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July 25, 2008

John Scardino  
Woodlands Ventures, LLC  
31200 Via Colinas, Suite 200  
Westlake Village, California 91362

**SUBJECT: July 2008 Ground Water Elevation Monitoring Report for The Woodlands Development, Nipomo Mesa, San Luis Obispo County, California**

Dear Mr. Scardino:

This report documents the monitoring of water levels at twelve wells in the vicinity of The Woodlands project and at the six wells on The Woodlands property. The monitoring program is being performed to enable compliance with Mitigation Measure 4.1-6d of the Woodlands Specific Plan Environmental Impact Report (1998):

“Prior to approval of discretionary development (e.g. prior to recordation of the final map, Development Plan approval), the applicant shall conduct a complete survey of wells that could be affected by cumulative water level interference. The applicant shall then implement means to allow for continued production of these wells under drought conditions to the satisfaction of the County Engineer.”

Cleath & Associates conducted a private domestic well survey between March and May 2000 and has been monitoring water levels in selected offsite wells and in The Woodlands wells on a monthly basis since March 1999. Well locations are shown on Figure 1. All of the onsite wells and offsite wells have been land surveyed by Wallace Group to establish map coordinates and monitoring reference point elevations.

**Onsite Wells**

Four of the onsite wells were constructed as production wells for the project, with the Highway 1 Monitoring well and the Flintcote well utilized as monitoring wells only. The Highway 1 Monitoring well was installed prior to the production wells to identify the aquifer zones beneath the site, evaluate water quality in these zones, and to determine general design parameters for the production wells. The Flintcote well was drilled in 1944, and the five Woodlands project wells were drilled in 1993 and 1994.

Currently, ground water production is occurring at three of the four production wells. The Homestead well has not been in production since August 2007, because discharge piping design is being reconfigured. The Mesa well is the primary production well; however, according to Jason Meeks of Fluid Resource Management, the Homestead well will eventually be the primary supply well and the



Mesa well will serve as its backup well. The Highway 1 well is configured for golf course irrigation. The Dawn well will not be pumped significantly after the Homestead well becomes the primary well again. Also according to Jason Meeks, after test discharges of treated wastewater in the Spring of 2007, consistent wastewater discharges began in September 2007. The effluent is pumped into Pond D where it is blended with water produced from the Highway 1 well and occasionally the Mesa well, and then the water is available for spray irrigation onto golf course turf. Approximately 6 million gallons (18 acre feet) of treated wastewater were discharged to the ponds during the 10 months from September 2007 through June 2008. Total potable water production from the four onsite wells from January 2008 through June 2008 is 197 acre feet. Well production volumes from the four wells through June 2008 are included in the table below.

**Table 1**  
**Woodlands 2008 Water Usage Summary**  
Volumes in acre-feet

Month	Well				Total
	Dawn	Homestead	Mesa	Highway 1	
January	10.0	0.1	0.8	0.1	11.0
February	0.8	0.0	14.0	8.6	23.4
March	10.9	0.0	16.6	9.0	36.5
April	7.5	0.5	27.6	9.2	44.8
May	4.8	0.0	5.4	14.3	24.5
June	18.1	0.1	21.3	17.4	56.9
<b>Total</b>	<b>52</b>	<b>1</b>	<b>86</b>	<b>59</b>	<b>197</b>

Ground water elevations for the onsite wells and monthly precipitation are shown on Figure 2. The water level data tables are available upon request. Seasonal water level fluctuations have ranged between approximately 20 feet and 45 feet in the six onsite wells during the nine years of monitoring. Since 2002, the range of seasonal fluctuation has increased in each of the wells because of higher pumping rates during the dry seasons as compared to the wet seasons. The slightly declining average water levels indicated in the hydrograph from the year 1999 through 2005 is a result of changing climatic conditions in the area during that period. From 2004 to the fall of 2006 average water levels were stable because of higher than normal precipitation amounts during the winter of 2004 - 2005, and the late winter and spring precipitation in 2006. Average water levels have decreased slightly during and following the below-normal precipitation amounts in the winter of 2006 - 2007. Water levels in the onsite wells were 20 feet to 36 feet lower in summer 2008 than in winter 2008, representing a typical seasonal water level fluctuation for the wells. Water levels were three to five feet lower in July 2008 than in July 2007 in the Flintcote and Highway 1 wells respectively, and were eight feet lower in the Dawn well. The lower water levels in the Dawn well in July 2008 compared to July 2007 reflects the increased pumping at the well since October 2007. Water levels in the Homestead well were approximately 4.5 feet higher in July 2008 than in July 2007 because of the lack of significant pumping at the well since August 2007.



