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Hydraulics

Hydrology

Water Resources

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MAR 15 2011

DEPT. OF WATER RESOURCES
SOUTHERN REGION

March 14, 2011

Mr. Allen Merritt
IDWR-Southern Region
1341 Fillmore Street, Suite 200
Twin Falls, ID 83301-3380

Re: Heart Rock Ranch LLC- Materials in Support of 37-22459

Dear Allen:

Per our meeting on March 9th 2011 with Jeff Peppersack, Mat Weaver and Pam Skaggs of the IDWR State Office, yourself and Jeanie Robertson of the IDWR Southern Office, and Fritz Haemmerle, Chuck Brockway Sr. and myself, enclosed are a mitigation plan outlining the location of the 47.5 acres to be dried up during the first year of project construction, an addendum requested by IDWR to accompany our March 10th 2010 First Fill Analysis, and a table outlining the overlapping acres associated with each of the water right transfer applications in the name of Heart Rock Ranch LLC. It is also our understanding that final processing and approval of permit 37-22459 and the 11 associated water right transfer applications will occur as soon as possible with the receipt of the enclosed materials and agreed upon conditions for permit 37-22459. We appreciate your attention to all of these applications.

Please copy our office on all correspondence dealing with water right permit application 37-22459 and all 11 associated water right transfer applications in the name of Heart Rock Ranch LLC. Please call our office with additional questions or comments.

Regards,

Zach Latham, M.S., Hydrologist

Enclosures: (1) Mitigation Plan
(1) Additional First Fill Memo Materials
(1) Overlapping Acre Analysis- Heart Rock Ranch

Cc: Fritz Haemmerle

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Heart Rock Ranch LLC- Permit 37-22459 Mitigation Acres Analysis for First Fill

To: Mr. Allen Merritt, IDWR Southern Region Office
From: Charles E. Brockway, Zach Latham
Cc: Mrs. Jeanie Robertson, IDWR Southern Region
Date: March 14th 2011
Re: Heart Rock Ranch LLC- Mitigation Acres Analysis for First Fill

