% from the Baseline

d. 2040: approximately 70% from the Baseline (the precise percentage is the amount necessary to achieve Sustainable Yield. This percentage reduction will be refined during the Plan period based on difference of actual withdrawals from the Sustainable Yield goal.)

See http://www.borregospringschamber.com/bwc/documents/2014/BWC%20Policy%20Recs%20FINAL%2011-06-14.pdf for complete set of policy recommendation from the Borrego Water Colaition

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Roseville, CA 95661-9082

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www.acwajpia.com

July 05, 2016

R. Greg Holloway
Borrego Water District
P.O. Box 1870
Borrego Springs, CA 92004

Re: Member - Borrego Water District
Type of Loss - Tank Bladder
D/Loss - 04/30/2013
Claim No. - 16-0741

Dear Mr. Holloway:

The ACWA JPIA has received and reviewed the claim from your District for damage to the 800 Tank .75 Bolted Steel Ring with Hypalon Bladder (Tank). It is our conclusion that there is no coverage for this loss under the terms and conditions of the Memorandum of Property Coverage.

The MOPC provides coverage for losses to property owned by the participating member. The Tank is property owned by the District and it is included on the District's property schedule.

The MOPC covers all risks of direct physical loss or damage to the property and interest in Section E, including general average and salvage charges, except as hereinafter excluded. Section H provides a listing of Perils Excluded. Exclusion 15 states,

This Memorandum does not cover:

15. Loss, damage or expense caused by or resulting from the following, unless direct physical loss, damage or expense from a peril otherwise covered by this Memorandum ensues, in which case the Authority will pay for such ensuing loss.

a. Defective, faulty or inadequate:

ii. design, specifications, workmanship, repair, construction, renovation or remodeling; or

iii. materials, parts or equipment used in repair, construction, renovation or remodeling; or

iv. maintenance

of part or all of any property wherever located.

Based upon the documents provided this claim appears to be subject to the above stated exclusion. Therefore, ACWA JPIA must respectfully decline the District's tender of this claim. If there is any additional information the District believes the ACWA JPIA should consider as regards coverage for this loss, please forward it to the ACWA JPIA for review.

This letter is based upon information the ACWA JPIA has received to date, and is not intended, nor shall it be construed, as an exhaustive listing of all of the MOPC's terms, conditions, or exclusions, which may apply to this matter. The ACWA JPIA does not waive any other rights or defenses to coverage that may be applicable, whether or not such rights or defenses are specifically set forth in this letter. The ACWA JPIA specifically reserves the right to amend or supplement the positions stated in this letter based upon further analysis or for any other reason. All of the ACWA JPIA's rights in connection with this matter are expressly reserved, whether asserted herein or not.

Sincerely,

Robert H. Greenfield, Esq.
General Counsel
RGreenfield@acwajpia.com

WATER FACT SHEET

Borrego Water District
May 24, 2016

- The Borrego Valley Groundwater Basin is the sole source of drinking water for the community of Borrego Springs. The first public drinking water well was established in 1947.

- The pristine quality of the water which has been percolating into the Basin for tens of thousands of years requires no treatment, except for chlorine disinfection of the distribution pipelines, and is regulated by the State Water Resources Control Board, Department of Drinking Water. The watershed surrounding the basin is protected by the resources of the Anza-Borrego Desert State Park.

- A recent U.S. Geological Survey Report (Scientific Investigation Report #2015-5150) provides an overview of the water supply, water quality and scenarios of aquifer life expectancy based on various future planning options. Based on these scenarios, the uppermost, and most prolific of three aquifers is estimated to be depleted in approximately 50 years at the "present" rate of extraction. While water remains available below the uppermost aquifer, it is projected that the cost of extraction would rise significantly.

- The Sustainable Groundwater Management Act of 2014 requires all basins of the State in a groundwater overdraft condition (groundwater extractions are greater than natural recharge to achieve sustainability by the year 2040. Sustainability means the amount being used equals the amount being naturally recharged. Each basin in overdraft is required to adopt a Groundwater Sustainability Plan to address how it will reach sustainability by 2040 and submit the Plan to the State for review. If a Community fails to act, the State of California will take charge of Basin to establish sustainability.

- In Borrego, the Borrego Water District together with the County of San Diego and local community stakeholders, are working to create a Groundwater Sustainability Plan that is designed to reduce overall groundwater pumping to a sustainable level to ensure future water supplies for the community and extend the life of the uppermost aquifer beyond the time frame projected if use were to continue at the "present" rate.

- The process for creating a Groundwater Sustainability Plan is public and open to all stakeholders in the Borrego Valley Groundwater Basin. The Plan will establish the guidelines for basin-wide pumping reductions to achieve groundwater sustainability by 2040. For more information, go to www.borregowd.org.

- Unlike other areas of Southern California where water is imported from great distances and subject to drought conditions, the residents of the Borrego Valley have an excellent opportunity to control their destiny and ensure **WATER FOR THE FUTURE!**

BORREGO WATER DISTRICT

7/1/16

Harry Ehrlich

PO Box 2247

Borrego Springs, CA 92004

Dear Harry,

The Borrego Water District (BWD) Board of Directors appreciates your leadership, volunteering your personal time to advertise, recruit, interview and helping to down select the best candidates for the BWD General Manager (GM) open position. We began this process on April 19th 2016 and have successfully hired a new BWD GM beginning July 11th 2016. I have recorded over 93 hours of your volunteer time to fill this position.

Joseph Tatusko

BWD Director, Secretary & Treasurer

806 PALM CANYON DRIVE, BORREGO SPRINGS, CA 92004 (760) 767-5806 FAX (760) 767-5994 www.borregowd.org

THE SUSTAINABLE GROUNDWATER MANAGEMENT ACT (SGMA)
QUESTIONS & ANSWERS

What Is the Sustainable Groundwater Management Act or SGMA?

A new law that requires all medium and high priority groundwater basins in the State be brought into balance. Any overdraft must be eliminated to the point where no *undesirable results* occur, no later than 2040 in Borrego's specific case.

Does SGMA apply to the Borrego Valley Groundwater Basin (Borrego Basin)?

Yes. The overdraft was first identified by the US Geological Survey (USGS) study for the County of San Diego in 1982 and irrefutably reaffirmed in 2015 by a subsequent USGS study. Today, the overdraft has been designated as *critical* by the California Department of Water Resources (DWR) hydrologists. *Critical means the probability of large economic impacts is high, and immanent. The critical* overdraft status of the Borrego Basin is not a political designation. It is based on physical changes in the groundwater basin that have occurred over time.

Who is responsible for implementing SGMA for the Borrego Basin?

The Borrego Water District and San Diego County are the only two public agencies eligible to implement SGMA for the Borrego Basin. Both have filed a request with DWR to become a Groundwater Sustainability Agency (GSA) for the Borrego Basin. DWR requires that where two GSAs apply for the same Basin, they must work out an accord for sharing their different authorities. The County and District are currently working towards creating a Memorandum of Understanding (MOU) to address any overlap. Thereafter, it will be the responsibility of the two GSAs to create a Groundwater Sustainability Plan (GSP). A key element in the GSA's responsibilities is securing stakeholder participation and input in the process of developing a plan. To that end, the GSA's are establishing an Advisory Committee that will have approximately nine representatives from various community sectors who will provide technical and informational assistance to the GSAs. Each Advisory Committee representative will be required to serve in a leadership role to provide stakeholder input from the sector's members to the Advisory Committee.

Who will write the plan and what will be in it?

The process for creating a plan and its various elements is yet to be decided. Public stakeholder meetings to think through potential issues, solutions, and obstacles will be held. Input from the discussions will then be communicated to the Advisory Committee through the sector representative and discussed with the GSAs. This is the process that will likely create an initial framework for discussion, negotiations and design. A consultant will be selected by the two GSAs to write the plan and to conduct the technical work necessary to be an SGMA-compliant plan acceptable to DWR.

Does SGMA mean that water rates will increase?