The slightly higher average water levels measured during 1999 and 2000 of the monitoring program reflect the higher than normal precipitation of the mid and late 1990s. Average to below average annual precipitation occurred from the year 2000 through the winter of 2003 - 2004, and precipitation was significantly below average during the winter of 2006 - 2007. Historically, water levels generally drop from February through September of each year, after which they recover and rise.

### **Offsite Wells**

Wells 9K4, 15G1, 10N, and 22H are currently used as domestic supply wells to single-family homes and are pumped on a regular basis. Wells 10K, 10Q, 14N, and 22G have been inactive since monitoring began. Well 10R2 is used for domestic and irrigation supply, but is pumped less frequently than in previous years. Well 10F is unequipped. Wells 15B4, and 10R3 are equipped, but inactive, and are located on properties currently being developed. Well 10R1 was abandoned in January 2007, and well 15B3 is no longer accessible. The 12 offsite wells are listed in Table 2.

Ground water elevations for the offsite wells are shown on Figures 3, 4, and 5. The water level data tables are available upon request. Water levels in wells 9K4, 10F, 10R2, 10R3, 15B4, and 15G1 have shown the greatest amount of seasonal fluctuation of all the monitored off-site wells, fluctuating 30 to 35 feet between the 2008 wet and dry seasons. Fluctuations in the other offsite wells penetrating the deeper aquifer or mixed aquifers ranged between 16 feet in well 14N and 31 feet in well 10N. Water levels in wells 10F, 10N, 14N, 15G1, and 10R2, all penetrating the deeper aquifer or mixed aquifers, were about seven feet to 12 feet lower in the 2008 dry season, compared to the 2007 dry season. Declines in dry season water levels have been greatest in well 15G1, having steadily dropped 26 feet since monitoring began in 2000. In well 10N, dry season water levels dropped the most of any offsite well over a one-year period with a twelve feet decline between the 2007 and 2008 dry seasons.

Hydrographs of wells 22G, 22H, 10K, and 10Q are relatively flat, compared to hydrographs of all the other wells which fluctuate in response to regional pumping. This data, and the relatively high water levels suggest that these wells have been completed within the unconfined dune sand aquifer, whereas other offsite and onsite wells were either completed within a deeper, confined aquifer, or completed within portions of both aquifers.

Wells 9K4, 10N, and 10R3 were either pumping or could not be measured during the July 2008 monitoring event. Table 3 shows the aquifers penetrated by the offsite and onsite wells.

### **Ground Water Movement**

Estimated confined aquifer ground water flow directions and hydraulic gradients on The Woodlands property are shown in Figure 1. Ground water during June 2008 is inferred to flow generally to the



north beneath the central portion of the site at an estimated average hydraulic gradient of 0.0046 vertical feet of head loss per horizontal foot of distance. The Dawn well was pumping during the sampling event and, therefore, was not included in the gradient calculations. Between the Flintcote well and the Homestead well in the southern portion of the site, the flow direction becomes southerly with a shallower gradient than in the central portion of the site.

Wells used for the confined aquifer hydraulic gradient calculations represent the same or similar hydraulic pressure zones. Four onsite wells were used to calculate the hydraulic gradient for the July 2008 monitoring event. The Highway 1 Monitoring well is completed within multiple pressure zones and therefore is not used in gradient calculations.

#### **Conclusions and Recommendations**

Mitigation Measure 4.1-6d of the project EIR requires that the applicant shall implement means to allow for continued production of offsite wells that have been significantly affected by well interference from The Woodlands project. Monthly water level monitoring allows early detection of wells most vulnerable to well interference during drought, and will allow for the mitigation of potentially significant water-level impacts before they occur.