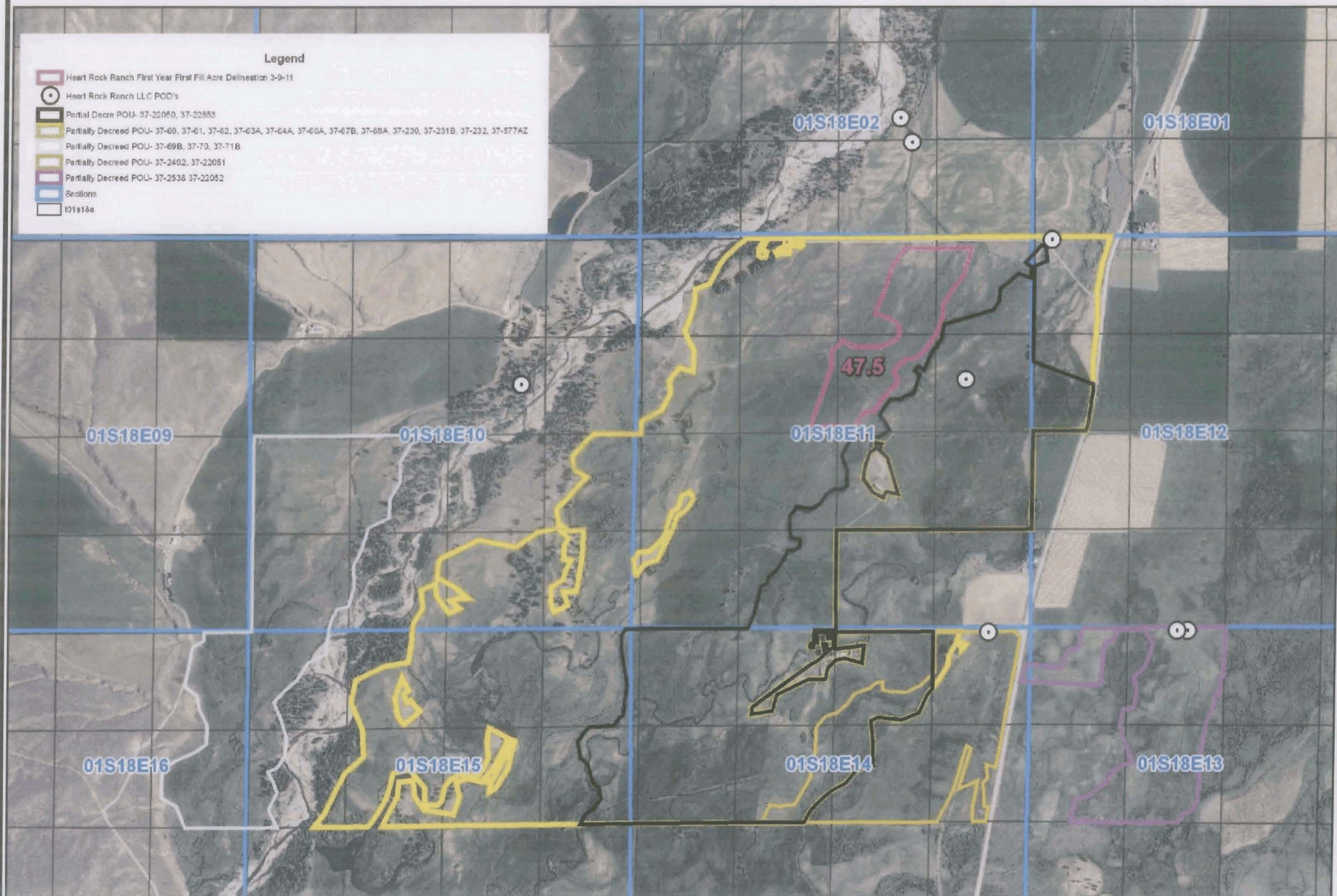
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In a meeting with Brockway Engineering on March 9th 2011, Mr. Jeff Peppersack of the IDWR State Office in Boise, requested a mitigation plan for the acres to be dried up to account for the first fill volume associated with permit 37-22459. It was agreed upon at the meeting that 213.7 acres of grass pasture (1.82 acre-feet per acre) will need to be mitigated during the first year of construction (one year only) to account for the 298.7 acre-feet of consumptive use associated with the open water proposed under permit 37-22459 and the 90.1 acre feet of first fill volume associated with permit 37-22459. Because 166.2 acres have been proposed to be permanently dried up to account for pond evaporation under 37-22459, the 47.5 acres required to meet 213.7 acres during the first year, first fill have been identified (see Figure 1). The water rights associated with the area to be dried up during the one-time first year fill are listed in the table below. 1.73 cfs of Big Wood River water will not be diverted from the Black 61 diversion for the entire one-time first fill 2011 irrigation season (assuming 2011 permit and transfer application approval).

HEART ROCK RANCH LLC- PERMIT 37-22459 FIRST FILL MITIGATION PLAN				
ACRES TO BE DRIED UP TO MEET FIRST FILL =			47.5	
TOTAL COMBINED ACRES =			1084.1	
PERCENTAGE OF ACRES TO BE DRIED UP FOR FIRST FILL =			4.4%	
Water Right Number:	Partially Decreed Discharge (cfs):	Partially Decreed Acres:	Discharge Rate Used for First Fill Mitigation (cfs):	One Year Dry Up Acres for First Fill Mitigation (cfs):
37-60	2.8	400	0.1	17.5
37-61	8.4	400	0.4	17.5
37-62	2.8	400	0.1	17.5
37-63A	2	1084.1	0.1	47.5
37-64A	5.6	1084.1	0.2	47.5
37-66A	4.2	1084.1	0.2	47.5
37-67B	3.3	1084.1	0.1	47.5
37-68A	1.6	1084.1	0.1	47.5
37-230	4	160	0.2	7.0
37-231B	0.4	160	0.0	7.0
37-232	1.6	160	0.1	7.0
37-577AZ	2.7	57.9	0.1	2.5
Totals =	39.4	1084.1	1.73	47.5
Total Discharge Rate Used for First Fill Mitigation =			1.73	
Total Acres Used for First Fill Mitigation =			47.5	
Irrigation Season- Total Volume Left in Big Wood River (200 diversion days)=			683.6	



