

**WESTBAY® RETROFIT WELL SUMMARY**

**Location ID:** ST-7

**Field Representatives:** Giles, Hunnicutt-Mack, McClure, Pearson, Rivera

**Purpose of Well:** To monitor plume-front contamination and the effectiveness of the water treatment system for plume stabilization.

**Date Started:** 1/26/99

**Date Completed:** 7/16/99

**Northing:** 228434.04

**Easting:** 399760.52

**Brass Cap:** 4482.78'

**Outer Casing:** 4483.62'

**Inner Casing:** 4483.51'

**Drilling Method:** Mud Rotary

**Drilling Contractor:** Stewart Brothers Drilling Company

**Driller:** Paul Hollar

**Total Depth Borehole:** 1020'

**Diameter Borehole:** 12.25" to 105';  
Reamed to 17.5"; 12.25" to TD.

**Total Depth Surface Casing:** 103'

**Diameter Surface Casing:** 14" OD

**Total Depth Conv. Well Casing:** 1010'

**Diameter Conv. Well Casing:** 4.5" OD

**Total Depth 1.5" OD Westbay® Casing:** 1000'

**Water First Detected:** Not detected during drilling

**Water Level Open Borehole:** 365'  
(from geophysical log)

**Water Level Conv. Cased Borehole (post-development SS):** 416.98'

**Estimated Water Use (pre- development):**  
108,800 gallons

**Sampling Zones**

<b>Screened Zone</b>	<b>Sand Pack</b>	<b>Westbay® Zone (packer to packer)</b>	<b>Meas. Port Depth</b>
<u>453.14' to 463.16'</u>	<u>444' to 469'</u>	<u>440' to 460'</u>	<u>450'</u>
<u>543.38' to 553.40'</u>	<u>535' to 559'</u>	<u>540' to 560'</u>	<u>550'</u>
<u>778.97' to 789.00'</u>	<u>772' to 794'</u>	<u>775' to 795'</u>	<u>785'</u>
<u>969.47' to 979.57'</u> (continued next page)	<u>958' to 987'</u>	<u>965' to 985'</u>	<u>975'</u>

**Conventional Well Casing Used**

Diameter: 4.5" OD

Stainless Steel Type: 304

**Schedule 5**

**Schedule 10**

5-foot: 0 = 0 ft

5-foot: 2 = 10 ft

10-foot: 0 = 0 ft

10-foot: 2 = 20 ft

20-foot: 0 = 0 ft

20-foot: 47 = 940 ft

Total Sch 5 Footage = 0 ft

Total Sch 10 Footage = 970 ft

Total Footage of Blank Risers: 970 ft

Stick-Up: 3.6 ft originally. Cut to 0.96 ft on 6/29/99. Final stick-up (from brass cap) = 0.84 ft

**Screen Used**

Diameter: 4.5" OD

Slot Size: 0.020"

Stainless Steel Type: 304

**400-600-ft Depth Rating**

**600-1000-ft Depth Rating**

5-foot: 0 = 0 ft

5-foot: 0 = 0 ft

10-foot: 1 = 10 ft

10-foot: 3 = 30 ft

20-foot: 0 = 0 ft

20-foot: 0 = 0 ft

Total Footage of Screen: 40 ft

**Annular Materials**

Based on field notes and drill reports (approximate totals only).

Sand, grade 10/20

100-lb. Bags: 50

50-lb Bags Bentonite: 135

50-lb. Bags : 3

100-lb. Buckets: 466

94-lb. Bags Cement: 94

Sand, grade 30/70

50-lb. Bags: 25

100-lb. Buckets: 0

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**Westbay® Casing Used:**

10-foot: 85 = 850 ft

5-foot: 19 = 95 ft

2-foot: 1 = 2 ft

Packer: 11 = 55 ft Total Footage: 1002 ft

Regular Couplings: 100 Well Depth: 1000 ft

Pumping Ports: 4 Stick-Up: 2 ft joint; 1.34 ft (0.38 ft above stainless steel 6/99) Final stick-up (from brass cap) = 0.73 ft

Measurement Ports: 11

End Caps: 1

Magnetic Collars: 4

**Pertinent Field Notes**

For more detail, refer to Field Notebook #s DP 392/RFI/CMS (pages 27-31; 87-96); TDP 392/RFI/CMS (pages 1-16; 51); Development #1, (pages 1-16); Westbay® Installation, (pages 26-36).

- 1/26/99- Mobilized to site, rigged up and mixed mud. Spud borehole. Drilled mud rotary 12.25" borehole to 105'-M. McClure.
- 1/27/99- Reamed borehole to 17.5" from 0'-105' below ground surface. Replaced piston in mud pump-M. McClure.
- 1/28/99- Installed 14" outside diameter (OD) surface casing to 103' and grouted to surface-M. McClure.
- 2/2/99- Rigged down, decontaminated rig and pipe, and mobilized to WW-2-L. Hunnicutt.
- NOTE- Installed stainless steel casing at WW-2 and then drilled and installed stainless steel casing at JP-3 before returning to ST-7 to complete drilling.
- 3/6/99- Drilled mud rotary 12.25" borehole from 103'- 231'. Totco Drift Survey showed the borehole deviation was ¼° from hole origin-L. Hunnicutt.
- 3/7/99- Drilled 231'-385'. Shut down at 1740 due to high winds- G. Giles and J. Pearson.
- 3/8/99- Drilled 385'-582'. Bit chatter pervasive. Borehole deviation was <¼° from hole origin-L. Hunnicutt.