There are 18 wells currently being monitored at the Woodlands project. There are six onsite wells and a total of 12 offsite wells in the program. Based on observed water levels, there are two principal groups of aquifer zones being tapped by the various wells: shallow aquifers (unconfined) and deep aquifers (confined). Table 3 shows the aquifers penetrated by each well in The Woodlands monitoring program.

Water level monitoring results show no evidence of significant water-level impacts to offsite wells from ground water production in the four producing onsite wells. Observed water level fluctuations and declines are related to seasonal changes in precipitation and regional well pumping. Regional pumping appears to be heavy north of Camino Caballo. In order to reduce cumulative impacts of pumping in this area and on wells such as 10N and 15G1 during this current low rainfall period, the Homestead well should be utilized again as the primary production well as soon as is practical, and the Dawn well should be pumped less.

Cleath & Associates recommends the following:

- Abandonment of the Highway 1 monitoring well. The well was installed prior to the production wells to identify the aquifer zones beneath the site, evaluate water quality in these zones, and to determine general design parameters for the production wells. Because the well is completed across multiple aquifer zones, water levels do not compare well with other wells on the site that are completed within the deep zones only. The well should be abandoned in accordance with



Department of Water Resources Water Well Standards, Section 23, Requirements for Destroying Wells.

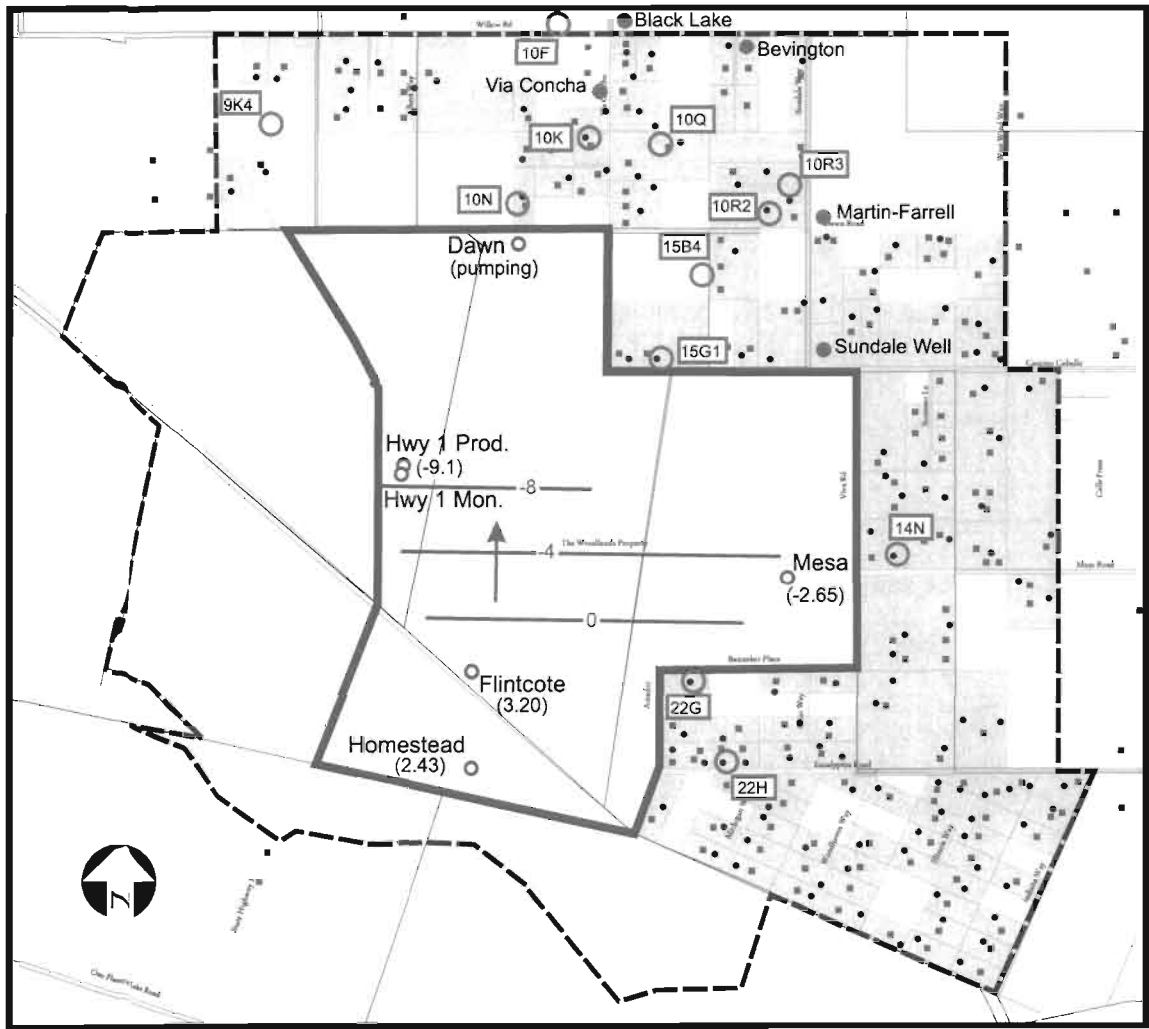
- Installation of a casing liner and filter pack in the Flintcote well to ensure the continued monitoring of the well in the event of failure of the old steel casing.
- Continue to monitor and record production data from well flow meters.
- Bring the Homestead well back on line as the primary supply well while reducing pumpage at the Dawn Road well.