1 inch equals 1,800 feet

**FIGURE 1: HEART ROCK RANCH LLC MITIGATION PLAN
FIRST FILL DRY UP ACRE LOCATION- 47.5 ACRES
T.01S R.18E SEC. 10, 11, 12, 14, 15
2009 NAIP AERIAL PHOTOGRAPH**





Heart Rock Ranch LLC- Permit 37-22459

ADDENDUM to First Fill Analysis

Summary

To: Mr. Allen Merritt, IDWR Southern Region Office
From: Charles E. Brockway, Zach Latham
Cc: Mrs. Jeanie Robertson, IDWR Southern Region
Date: March 14th 2011
Re: Heart Rock Ranch LLC- Addendum to First Fill Analysis

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As requested by Mr. Jeff Peppersack of the IDWR State Office in Boise, this is an addendum to Brockway Engineering's first fill analysis of the storage proposed and listed on water right permit 37-22459 in the name of Heart Rock Ranch LLC dated March 10th 2010. Previously, Brockway Engineering submitted a first fill analysis on March 10th 2010. The attached figures are intended to supplement those provided in the March 10th 2010 First Fill Analysis.

Figure 1 shows the 2007 and 2008 hydrographs at the Idaho Power Willow Creek gauging station. During 2007, Big Wood River irrigation water was neither imported nor used for irrigation as a hydrologic experiment. During 2008, Big Wood River water as regulated by the District 37 Watermaster was imported for irrigation use on the Heart Rock Ranch. Although the 2008 hydrograph has sustained irrigation season flows greater than 25 cfs, the 2008 hydrograph decreases after the end of the irrigation season to flows nearly identical to those recorded in 2007 in late December. This in part is a result of the release of irrigation water stored in the shallow aquifer on the Heart Rock Ranch which was applied throughout the 2008 irrigation season. Big Wood River Water imported onto the Heart Rock Ranch for irrigation is stored in the shallow alluvial aquifer and is released into Willow Creek and ultimately the Big Wood River by the end of the calendar year.

Figure 2 shows the network of 49 shallow ground water piezometers currently installed on the Heart Rock Ranch and the location of the Idaho Power Willow Creek Gauging Station. Average depths to water as recorded in the shallow ground water piezometers for sampling dates in 2007 and 2008 were calculated and plotted on Figure 3. Results show a decrease in the average shallow aquifer water level and then a subsequent increase and stabilization in the shallow aquifer water level during 2007. In 2008, irrigation water application caused the average shallow aquifer water level to rise consistently above the 2007 levels. The release of the irrigation water is seen in the decrease of the average depth to ground water towards the second half of the irrigation season. The average depth to water in the shallow aquifer stabilized near the same average level as was observed in 2007. Irrigation water application during 2008 was stored in the shallow aquifer and was then released downstream into Willow Creek and the Big Wood River by the beginning of the next irrigation season.

Because 90.1 acre feet of first fill storage is initially dry at the beginning of the irrigation season (and later filled), the same 90.1 acre feet of water is anticipated enter Crystal Creek and Black Slough, Willow Creek, confluence with the Big Wood River and enter Magic Reservoir later in the fall or winter of the first irrigation season. During the first year of project implementation, 90.1 acre-feet of water is proposed to be left in the Big Wood River due to the dry up of 47.5 acres (per ADM- IDWR), and 90.1 acre-feet of first fill water is anticipated to re-enter the Big Wood River. In total, 180.2 acre-feet of water enters the Big Wood River during the first year. Therefore, the dry up of 47.5 acres to mitigate for the first fill volume of the 90.1 acre feet will only be required the first year of the project since every subsequent year's fill will be released downstream and will be stored in Magic Reservoir at the end of the previous irrigation season.

