

## TECHNICAL MEMORANDUM 3

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**To:** Jerry Rolwing, General Manger Borrego Water District  
**From:** Trey Driscoll, PG, CHG and Tom Falk, PE  
**Subject:** Wells ID1-1 and ID1-2 Valuation  
**Date:** June 14, 2013  
**cc:** Bill Berkley, President, Olympia Partners  
**Attachment(s):** Figure 1

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Dudek has prepared an independent valuation of Borrego Water District (BWD) Wells ID1-1 and ID1-2 for the potential sale to Olympia Partners. These wells will be used to supply the Rams Hill Golf Course (Rams Hill) with irrigation water. Dudek's valuation of the wells was based on replacement cost of the wells, pumps, motors and appurtenances. A straight-line depreciation was used based on the estimated remaining useful life of the wells to determine their current value. Land costs for the two parcels associated with the wells and owned by the BWD were valued based on current market comparisons and a broker price opinion (BPO) of undeveloped land, independent of the wells valuation. A valuation of existing utilities located on Wells ID1-1 and ID1-2 was limited to estimating the current replacement cost associated with providing electric power to the wells.

### Historic Water Use

Historic water use data were provided by the BWD dating back to 1984 for Wells ID1-1 and ID1-2. These wells were originally installed in 1972 by Roscoe Moss Company for the DiGiorgio Corporation<sup>1</sup>. When installed, Wells ID1-1 and ID1-2 were originally estimated to have a maximum capacity of 300 gallons per minute (GPM) and 295 GPM, respectively (Note: wells are typically not pumped at their maximum capacity in order to minimize drawdown and maximize pumping efficiency).

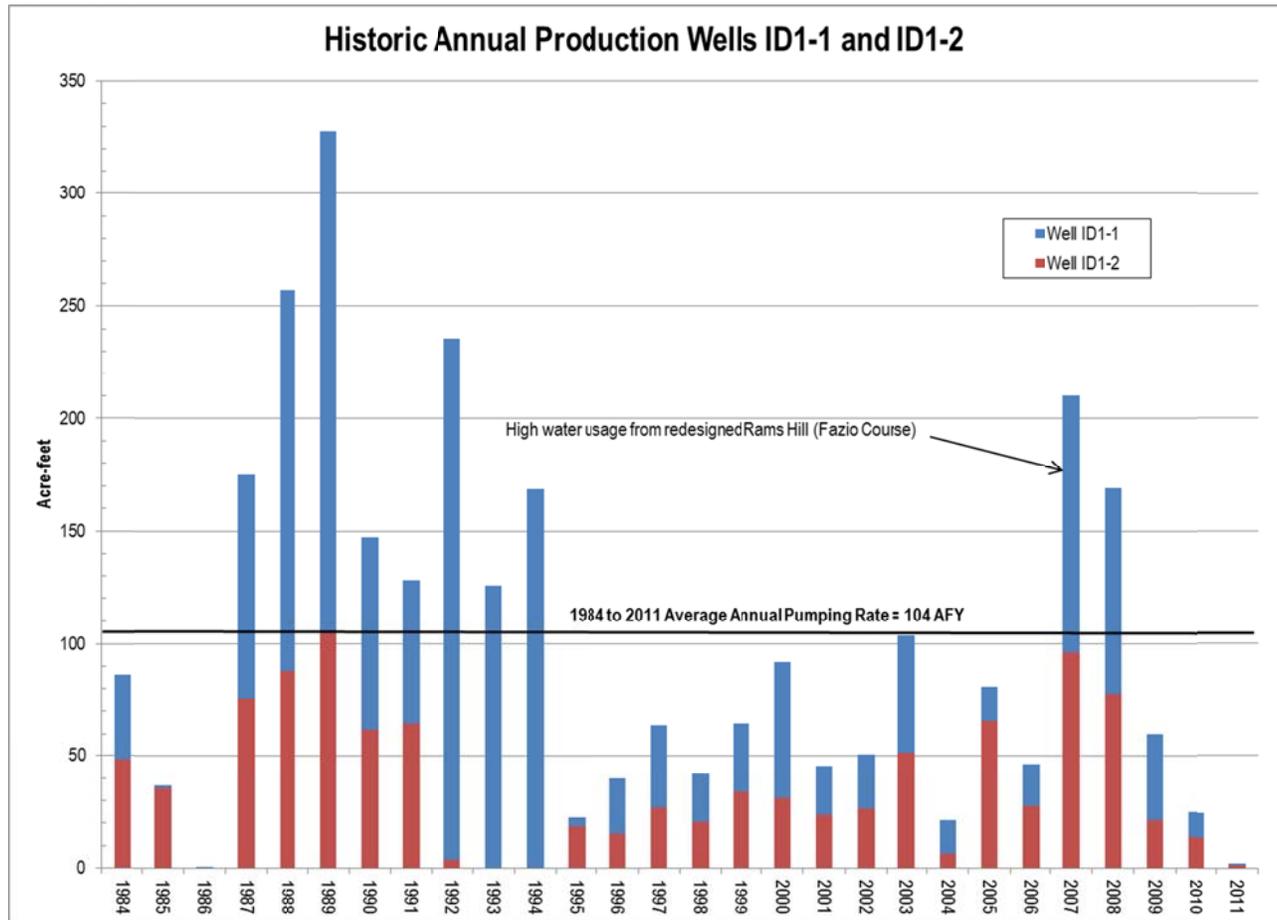
The average production rate from Wells ID1-1 and ID1-2, from 1984 to 2011 is 104 acre-feet per year as indicated below in Exhibit 1. Peak annual production occurred in 1989 at 328 acre-feet. In the mid to late 1990's and early 2000's annual production was less than the long-term average. After 2011, water use plummeted as irrigation of Rams Hill golf course ceased (Exhibit 1).