Water level data sheets including depths to ground water, ground water elevations, and changes in water levels for each well are available upon request. If you have any questions regarding this letter report, please call our office.

Sincerely,

David R. Williams  
Associate Geologist

cc. Tom Whalen



**EXPLANATION:**

- Impact Area Boundary
- Site Boundary
- Parcels with one or more domestic wells
- Houses
- Domestic Wells (Inferred)
- Offsite Monitoring Well Location
- Onsite Production Well Location, ground water elevation in feet above sea level
- Homestead (2.43)
- Nipomo Community Services District Well
- Onsite Ground water elevation contour on June 25, 2008, for confined aquifer zones, elevation in feet above sea level
- Ground water flow direction

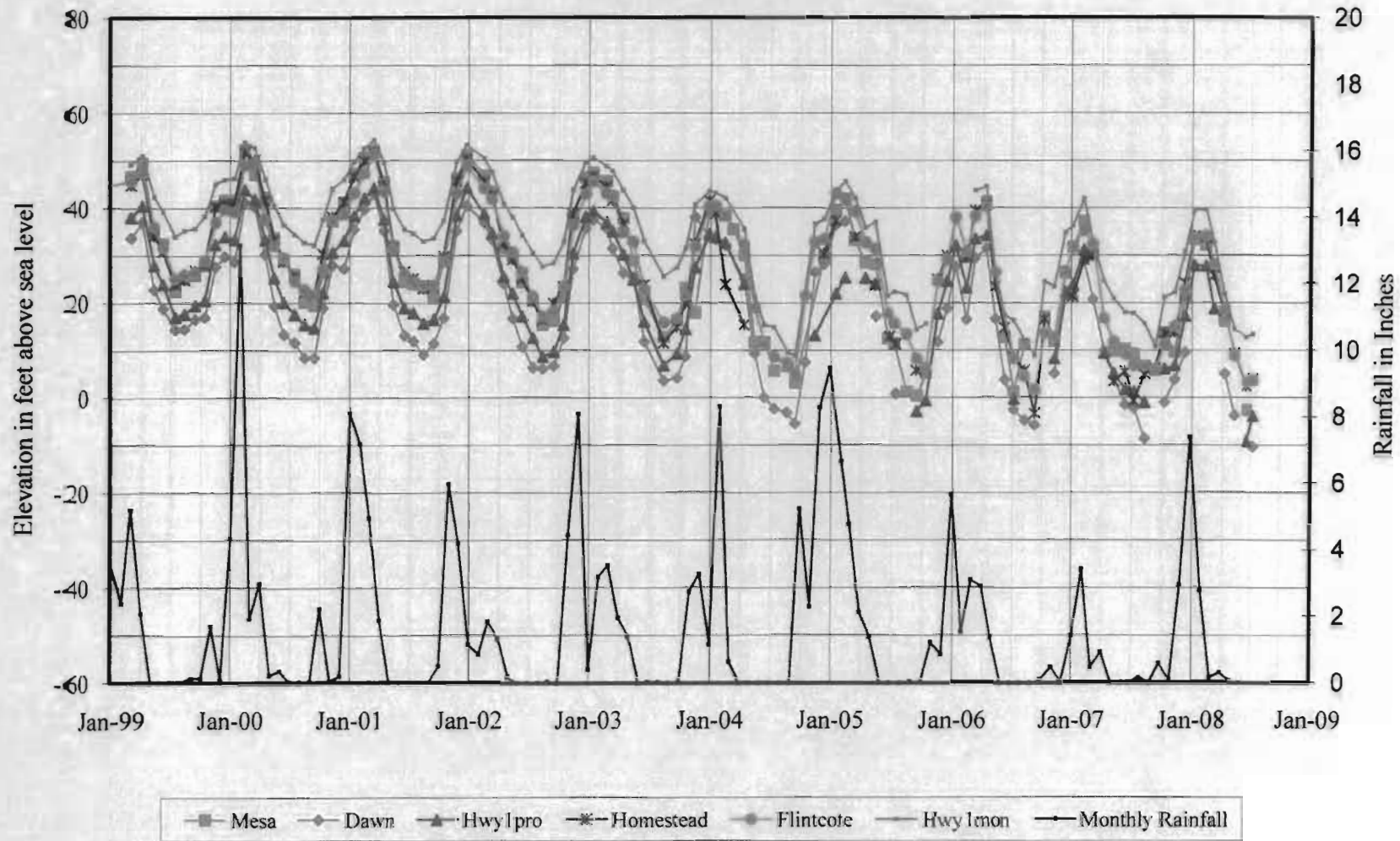
Base Map: San Luis Obispo County  
 Building & Planning Dept.  
 Assessor's Parcel Maps



