Beissel, Dennis

From: Perkins, Leslie
Sent: Wednesday, February 16, 2011 12:43 PM
To: Beissel, Dennis
Subject: FW: Response to NJGS Comments on Groundwater Impacts at Salem and Hope Creek Site
Attachments: Rspns_To_NJGS_Cmts_on_SalemHCGS_GrndWtr_2.15.2011.doc

Dennis,

FYI- Attached are responses from the applicant regarding the NJ Geological Survey's comments.

Leslie

From: Nancy.Ranek@exeloncorp.com [mailto:Nancy.Ranek@exeloncorp.com]
Sent: Wednesday, February 16, 2011 10:18 AM
To: Pham, Bo; Perkins, Leslie
Cc: Jeffrey.Pantazes@pseg.com; Helen.Gregory@pseg.com; Edward_Keating@URSCorp.com; albert.fulvio@exeloncorp.com; john.hufnagel@exeloncorp.com
Subject: Response to NJGS Comments on Groundwater Impacts at Salem and Hope Creek Site

Hi Bo and Leslie—
I am attaching a file containing a response to the NJ Geological Survey's comments on the discussion concerning groundwater impacts in the Salem and Hope Creek License Renewal Environmental Reports. This information is provided to assist the NRC Staff with its environmental review of the Salem and Hope Creek license renewal applications.

The attachments (A through F) referred to in the attached response have file sizes that are too large for email. Therefore, I am not sending the attachments with this email. They will be provided on a CD delivered to Leslie.

Please call if there are comments.

Thanks.
Nancy

Nancy L. Ranek
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Exelon Nuclear, LLC
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Response to Comments from the New Jersey Geologic Survey (NJGS) on the Analysis of Groundwater Impacts in the Salem and Hope Creek License Renewal Environmental Reports

1. **NJGS Comment:** Pages 3-7, 3-9. In the section on Ground Water Usage they indicate the ground water levels in the PRM aquifer system in the plant area are the result of the pumping centers north of the Chesapeake and Delaware Canal. On page 3-.8 they reference USGS (2001b) as the report which "...clearly shows that the pumping centers north of the Chesapeake and Delaware Canal influence the levels in the lower PRM in the Artificial Island vicinity." This report according to their references USGS 2001b is Simulation of Ground-Water Flow in the Potomac-Raritan-Magothy Aquifer System Near the Defense Supply Center Philadelphia, and the Point Breeze Refinery, Southern Philadelphia County, Pennsylvania, US Geological Survey Water-Resources Investigations Report 01-4218. The report and model is very specific only to the area around the Philadelphia Navy yard and Camden over **35 miles** NNE of Artificial Island. Therefore this report obviously does not indicate the PRM ground water levels are the result of pumping centers north of the canal.

Response: See Below.

2. **NJGS Comment:** Then on page 3-9 they indicate that according to USGS (2009) the Delaware withdrawals have reduced the regional water levels and that the information in the report suggests that the decrease in water levels at Artificial Island in the lower and middle PRM are the result of the regional lowering.

Response: See Below.

3. **NJGS Comment:** According to 3-7 and 3-8 and Table 3.1-3 the Salem and Hope Creek wells are in the upper and middle PRM, not the middle and lower PRM as implied on 3-9.

Response: Site wells PW-5 (840' below ground surface [bgs]), HC-1 (816' bgs) and HC-2 (817' bgs) are screened in the Upper Raritan formation, while site well PW-6 (1138' bgs) is screened in the Middle Raritan formation (Dames and Moore, 1988; NJDEP 1975, 1980, and 1984). Both the Upper and Middle Raritan formations belong to the Middle aquifer of the Potomac-Raritan-Magothy (PRM) aquifer system (USGS 2009a). See Attachment A.

4. **NJGS Comment:** Also, if USGS (1983) Plate 1 is examined there is a distinct cone of depression, at the plant site (PW 5), in the lower PRM which according to page 12 of the report "...includes essentially all water-bearing zones within the aquifer system below the upper aquifer."

Response: USGS (1983) Plate 1 does show a cone of depression in the Lower aquifer of the PRM beneath the Salem and Hope Creek site in 1978 (Attachment B). However, well PW-5 pumps water from the Upper Raritan formation, which belongs to the Middle aquifer of the PRM, not the Lower aquifer of the PRM. No wells at the Salem and Hope Creek site pump water from the Lower aquifer of the PRM.

USGS (2009a) Plate 7 shows no cone of depression beneath the Salem and Hope Creek site in the Upper aquifer of the PRM in 2003 (Attachment C). Similarly, USGS (2009a) Plate 9 shows no cone of depression beneath the Salem and Hope Creek site in the Lower aquifer of the PRM in 2003 (Attachment F). In the Middle aquifer of the PRM, USGS (2009a)

Plate 8 does show a localized cone of depression in 2003 beneath the Salem and Hope Creek site (Attachment D). Hence, based on USGS (2009a) Plates 7, 8 and 9, it appears that groundwater production at the site may be contributing to a reduction in localized groundwater availability. However, this reduction is limited to a small area within approximately 2 miles of well PW-5 and is not likely to impact other groundwater users.

USGS (2011) reports that groundwater levels have increased in the City of Salem observation well over the past several years, and USGS (2008 and 2009b) indicate that groundwater levels in the area are not decreasing. Although groundwater use conflicts were enough of a regional concern to cause designation of two Critical Areas, the Salem and Hope Creek site was not included within either of the two Critical Areas. The success of the Critical Areas program in allowing groundwater levels to recover suggests that groundwater use conflicts in western Salem County may diminish with time, rather than grow.

5. NJGS Comment: There is no information shown in USGS (1983) for the upper aquifer at the plant site. Table 2 indicates a water level for PW5 in 1978 at -78 feet. The well record for PW5 indicates static water levels of 35' (8/27/74) and 32' (11/4/75). The land surface at the well is about 17' above sea level which would indicate the water level at Artificial Island in 1974-75 was -18 to -15 feet. Three years after the plant started pumping out of the aquifer the water levels dropped to -78 feet or a decline of 60 feet in three years. That indicates the plant is causing the low levels not a pumping center over 10 miles away. USGS WRI 96-4206 Water levels in, Extent of Freshwater in, and Water Withdrawal from Eight Major Aquifers, New Jersey Coastal Plain, 1993, by Pierre J. Lacombe and Robert Rosman, 1997, also shows the same cone of depression on Plate 7 of 8, Middle and undifferentiated Potomac-Raritan-Magothy aquifer. This report has separated the PRM into three aquifers. The water level on the plate is PW5 at -75 feet, the same well as in USGS (1983) Plate 1. The USGS reports above and in USGS (2009) show no wells at Artificial Island as being in the upper PRM. In the USGS reports and in their database lists PW5 as middle PRM and PW6 as being in the lower PRM, not upper and middle respectively. Based on the depths of HC-1 and HC-2 would likely be in the middle and lower PRM respectively. Without having the construction of the other wells on Table 3.1-3 the NJGS can't tell which aquifer each is in, but the USGS (2009) shows pumpage from the upper aquifer at the site.

Response: No well at the Salem and Hope Creek site is screened in the Upper aquifer of the PRM. PW-6 (1138' bgs) is screened in the Middle Raritan formation, while PW-5 (840' bgs), HC-1 (816' bgs) and HC-2 (817' bgs) are screened in the Upper Raritan formation (Dames and Moore, 1988; NJDEP 1975, 1980, and 1984). Both the Upper and Middle Raritan formations belong to the Middle aquifer of the PRM (USGS 2009a). See Attachment A.

Similar to USGS (2009a), which is discussed in previous responses above, USGS (1997) WRI-96-4206 shows a localized cone of depression in 1993 in the Middle aquifer of the PRM beneath the Salem and Hope Creek site. This suggests that groundwater production at the site may be contributing to a reduction in localized groundwater availability. However, this reduction is limited to a small area within approximately 2 miles of well PW-5 and is not likely to impact other groundwater users.

USGS (2009a) Figures 31, 36 and 42 show amounts of groundwater withdrawn per year from the Upper, Middle, and Lower aquifers of the PRM, respectively, in the region surrounding the Salem and Hope Creek site. At the location of the Salem and Hope Creek site, these figures show groundwater being withdrawn only from the Middle aquifer of the PRM (Attachment E).

6. NJGS Comment: Page 4.11, Section 4.5 **Ground-Water Use Conflicts (Plants Using >100 gpm of Ground-Water)**. Here again they indicate PW5 and PW6 are in the upper and middle PRM aquifers, whereas the USGS indicates the wells are in the middle and lower PRM.

Response: PW-6 (1138' bgs) is screened in the Middle Raritan formation, while PW-5 (840' bgs), HC-1 (816' bgs) and HC-2 (817' bgs) are screened in the Upper Raritan formation (Dames and Moore, 1988; NJDEP 1975, 1980, and 1984). Both the Upper and Middle Raritan formations belong to the Middle aquifer of the PRM (USGS 2009a). See Attachment A. At the location of the Salem and Hope Creek site, USGS (2009a) Figures 31, 36, and 42 show groundwater being withdrawn only from the Middle aquifer of the PRM (Attachment E).

7. NJGS Comment: They also indicate the impacts from the pumpage at the current rates at the site are "...SMALL and would not warrant mitigation." Examination of the synoptic data down through the years since PW5 was installed shows the plant has caused a deep cone of depression in the middle PRM which is also now being affected by pumpage from Delaware. If the plant ever pumped at the current diversion approval the affect would be felt in Delaware. The plant is the only diversion within 8 to 10 miles of the plant and yet the water levels in the PMR middle PRM are about -70 feet and the lower PRM are about -45 feet.