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<sup>1</sup> Department of Water Resources (DWR) Well Completion Reports provided by BWD.

**Exhibit I**

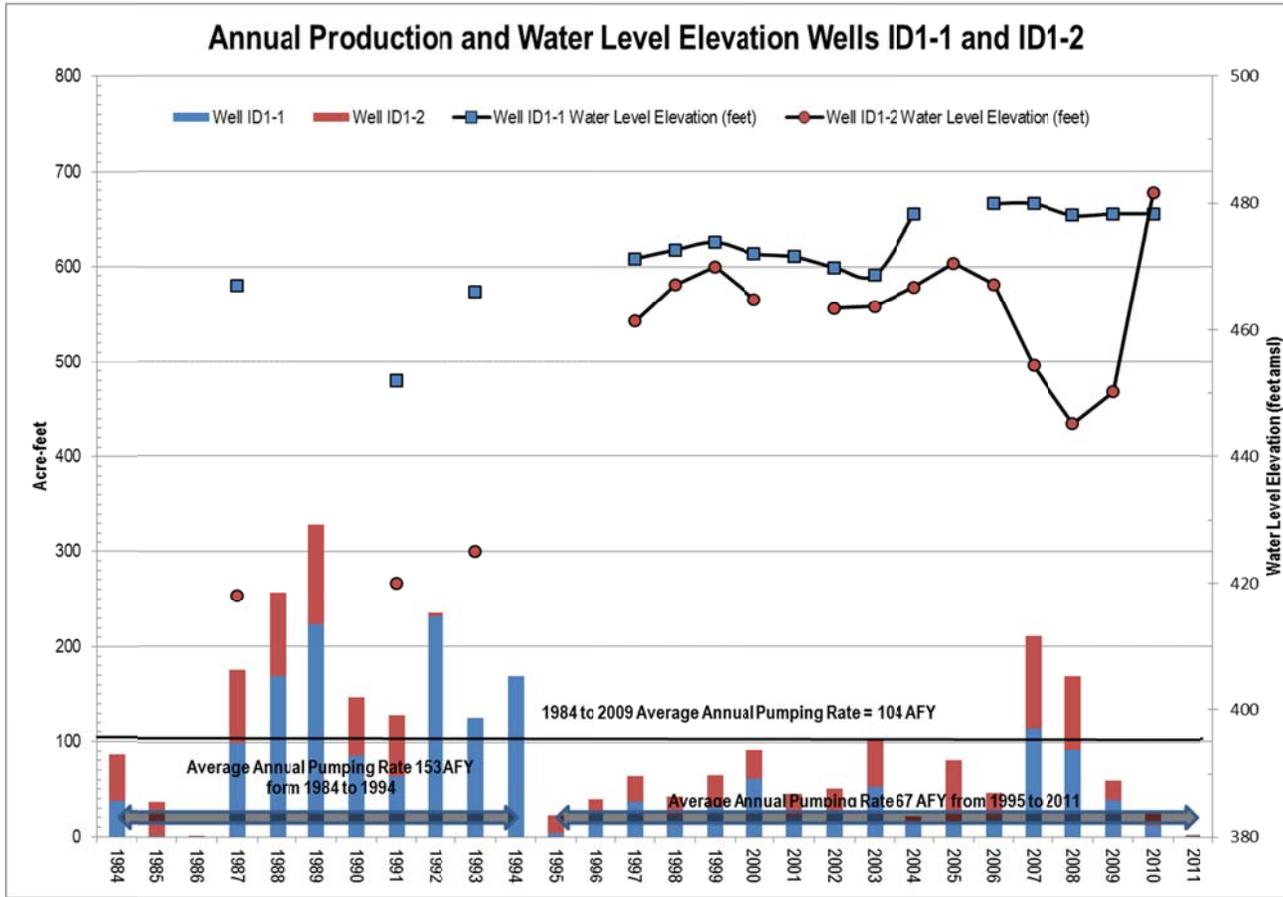
**Historic Annual Production Wells ID1-1 and ID1-2**



Source: Historical Production Well Pumpage, BWD 2011.