Yes. Today, no one pays for the groundwater itself. It has been assumed the value of groundwater was zero. This is an economic fiction. Under SGMA, the groundwater pumped from the basin will cost something rather than nothing for all basin pumpers.

Who will enforce any GSP?

Both San Diego County and the Borrego Water District, as Groundwater Sustainability Agencies (GSAs), once the GSP is approved, have the police powers to enforce the plan.

What will prevent current water users from hoarding water or speculators from gouging municipal and recreational users with outrageous prices for water transfers?

Market rules that ensure moral and fair trades will be established. These will be developed as part of the GSP.

How will a GSP go into effect?

The GSP has to be approved by the County's Board of Supervisors and the District's Board and accepted by the California Department of Water Resources as SGMA compliant to legally be in effect. This must occur no later than January 2020. The District and County are cooperatively working to make the plan effective earlier than the regulatory deadline.

Who gets to represent the ratepayers in the planning process?

All GSP planning meetings will be open to the public. There will also be an Advisory Committee composed of stakeholders approved by the County's Board of Supervisors and the District's Board of Directors that offers formal input to the GSAs for the GSP development. The District Board may appoint one ratepayer representative to this Advisory Committee.

How will this ratepayer representative to the Water Advisory be selected by the District's Board of Directors?

That process is yet to be determined. The Board will be seeking a representative who is willing to fairly represent all ratepayers' interests within the context of technical and analytically based discussions that will be held among the Advisory Committee members. Decisions made by the Advisory Committee must be defensible within the context of SGMA law. Thus, the Board will be seeking a representative who is able to build trust among the other members of the Advisory Committee and those working on the GSAs' project team. In addition, the selected ratepayer representative will hold a leadership position facilitating the ability of all ratepayers to meet, express their opinions and insure their input is adequately and accurately communicated to the GSAs.

Instead of working to produce a Groundwater Sustainability Plan (GSP), why don't we just let the State Water Resources Control Board (SWRCB) take over the Borrego Basin from local control?

That will occur if the local management of the basin fails. Having the State take control of the basin is not free. The exercise of local control to deal with the overdraft is the most economical since community members working on the project will be motivated to design a process that is both successful and economically feasible. If the State were to assume control of the basin the outcome would likely be *top down* and *regulatory*, potentially increasing the cost significantly beyond what locals would be able to accomplish on their own.

Instead of using SGMA to eliminate the overdraft, why don't we just adjudicate the Borrego Basin?

Under SGMA, filing an adjudication does not preempt or delay the requirements of SGMA. In other words, one would be adding the cost for attorneys in an adjudication to all the costs associated with SGMA. Some believe that an adjudication would force farmers to leave the Valley and those remaining could use the farmers' water rights 'for free.' To date no adjudication in California has resulted in such an outcome and such a strategy is likely not legal under California water law. The only purpose for an adjudication is to ask the courts to determine who has rights to pump a specific amount of water when there is a dispute. To date, no adjudications in southern California have actually accomplished the purposes of SGMA - that is, to create a sustainable use of the basin by bringing the basin into balance.

Why hasn't the District Water Board done something about the overdraft long before now?

Prior to SGMA, the District did not have the authority required to control or limit withdrawals. San Diego County had the "police powers" necessary to do so, but did not exercise it.

Why didn't the County act to limit withdrawals from the basin if it always had the police powers to accomplish this?

No County in California has previously exercised its police powers to limit groundwater withdrawals. Thus, SGMA was enacted.

Didn't the District under the AB3030 Groundwater Management Act have the authority to limit withdrawals?

Yes, but with a catch-22. The District could not, for example, limit withdrawals without an approved plan. A plan had to have specific reduction targets over time, a budget, and clearly articulated policies with penalties for not meeting reduction targets. The Groundwater Management Plan approved by the District Board in 2002 possessed none of these required attributes. Further, even if the District had created a plan that met these requirements, while it could limit withdrawals and, for example, impose a pump tax, it had no authority (police powers) to enforce

reductions or to collect the tax. Thus, SGMA was enacted to address the shortcomings of the Groundwater Management Act.

How do we know that the Borrego Basin is in critical overdraft?

The District commissioned over three million dollars in studies for which the ratepayers contributed approximately one million dollars to determine unequivocally: (a) that an overdraft exists; (b) its magnitude; and (c) that no other sources of water are economically available to the Valley in the near future. The most recent 2015 USGS study is available for review at: https://pubs.er.usgs.gov/publication/sir20155150).

But, I know of wells that are at the same water levels they were years ago or have been increasing recently. Does that mean the overdraft is not as serious as the studies claim?

The physical reality of basins is that over time, individual wells can increase, decrease, stay the same or do all of the above, including go dry depending on the time frame within which they were examined. Thus, no valuable data can be gleaned with respect to a long-standing overdraft by just examining individual well data. Hydraulic systems are very complex and affected by multiple diverse factors. A more systemic analysis of the whole Basin is required before a definitive and defensible analysis can be used to define the issues associated with an overdraft.

Does overdraft mean we are running out of water?

No. According to both USGS studies, there is ample and adequate water available within the Basin. An overdraft results in basin changes that potentially have large economic impacts.

Is it fair to say that only the ratepayers have borne the cost of the overdraft to date?

Yes, but only when discussing studies, whose cost have been borne solely by the District's ratepayers. However, in terms of actual dollars invested in end use efficiency measures (using less water in perpetuity to do comparable work), both the investments made by the golf courses and the farmers in the Valley have likely

exceeded the aggregate amount of investment in end use efficiency measures by ratepayers. [Note: "water conservation" is typically thought of as short-term water savings].

Is it fair to say that ratepayers have done a good job at using water more efficiently and the golf courses and farmers have done little to use water efficiently?

No. In terms of total invested capital and changes in total acre-feet of water per year reductions, each sector overall has accomplished reductions that are exemplary. However, these reductions have been primarily economically motivated and have done little to *eliminate* the overdraft. These reductions have also not been uniform within each sector with some municipal users, golf courses, and farmers leading the way in producing the majority of sector savings whereas others in each sector have done little to invest the necessary capital to materially reduce water use.

Why does the Borrego Water Coalition (Coalition) recommend a 70% reduction of withdrawals across all sectors - agriculture, recreation (golf courses & resorts) and municipal uses?

Seventy percent (70%) reductions is just an estimate of water reductions required by all sectors. Such a shared reduction across all sectors of use is supported by California Water law and is potentially a likely outcome if an adjudication of the basin would occur. This 70% estimate is substantiated by the USGS study. Actual percentage reductions will not be fully defined until a benchmark for current basin withdrawals is developed and verified when all wells are metered, validated, and monitored, a requirement of SGMA.

Is the *sky falling? Should I be worried about the overdraft?*

No, the sky is not falling. While cost of using water *will* become more expensive in the future, we are not running out of it. In addition, the District is carefully considering how to best apportion these expenses so as to most efficiently and effectively manage future costs. Another plus is all the recharge (inflow) to the basin comes from protected watersheds in the Anza-Borrego Desert State Park. What that means is our recharge inflow is clean water. That puts Borrego in a

particularly advantageous situation when it comes to assuring future freshwater supplies.

Finally, we aren't alone - almost all groundwater basins in California are in overdraft, as are groundwater basins in the Colorado River Basin, multiple basins in the US, and groundwater basins throughout the world. That means we aren't the only ones seeking methods and means to create cost controls for water use. Others are doing the same and using their collective experiences to address our issues will have benefit. However, if this Community is to successfully address the overdraft, it is up to us to ensure our own future destiny by getting involved, becoming better informed, and working together to address the challenges ahead.