Response: USGS (1997) and USGS (2009a) show a localized cone of depression in 1993 and 2003, respectively, in the Middle aquifer of the PRM beneath the Salem and Hope Creek site. This suggests that groundwater production at the site may be contributing to a reduction in localized groundwater availability. However, this reduction is limited to a small area within approximately 2 miles of well PW-5 and is not likely to impact other groundwater users. USGS (2009a) indicates that the depression within the Middle aquifer of the PRM was at approximately 60 feet in 2003.

USGS (2011) reports that groundwater levels have increased in the City of Salem observation well over the past several years, and USGS (2008 and 2009b) indicate that groundwater levels in the area are not decreasing. Although groundwater use conflicts were enough of a regional concern to cause designation of two Critical Areas, the Salem and Hope Creek site was not included within either of the two Critical Areas. The success of the Critical Areas program in allowing groundwater levels to recover suggests that groundwater use conflicts in western Salem County may diminish with time, rather than grow.

8. NJGS Comment: Based on the various synoptic water level measurements from 1978 to 2003 the plant has caused significant water level declines which are reaching out an unknown distance from the plant. There needs to be a detailed study much like USGS (2001b) to determine the impacts of all the pumpage in the PRM around Artificial Island with a cluster of observation wells, offsite in each of the PRM aquifers.

Response: USGS (1997) and USGS (2009a) show a localized cone of depression in 1993 and 2003, respectively, in the Middle aquifer of the PRM beneath the Salem and Hope Creek site. USGS (2009a) Figures 31, 36, and 42 show groundwater being withdrawn only from the Middle aquifer of the PRM at the location of the Salem and Hope Creek site (Attachment E). These figures show no groundwater withdrawals from the Upper aquifer or Lower aquifer of the PRM (Attachment E). The cone of depression beneath the site is localized, and there are no groundwater users nearby. Hence, the impacts to local groundwater use are SMALL, and a detailed study of the PRM aquifers is not warranted.

Attachments

Attachment A: Table 1 from USGS 2009a
Attachment B: Plate 1 from USGS 1983
Attachment C: Plate 7 from USGS 2009a
Attachment D: Plate 8 from USGS 2009a
Attachment E: Figures 31, 36, and 42 from USGS 2009a
Attachment F: Plate 9 from USGS 2009a

Calculation Package for Groundwater Pumpage

ER Section 3.1.4 Groundwater

Salem & Hope Creek Generating Station Environmental Report for License Renewal

November 18, 2008

Prepared for:
Exelon

Prepared by:

Gary L. Gunter
Tetra Tech NUS
Aiken, South Carolina

Author:	Gary L. Gunter	**Date:** 11/25/08
Reviewed By:	Jeffrey L. Byrnes	12/9/08
Project Manager:	K. [illegible]	12/10/08

Supporting Information for ER Section 3.1.4– Salem/HCGS ER for License Renewal

The spread sheet input data supplied by PSEG (Keating 2008a, b, c, d) was selected to represent a range of usage and groundwater level/elevation data as close to the current year as possible. Tetra Tech calculated ground-water elevations using an Excel spreadsheet. These are the only calculations performed.

References:

Keating (Edward J.) 2008a, Groundwater Diversion Calculations for Salem/Hope Creek Generating Stations, E-mail from E. Keating (PSEG) to Gary Gunter (TtNUS) on November 14, 2008.

Keating (Edward J.) 2008b, Groundwater Elevation Data for Salem Generating Stations, E-mail from E. Keating (PSEG) to Gary Gunter (TtNUS) on May 5.

Keating (Edward J.) 2008c, Groundwater Level Data for Hope Creek Generating Stations, E-mail from E. Keating (PSEG) to Gary Gunter (TtNUS) on May 9.

Keating (Edward J.) 2008d, Total Head Calculation Sheet for Salem/Hope Creek Generating Stations, E-mail from E. Keating (PSEG) to Gary Gunter (TtNUS) on May 8, 2008.

		Mt Laurel - W	Mt Laurel -	Upper Rarit	Upper Rarit	Upper Rarit	Mid Raritan	Upper Rarit	Mid Raritan	Upper Rarit	Mt Laurel - Wen
Year	**Month**	**PW-2**	**PW-3**	**PW-5**	**HC-1**	**HC-2**	**PW-6**	**OW-J**	**OW-6**	**OW-I**	**OW-G**
2000	Jan	11.60	13.00	72.50	78.00	75.00	77.30	70.30	78.00	62.30	17.80
2000	Feb	12.20	10.80	71.00	76.00	81.00	52.80	11.70	50.50	62.90	11.00
2000	Mar	11.30	10.95	73.30	79.00	80.00	50.50	76.50	55.40	67.10	16.60
2000	Apr	11.90	12.30	64.40	74.00	78.00	56.10	79.40	56.60	63.90	17.20
2000	May	11.40	11.10	73.50	74.00	78.00	55.20	63.90	55.60	73.90	16.40
2000	Jun	11.90	12.00	77.10	82.00	82.00	59.20	75.40	61.50	67.00	17.00
2000	Jul	11.40	11.00	76.90	78.00	80.00	66.70	80.40	70.90	66.00	16.80
2000	Aug	12.20	17.00	46.20	76.00	81.00	54.90	86.20	55.00	*70.90*	16.20
2000	Sep	12.20	11.10	85.00	75.00	77.00	54.90	84.50	53.00	69.20	16.70
2000	Oct	12.40	12.10	78.00	75.00	80.00	54.00	73.80	55.00	73.60	18.70
2000	Nov	12.90	11.50	80.00	78.00	76.00	48.40	78.70	72.80	67.50	19.50
2000	Dec	15.30	15.50	83.90	76.00	78.00	57.00	69.00	57.30	22.60	19.40
2001	Jan	13.70	13.70	78.30	77.00	82.00	56.50	80.50	57.00	67.90	20.60
2001	Feb	12.00	11.20	71.50	74.00	75.00	55.00	73.80	55.90	68.00	17.10
2001	Mar	12.70	11.70	76.70	79.00	78.00	57.50	76.40	58.80	65.30	17.90
2001	Apr	12.80	14.50	78.50	76.00	80.00	56.70	78.50	16.50	66.50	19.50
2001	May	12.30	12.80	89.40	76.00	77.00	56.80	94.00	57.40	88.70	15.70
2001	Jun	13.80	15.00	79.90	80.00	80.00	58.80	80.80	59.30	69.30	18.20
2001	Jul	11.40	11.00	76.90	76.00	74.00	66.70	80.40	70.90	66.00	16.80
2001	Aug	12.10	12.80	72.80	73.00	75.00	61.80	75.60	58.00	*68.00*	18.60
2001	Sep	11.50	10.80	81.70	78.00	78.00	55.30	88.80	57.90	70.00	14.00
2001	Oct	12.50	12.30	75.30	78.00	84.00	56.90	75.60	57.60	64.10	18.50
2001	Nov	11.70	10.20	79.80	78.00	77.00	56.40	85.40	57.00	66.80	15.90
2001	Dec	13.70	10.70	58.80	79.00	78.00	56.00	79.90	56.10	66.90	16.80
2002	Jan	13.50	13.60		78.00	84.00	56.50	82.50	55.50	69.70	16.50
2002	Feb	12.50	12.90	82.20	85.00	88.00	56.50	80.10	58.00	71.30	16.30
2002	Mar	13.30	12.50	83.50	89.00	83.00	56.10	92.10	57.00	74.00	17.00
2002	Apr	13.50	13.50	75.50	75.00	76.00	57.50	80.50	63.00	69.00	18.50
2002	May	12.50	13.00	74.50	76.00	74.00	55.10	78.50	53.50	87.50	18.40
2002	Jun	11.40	11.00	76.90	74.00	74.00	55.10	77.70	55.00	66.60	17.50
2002	Jul	11.40	11.70	74.30	75.00	78.00	55.10	77.60	61.50	99.50	16.80
2002	Aug	12.00	11.80	72.60	75.00	74.00	55.70	73.80	56.40	65.30	18.20
2002	Sep	12.00	12.20	71.60	72.00	75.00	56.10	72.90	56.50	63.60	17.70
2002	Oct	11.30	10.10	75.50	72.00	72.00	57.70	74.00	58.30	66.00	17.00
2002	Nov	11.90	11.10	75.70	81.00	81.00	55.00	77.90	56.30	65.80	15.80