The annual production rate from 1984 to 1994 was 153 acre-feet per year as compared to 67 acre-feet per year for the period 1995 to 2011 (Exhibit 2). Production in Wells ID1-1 and ID1-2 since 1995 has been substantially less than previous historic pumping. Because of this diminished pumping, water levels have stabilized in the area of Wells ID1-1 and ID1-2 as indicated below in Exhibit 2.

**Exhibit 2**



**Annual Production and Water Elevation Wells ID1-1 and ID1-2**

Source: Historical Production Well Pumpage, BWD 2011 and Water Levels, BWD 2013.

**Water Levels**

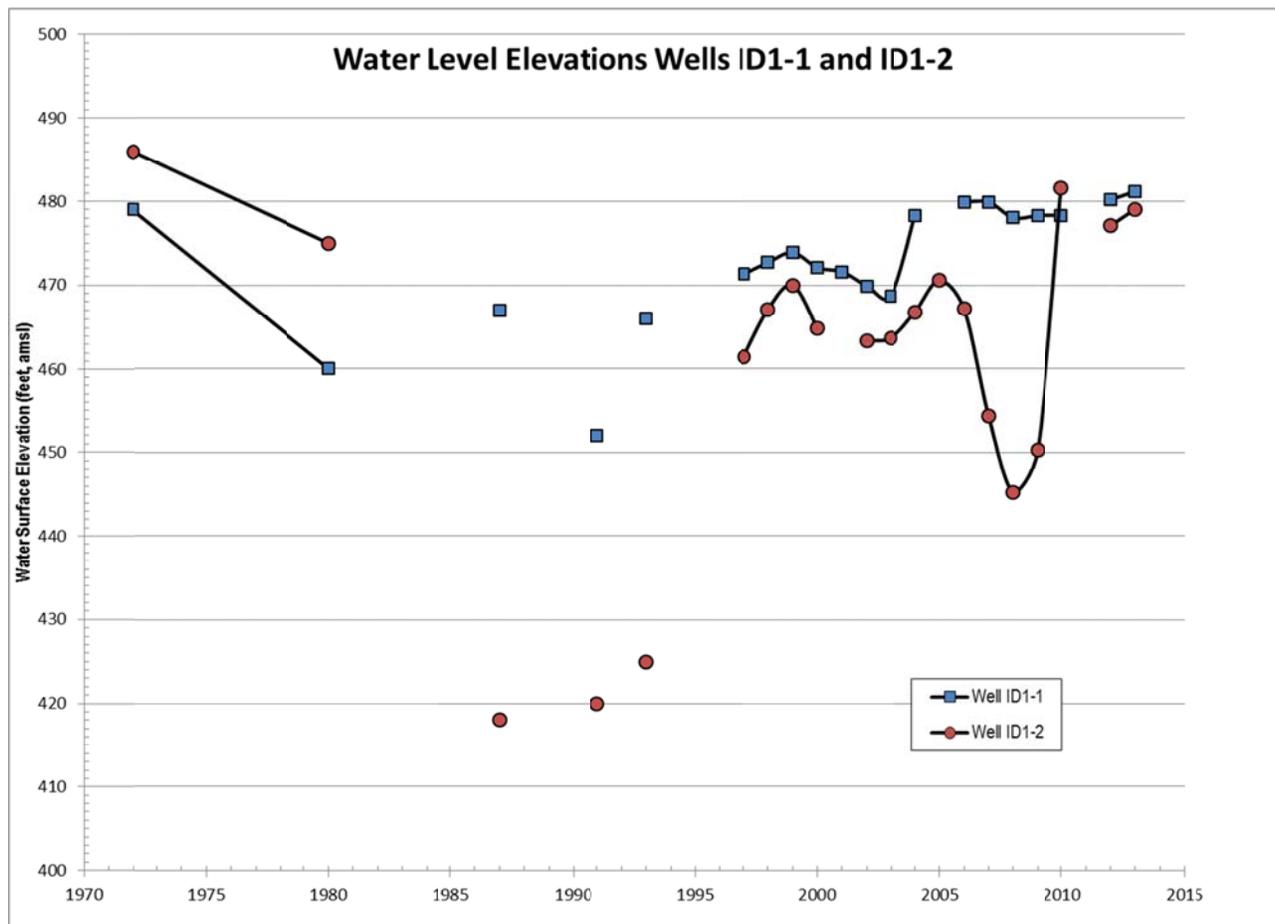
The original static water levels reported for Wells ID1-1 and ID1-2 were 53 feet below ground surface (bgs) and 92 feet bgs, respectively [479 feet above mean sea level (amsl) and 486 feet amsl]<sup>2</sup>. For comparison, water levels measured on June 10, 2013 during the video survey of Wells ID1-1 and ID1-2 were 51.3 feet below top of casing (btoc) and 99.2 feet btoc, respectively. Due to high annual production from Wells ID1-1 and ID1-2 water levels declined from 1972 until about 1992. As production shifted away from Wells ID1-1 and ID1-2, water