Managing the Business Risk of SGMA

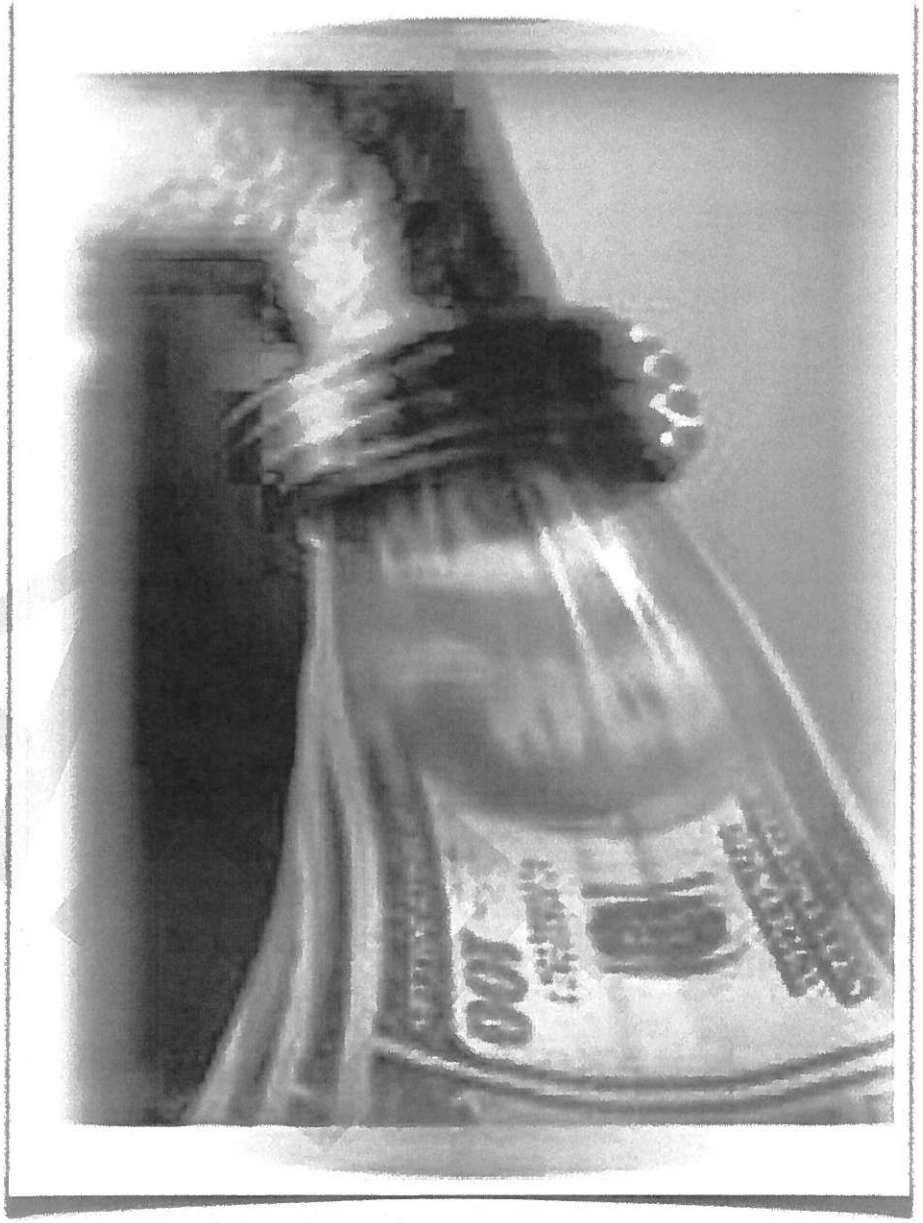
A Risk Management View

DRAFT - for discussion purposes only

7 July 2016

RISK MANAGEMENT *CERTAINTY*

ADEQUATE & AFFORDABLE FRESHWATER SUPPLY HAS *ALWAYS* BEEN NECESSARY TO SUSTAIN & GROW ECONOMIES AND PRESERVE THE ECOSYSTEMS ON WHICH HUMAN CIVILIZATION DEPENDS



Data Uncertainty

- GSAs need to develop GSPs that account for uncertainties in data, as well as uncertainty in future conditions
- basins with higher uncertainty need to adopt more conservative management options
- data should be collected under a risk assessment framework, focusing on areas of the greatest risk
- recognition and understanding of data uncertainty needs to drive data acquisition and data sharing
- GSPs must include contingency plans and management actions to address new data and times of extreme stress
- adaptive management is necessary to make certain GSPs include: (a) management objectives and thresholds that reflect level of uncertainty in data; (b) revision of management objectives based on new data; (c) modification of monitoring and enforcement programs based on new data; (d) design of proactive metrics to make certain thresholds are not exceeded during periods of extreme stress

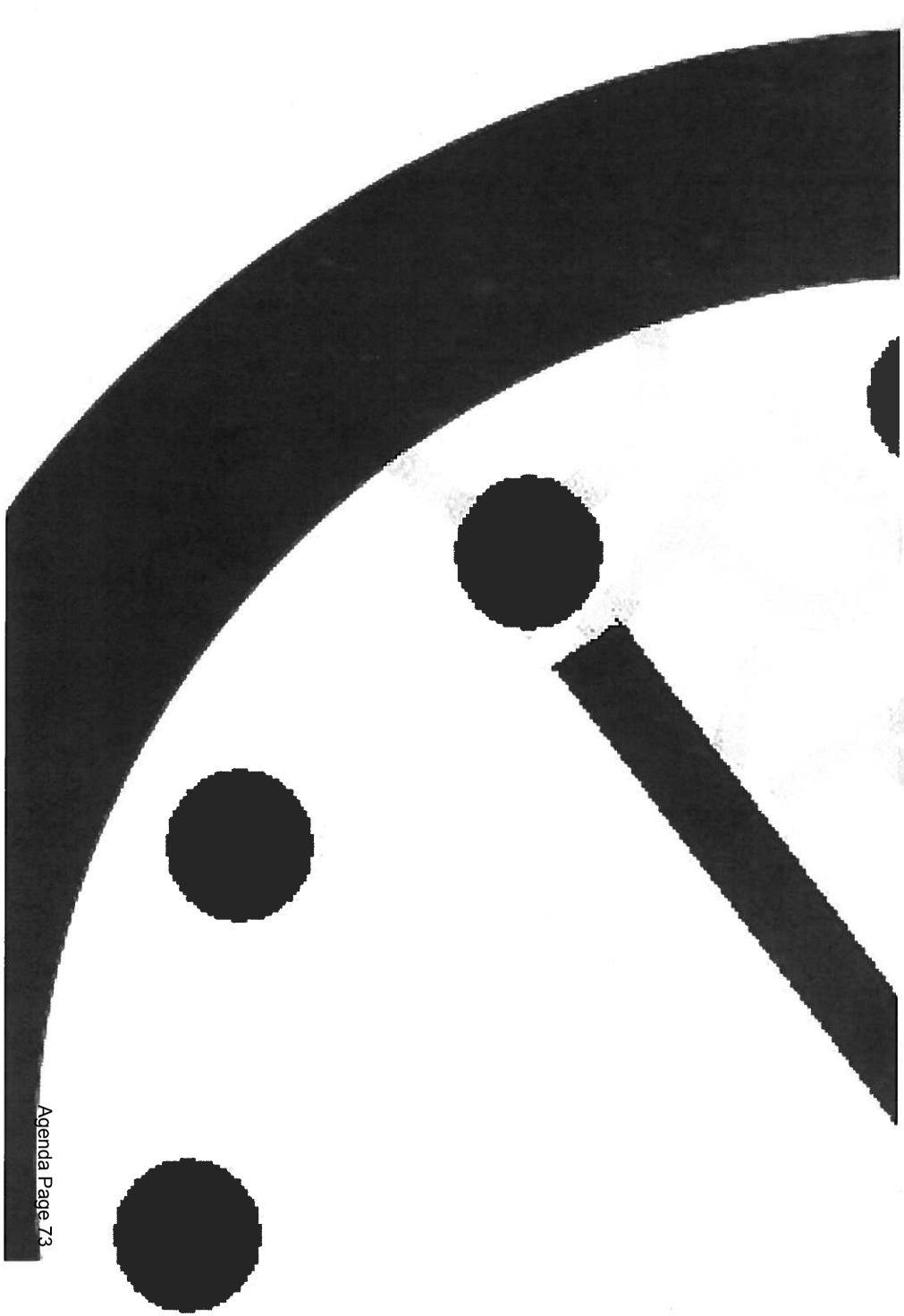
Risk Management

- currently, there are thousands of public and private water supply systems that do not meet drinking water standards for potable water
  - the USEPA has identified 5000+ municipal systems that exceed lead levels since Flint, MI
  - in California, the eight-county San Joaquin Valley has some of the most contaminated aquifers in the nation, affecting the water quality of approximately 1.3 million residents
  - the State Water Resources Control Board sampled 181 domestic wells in Tulare County in 2006 and found that 40% of those tested had nitrate levels above the legal drinking water limit
- Are water managers are using outdated economic approaches to determine when to invest in water quality infrastructure, largely based on *regulatory* forcing functions?