2002	Dec	10.70	9.80	74.60	74.00	85.00	56.30	77.50	56.80	65.70	18.30
2003	Jan	12.00	12.20	73.00	75.00	76.00	57.40	73.50	58.00	65.90	17.70
2003	Feb	12.70	12.70	78.80	82.00	75.00	56.70	79.00	57.40	68.00	18.50
2003	Mar	12.60	13.00	78.30	78.00	81.00	55.30	78.50	58.40	68.00	19.50
2003	Apr		12.50	85.60	78.00	82.00	57.90	84.00	58.70	69.70	18.70
2003	May	12.60	10.90	77.00	78.00	82.00	57.70	78.50	59.20	68.00	18.20
2003	Jun	11.00	11.00	81.00	80.00	82.00	55.30	79.30	56.50	63.30	16.80
2003	Jul	12.80	11.20	78.30	79.00	80.00	57.30	76.80	63.30	69.50	17.60
2003	Aug	12.00	11.50	76.70	84.00	82.00	53.00	74.50	58.30	68.50	19.50
2003	Sep	12.50	12.00	80.30	79.00	82.00	58.20	81.80	58.40	73.00	18.60
2003	Oct	12.00	10.60	88.00	84.00	86.00	57.10	86.90	59.00	73.40	17.10
2003	Nov	12.00	11.30	81.70	80.00	85.00	57.10	82.30	58.00	72.00	17.30
2003	Dec	11.50	12.00	87.30	86.00	88.00	55.90	75.00	56.50	72.00	17.70
2004	Jan	10.80	10.40	80.60	88.00	90.00	54.10	85.00	55.80	71.00	15.00
2004	Feb	12.00	11.90	82.00	98.00	88.00	57.40	89.20	57.30	75.50	16.00
2004	Mar	11.60	20.30	83.00	72.00	93.00	57.50	85.60	56.50	83.80	56.00
2004	Apr	11.50	12.00	86.00	73.00	86.00	56.90	90.80	56.40	81.80	19.10
2004	May	12.00	21.70	79.00	85.00	84.00	57.00	83.10	57.50	72.30	19.60
2004	Jun	13.80	18.30	75.50	79.00	90.00	58.50	86.20	59.40	76.00	18.50
2004	Jul	11.80	11.00	85.40	80.00	86.00	56.30	84.70	57.30	68.00	16.50
2004	Aug	11.40	11.00	87.60	85.00	86.00	55.80	83.20	56.60	73.00	16.90
2004	Sep	11.00	10.50	93.50	83.00	83.00	55.80	78.80	56.20	73.50	15.10
2004	Oct	11.00	10.80	84.00	76.00	85.00	56.00	87.30	56.60	74.40	16.20
2004	Nov	10.70	10.70	81.60	85.00	98.00	65.20	86.90	59.50	83.40	16.00
2004	Dec	11.60	12.80	95.40	83.00	95.00	58.20	104.10	58.30	89.20	18.30
2005	Jan	12.30	13.20	85.50	89.00	100.00	56.00	102.60	56.20	89.00	16.80
2005	Feb	11.10	12.80	89.70	78.00	92.00	57.30	89.30	58.10	90.40	17.60
2005	Mar	11.40	11.70	87.90	82.00	96.00	58.00	96.00	58.40	88.90	16.00
2005	Apr	10.60	10.00	95.00	78.00	91.00	57.70	92.80	57.40	77.10	17.10
2005	May	10.00	12.50	98.00	83.00	92.00	56.00	89.70	56.00	75.00	17.80
2005	Jun	11.00	11.00	90.00	76.00	88.00	56.50	87.50	57.30	80.00	13.00
2005	Jul	3.60	2.40	93.00	76.00	89.00	48.30	78.70	48.90	69.10	11.80
2005	Aug	10.80	12.00	89.40	88.00	87.00	56.60	92.50	57.00	77.30	17.50
2005	Sep	10.00	<0.1	83.60	75.00	90.00	57.00	79.00	58.60	75.00	17.00
2005	Oct	11.60	10.00	81.60	78.00	88.00	57.10	79.00	57.50	67.00	12.00
2005	Nov	10.00	10.50	96.00	76.00	94.00	57.60	86.00	57.00	83.00	17.50
2005	Dec	11.40	10.20	88.00	79.00	96.00	57.10	83.90	57.50	67.60	17.00
2006	Jan	12.00	11.00	88.00	81.00	95.00	57.50	91.50	58.00	78.50	17.00

2006	Feb	11.10	12.80	89.70	80.00	93.00	57.30	89.30	58.10	90.40	17.60
2006	Mar	11.00	12.00	86.50	79.00	93.00	58.00	90.00	58.50	80.30	17.90
2006	Apr	12.10	11.25	88.45	81.00	94.00	57.75	92.83	58.50	80.10	17.33
2006	May	11.10	11.75	76.60	76.00	85.00	57.50	84.60	57.80	71.50	17.10
2006	Jun	11.00	12.00	79.50	74.00	85.00	58.00	84.50	57.60	71.50	18.00
2006	Jul	11.25	11.00	79.50	68.00	83.00	58.00	82.10	58.25	71.00	17.75
2006	Aug	11.50	11.40	86.50	74.00	86.00	57.90	84.30	58.40	73.10	17.30
2006	Sep	11.20	10.50	92.60	75.00	84.00	58.20	82.50	58.90	70.70	16.00
2006	Oct	11.50	11.90	84.20	70.00	88.00	58.80	82.70	59.30	72.50	17.60
2006	Nov	11.30	10.30	80.00	88.00	85.00	58.70	84.80	59.30	71.20	16.20
2006	Dec	11.50	11.40	81.70	70.00	83.00	58.80	83.50	59.20	71.20	17.40

Reference: 1) Keating 2008a

		Mt Laurel - W	Mt Laurel -	Upper Rarit	Upper Rarit	Upper Rarit	Mid Raritan
Year	**Month**	**PW-2** [2]	**PW-3** [2]	**PW-5** [2]	**HC-1** [3]	**HC-2** [3]	**PW-6** [2]
2007	Jan	11.50	12.30	80.30	75.00	84.00	58.50
2007	Feb	11.20	11.00	85.80	70.00	85.00	58.60
2007	Mar	12.00	12.20	94.50	75.00	97.00	59.50
2007	Apr	10.10	11.50	90.00	80.00	95.00	57.90
2007	May	12.30	11.20	96.90	79.00	91.00	58.20
2007	Jun	11.70	11.20	81.00	77.00	88.00	60.50
2007	Jul	11.50	11.10	85.30	78.00	90.00	58.00
2007	Aug	11.10	11.00	87.30	78.00	90.00	58.70
2007	Sep	11.60	10.90	85.60	77.00	87.00	59.40
2007	Oct	11.00	11.00	89.50	78.00	91.00	59.10
2007	Nov	11.30	12.30	90.30	80.00	93.00	59.40
2007	Dec	12.70	12.90	90.50	80.00	96.00	60.90

References:

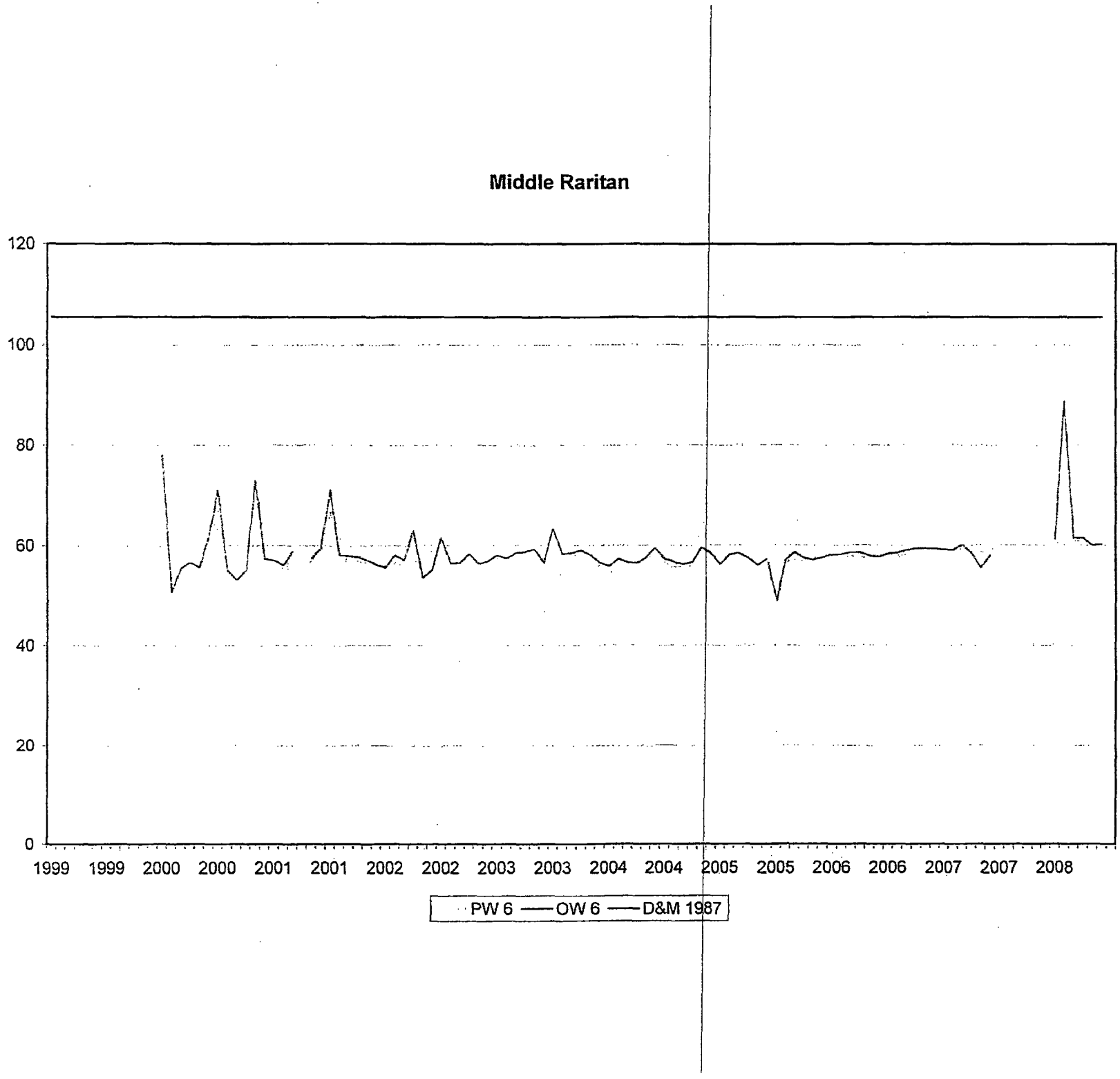
2) Keating 2008 b

3) Keating 2008 c

Keating (Edward J.) 2008a, Groundwater Diversion Calculations for Salem/Hope Creek Generating Stations, E-mail from E. Keating (PSEG) to Gary Gunter (TtNUS) on May14.