**Figure 1**  
**Onsite Ground Water Elevation**  
**Contours on June 25, 2008 for**  
**Confined Aquifer Zones**

**The Woodlands**  
 Cleath & Associates  
 July 2008

**Figure 2**  
**Water Levels: February 1999 to July 2008**  
**The Woodlands Onsite Wells**

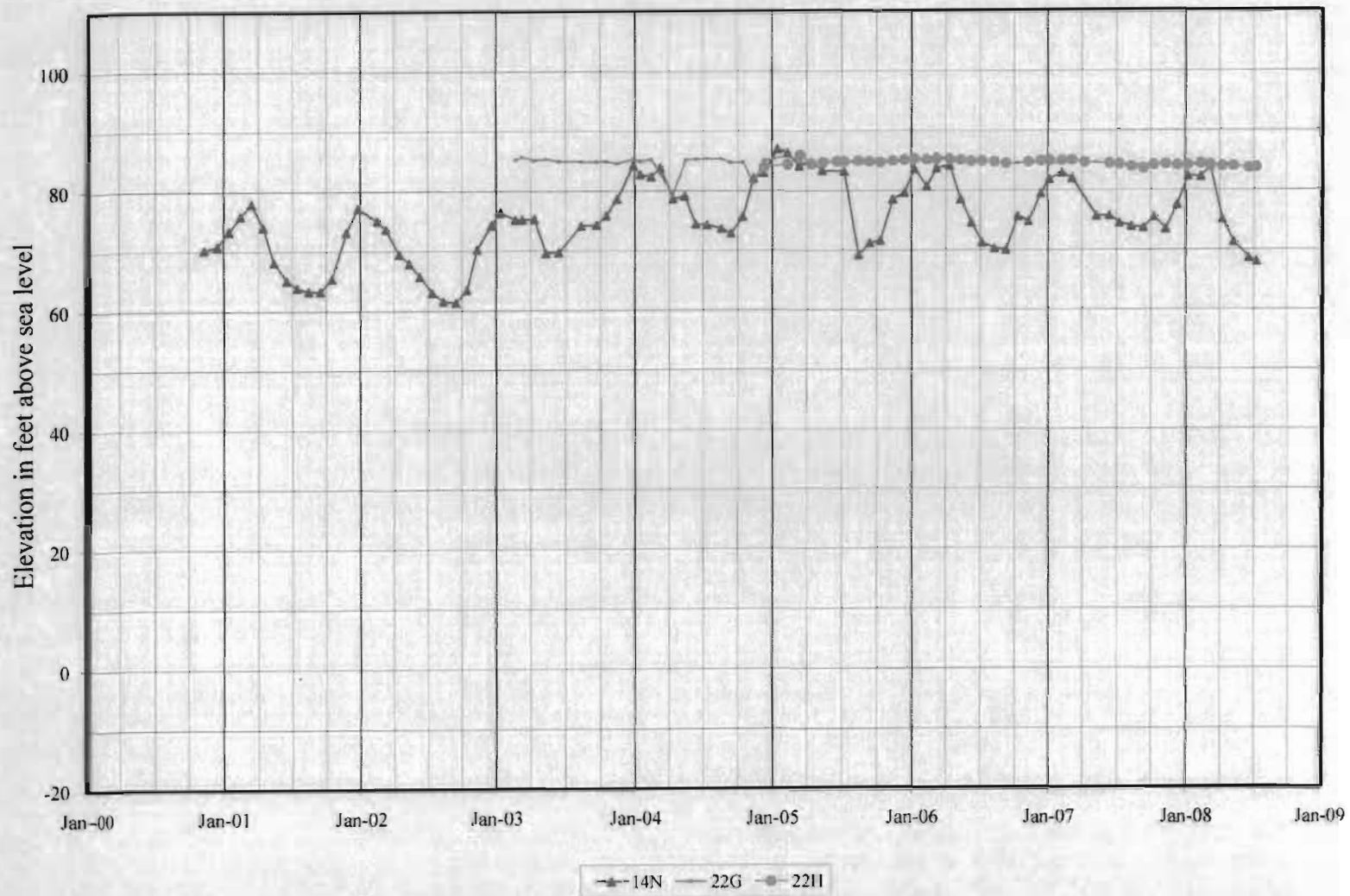


**Table 2  
Woodlands Offsite Wells**

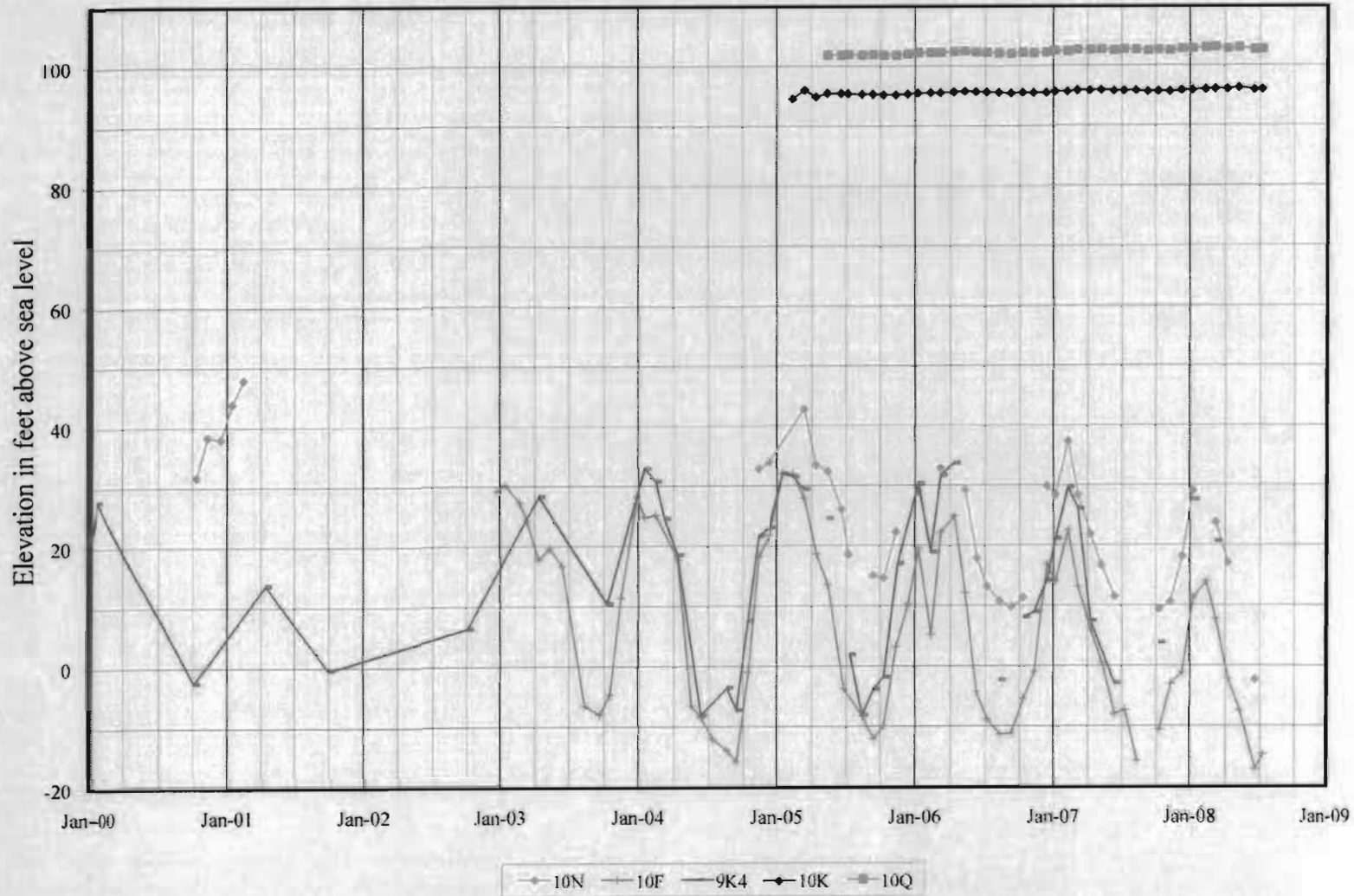
Well Number	Reference Point	Total depth (in feet)	Well Type	Well Status	Date Monitoring Began	Drillers	Year Drilled	Comments
11N/35W-14N	Top of sounding tube (271.2)	--	Irrigation	Equipped, inactive	Nov-00	Floyd V. Wells	1975	--