Overdraft Context

RISK
ANAGEMEN

- almost all groundwater basins in California are in overdraft
- the Borrego Basin is in *critical* overdraft
- *critical* overdraft status is not a political designation. It is based on physical changes in the groundwater basin
- the overdraft was first established by the US Geological Survey in 1982 and definitively confirmed in 2015
- *overdraft does not mean a basin is running out of water. Overdraft results in basin changes that potentially have large economic impacts - critical means the probability of large economic impacts is high, and immanent*

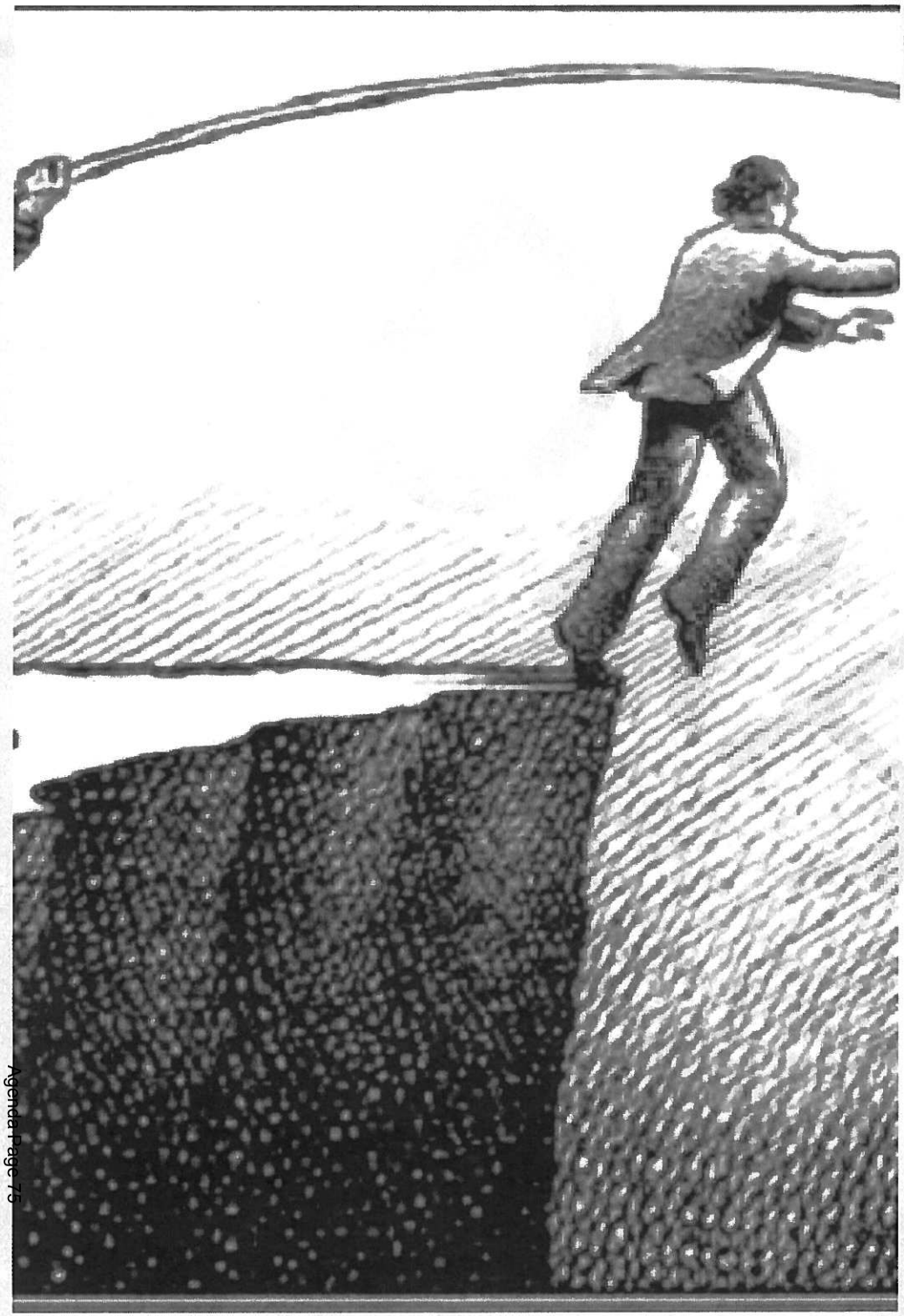


Overdraft History

- adjudications have NOT led to sustainable use of groundwater basins in California
- overdrafts have cost the State billions of dollars in lost economic development and will cost billions for future advanced water treatment
- thus in 2014, the legislature passed the Sustainable Groundwater Management Act (SGMA) that gives the District the same police powers as the County and requires the County and District to work together to eliminate the overdraft by 2040
- the State Water Resources Control Board (SWRCB) will take control of the basin and force reductions through the police powers granted it by SGMA if the County and District cannot come up with a plan by 2020 to eliminate the overdraft by 2040 and if the plan's implementation does not meet strict 5-year groundwater use reduction objectives

Avoid System Collapse

- potable water becomes too expensive for the District's customers to buy
- irrigation water becomes too expensive for recreational uses
- water quality degrades so that it no longer may be used for crops or private wells without expensive treatment



Minimum Risk Management Requirement to Avoid System Collapse

Eliminate basin overdraft before system collapse is locked in (a *tipping point* is reached after which the system is likely to collapse no matter what risk management strategies are put in place)