Keating (Edward J.) 2008b, Groundwater Elevation Data for Salem Generating Stations, E-mail from E. Keating (PSEG) to Gary Gunter (TtNUS) on May 5.

Keating (Edward J.) 2008c, Groundwater Level Data for Hope Creek Generating Stations, E-mail from E. Keating (PSEG) to Gary Gunter (TtNUS) on May 9.


Middle Raritan
120
100
80
60
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2003
2003
2004
2004
2005
2005
2006
2006
2007
2007
2008
PW 6
OW 6
D&M 1987

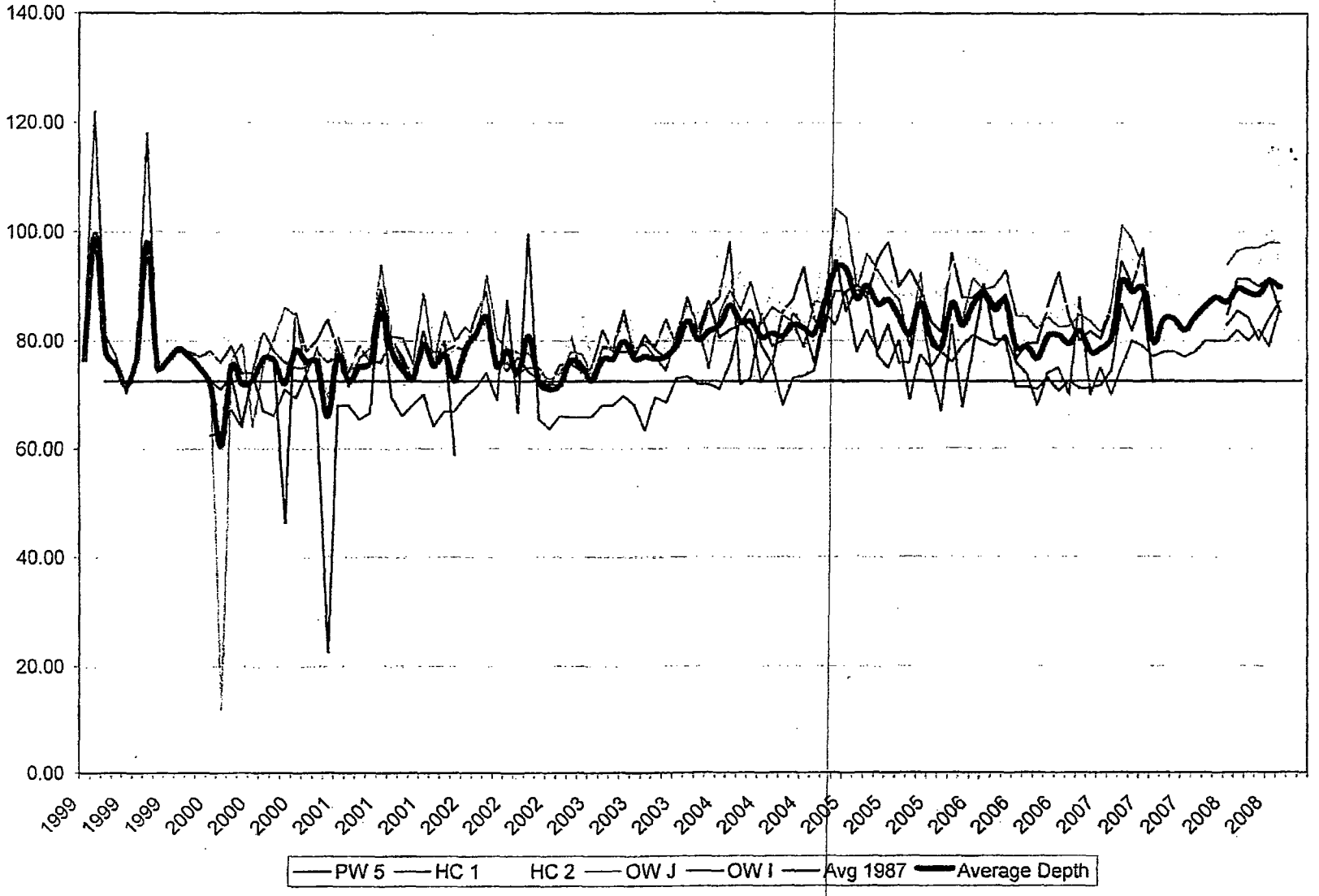
STATIC WATER LEVELS (feet)

Year	Month	PW-6	OW-6	
1987	Jul	105.50		
1987	Sep		>100	
1999	Jan			105.5
1999	Feb			105.5
1999	Mar			105.5
1999	Apr			105.5
1999	May			105.5
1999	Jun			105.5
1999	Jul			105.5
1999	Aug			105.5
1999	Sep			105.5
1999	Oct			105.5
1999	Nov			105.5
1999	Dec			105.5
2000	Jan	77.30	78.00	105.5
2000	Feb	52.80	50.50	105.5
2000	Mar	50.50	55.40	105.5
2000	Apr	56.10	56.60	105.5
2000	May	55.20	55.60	105.5
2000	Jun	59.20	61.50	105.5
2000	Jul	66.70	70.90	105.5
2000	Aug	54.90	55.00	105.5
2000	Sep	54.90	53.00	105.5
2000	Oct	54.00	55.00	105.5
2000	Nov	48.40	72.80	105.5
2000	Dec	57.00	57.30	105.5
2001	Jan	56.50	57.00	105.5
2001	Feb	55.00	55.90	105.5
2001	Mar	57.50	58.80	105.5
2001	Apr	56.70		105.5
2001	May	56.80	57.40	105.5
2001	Jun	58.80	59.30	105.5
2001	Jul	66.70	70.90	105.5
2001	Aug	61.80	58.00	105.5
2001	Sep	55.30	57.90	105.5
2001	Oct	56.90	57.60	105.5
2001	Nov	56.40	57.00	105.5
2001	Dec	56.00	56.10	105.5
2002	Jan	56.50	55.50	105.5
2002	Feb	56.50	58.00	105.5
2002	Mar	56.10	57.00	105.5
2002	Apr	57.50	63.00	105.5
2002	May	55.10	53.50	105.5
2002	Jun	55.10	55.00	105.5
2002	Jul	55.10	61.50	105.5
2002	Aug	55.70	56.40	105.5
2002	Sep	56.10	56.50	105.5
2002	Oct	57.70	58.30	105.5

2007 Mar	59.50	60.00	105.5
2007 Apr	57.90	58.30	105.5
2007 May	58.20	55.40	105.5
2007 Jun	60.50	57.90	105.5
2007 Jul			105.5
2007 Aug			105.5
2007 Sep			105.5
2007 Oct			105.5
2007 Nov			105.5
2007 Dec			105.5
2008 Jan	60.50	61.00	105.5
2008 Feb	60.00	88.70	105.5
2008 Mar	60.60	61.40	105.5
2008 Apr	61.10	61.40	105.5
2008 May	59.30	59.90	105.5
2008 Jun	60.20	60.10	105.5

Notes:

Sources:
Dames & Moore (1988) Table 1 - 1987
Wells 1&2 (08 data).xls - includes only HC-1, HC-2 (S) 1999, 2000, 2001, 2002, 2003, 2006, 2007
Total Head Calc Sheet.xls - (not including HC-1, HC-2) 2001, 2002
Private Water Diversion Reports - Oct-Nov 2003, 2004, 2005, Jan-Mar 2006, Jan-Jun 2008
Well Reports -(not including HC-1, HC-2) Jan-Sep 2003, Apr-Dec 2006, Jan-Jun 2007


140.00
120.00
100.00
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60.00
40.00
20.00
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2006
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2007
2007
2007
2008
2008
PW 5
HC 1
HC 2
OW J
OW I
Avg 1987
Average Depth

STATIC WATER LEVELS (feet)