<sup>2</sup> BWD Historic Water Levels.

levels have rebounded to near 1972 levels as indicated below in Exhibit 3. A brief dip in water level elevations due to increased pumping is indicated in Wells ID1-1 and ID1-2 for the period 2006 to 2008. In 2007, production from the two wells was 211 acre-feet. By projecting the slope of the water level decline for Well ID1-2 from 2006 to 2008, it is forecast that water levels would drop to an elevation of 410 feet amsl within approximately 8 to 10 years at a production rate of about 100 acre-feet per year from Well ID1-2. (Note: water level decline at a specific annual pumping rate may not follow a linear trend in the aquifer due to heterogeneity of the formation materials).

### Exhibit 3

#### Static Water Level Elevations ID1 Wells 1 and 2



Source: Water Levels, BWD 2013.

Stabilization of water levels in the area of Rams Hill is confirmed by regional water level monitoring conducted by the Department of Water Resources (DWR)<sup>3</sup>. Water level elevation contours for the Borrego Valley Groundwater Basin for Fall 2012 completed by the DWR confirm the water elevation in the vicinity of Wells ID1-1 and ID1-2 at 470 feet to 480 feet amsl<sup>4</sup>. A cone of depression due to pumping of Wells ID1-10, ID1-12, ID1-16 and the Wilcox Well is evident from the Borrego Valley Groundwater Elevation Map for Fall 2012. Water Elevations are reported from 360 feet amsl to 410 feet amsl in the area of the Wells ID1-10, ID1-12, ID1-16 and the Wilcox Well cone of depression.

### **Water Quality**

Wells ID1-1 and ID1-2 are non-potable wells with a separate dedicated non-potable system that solely serves Rams Hill for irrigation of the golf course. The water produced from Wells ID1-1 and ID1-2 has elevated concentrations of total dissolved solids (TDS) with a reported concentration of 725 parts per million (ppm).<sup>5</sup> For comparison, the reported average TDS concentration of water supplied for potable use by BWD is 380 ppm with a range of detections between 220 ppm and 620 ppm.<sup>6</sup>

### **Well Construction Details**

Wells ID1-1 and ID1-2 were drilled and completed in 1972 by Roscoe Moss Company for DiGiorgio Corporation. Wells ID1-1 and ID1-2 were completed to depths of 600 feet and 732 feet, respectively. Well Construction details and pump information are summarized below in Table I.

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<sup>3</sup> DWR, 2012. Preliminary Change in Water Level Map 2005 – 2012 dated September 24, 2012.

<sup>4</sup> DWR, 2012. Borrego Valley Groundwater Elevation Map for Fall 2012.

<sup>5</sup> BWD, 2013. E-mail from Jerry Rolwing dated May 7, 2013.

<sup>6</sup> BWD, 2012. 2011 Consumer Confidence Report dated July 1, 2012.

**Table I**

**IDI Wells 1, 2 and 8 Well Construction Details**

	Well ID1-1 (Non-potable Irrigation Well)	Well ID1-2 (Non-potable Irrigation Well)
<b>Well Information</b>		
Well Depth	600 feet	732 feet
Conductor Size/Depth	24 inches/50 feet	24 inches/50 feet
Well Casing Type/Thickness	mild steel/0.25 inch wall thickness	mild steel/0.25 inch wall thickness
Well Casing Diameter	12.75 inches	12.75 inches
Blank Casing Intervals	0-180 feet 230-240 feet 456-465 feet 580-600 (sump)	0-120 feet 360-384 feet 720-732 feet (sump)
Screen Type	louver 0.070 inch slot	louver 0.070 inch slot
Screen Intervals	180-230 feet 240-456 feet 465-580 feet	120-360 feet 384-720 feet
<b>Pump Information</b>		
Pump Type	Goulds 250L40 submersible	Goulds 6CHC 8 stage submersible
Motor Type	Cenriopro 40 HP 6 inch motor	Cenriopro 40 HP 6 inch motor
Power	3 phase	3 phase
Drop Pipe	151 feet galvanized steel (4 inch)	283 feet galvanized steel (4 inch)
Cable	160 feet Flat 4/4	300 feet Flat 4/4
Check Valve	Flomatic 80 Di (4 inch)	Flomatic 80 Di (4 inch)
Pump Panel	Size 3 25-100A	Size 3 25-100A
Motor Saver	Model 777-P2	Model 777-P2

Source: DWR Well Completion Reports, BWD and Hidden Valley Pump.