WILLOW CREEK AT IDAHO POWER GAUGE

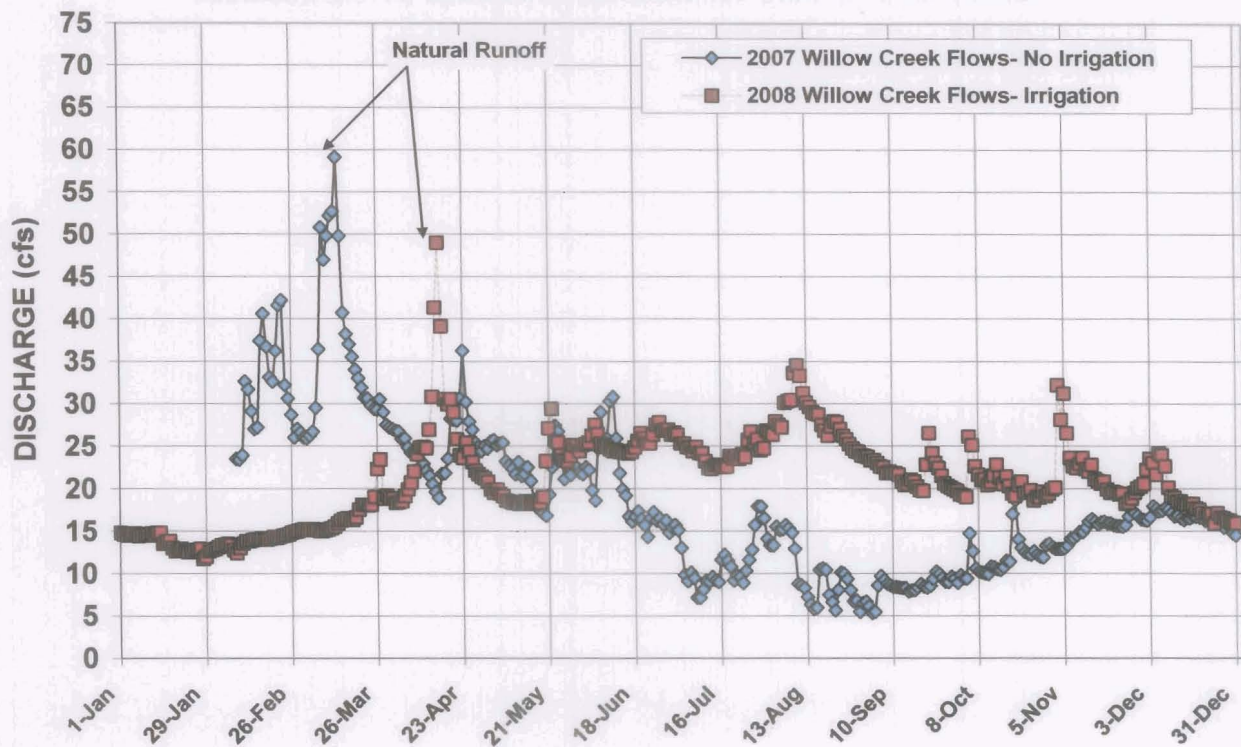


Figure1: Idaho Power Willow Creek Gauge Hydrograph.