Year	Month	PW-5	HC-1	HC-2	OW-J	OW-I	Avg 1987	
1987	Jul	71.40	70.80					
1987	Sep	76.00	71.90					
1999	Jan		78.00	75.00			72.525	76.50
1999	Feb		122.00	77.00			72.525	99.50
1999	Mar		81.00	75.00			72.525	78.00
1999	Apr		77.00	74.00			72.525	75.50
1999	May		70.00	73.00			72.525	71.50
1999	Jun		78.00	76.00			72.525	77.00
1999	Jul		118.00	78.00			72.525	98.00
1999	Aug		74.00	76.00			72.525	75.00
1999	Sep		77.00	76.00			72.525	76.50
1999	Oct		78.00	79.00			72.525	78.50
1999	Nov		78.00	76.00			72.525	77.00
1999	Dec		77.00	73.00			72.525	75.00
2000	Jan	72.50	78.00	75.00	70.30	62.30	72.525	71.62
2000	Feb	71.00	76.00	81.00	11.70	62.90	72.525	60.52
2000	Mar	73.30	79.00	80.00	76.50	67.10	72.525	75.18
2000	Apr	64.40	74.00	78.00	79.40	63.90	72.525	71.94
2000	May	73.50	74.00	78.00	63.90	73.90	72.525	72.66
2000	Jun	77.10	82.00	82.00	75.40	67.00	72.525	76.70
2000	Jul	76.90	78.00	80.00	80.40	66.00	72.525	76.26
2000	Aug	46.20	76.00	81.00	86.20	70.90	72.525	72.06
2000	Sep	85.00	75.00	77.00	84.50	69.20	72.525	78.14
2000	Oct	78.00	75.00	80.00	73.80	73.60	72.525	76.08
2000	Nov	80.00	78.00	76.00	78.70	67.50	72.525	76.04
2000	Dec	83.90	76.00	78.00	69.00	22.60	72.525	65.90
2001	Jan	78.30	77.00	82.00	80.50	67.90	72.525	77.14
2001	Feb	71.50	74.00	75.00	73.80	68.00	72.525	72.46
2001	Mar	76.70	79.00	78.00	76.40	65.30	72.525	75.08
2001	Apr	78.50	76.00	80.00	78.50	66.50	72.525	75.90
2001	May	89.40	76.00	77.00	94.00	88.70	72.525	85.02
2001	Jun	79.90	80.00	80.00	80.80	69.30	72.525	78.00
2001	Jul	76.90	76.00	74.00	80.40	66.00	72.525	74.66
2001	Aug	72.80	73.00	75.00	75.60	68.00	72.525	72.88
2001	Sep	81.70	78.00	78.00	88.80	70.00	72.525	79.30
2001	Oct	75.30	78.00	84.00	75.60	64.10	72.525	75.40
2001	Nov	79.80	78.00	77.00	85.40	66.80	72.525	77.40
2001	Dec	58.80	79.00	78.00	79.90	66.90	72.525	72.52
2002	Jan		78.00	84.00	82.50	69.70	72.525	78.55
2002	Feb	82.20	85.00	88.00	80.10	71.30	72.525	81.32
2002	Mar	83.50	89.00	83.00	92.10	74.00	72.525	84.32
2002	Apr	75.50	75.00	76.00	80.50	69.00	72.525	75.20
2002	May	74.50	76.00	74.00	78.50	87.50	72.525	78.10
2002	Jun	76.90	74.00	74.00	77.70	66.60	72.525	73.84
2002	Jul	74.30	75.00	78.00	77.60	99.50	72.525	80.88
2002	Aug	72.60	75.00	74.00	73.80	65.30	72.525	72.14
2002	Sep	71.60	72.00	75.00	72.90	63.60	72.525	71.02
2002	Oct	75.50	72.00	72.00	74.00	66.00	72.525	71.90

2007 Mar	94.50	75.00	97.00	101.10	86.80	72.525	90.88
2007 Apr	90.00	80.00	95.00	98.40	81.80	72.525	89.04
2007 May	96.90	79.00	91.00	93.50	88.40	72.525	89.76
2007 Jun	81.00	77.00	88.00	80.20	72.30	72.525	79.70
2007 Jul		78.00	90.00			72.525	84.00
2007 Aug		78.00	90.00			72.525	84.00
2007 Sep		77.00	87.00			72.525	82.00
2007 Oct		78.00	91.00			72.525	84.50
2007 Nov		80.00	93.00			72.525	86.50
2007 Dec		80.00	96.00			72.525	88.00
2008 Jan	84.90	80.00	94.00	94.00	83.00	72.525	87.18
2008 Feb	91.40	82.00	93.00	96.50	85.60	72.525	89.70
2008 Mar	91.40	80.00	92.00	97.00	84.20	72.525	88.92
2008 Apr	90.00	82.00	94.00	97.00	80.10	72.525	88.62
2008 May	91.60	79.00	102.00	98.00	84.20	72.525	90.96
2008 Jun	85.30	86.00	93.00	97.90	87.40	72.525	89.92

STATIC WATER LEVELS (feet)

		Mt Laurel -	Mt Laurel -	Upper Rarit	Upper Rarit	Upper Rarit	Mid Raritan	Upper Raritan	Mid Raritan	Upper Raritan	Mt Laurel - Wel
Year	Month	PW-2	PW-3	PW-5	HC-1	HC-2	PW-6	OW-J	OW-6	OW-I	OW-G
1987	Jul			71.40	70.80		105.50				21.30
1987	Sep	19.00	27.60	76.00	71.90				>100	68.30	23.40
1999	Jan				78.00	75.00					
1999	Feb				122.00	77.00					
1999	Mar				81.00	75.00					
1999	Apr				77.00	74.00					
1999	May				70.00	73.00					
1999	Jun				78.00	76.00					
1999	Jul				118.00	78.00					
1999	Aug				74.00	76.00					
1999	Sep				77.00	76.00					
1999	Oct				78.00	79.00					
1999	Nov				78.00	76.00					
1999	Dec				77.00	73.00					
2000	Jan	11.60	13.00	72.50	78.00	75.00	77.30	70.30	78.00	62.30	17.80
2000	Feb	12.20	10.80	71.00	76.00	81.00	52.80	11.70	50.50	62.90	11.00
2000	Mar	11.30	10.95	73.30	79.00	80.00	50.50	76.50	55.40	67.10	16.60
2000	Apr	11.90	12.30	64.40	74.00	78.00	56.10	79.40	56.60	63.90	17.20
2000	May	11.40	11.10	73.50	74.00	78.00	55.20	63.90	55.60	73.90	16.40
2000	Jun	11.90	12.00	77.10	82.00	82.00	59.20	75.40	61.50	67.00	17.00
2000	Jul	11.40	11.00	76.90	78.00	80.00	66.70	80.40	70.90	66.00	16.80
2000	Aug	12.20	17.00	46.20	76.00	81.00	54.90	86.20	55.00	70.90	16.20
2000	Sep	12.20	11.10	85.00	75.00	77.00	54.90	84.50	53.00	69.20	16.70
2000	Oct	12.40	12.10	78.00	75.00	80.00	54.00	73.80	56.00	73.60	18.70
2000	Nov	12.90	11.50	80.00	78.00	76.00	48.40	78.70	72.80	67.50	19.50
2000	Dec	15.30	15.50	83.90	76.00	78.00	57.00	69.00	57.30	22.80	19.40
2001	Jan	13.70	13.70	78.30	77.00	82.00	56.50	80.50	57.00	67.90	20.60
2001	Feb	12.00	11.20	71.50	74.00	75.00	55.00	73.80	55.90	68.00	17.10
2001	Mar	12.70	11.70	76.70	79.00	78.00	57.60	76.40	58.80	65.30	17.90
2001	Apr	12.80	14.50	78.50	76.00	80.00	58.70	78.50	16.50	66.50	19.60
2001	May	12.30	12.80	69.40	76.00	77.00	56.80	94.00	57.40	68.70	15.70
2001	Jun	13.80	15.00	79.90	80.00	80.00	58.80	80.80	59.30	69.30	18.20
2001	Jul	11.40	11.00	76.90	78.00	74.00	66.70	80.40	70.90	66.00	16.80
2001	Aug	12.10	12.80	72.80	73.00	75.00	61.80	75.60	58.00	68.00	18.60
2001	Sep	11.50	10.80	81.70	78.00	78.00	65.30	88.80	57.90	70.00	14.00
2001	Oct	12.50	12.30	75.30	78.00	84.00	56.90	75.60	57.60	64.10	18.50
2001	Nov	11.70	10.20	79.80	78.00	77.00	56.40	85.40	57.00	66.80	15.90
2001	Dec	13.70	10.70	58.80	79.00	78.00	56.00	79.90	56.10	66.90	16.80
2002	Jan	13.50	13.60		78.00	84.00	56.50	82.50	55.50	69.70	16.50
2002	Feb	12.50	12.90	82.20	85.00	88.00	56.50	80.10	58.00	71.30	16.30
2002	Mar	13.30	12.50	83.50	89.00	83.00	56.10	92.10	57.00	74.00	17.00
2002	Apr	13.50	13.50	75.50	75.00	76.00	57.50	80.50	63.00	69.00	18.50
2002	May	12.50	13.00	74.50	76.00	74.00	55.10	78.50	53.50	87.50	18.40
2002	Jun	11.40	11.00	76.90	74.00	74.00	55.10	77.70	55.00	68.60	17.50
2002	Jul	11.40	11.70	74.30	75.00	78.00	55.10	77.60	61.50	99.50	16.80
2002	Aug	12.00	11.80	72.60	75.00	74.00	55.70	73.80	58.40	65.30	18.20
2002	Sep	12.00	12.20	71.60	72.00	75.00	56.10	72.90	56.50	63.60	17.70
2002	Oct	11.30	10.10	75.50	72.00	72.00	57.70	74.00	58.30	66.00	17.00
2002	Nov	11.90	11.10	75.70	81.00	81.00	55.00	77.90	56.30	65.80	15.80
2002	Dec	10.70	9.80	74.60	74.00	85.00	56.30	77.50	56.80	65.70	18.30
2003	Jan	12.00	12.20	73.00	75.00	76.00	57.40	73.50	58.00	65.90	17.70
2003	Feb	12.70	12.70	78.80	82.00	75.00	56.70	79.00	57.40	68.00	18.50
2003	Mar	12.60	13.00	78.30	78.00	81.00	55.30	78.50	58.40	68.00	19.50
2003	Apr		12.50	65.60	78.00	82.00	57.90	84.00	58.70	69.70	18.70
2003	May	12.60	10.90	77.00	78.00	82.00	57.70	78.50	59.20	68.00	18.20
2003	Jun	11.00	11.00	81.00	80.00	82.00	55.30	79.30	58.50	63.30	16.80
2003	Jul	12.80	11.20	78.30	79.00	80.00	57.30	76.80	63.30	69.50	17.60
2003	Aug	12.00	11.50	76.70	84.00	82.00	53.00	74.50	58.30	68.50	19.50
2003	Sep	12.50	12.00	80.30	79.00	82.00	58.20	81.80	58.40	73.00	18.60
2003	Oct	12.00	10.60	88.00	84.00	86.00	57.10	86.90	59.00	73.40	17.10
2003	Nov	12.00	11.30	81.70	80.00	85.00	57.10	82.30	58.00	72.00	17.30
2003	Dec	11.50	12.00	87.30	86.00	88.00	55.90	75.00	56.50	72.00	17.70
2004	Jan	10.80	10.40	80.60	88.00	90.00	54.10	85.00	55.80	71.00	15.00
2004	Feb	12.00	11.90	82.00	98.00	88.00	57.40	89.20	57.30	75.50	16.00
2004	Mar	11.60	20.30	83.00	72.00	93.00	57.50	85.00	56.50	83.80	56.00
2004	Apr	11.50	12.00	86.00	73.00	86.00	56.90	90.80	56.40	81.80	19.10
2004	May	12.00	21.70	79.00	85.00	84.00	57.00	83.10	57.50	72.30	19.00
2004	Jun	13.80	18.30	75.50	79.00	90.00	58.50	86.20	59.40	76.00	18.50
2004	Jul	11.80	11.00	85.40	80.00	86.00	58.30	84.70	57.30	68.00	16.50
2004	Aug	11.40	11.00	87.60	85.00	88.00	55.80	83.20	58.80	73.00	16.90
2004	Sep	11.00	10.50	93.50	83.00	83.00	55.80	78.80	58.20	73.50	15.10
2004	Oct	11.00	10.80	84.00	76.00	85.00	56.00	87.30	58.60	74.40	18.20
2004	Nov	10.70	10.70	81.60	85.00	98.00	65.20	86.90	59.50	83.40	16.00
2004	Dec	11.60	12.80	95.40	83.00	95.00	58.20	104.10	58.30	89.20	18.30
2005	Jan	12.30	13.20	85.50	89.00	100.00	56.00	102.60	56.20	89.00	16.80
2005	Feb	11.10	12.80	89.70	78.00	92.00	57.30	89.30	58.10	90.40	17.60
2005	Mar	11.40	11.70	87.90	82.00	96.00	58.00	96.00	58.40	88.90	16.00
2005	Apr	10.60	10.00	95.00	78.00	91.00	57.70	92.80	57.40	77.10	17.10