Wells ID1-1 and ID1-2 have historically solely been used as irrigation wells to supply Rams Hill and are not part of BWD’s potable system.

**Replacement Cost Estimate**

Replacement cost of Wells ID1-1 and ID1-2 are estimated based on the method and material that they were originally constructed. Pump cost is estimated based on existing as-built installation of pumps currently installed in the wells. The estimate assumes that each well is constructed as an individual project and installed at prevailing wages.

**Table 2**

**Wells IDI-1 and IDI-2 Replacement Costs**

	Well ID1-1	Well ID1-2
Wells		
Mobilization	\$30,000	\$30,000
Well Permit	\$1,500	\$1,500
Drill 12 Inch Pilot Borehole	\$54,810 (\$90/foot)	\$64,800 (\$90/foot)
Provide Geophysical Log	\$3,000	\$3,000
Provide Drift and Caliper Log	\$3,000	\$3,000
Ream for Sanitary Seal	\$11,000 (\$200/foot)	\$11,000 (\$200/foot)
Install Sanitary Seal	\$5,565 (\$105/foot)	\$5,565 (\$105/foot)
Ream Borehole To Total Depth	\$50,040 (\$90/foot)	\$60,030 (\$90/foot)
Install Mild Steel Screen <sup>1</sup>	\$31,464 (\$83/foot)	\$47,610 (\$83/foot)
Install Blank Casing <sup>1</sup>	\$7,600 (\$35/foot)	\$5,389 (\$35/foot)
Install Sump	\$1,000	\$1,000
Install Gravel Pack	\$24,000 (\$40/foot)	\$29,280 (\$40/foot)
Develop Well Air Rig	\$8,000 (20 hours)	\$8,000 (20 hours)
Develop Well Line and Swab	\$5,000 (20 hours)	\$5,000 (20 hours)
Develop Well Test Pump	\$8,000 (16 hours)	\$8,000 (16 hours)
Aquifer Test	\$21,600 (72 hours)	\$21,600 (72 hours)
Video Completed Well	\$1,500	\$1,500
Total Well Construction	<b>\$267,079</b>	<b>\$306,274</b>
Pumps and Motors		
Pump	Lump Sum Pricing Provided by Pump Contractor <sup>2</sup> (\$20,105)	Lump Sum Pricing Provided by Pump Contractor <sup>2</sup> (\$22,989)
Motor		
Drop Pipe		
Cable		
Check Valve		
Electric Panel		
Sounding Tube	\$75	\$142
Welded Well Seal	\$875	\$875
Flow Meter	\$2,500	\$2,500
Wellhead Support Slab	\$1,000	\$1,000
Misc. Items	\$2,500	\$2,500
Labor	\$3,381	\$4,393
Total Pumps	<b>\$30,436</b>	<b>\$34,399</b>
<b>TOTAL WELL AND PUMP REPLACEMENT COST</b>	<b>\$297,515</b>	<b>\$340,673</b>

1. Roscoe Moss Mild Steel Pricing Current as of May 16, 2013 (Personal Communication Ted Caldwell).

2. Hidden Valley Pump Cost Estimate May 16, 2013.

The estimated replacement cost for Wells IDI-1 and IDI-2 is \$297,515 and \$340,673, respectively for a total of \$638,188.

### Remaining Useful Life

The useful life of water wells can vary greatly depending on several factors, including type of casing material, well construction methods, scaling and corrosion, and biological film issues. Roscoe Moss completed a study of 34 public supply wells in Arizona, which indicated useful life of mild steel wells at 40 to 50 years and that use of corrosion resistant materials such as stainless steel could increase useful life to 100 years or more<sup>7</sup>.

In order to estimate the remaining useful life of Wells ID1-1 and ID1-2, a down-hole video inspection was conducted on June 10, 2013 by Hidden Valley Pump and Victory Well Surveys. The casing of both wells appears to be intact to depths of 579 feet below top of casing (btoc) and 712 feet btoc, respectively. The original installed depths for Wells ID1-1 and ID1-2 are 600 feet and 732 feet, respectively. Thus, Wells ID1-1 and ID1-2 have approximately 21 feet and 20 feet of fill in the bottom of the casing, respectively. Fill in the bottom of wells is typical, especially if the wells have never been redeveloped. The casing walls of both wells are encrusted with scale and biological growth, obscuring view of the casing surface and louvered portions of the wells. Scale density typically increases with depth and most if not all of the louvered sections appear to be plugged.