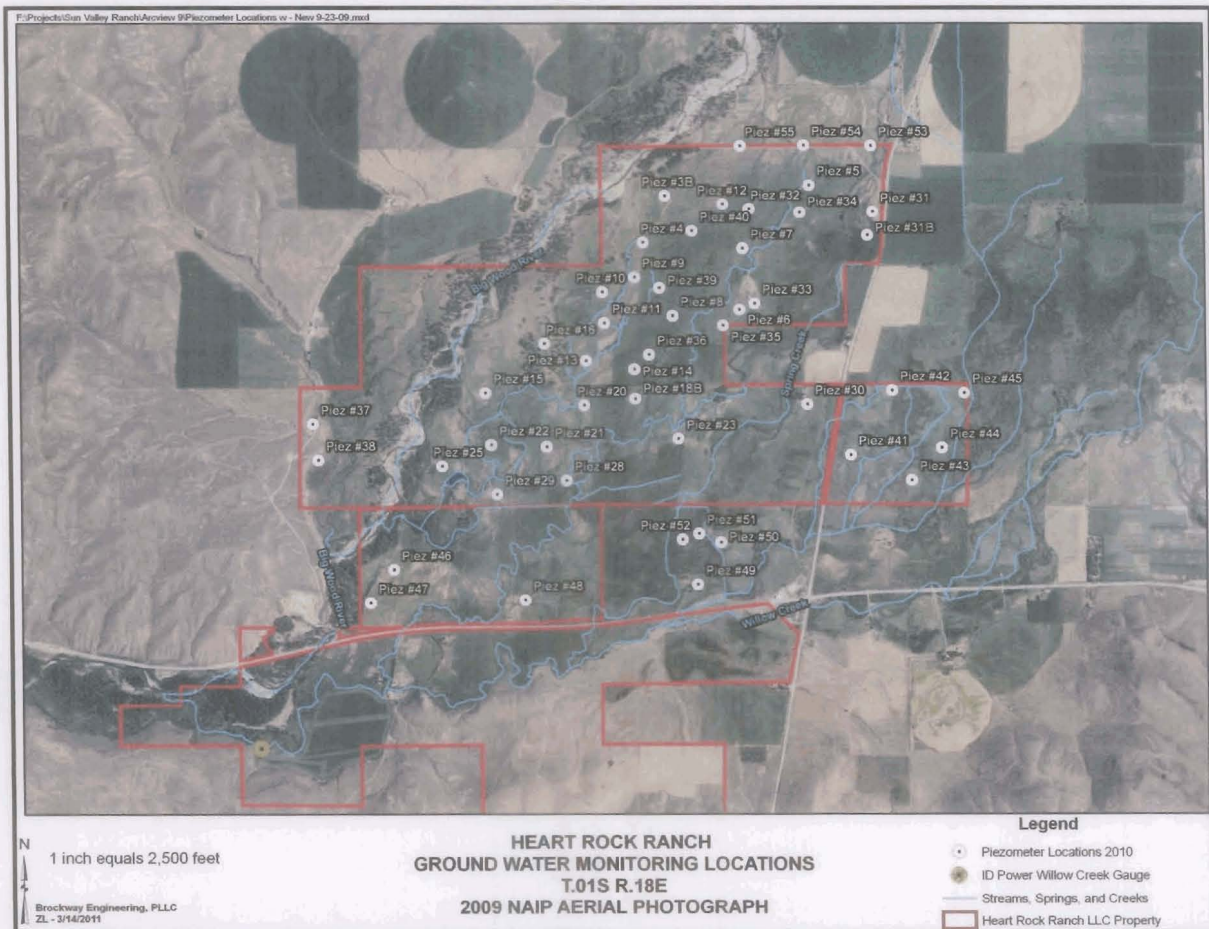


Figure 2: Heart Rock Ranch Piezometer Locations.