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**Pertinent Field Notes Cont.**

- 3/9/99- Drilled 582'-746'. Borehole deviation was  $> \frac{1}{2}^\circ$  from hole origin-M. McClure.
- 3/10/99- Drilled 746'-880'. Borehole deviation was  $\frac{1}{2}^\circ$  from hole origin-M. McClure.
- 3/11/99- Drilled 880'-952'. Borehole deviation was  $1^\circ$  from hole origin. Tripped out for weekend-M. McClure.
- 3/16/99- Drilled 952'-1020' (Total Depth). Circulated to clean borehole and tripped out. Decontaminated rig-J. Pearson.
- 3/17/99- Geophysical logging was attempted by Southwest Geophysical Services, Inc. A bridge was present at 140'. Cleared bridge ("chased bridge to bottom"). Pipe tripped out-J. Pearson.
- 3/18/99- Geophysical logging was completed by Southwest Geophysical Services-J. Pearson.
- 3/19/99- Installed 4.5" OD stainless steel casing to 1010' with 3.6' stick up-J. Pearson.
- 3/20/99- Installed annular materials from 1005' (due to borehole slough) to 958' (above the bottom screen)-L. Hunnicutt.
- 3/21/99- Installed annular materials from 957'-764' (above the third screen)-J. Pearson.
- 3/22/99- Installed annular materials from 763'-559' (up to sand pack of the second screen)-L. Hunnicutt.
- 3/23/99- Installed annular materials from 559'-284' (through first or top screen)-L. Hunnicutt.
- 3/24/99- Installed annular materials to 202' and grouted to surface-M. Rivera.
- NOTE- Developed (bailed, swabbed, and pumped) BLM-36, BLM-39 and JP-3; bailed and swabbed BLM-38; and installed Westbay® casing at BLM-36 before returning to develop ST-7.
- NOTE- From 5/18/99-5/26/99, all development summaries are taken from the development sheets. No other details are available.
- 5/18/99- Bailed well. 1,428 gallons removed. Water changed from black with a sulfur odor to gray, cloudy and soapy- M. Canavan, G. Giles, J. Pearson, and M. Rivera.
- 5/21/99- Swabbed well. 115 gallons removed from first screen (top); 140 gallons removed from screen #2. Three dry runs; 6,125 gallons from screen #3. Water was greenish, yellowish gray and cleared significantly. Turbidity was 36.8 NTU; 1,760 gallons removed from screen #4. Water initially brown but clearing-M. Canavan, G. Giles, and L. Hunnicutt-Mack.

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**Pertinent Field Notes Cont.**

- 5/26/99-  
6/1/99- Jetted well. Unchlorinated Well J water was used to jet each screen twice (6,400 gallons; a total of 25,600 gallons was jetted into the well)-  
M. Canavan.
- 6/2/99-  
6/9/99- Pumped well. 632 gallons removed from the sump; 11,015 gallons removed from the bottom screen; 8,589 gallons from screen #3; 7,847 gallons from screen #2; and 2,324 gallons from the top screen-  
M. Canavan, M. McClure, J. Pearson, and M. Rivera.  
Development complete. Waiting for camera log to install Westbay® casing.
- 6/25/99- Camera logged the well. Water clear and ready for Westbay® casing installation.
- 6/28/99- Camera logged the well above the top screen with the casing pumped dry to check stainless steel casing integrity.
- 6/29/99- The stainless steel 4" casing was cut to 0.96 ft above the surface casing.  
6/29/99- Set up tables and Westbay® MP 38 1.5" OD PVC casing (with two QA/QC checks). Installed 420' of Westbay® casing (to 580')-M. McClure and L. Hunnicutt-Mack.
- 6/30/99- Installed Westbay® MP 38 casing from 580' to surface. Completed a casing integrity (leak) test with 198' head differential. Casing did not leak. During surface tests (to check hold back valve pressure), there was a problem with the packer inflation tool (leaking tool; line pressure too low). Packer inflation suspended until D. Larsen or D. Mercer can be reached at Westbay®-M. McClure and L. Hunnicutt-Mack.
- 7/7/99- Cleaned tool parts, replaced hold back valve, spring, and o-ring in injection valve assembly. Line pressure was still reading too low-  
L. Hunnicutt-Mack.
- 7/8/99- Trouble-shooting the line pressure problem continued. D. Mercer was contacted and surface tests were performed with the tool. D. Mercer believed the vent control in the pressure control unit (PCU box) was leaking-L. Hunnicutt-Mack.
- 7/9/99- New PCU was sent by D. Mercer at Westbay® yesterday. Packer inflation suspended until control box arrives (~7/12)-L. Hunnicutt-Mack.
- 7/14/99- Set up for packer inflation. Tested packer inflation tool-M. McClure.  
7/15/99- Retested tool (injection valve pressure and tool pressure (injection valve pressure + hold back valve pressure). Inflated packers one through nine-  
M. McClure.
- 7/16/99- Packer inflation completed with packers 10 and 11-G. Giles.  
Installation complete. Turned well over to Technicians for Westbay® development.