Based on the results of the video survey, redevelopment of Wells ID1-1 and ID1-2 is required prior to putting the wells back into service. Hidden Valley Pump provided a cost estimate of \$50,000 per well to complete the following: 1) mechanically line swab the well with brushes and bail sediment from bottom of well, 2) sonar jet to disintegrate mineral and bacterial deposits and 3) well acidizing with inhibited acid to dissolve scale and kill bacteria in filter pack<sup>8</sup>.

Given the fact that Wells ID1-1 and ID1-2 were completed in 1972 and are approximately 40 years old, and the scaling and biological fouling issues identified during the video inspection, their remaining useful like is likely 10 to 20 years. Based on the estimated replacement cost of \$638,188 for Wells ID1-1 and ID1-2, straight line depreciation would indicate a value of the wells between \$127,638 and \$212,729 using a reaming useful life of 10 to 20 years. Wells ID1-1 and ID1-2 require approximately \$100,000 of redevelopment work to put the wells back into service. Thus, the remaining value of Wells ID1-1 and ID1-2 is estimated at between \$27,638 to \$112,727.

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<sup>7</sup> Roscoe Moss Technical Memorandum 004-2.

<sup>8</sup> Personal Communication with Mike Burke of Hidden Valley Pump, June 13, 2013.

**Land Valuation**

Wells ID1-1 and ID1-2 are located on assessor’s parcel numbers (APN) 200-160-26 and 200-160-28, respectively (Figure 1). The parcels consist of 1.88 acres and 1.80 acres for a total of 3.68 acres of land (Table 3).

**Table 3**

**Wells ID1-1 and ID1-2 Land Information**

Well	Address	APN	Acres
Well ID1-1	5073 Borrego Springs Road*	200-160-26	1.88
Well ID1-2	5065 Borrego Springs Road*	200-160-28	1.80
Total			3.68

\* Addresses need to be verified.

A review of recent comparable undeveloped land sales was completed to determinate a current market value of the BWD land as presented below in Table 4. Based on 28 transactions, the average cost per acre of undeveloped land in Borrego Springs is \$4,767.

**Table 4**

**Undeveloped Land Sales Comparison**

	Address	City	APN	Acres	Sales Price	Sales Date
1	256 Esquaro	Borrego Springs	200-233-21-00	0.41	\$3,000	12/28/2012
2	12th	Borrego Springs	253-282-11-00		\$3,000	2/26/2013
3	188 Santa Saba	Borrego Springs	198-401-27-00	0.35	\$3,300	6/11/2013
4	189 Santa Saba	Borrego Springs	198-063-07-00	0.57	\$3,300	3/25/2013
5		Borrego Springs	198-063-07-00	0.57	\$3,666	3/25/2013
6	Frying Pan LOT #60	Borrego Springs	198-063-04-00	0.55	\$3,666	3/25/2013
7	San Ysidro	Borrego Springs	140-280-15-00	3.47	\$5,000	1/10/2013
8	Santa Rosa	Borrego Springs	140-280-29-00	16.9	\$5,000	1/21/2013
9	Lot 183 Bouble O	Borrego Springs	198-061-16-00	0.43	\$5,500	3/24/2013
10	10 Borrego Springs Road	Borrego Springs		10	\$6,000	4/30/2013
11	25 Borrego Springs Road	Borrego Springs	200-120-25-00		\$6,000	4/30/2013
12	Lot 119 Double O	Borrego Springs	198-061-24-00	0.51	\$6,000	4/11/2013
13	44 Borrego Springs	Borrego Springs	198-054-24-00	0.57	\$7,000	2/4/2013
14	43 Borrego Springs	Borrego Springs	198-054-23-00	0.57	\$7,000	2/4/2013
15	10 Split Mountain Road	Borrego Springs		10	\$8,000	4/19/2013

### Technical Memorandum 3

Subject: Wells IDI-1 and IDI-2 Valuation

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	Address	City	APN	Acres	Sales Price	Sales Date
16	900 Split Mountain	Borrego Springs		9	\$8,000	4/19/2013
17	39 Foursome	Borrego Springs	199-330-10-00	0.14	\$13,000	1/31/2013
18	5 Tilting T	Borrego Springs	199-270-05-00	0.4	\$13,000	4/5/2013
19	14 Yaqui Pass	Borrego Springs	199-181-14-00	5.22	\$15,000	4/5/2013
20	20 Palm Canyon Drive	Borrego Springs	199-110-17-00	20	\$16,500	4/22/2013
21	Lot 13 Wagon	Borrego Springs	198-312-04-00	1.04	\$18,000	3/1/2013
22	4760 Tinaja	Borrego Springs	200-291-06-00	2.16	\$22,500	2/20/2013
23	Split Mountain	Borrego Springs	253-360-12-00	10	\$23,000	2/4/2013
24	3325 Borrego Valley	Borrego Springs	199-16-39-00	10	\$235,000	4/3/2013
25	6051 Split Mountain	Borrego Springs	253-220-62-00	80	\$90,000	3/11/2013
26	Palm Canyon	Borrego Springs	141-384-34-00	5.61	\$100,000	12/31/2012
27	Palm Canyon Drive	Borrego Springs	141-384-33-00	5.52	\$125,000	12/31/2012
28	Palm Canyon	Borrego Springs	141-384-16-00	9.37	\$215,000	12/12/2012
			Total	203	\$969,432	
				Average \$/Acre	\$4,767	