Planning Problem

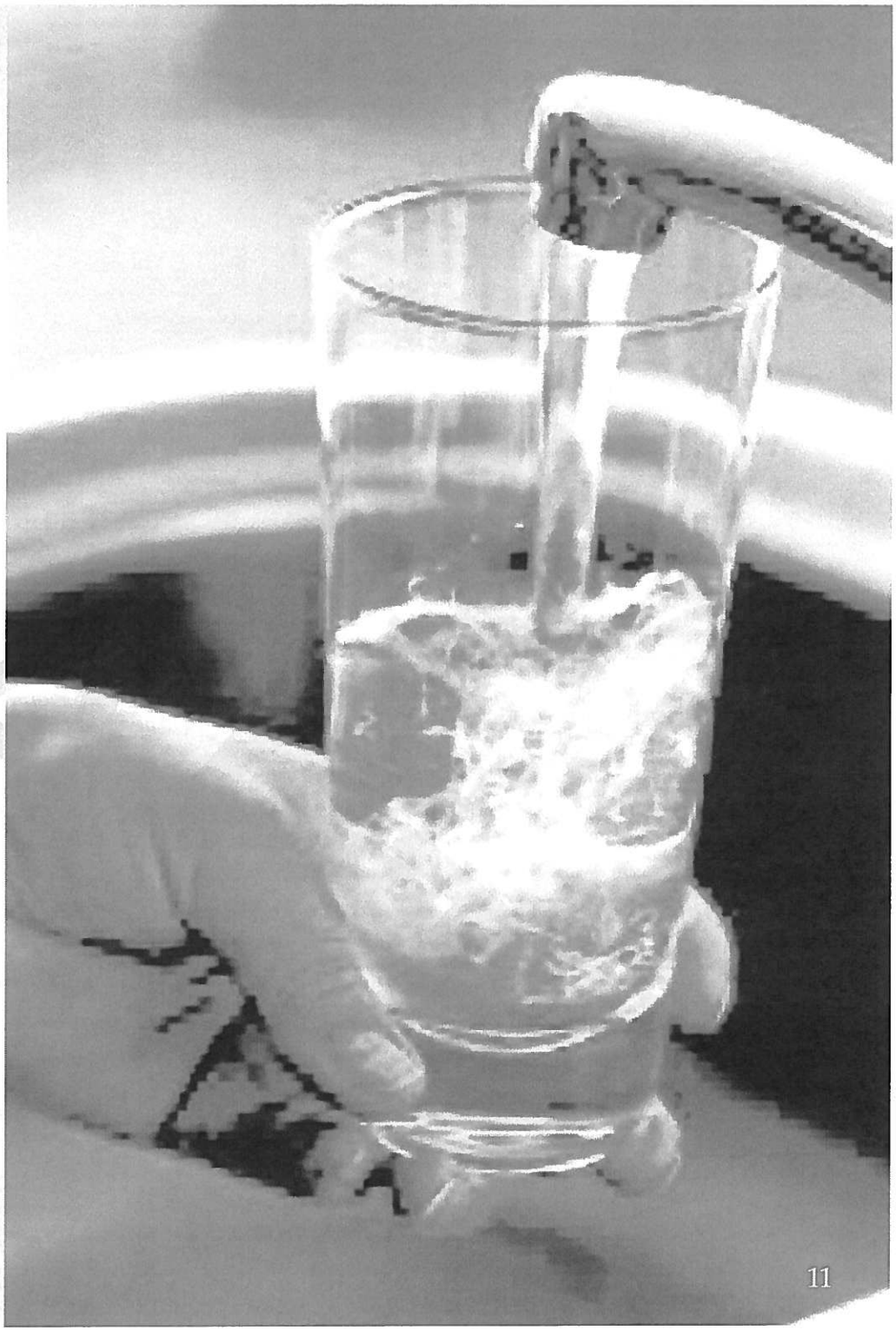
Path Dependency - To avoid system collapse - <u>how</u> the overdraft is eliminated may be just as important as just reaching a safe yield (reaching a specific AFY of average annual withdrawals)

Path Dependency

- small changes in initial conditions are amplified exponentially over time to big changes in outcomes
- the changes that occur are *non-linear.* Changes are not uniform over time and the changes that occur are likely to have *emergent* (unanticipated) properties with large economic consequences

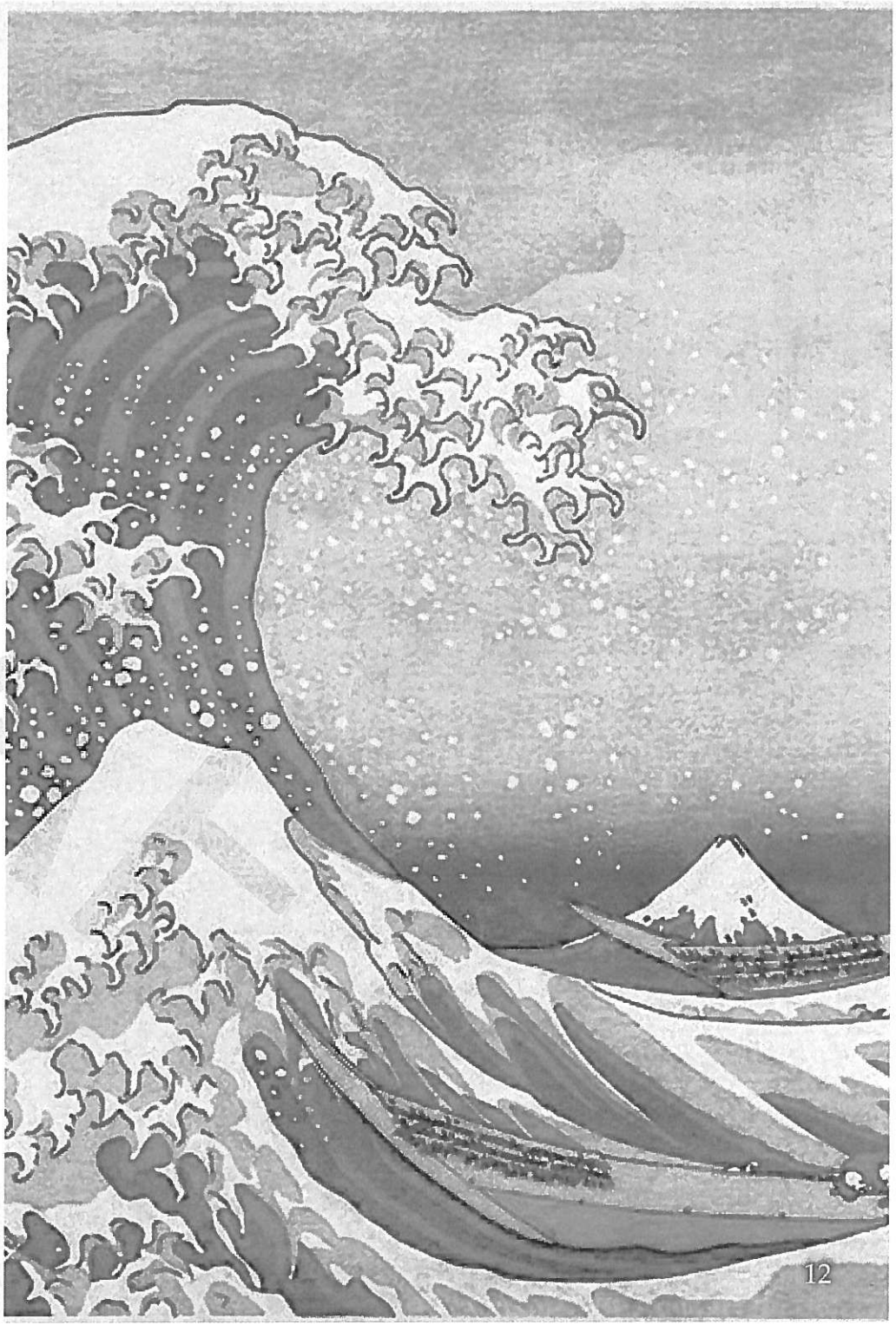
Risk Management Priority

- the continued ability of the District to deliver affordable potable water to its customers is by far the largest driver for:
  - affordability
  - future economic development, and
  - preservation of existing appraised residential and commercial property values