Year	Month	PW-2	PW-3	PW-5	HC-1	HC-2	PW-6	OW-J	OW-6	OW-I	OW-G
2006	Jan	12.00	11.00	88.00	81.00	95.00	57.50	91.50	58.00	78.50	17.00
2006	Feb	11.10	12.80	89.70	80.00	93.00	57.30	89.30	58.10	90.40	17.60
2006	Mar	11.00	12.00	86.50	79.00	93.00	58.00	90.00	58.50	80.30	17.80
2006	Apr	12.10	11.25	88.45	81.00	94.00	57.75	92.83	58.50	80.10	17.33
2006	May	11.10	11.75	76.60	76.00	85.00	57.50	84.60	57.80	71.50	17.10
2006	Jun	11.00	12.00	79.50	74.00	85.00	58.00	84.50	57.60	71.50	18.00
2006	Jul	11.25	11.00	79.50	68.00	83.00	58.00	82.10	58.25	71.00	17.75
2006	Aug	11.50	11.40	86.50	74.00	86.00	57.90	84.30	58.40	73.10	17.30
2006	Sep	11.20	10.50	92.60	75.00	84.00	58.20	82.60	58.90	70.70	16.00
2006	Oct	11.50	11.90	84.20	70.00	88.00	58.80	82.70	59.30	72.50	17.60
2006	Nov	11.30	10.30	80.00	88.00	85.00	58.70	84.80	59.30	71.20	16.20
2006	Dec	11.50	11.40	81.70	70.00	83.00	58.80	83.50	59.20	71.20	17.40
2007	Jan	11.50	12.30	80.30	75.00	84.00	58.50	81.50	59.00	71.80	18.30
2007	Feb	11.20	11.00	85.80	70.00	85.00	58.60	86.80	59.00	74.30	18.00
2007	Mar	12.00	12.20	94.50	75.00	97.00	59.50	101.10	60.00	86.80	18.40
2007	Apr	10.10	11.50	90.00	80.00	95.00	57.90	98.40	58.30	81.80	16.90
2007	May	12.30	11.20	96.90	79.00	91.00	58.20	93.50	55.40	88.40	17.30
2007	Jun	11.70	11.20	81.00	77.00	88.00	60.50	80.20	57.90	72.30	17.70
2007	Jul				78.00	90.00					
2007	Aug				76.00	90.00					
2007	Sep				77.00	87.00					
2007	Oct				78.00	91.00					
2007	Nov				80.00	93.00					
2007	Dec				80.00	96.00					
2008	Jan	11.70	11.00	84.90	80.00	94.00	60.50	94.00	61.00	83.00	16.90
2008	Feb	11.80	11.80	91.40	82.00	93.00	60.00	96.50	88.70	85.60	17.00
2008	Mar	11.90	10.70	91.40	80.00	92.00	60.60	97.00	61.40	84.20	17.50
2008	Apr	11.50	10.00	90.00	82.00	94.00	61.10	97.00	61.40	80.10	17.90
2008	May	11.30	11.50	91.60	79.00	102.00	59.30	98.00	59.90	84.20	17.20
2008	Jun	10.90	10.70	85.30	86.00	93.00	60.20	97.90	60.10	87.40	17.80
2008	Jul										
2008	Aug										
2008	Sep										
2008	Oct										
2008	Nov										
2008	Dec										

Notes:

=measured while pumping

=not static

Sources:

Dames & Moore (1988) Table 1 - 1987

Wells 1&2 (08 data).xls - includes only HC-1, HC-2 (S) 1999, 2000, 2001, 2002, 2003, 2006, 2007

Total Head Calc Sheet.xls - (not including HC-1, HC-2) 2001, 2002

Private Water Diversion Reports - Oct-Nov 2003, 2004, 2005, Jan-Mar 2006, Jan-Jun 2008

Well Reports -(not including HC-1, HC-2) Jan-Sep 2003, Apr-Dec 2006, Jan-Jun 2007

2007	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	DEPTH	CL-	DEPTH	CL-	DEPTH	CL-	DEPTH	CL-	DEPTH	CL-	DEPTH	CL-
W-2	11.5' 1/23/07	73.8 ppm Integ 626	11.2' 2/27/07	Integ 626	12.0' 3/13/07	Integ 626	10.1 5/1/07	166 ppm 4/13/07 Integ 669	12.3 5/23/07		11.7 6/7/07	181 ppm 6/6/07
W-3	12.3' 1/24/07	N/A	11.0' 2/27/07	N/A	12.2' 3/13/07	N/A	11.5 5/2/07	N/A	11.2 5/30/07	N/A	11.2 6/7/07	N/A
W-5	80.3' 1/25/07	21.9 ppm 1/25/07 Integ 297563	85.8' 2/28/07	Integ 409494	94.5' 3/20/07	Integ 489936	90.0 5/2/07	Integ 679035	96.9 5/31/07	Integ 703679	81.0 6/8/07	21.4 PPM 6/18/07 Integ 703839
W-6	58.5' 1/23/07	Integ 109810	58.6' 2/27/07	Integ 116107	59.5' 3/13/07	196 ppm 3/20/07 Integ 120076	57.9 5/1/07	Integ 121224	58.2 5/30/07	202 ppm 5/31/07 Integ 1282707	60.5 6/14/07	228 ppm 6/7/07 Integ 150724
O-6	59.0' 1/23/07	N/A	59.0' 2/27/07	N/A	60.0' 3/13/07	N/A	58.3 5/1/07	N/A	55.4 5/23/07	N/A	57.9 6/14/07	N/A
O-G	18.3' 1/24/07	Integ 5838	18.0' 2/27/07		18.4' 3/26/07	13.6 ppm 3/26/07	16.9 5/1/07		17.3 5/23/07		17.7 6/8/07	1410 ppm 6/8/07
O-I	71.8' 1/24/07	Integ 12028	74.3' 2/27/07		86.8' 3/26/07	20.6 ppm 3/26/07	81.8 5/1/07		88.4 5/30/07		72.3 6/8/07	<5 ppm 6/11/07
O-J	81.5' 1/24/07	N/A	86.8' 2/27/07		101.1' 3/26/07	No sample	98.4 5/1/07		93.5 5/23/07	34.2 ppm 6/23/07	80.2 6/8/07	

SAMPLE REQUIREMENTS: DEPTH - MONTHLY ALL WELLS ALL WELL READINGS ARE IN GALLONS AS OF JANUARY 1998. POTABLE WATER-TOTAL COLIFORM - MONTHLY (2 SAMPLES) CHLORIDES QUARTERLY - WELLS 2, 5, 6, OB-G, OB-I, OB-J, (OB-6 IS BACKUP TO WELL 6)
Cu/Pb, NITRATE, NITRITE - YEARLY