In addition to the sales comparison, a broker price opinion (BPO) was obtained from Road Runner Realty of Borrego Springs, California.<sup>9</sup> Road Runner Realty used two recent sales on Yaqui Pass and Borrego Valley Road that consisted of vacant land of 5 and 10 acres, respectively and sold for between \$2,300 and \$2,873 per acre as a basis for comparison. Additionally, Road Runner Realty took into consideration that smaller parcels such as the BWD parcels typically demand a higher price per acre. Considering the specialized nature of the BWD parcels, the BPO estimates the fair market value of the land at between \$4,000 and \$5,000 per acre. Thus, the current market value of the 3.68 acres of the two BWD parcels is estimated at \$14,720 to \$18,400.

#### Utilities

A 6-inch non-potable pipeline traverses from Well IDI-1 to Well IDI-2 where the pipeline transitions to an 8-inch line that runs to the northeast, parallel to Borrego Springs Road. Ownership of the pipeline and potential pipeline easements are being researched by the BWD. Therefore, a valuation of the pipeline was not performed as part of this analysis.

Power is supplied to both Wells IDI-1 and IDI-2 by the electric utility, San Diego Gas and Electric (SDG&E). Well IDI-1 is located approximately 2,900 feet (0.55 miles) from the

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<sup>9</sup> Letter from David Cragoe, Road Runner Realty dated June 13, 2013.

overhead power lines running parallel to Borrego Springs Road by way of tracing the dirt road that is used to access the site. Well ID1-2 is located approximately 125 feet from an existing power line and the estimated cost to obtain electrical supply to the well was not evaluated separately from the costs to provide electrical service to ID1-1. Both wells are supplied with three phase power in order to operate 40 horsepower (HP) submersible pumps. The current estimated replacement cost to install 0.55 miles of overhead electrical line capable of supplying three-phase power is \$50,000 to \$75,000<sup>10</sup>.

The roadways to Wells ID1-1 and ID1-2 consist of unimproved dirt roads. Therefore, no improved value was assigned to them.

### Valuation Wells ID1-1 and ID1-2

A valuation for Wells ID1-1 and ID1-2 has been developed based on replacement cost of the wells, pumps, motors and appurtenances. A straight-line depreciation was used based on the remaining useful life of the wells (10 to 20 years) to determine their current value. Land costs for the two parcels associated with the wells were valued based on current market comparisons and a BPO of undeveloped land in Borrego Springs (\$4,000/acre to \$5,000/acre) independent of the well valuation. The cost to provide electric power to the well sites (\$50,000 to \$75,000) was also included in the valuation. As discussed above, the cost of the non-potable pipeline system was not included in the valuation. Needed repairs consisting of well redevelopment required to put Wells ID1-1 and ID1-2 back into service were subtracted from the total valuation. Thus, the estimated value of Wells ID1-1 and ID1-2 is **\$92,358 - \$206, 129** (Table 5).

**Table 5**

#### **Wells ID1-1 and ID1-2 Valuation**

Item	Valuation
Wells, Pumps and Motors	\$127,638 - \$212,729
Land (3.68 Acres)	\$14,720 - \$18,400
0.55 Miles Overhead Electric Line (3 Phase)	\$50,000 - \$75,000
Non-potable pipeline	Not valued
<b>Total Wells, Land and Power</b>	<b>\$192,358 - \$306,129</b>
Well Redevelopment	(\$100,000)
<b>Value Wells ID1-1 and ID1-2</b>	<b>\$92,358 - \$206,129</b>

As the purchaser, Olympia Partners, would be taking on the risk of well redevelopment (i.e. casing could fail or poor casing condition could be identified during redevelopment), it is