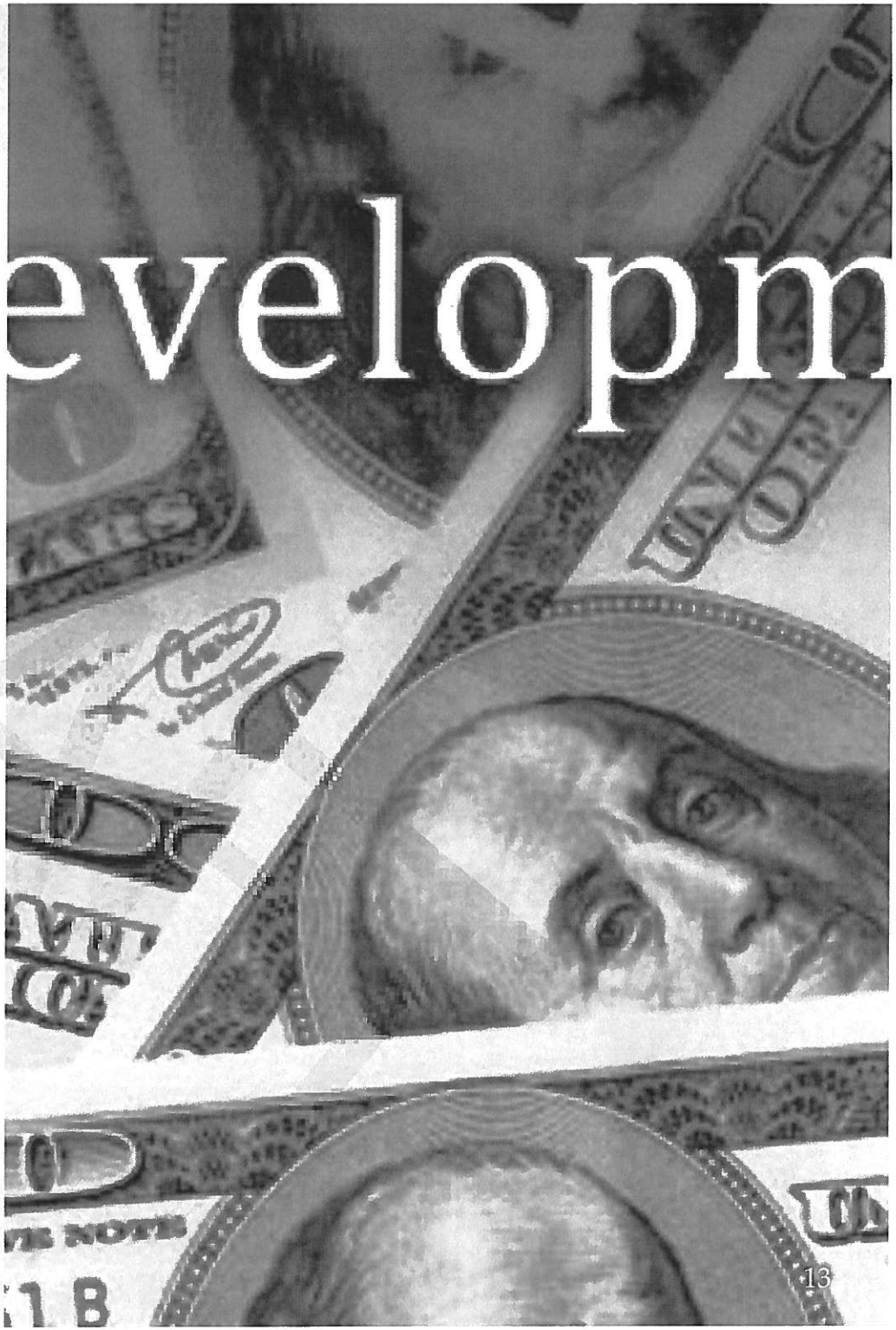
Probabilistic Risk Management

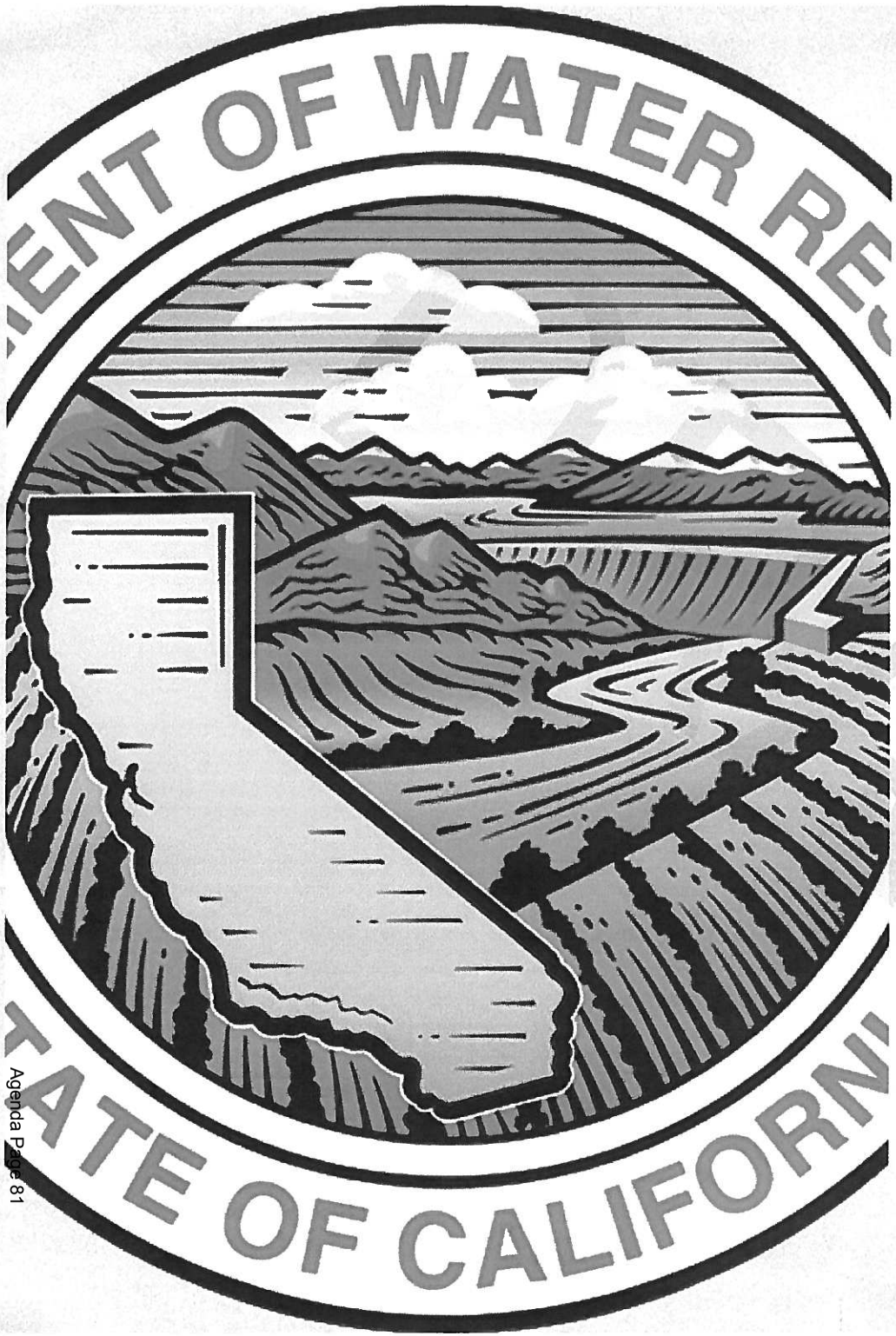
- reacting to water quality changes rather than *planning for* water quality changes, is risky. One is more likely to end up in a Flint, MI situation than not
- a *tipping point* may be tripped long before a systems collapse is manifest
- best planning practice is to use *probabilistic risk assessment* techniques to proactively plan for an uncertain future
- determine the least risky path for moving forward into an uncertain future