11N/35W-10F	Steel plate on top of casing (277.9)	600	School supply & Irrigation	Unequipped	Dec-02	Enloe Well Drilling	2002	Cascading water enters well at approximately 206 feet depth
11N/35W-10N	Top of casing (246.0)	360	Domestic	Active	Oct-00	Floyd V. Wells	1981	Discontinued Feb-01, Resumed monitoring in Nov-04
11N/35W-22G	Top of casing (279.8)	--	Domestic	Equipped, inactive	Feb-03	--	--	--
11N/35W-15G1	Top of sounding tube (234.8)	380	Domestic	Active	Oct-00	Water Well Supply	1985	--
11N/35W-10R2	Top of casing (269.1)	365	Domestic / Irrigation	Active	Nov-03	Longwell	1956	Pumping often
11N/35W-10R3	Top of casing (est. 276)	--	Domestic	Unequipped	Apr-06	--	--	--
11N/35W-9K4	Top of sounding port (County GPS=168.53)	--	Domestic	Active	Jan-2004 by Cleath & Associates	Floyd V. Wells	1960's	Pumping often. Monitored by County Public Works Dept. in October and April since 1973
11N/35W-10K	Top of casing (249.3)	210	Domestic	Unequipped	Feb-05	--	--	--
11N/35W-22H	Top of casing (270.1)	--	Domestic	Active	Dec-04	--	--	--
11N/35W-10Q	Top of casing (284.5)	257	Domestic	Inactive	May-05	--	--	--
11N/35W-15B4	Concrete slab (244.8)	500	Domestic	Inactive	Sep-05	Central Coast	2005	Unimproved lots