2007	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	DEPTH	CL-	DEPTH	CL-	DEPTH	CL-	DEPTH	CL-	DEPTH	CL-	DEPTH	CL-
W-2	11.5 7/25/7	166 ppm 7/13/07 Integ 67700	11.1 8/28/7	Integ 67700	11.6 9/24/7	Integ 67700	11.0 10/24/7	144 ppm 10/12/07	11.3 11/15/7		12.7' 12/17/07	Integ 70600
W-3	11.1 7/25/7		11.0 8/28/7		10.9 9/24/7		11.0 10/25/7		12.3 11/16/7		12.9' 12/17/07	
W-5	85.3 7/26/7	Integ 5523	87.3 8/21/7	19.5 ppm 9/12/07 Integ 99894	85.6 9/25/7	Integ 188457	89.5 10/25/7	21.7 ppm 10/30/07 Integ 300613	90.3 11/16/7	Integ 394624	90.5' 12/19/07	Integ 496689
W-6	58.0 7/25/7	Integ 150724	58.7 8/20/7	208 ppm 8/22/07 Integ 163593	59.4 9/24/7	Integ 163593	59.1 10/24/7	207 ppm 10/25/07 Integ 169135	59.4 11/15/7	Integ 171473	60.9/ 12/17/07	Integ 179427
O-6	58.8 7/25/7		59.3 8/28/7		59.6 9/24/7		59.7 10/24/7		59.9 11/15/7		61.0' 12/17/07	
O-G	16.4 7/25/7		17.2 8/20/7	1190 ppm 8/8/07	16.8 9/24/7		15.9 10/22/7		17.6 11/16/7	1530 ppm 11/28/07	18.5' 12/17/07	
O-I	76.9 7/25/7		78.0 8/28/7	<5 ppm 8/10/07	77.9 9/24/7		79.2 10/30/7		80.7 11/16/7	5.47 ppm 11/29/07	80.4' 12/19/07	
O-J	86.7 7/25/7		98.0 8/10/7	35.6 ppm 8/10/07	90.0 9/24/7		95.7 10/22/7		90.4 11/16/7	38.1 ppm 11/28/07	97.2' 12/17/07	

SAMPLE REQUIREMENTS: DEPTH - MONTHLY ALL WELLS ALL WELL READINGS ARE IN GALLONS AS OF JANUARY 1998, POTABLE WATER-
TOTAL COLIFORM - MONTHLY (2 SAMPLES) CHLORIDES QUARTERLY - WELLS 2, 3, 5, 6, OB-G, OB-I, OB-J, (OB-6 IS BACKUP TO WELL 6)
Cu/Pb, NITRATE, NITRITE - YEARLY

Levels

	Well#1(A)		Well#2 (B)						
Date	Level (ft.)		Level (ft.)						
6/4/1998	88 (gauge)	S	>160 (g)	D					
	73 (tape)	S	77 (t)	D					
6/25/1998	87(g)	D	>160 (g)	S					
	76 (tape)	D	77(tape)	S					
7/9/1998	75 (g)	S	>160 (g)	D					
	72 (tape)	S	78 (t)	D					
7/17/1998	83 (tape)	D	>160 (g)	S					
	84 (g)	D	78 (tape)	S					
7/31/1998	none		78 (g)	S					
	none		72 (tape)	S					
8/20/1998	none		65 (g)	S					
	none		63 (tape)	S					
8/27/1998	70 (g)	S	74 (g)	D					
	67(tape)	S	73 (tape)	D					
8/28/1998	71 (g)	D	none						
9/2/1998	64 (g)	S	69 (g)	D					
	63 (tape)	S	64 (tape)	D					
9/23/1998	75 (g)	D	>160 (g)	S					
	71 (tape)	D	75 (tape)	S					
10/7/1998	74 (g)	S	78 (g)	D					
	72 (tape)	S	75 (tape)	D					
10/21/1998	76 (g)	D	74 (g)	S					
11/4/1998	91 (g)	S	87 (g)	D					
	87 (t)	S	85 (t)	D					
1/6/1999	78 (g)	S	79 (g)	D					
1/19/1999	74 (g)	D	75 (g)	S					
2/2/1999	122 (g)	S	115 (g)	D					
2/23/1999	78 (g)	D	77 (g)	S					
3/2/1999	81 (g)	S	83 (g)	D					
3/16/1999	75 (g)	D	75 (g)	S					
4/6/1999	77 (g)	S	78 (g)	D					
4/20/1999	76 (g)	D	74 (g)	S					
5/4/1999	70 (g)	S	72 (g)	D					
5/19/1999	72 (g)	D	73 (g)	S					
6/2/1999	78 (g)	S	80 (g)	D					
6/15/1999	77 (g)	D	76 (g)	S					
7/6/1999	118 (g)	S	120 (g)	D					
7/22/1999	75 (g)	D	78 (g)	S					
8/3/1999	74 (g)	S	75 (g)	D					
8/20/1999	82 (g)	D	76 (g)	S					
8/31/1999	77 (g)	S	80 (g)	D					
9/21/1999	77 (g)	D	76 (g)	S					
10/5/1999	78 (g)	S	83 (g)	D					
10/20/1999	78 (g)	D	79 (g)	S					
11/2/1999	78 (g)	S	82 (g)	D					
11/22/1999	75 (g)	D	76 (g)	S					

12/2/1999	77 (g)	S	76 (g)	D					
12/14/1999	74 (g)	D	73 (g)	S					
1/5/2000	78 (g)	S	80 (g)	D					
1/18/2000	75 (g)	D	75 (g)	S					
2/2/2000	76 (g)	S	76 (g)	D					
2/15/2000	86 (g)	D	81 (g)	S					
3/2/2000	79 (g)	S	80 (g)	D					
3/15/2000	85 (g)	D	80 (g)	S					
4/6/2000	74 (g)	S	78 (g)	D					
4/19/2000	76 (g)	D	78 (g)	S					
5/4/2000	74 (g)	S	75 (g)	D					
5/18/2000	81 (g)	D	78 (g)	S					
6/6/2000	82 (g)	S	83 (g)	D					
6/21/2000	80 (g)	D	82 (g)	S					
7/6/2000	78 (g)	S	79 (g)	D					
7/20/2000	80 (g)	D	80 (g)	S					
8/1/2000	76 (g)	S	77 (g)	D					
8/15/2000	81 (g)	D	81 (g)	S					
9/5/2000	75 (g)	S	76 (g)	D					
9/19/2000	77 (g)	D	77 (g)	S					
10/2/2000	75 (g)	S	78 (g)	D					
10/12/2000	80 (g)	D	80 (g)	S					
11/1/2000	78 (g)	S	78 (g)	D					
11/9/2000	77 (g)	D	76 (g)	S					
12/7/2000	76 (g)	S	76 (g)	D					
12/14/2000	78 (g)	D	78 (g)	S					
1/4/2001	77 (g)	S	82 (g)	D					
1/16/2001	81 (g)	D	82 (g)	S					
2/2/2001	74 (g)	S	78 (g)	D					
2/9/2001	75 (g)	D	75 (g)	S					
3/1/2001	79 (g)	S	82 (g)	D					
3/5/2001	78 (g)	D	78 (g)	S					
4/4/2001	76 (g)	S	78 (g)	D					
4/10/2001	79 (g)	D	80 (g)	S					
5/3/2001	76 (g)	S	78 (g)	D					
5/11/2001	78 (g)	D	77 (g)	S					
6/4/2001	80 (g)	S	78 (g)	D					
6/11/2001	80 (g)	D	80 (g)	S					
7/2/2001	76 (g)	S	78 (g)	D					
7/12/2001	75 (g)	D	74 (g)	S					
8/8/2001	73 (g)	S	73 (g)	D					
8/13/2001	75 (g)	D	75 (g)	S					
9/10/2001	78 (g)	S	79 (g)	D					
9/17/2001	76 (g)	D	78 (g)	S					
10/8/2001	78 (g)	S	76 (g)	D					
10/25/2001	83 (g)	D	84 (g)	S					
11/13/2001	78 (g)	S	78 (g)	D					
11/19/2001	78 (g)	D	77 (g)	S					
12/11/2001	79 (g)	S	81 (g)	D					
12/18/2001	80 (g)	D	78 (g)	S					
1/7/2002	78 (g)	S	82 (g)	D					
1/17/2002	86 (g)	D	84 (g)	S					