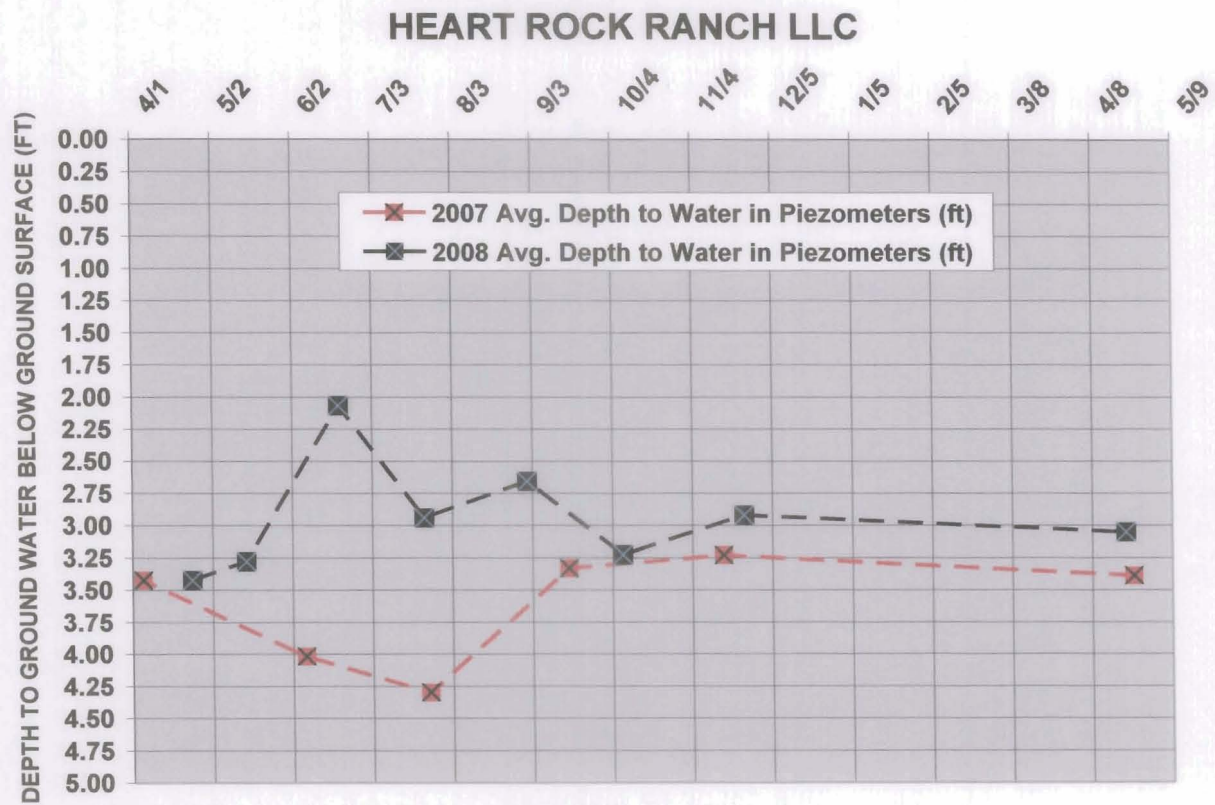


Figure 3: Average Shallow Ground Water Depths on the Heart Rock Ranch.

HEART ROCK RANCH TRANSFER AND PERMIT APPLICATIONS-

Transfer Number:	ADM 3-3-11 Analysis- Physical Acres Per Transfer To Be Dried Up:	Brockway Analysis- Physical Acres Per Transfer To Be Dried Up:
75838	4.2	4.2
75839	0	0.0
75840	9.1	9.1
"	7.9	7.9
75849	0	0.0
"	105.1	102.1
"	0	0.0
"	0	0.0
75850	12.7	13.0
75851	15.3	15.3
75852	0	0.0
75853	2.4	2.4
75854	3	3.1
75855	0.1	0.1
75856	9.7	9.0
Total number of acres dried up on paper, including and accounting for all overlapping acres =	169.5	166.2
Acres Needing of Grass Pasture Needing to Be Dried up to meet CU of 298.9 AFA for Proposed Open Water:	164.2	164.2
Addition to Amount Required In Consumptive Use Balance for 37-22459=	5.3	2.0