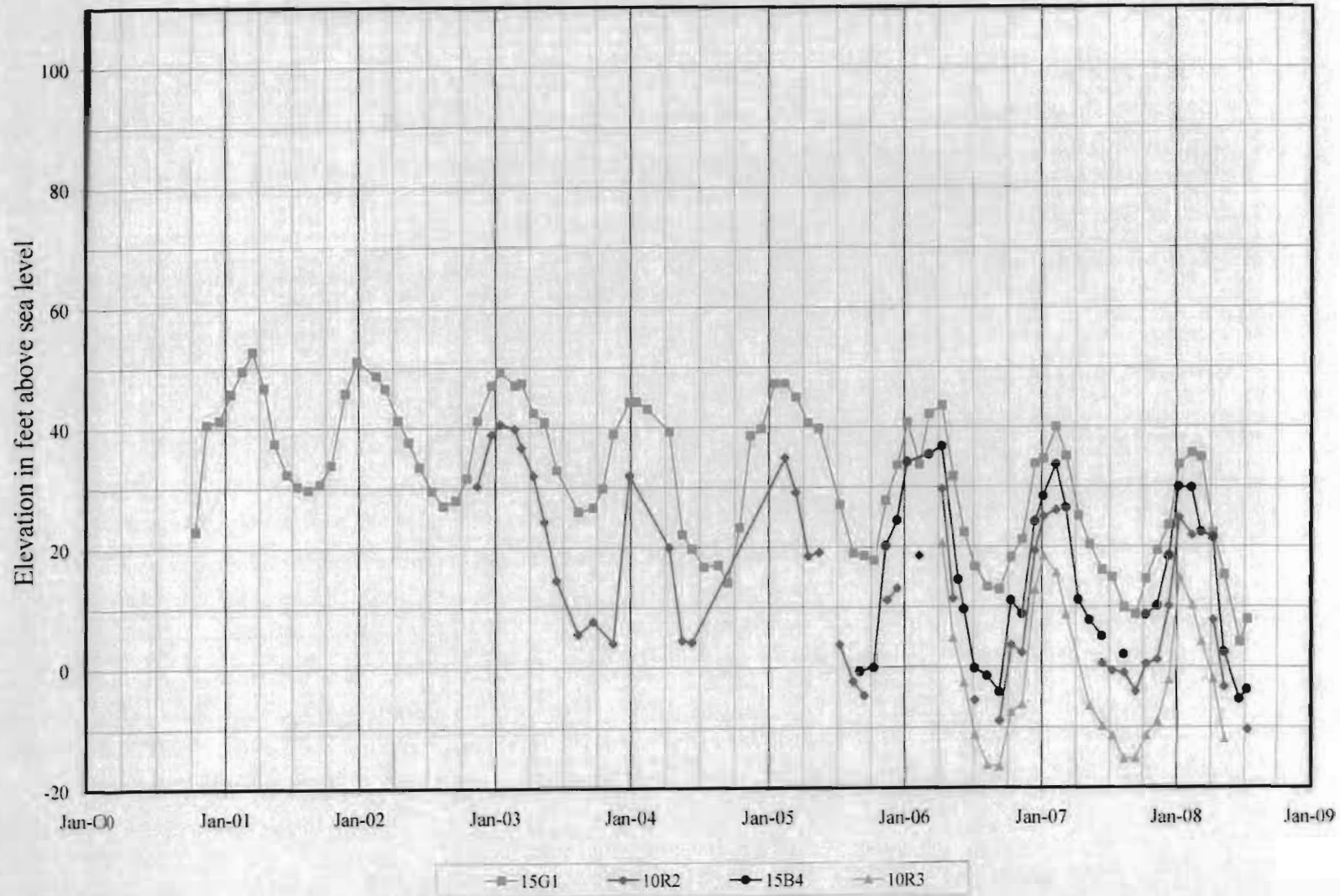
**Figure 3**  
**Water Levels Through July 2008**  
**The Woodlands Offsite - Southeast Wells**



**Figure 4**  
**Water Levels Through July 2008**  
**The Woodlands Offsite - Northern Wells**



**Figure 5**  
**Water Levels Through July 2008**  
**The Woodlands Offsite - Northeast Wells**



**Table 3**

**Aquifers Penetrated by Woodlands Onsite and Offsite Wells**

Common Well Name	Aquifer		
	Deep Aquifer (confined)	Shallow Aquifer (water table)	Mixed Aquifers
Mesa	X		
Dawn	X		
Hwy. 1 Production	X		
Hwy. 1 Monitoring			X
Homestead	X		
Flintcote	X		
11N/35W-14N			X
11N/35W-10F	X		
11N/35W-10N			X
11N/35W-22G		X	
11N/35W-15G1			X
11N/35W-10R2			X
11N/35W-10R3			X
11N/35W-9K4			X
11N/35W-10K		X	
11N/35W-22H		X	
11N/35W-10Q		X	
11N/35W-15B4	X		