What this means for GSP Development

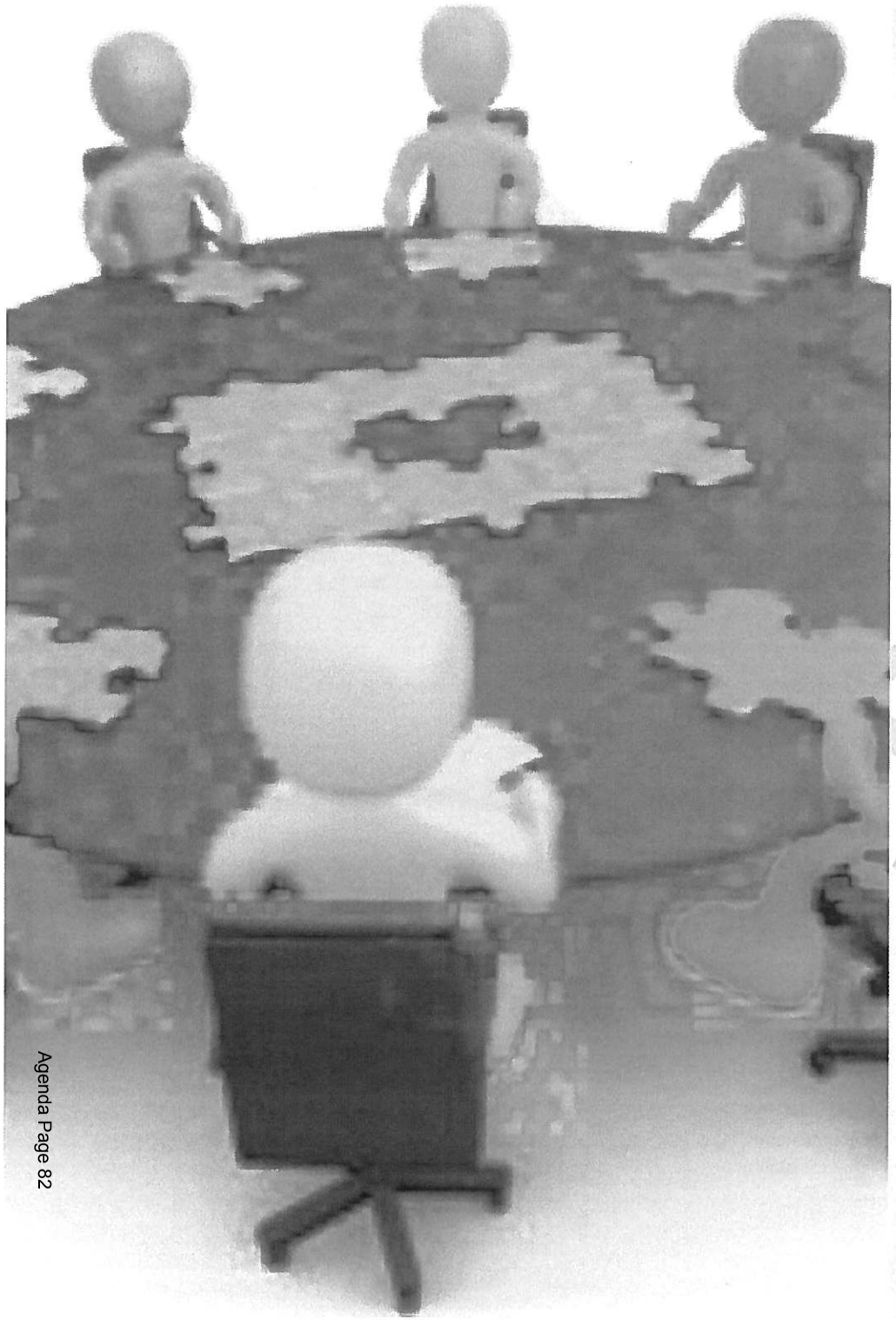
- 20-years to sustainability is arbitrary and may be OK or too long to avoid systems collapse
- the GSP must address the *business issues* of ensuring affordable potable water
- *sustainability is not enough*





Contingency

- achieving basin sustainability is necessary, but insufficient
- basin sustainability is *contingent*
  - whether or not balance is achieved before water quality changes reach a tipping point
  - whether water transfers can be achieved without causing damages to current property values

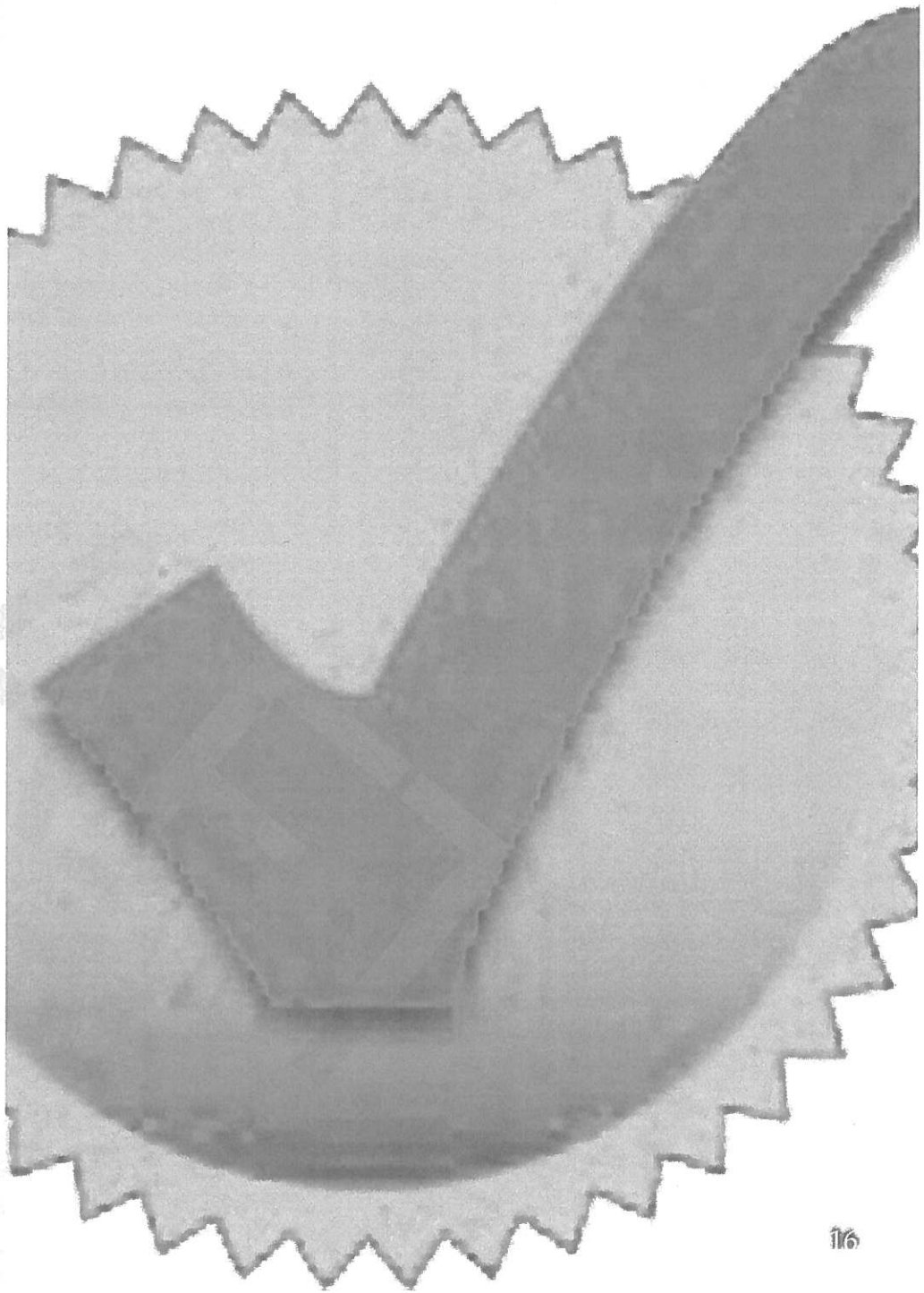


What this means for the Stakeholder Advisory

- if a special interest attempts to maximize its outcome over other stakeholders, all stakeholders may end up less well off
- typical negotiations using compromise is not necessarily useful for managing physical risk
- stakeholders for the Advisory Committee need to be capable of processing and interpreting data on it's analytic basis

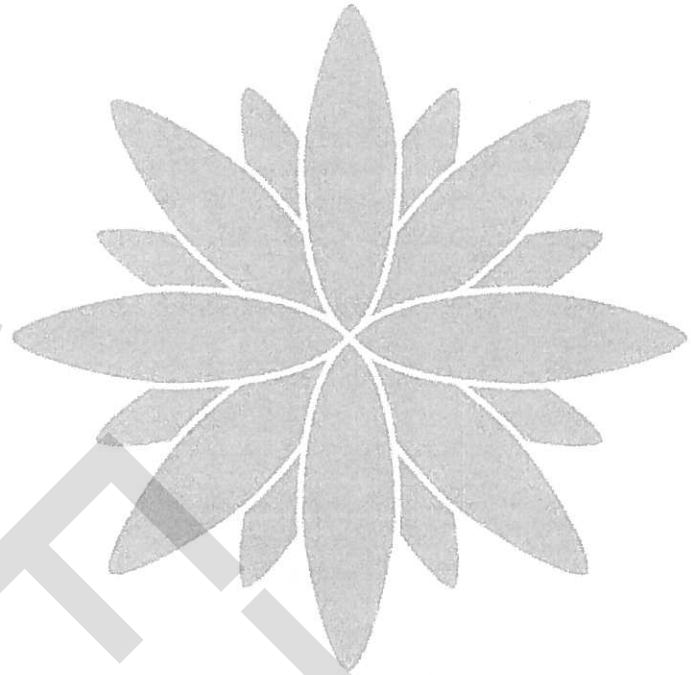
Standard Policy Frame

- the overdraft is the problem
- the objective is to eliminate the overdraft
- path dependency is immaterial
- the plan to implement policy focuses on *regulations*