Levels

2/11/2002	85 (g)	S	91 (g)	D					
2/19/2002	85 (g)	D	88 (g)	S					
3/12/2002	89 (g)	S	91 (g)	D					
3/18/2002	82 (g)	D	83 (g)	S					
4/11/2002	75 (g)	S	80 (g)	D					
4/16/2002	73 (g)	D	76 (g)	S					
5/8/2002	76 (g)	S	83 (g)	D					
5/15/2002	75 (g)	D	74 (g)	S					
6/6/2002	74 (g)	S	75 (g)	D					
6/10/2002	74 (g)	D	74 (g)	S					
7/5/2002	75 (g)	S	75 (g)	D					
7/10/2002	77 (g)	D	78 (g)	S					
8/1/2002	75 (g)	S	75 (g)	D					
8/8/2002	73 (g)	D	74 (g)	S					
9/5/2002	72 (g)	S	74 (g)	D					
9/9/2002	74 (g)	D	75 (g)	S					
10/3/2002	72 (g)	S	72 (g)	D					
10/7/2002	73.5 (g)	D	73 (g)	S					
11/1/2002	81 (g)	S	84 (g)	D					
11/7/2002	79 (g)	D	81 (g)	S					
12/6/2002	74 (g)	S	76 (g)	D					
12/11/2002	86 (g)	D	85 (g)	S					
1/3/2003	75 (g)	S	75 (g)	D					
1/7/2003	76 (g)	D	76 (g)	S					
2/3/2003	82 (g)	S	82 (g)	D					
2/10/2003	75 (g)	D	75 (g)	S					
3/6/2003	78 (g)	S	78 (g)	D					
3/13/2003	79 (g)	D	81 (g)	S					
4/4/2003	78 (g)	S	82 (g)	D					
4/8/2003	82 (g)	D	82 (g)	S					
5/2/2003	78 (g)	S	82 (g)	D					
5/7/2003	80 (g)	D	82 (g)	S					
6/6/2003	80 (g)	S	82 (g)	D					
6/9/2003	81 (g)	D	82 (g)	S					
7/3/2003	79 (g)	S	82 (g)	D					
7/7/2003	79 (g)	D	80 (g)	S					
8/1/2003	84 (g)	S	84 (g)	D					
8/7/2003	82 (g)	D	82 (g)	S					
9/4/2003	79 (g)	S	85 (g)	D					
9/8/2003	84 (g)	D	82 (g)	S					
10/2/2003	84 (g)	S	86 (g)	D					
10/6/2003	86(g)	D	86(g)	S					
11/7/2003	80(g)	S	85(g)	D					
11/14/2003	*		*		*Well #1 caution tagged(4112858) due to high vibes. No static for #2 a				
12/4/2003	86(g)	S	88(g)	D					
1/6/2005	89 (g)	S	132 (g)	D					
1/13/2005	86 (g)	D	100 (g)	S					
2/3/2005	78 (g)	S	83 (g)	D					
2/10/2005	80 (g)	D	92 (g)	S					
3/3/2005	82 (g)	S	95 (g)	D					
3/10/2005	103 (g)	D	96 (g)	S					
4/7/2005	78 (g)	S	95 (g)	D					

4/12/2005	78 (g)	D	91 (g)	S					
5/5/2005	83 (g)	S	91 (g)	D					
5/12/2005	82 (g)	D	92 (g)	S					
6/2/2005	76 (g)	S	114 (g)	D					
6/9/2005	80 (g)	D	88 (g)	S					
7/7/2005	76 (g)	S	89 (g)	D					
7/14/2005	81 (g)	D	89 (g)	S					
8/3/2005			87 (g)	S					
8/5/2005	88 (t)	S							
8/22/2005	77 (g)	D	87 (g)	D					
9/8/2005	76 (g)	D	90 (g)	S					
9/9/2005	75 (g)	S	92 (g)	D					
10/6/2005	78 (g)	S	92 (g)	D					
10/13/2005	78 (g)	D	88 (g)	S					
11/3/2005	76 (g)	S	93 (g)	D					
11/9/2005	84 (g)	D	94 (g)	S					
12/1/2005	79 (g)	S	94 (g)	D					
12/8/2005	83 (g)	D	96 (g)	S					
1/5/2006	81 (g)	S	120 (g)	D					
1/10/2006	115 (g)	D	95 (g)	S					
2/2/2006	80 (g)	S	97 (g)	D					
2/7/2006	83 (g)	D	93 (g)	S					
3/2/2006	79 (g)	S	92 (g)	D					
3/9/2006	82 (g)	D	93 (g)	S					
4/6/2006	81 (g)	S	97 (g)	D					
4/12/2006	80 (g)	D	94 (g)	S					
5/5/2006	76 (g)	S	87 (g)	D					
5/9/2006	73 (g)	D	85 (g)	S					
6/2/2006	74 (g)	S	84 (g)	D					
6/8/2006	74 (g)	D	85 (g)	S					
7/6/2006	68 (g)	S	82 (g)	D					
7/11/2006	95 (g)	D	83 (g)	S					
8/3/2006	74 (g)	S	88 (g)	D					
8/8/2006	75 (g)	D	86 (g)	S					
9/5/2006	75 (g)	S	89 (g)	D					
9/12/2006	74 (g)	D	84 (g)	S					
10/5/2006	70 (g)	S	83 (g)	D					
10/11/2006	74 (g)	D	88 (g)	S					
11/2/2006	88 (g)	S	92 (g)	D					
11/9/2006	73 (g)	D	85 (g)	S					
12/5/2006	70 (g)	S	85 (g)	D					
12/12/2006	70 (g)	D	83 (g)	S					
1/4/2007	75 (g)	S	83 (g)	D					
1/9/2007	72 (g)	D	84 (g)	S					
2/2/2007	70 (g)	S	86 (g)	D					
2/9/2007	73 (g)	D	85 (g)	S					
3/2/2007	75 (g)	S	88 (g)	D					
3/7/2007	84 (g)	D	97 (g)	S					
4/5/2007	80 (g)	S	97 (g)	D					
4/10/2007	85 (g)	D	95 (g)	S					
5/3/2007	79 (g)	S	95 (g)	D					
5/8/2007	77 (g)	D	91 (g)	S					

Levels

6/4/2007	77 (g)	S	90 (g)	D					
6/12/2007	75 (g)	D	88 (g)	S					
7/3/2007	78 (g)	S	89 (g)	D					
7/10/2007	78 (g)	D	90 (g)	S					
8/1/2007	78 (g)	S	92 (g)	D					
8/8/2007	78 (g)	D	90 (g)	S					
9/4/2007	77 (g)	S	91 (g)	D					
9/11/2007	78 (g)	D	87 (g)	S					
10/2/2007	78 (g)	S	93 (g)	D					
10/9/2007	78 (g)	D	91 (g)	S					
10/25/2007	76 (g)	S	92 (g)	D					
11/12/2007	82 (g)	D	93 (g)	S					
11/20/2007	80 (g)	S	97 (g)	D					
12/4/2007	83 (g)	D	96 (g)	S					
12/11/2007	80 (g)	S	93 (g)	D					
1/3/2008	80 (g)	S	96 (g)	D					
1/8/2008	83 (g)	D	94 (g)	S					
2/1/2008	82 (g)	S	96 (g)	D					
2/7/2008	86 (g)	D	93 (g)	S					
3/4/2008	80 (g)	S	96 (g)	D					
3/11/2008	80 (g)	D	92 (g)	S					

TOTAL HEAD = SITE ELEVATION - STATIC LEVEL

	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03
PWS2	1.66	0.96	1.06	13.66	1.06	2.66	0.86	1.66	1.16	13.66	13.66	13.66
PWS3	1.68	1.18	0.88	1.38	2.98	2.88	2.68	2.38	1.88	13.88	13.88	13.88
PWS5	-55.73	-61.53	-61.03	-68.33	-59.73	-63.73	-61.03	-59.43	-63.03	17.27	17.27	17.27
PWS6	-44.85	-44.15	-42.75	-45.35	-45.15	-42.75	-44.75	-40.45	-45.65	12.55	12.55	12.55
PWHC1	-60.94	-67.94	-63.94	-63.94	-63.94	-65.94	-64.94	-69.94	-64.94	14.06	14.06	14.06
PWHC2	-62.35	-61.35	-67.35	-68.35	-68.35	-68.35	-66.35	-68.35	-68.35	13.65	13.65	13.65
OWI	-56.25	-58.35	-58.35	-60.05	-58.35	-53.65	-59.85	-58.85	-63.35	9.65	9.65	9.65
OWG	0.62	-0.18	-1.18	-0.38	0.12	1.52	0.72	-1.18	-0.28	18.32	18.32	18.32
OWJ	-57.88	-63.38	-62.88	-68.38	-62.88	-63.68	-61.18	-58.88	-66.18	15.62	15.62	15.62
OW6	-45.15	-44.55	-45.55	-45.85	-46.35	-43.65	-50.45	-45.45	-45.55	12.85	12.85	12.85

TOTAL HEAD = SITE ELEVATION - STATIC LEVEL

STATIC WATER LEVEL - RAW DATA ENTRY

	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03
PWS2	12.00	12.70	12.60		12.60	11.00	12.80	12.00	12.50			
PWS3	12.20	12.70	13.00	12.50	10.90	11.00	11.20	11.50	12.00			
PWS5	73.00	78.80	78.30	85.60	77.00	81.00	78.30	76.70	80.30			
PWS6	57.40	56.70	55.30	57.90	57.70	55.30	57.30	53.00	58.20			
PWHC1	75.00	82.00	78.00	78.00	78.00	80.00	79.00	84.00	79.00			
PWHC2	76.00	75.00	81.00	82.00	82.00	82.00	80.00	82.00	82.00			
OWI	65.90	68.00	68.00	69.70	68.00	63.30	69.50	68.50	73.00			
OWG	17.70	18.50	19.50	18.70	18.20	16.80	17.60	19.50	18.60			
OWJ	73.50	79.00	78.50	84.00	78.50	79.30	76.80	74.50	81.80			
OW6	58.00	57.40	58.40	58.70	59.20	56.50	63.30	58.30	58.40			

LEVEL SUSPECT

STATIC WATER LEVEL - RAW DATA ENTRY

ELEVATION SURVEY RESULTS

	TOP OF PIPE	TOP OF PAD	FLOOR	TOP OF WELL	TOP OF PUMP	REFERENCE POINT
PWS2	13.66	13.47	13.03		17.2	13.66
PWS3	13.88	13.54	13.24		17.11	13.88
PWS5		16.38	15.06		21.49	17.27
PWS6		11.85	10.89		16.47	12.55
PWHC1			13.63		18.63	14.06
PWHC2			13.22		18.23	13.65
OWI	9.65					9.65
OWG	18.32					18.32
OWJ	15.62					15.62
OW6	12.83			12.85		12.85