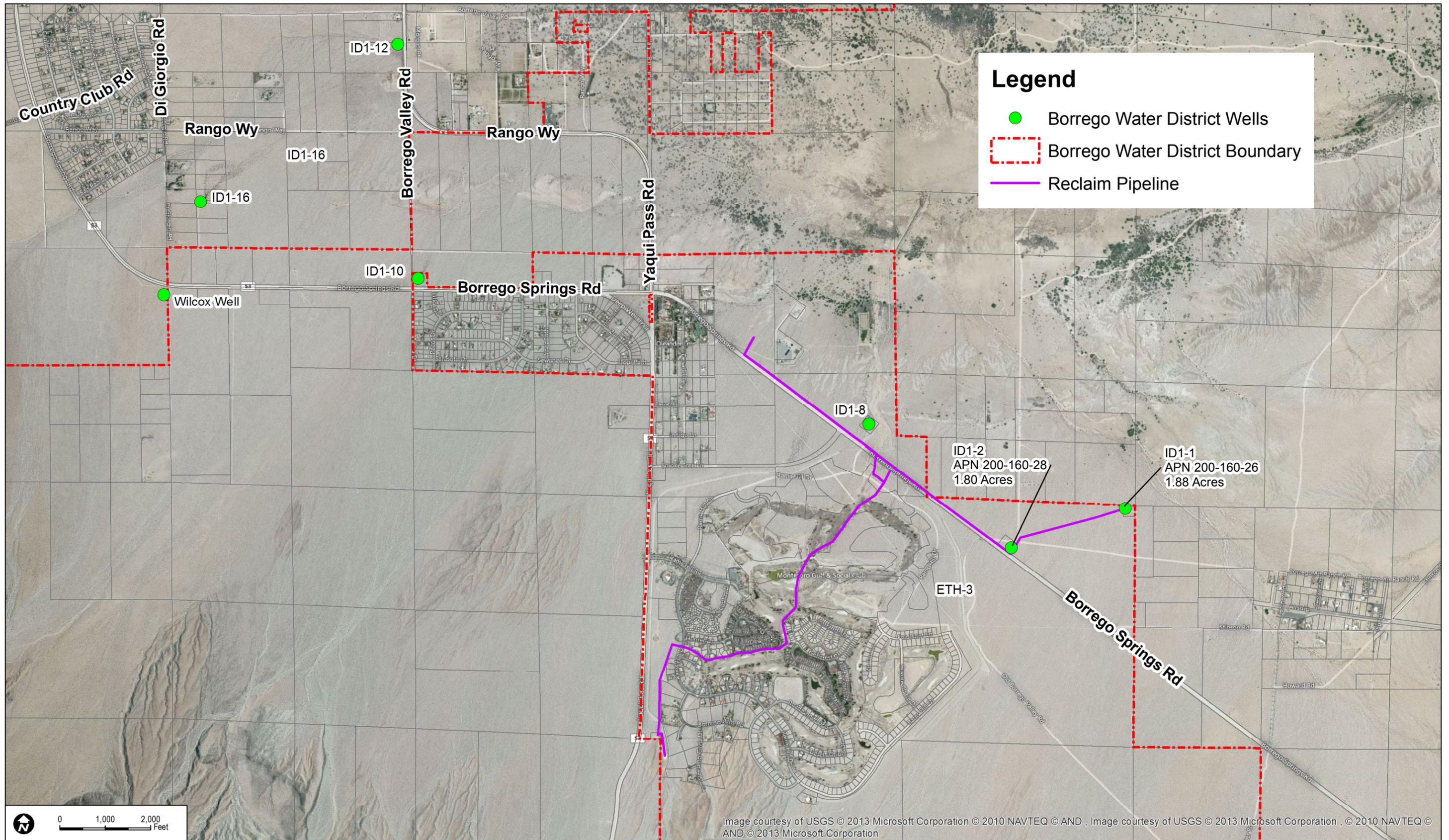
<sup>10</sup> Personal communication from Steve Dickey (Dudek). Estimate based on similar projects previously evaluated.

Dudek's opinion that Wells IDI-1 and IDI-2 should be valued at the low to mid end of the valuation (i.e. \$100,000 to \$150,000).

### **Limitations and Assumptions**

This technical memorandum of the valuation for Wells IDI-1 and IDI-2 does not represent an appraisal. The valuation has been developed on methodologies discussed herein, which is based on a cost approach. Considering the specialized nature of the use of the parcels and limited available comparisons, it was determined that a sales comparison approach was not appropriate for this type of valuation. Due to the limited ability of BWD to sell non-potable water (i.e. Rams Hill is the only current potential customer for non-potable water) it was determined that an income approach was not appropriate to value Wells IDI-1 and IDI-2.

This valuation is intended solely for use by the BWD and Olympia Partners in negotiating a final sales price for Wells IDI-1 and IDI-2.



**Legend**

- Borrego Water District Wells
- Borrego Water District Boundary
- Reclaim Pipeline

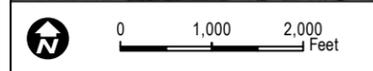


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