Resiliency Policy Frame

- the overdraft is a *symptom* of a larger systems problem
- the first objective is to identify the *systemic* problem. Is the problem caused primarily by:
  - lock-ins
  - constrained optimization
  - externalities
  - dynamic agent interactions, etc.
- path dependency is assumed
- the plan to address the systemic problem must focus on salient *business issues*



RESILIENCE

DUDEK

DRAFT MEMORANDUM

To:	James Bennett, County Groundwater Geologist, County of San Diego
From:	Trey Driscoll, PG, CHG
Subject:	Borrego Valley Groundwater Basin Work to Date
Date:	July 7, 2016
cc:	Jerry Rolwing, General Manger, Borrego Water District

EXECUTIVE SUMMARY

Dudek was retained by the Borrego Water District (BWD) in April, 2013 to evaluate water supply options for the privately owned Rams Hill Golf Course (Rams Hill). Dudek completed a series of technical memoranda to evaluate water supply options and provided the BWD technical support to develop the *Agreement to Resolve Outstanding Claims and Establish Long-term Cooperation for the Delivery of Water to the Rams Hill Golf Course*. Subsequently, Dudek led a drilling program to explore the aquifer underlying Rams Hill. This included drilling and logging five test holes, completing four of the five test holes as production water wells, performing aquifer tests and analysis, and water quality sampling of Wells ID1-1, ID1-2, RH-3, RH-4, RH-5 and RH-6. Currently, Rams Hill is producing a majority of the irrigation water supply from these six wells. Dudek is providing ongoing groundwater level and production monitoring of the six water wells. Rams Hill data is accessible remotely from the beta website: http://ramshill.dudek.com/ (Contact Dudek for login information).[1] Dudek completed updated water quality monitoring of seven wells in the vicinity of Rams Hill in June 2016. Dudek is currently preparing the Water Supply Application for the Rams Hill wells, including evaluation of the sustainable yield of the Southern Management Area of the Borrego Valley Groundwater Basin (BVGB). Dudek is using an integrated hydrologic numerical model using the USGS code, MODFLOW-OWHM to assist in completing this analysis.[2]

[1] Remote data access consists of provisional data that has not undergone quality assurance/quality control. All data is logged and recovered from the field on a semi-annual basis.

[2] Faunt, C.C., Stamos, C.L., Flint, L.E., Wright, M.T., Burgess, M.K., Sneed, Michelle, Brandt, Justin, Martin, Peter, and Coes, A.L., 2015, Hydrogeology, hydrologic effects of development, and simulation of groundwater flow in the Borrego Valley, San Diego County, California: U.S. Geological Survey Scientific Investigations Report 2015–5150, 135 p., http://dx.doi.org/10.3133/sir20155150. Model files available at: http://ca.water.usgs.gov/projects/borrego/borrego-groundwater-availability.html

Additionally, Dudek is providing the BWD with Sustainable Groundwater Management Act (SGMA) support services. Dudek prepared the Bulletin 118 basin boundary modification request (BBMR), which was tentatively approved by the Department of Water Resources (DWR) on July 1, 2016. Dudek is also assisting the BWD with District-specific business issues related to technical evaluation of water credits, water cost, economic analysis, water quality and water supply options for District customers. Additional detail regarding work product produced to date is provided in the following sections:

RAMS HILL GOLF COURSE

Water Supply Evaluation

Dudek completed a series of technical memoranda to evaluate water supply options for the Rams Hill Golf Course. Dudek completed the following technical memoranda:

- Technical Memorandum 1 – Preliminary Evaluation of Cocopah Well. Revised July 17, 2013.
- Technical Memorandum 2 – Preliminary Evaluation and Replacement Cost of Wells ID1-1, 2 and 8. May 16, 2013.
- Technical Memorandum 3 – Wells ID1-1 and ID1-2 Valuation. June 14, 2013.
- Final Technical Memorandum 4 – Preliminary Evaluation of Water Supply Options Rams Hill Golf Course. Finalized March 26, 2014.
- Preliminary Engineering Feasibility Assessment to Provide Water to Rams Hill Golf Course. Revised July 17, 2013.
- Technical Memorandum 5 – Rams Hill Golf Course Preliminary Energy Estimation Analysis for Groundwater Wells. June 19, 2014.
- Draft Technical Memorandum 6 – Borrego Springs Resort Wells and Water Valuation. December 29, 2014.
- Draft Schedules for Implementation Long-Term Cooperation Agreement Borrego Water District and T2 Borrego. January 2014.
- Fortiner Parcels Field Well Reconnaissance. June 2014.

- BWD Board Presentation South Borrego Valley Groundwater Basin Rams Hill Project Update. April 14, 2015.

Well Drilling, Supply Applications and Monitoring

Dudek completed a series of technical memoranda to document test hole drilling, well completions, aquifer testing and analysis, and water quality sampling for the Rams Hill area wells:

- Draft Aquifer Test Reports for Wells ID-1 and ID-2. July 2014
- Draft Rams Hill Golf Course Water Supply Application Wells ID-1, ID-2 and RH-3, October 2014.
- Draft Rams Hill Golf Course Water Supply Application Well RH-4. February 2015.
- Draft Rams Hill Golf Course Water Supply Application Well RH-5 and RH-6. October 2015.
- Draft Memorandum – Well ID1-8 Aquifer Testing Analysis. November 7, 2014.
- Groundwater Monitoring Report for Rams Hill Golf Course, Permit #SP-86-006. March 16, 2016.
- Groundwater Level 15 Minute Pressure Transducer Monitoring Data Wells ID1-1, ID1-2, ID1-8, Jack Crosby Well, MW-3, MW-5a, MW-5b, RH-3, RH-4, RH-5, RH-6, WWTP-1 and Air Ranch Well No. 4. Last updated April 29, 2016.
- Rams Hill Groundwater Quality Monitoring Data from Wells ID1-1, ID1-2, RH-3, RH-4, RH-5, RH-6 and Jack Crosby Well. June 14, 2016.

SUSTAINABLE GROUNDWATER MANAGEMENT ACT SUPPORT

Basin Boundary Modification Request

Dudek assisted the BWD with applying for a BBMR to the Bulletin 118 defined BVGB as per the guidelines developed by DWR. All documents are available from DWR website: http://sgma.water.ca.gov/basinmod/basinrequest/preview/44. The BBMR has been approved by the DWR as scientific internal modification as of July 1, 2016.

Water Credits and Cost Analysis

- Working Draft Technical Memorandum – Analysis of Borrego Water District and County of San Diego Demand Offset Water Credit Policy. September 10, 2014.
- Draft Technical Memorandum – Analysis of Borrego Water District and County of San Diego Demand Offset Water Credit Policy. December 18, 2015.
- Working Draft Technical Memorandum – Economic Evaluation of Water Credits and Production Credits for the Borrego Valley Groundwater Basin Sustainability Plan. February 24, 2016.
- Draft Technical Memorandum – Water Replacement and Treatment Cost Analysis for the Borrego Valley Groundwater Basin. December 11, 2015.
- Preliminary Review of Feasibility and Economic Review of the *Confidential Property* Land Donation and Land Fallowing Program through the Natural Heritage Preservation Tax Credit Act of 2000. April 2016.

Water Quality, Recharge and Water Supply Options

- Draft Scope of Work for Viking Ranch Recharge Evaluation. July 30, 2015.
- Draft Scope of Work for Rams Hill Golf Course Stormwater Capture. June 2, 2016
- Draft Technical Memorandum Cocopah Well Valuation. March 23, 2016.
- Draft Borrego Groundwater Quality Update. June 2016.
- Groundwater Quality Risk Assessment Cost Analysis (Ongoing July-September 2016)