Department of Energy
Office of Legacy Management

MAY 26 2010

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Deputy Director
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Uranium Concentrations in Monitoring Well T(M) at the Bluewater, New Mexico, UMTRCA Title II Disposal Site

To Whom It May Concern:

The U.S. Department of Energy (DOE) has been sampling the point-of-compliance (POC) monitoring wells at the Bluewater, New Mexico, disposal site since 1999 in accordance with the Long-Term Surveillance Plan. The monitoring network is shown on Figure 1. To date, no monitored constituents have exceeded an approved alternate concentration limit (ACL). However, uranium concentrations in the alluvium POC well T(M) have been trending upward and have increased substantially in the past couple of years (Figure 2). The most recent result from a sample collected on November 10, 2009, was 0.41 milligrams per liter (mg/L). The trend suggests that the ACL of 0.44 mg/L may be exceeded in the very near future.

In the course of evaluating groundwater conditions at our site and to determine the cause of the increasing uranium at well T(M), DOE requested groundwater data from the Homestake Mining Company (Homestake) and the New Mexico Environment Department (NMED) for a Homestake production well located next to the entrance of DOE's Bluewater site (Figure 1). This well, completed in the upper portion of the San Andres Limestone Formation, is designated as BWSI-34 by NMED and as HMC-951 by Homestake (it was originally installed as the Sabre Piñon well). Information from both sources was received during this past winter. Uranium concentration data provided by NMED are shown on Figure 3. Data provided by Homestake, pertaining to water level measurements, pumping rates, and uranium concentrations are shown on Figures 4 and 5.

The data indicate that Homestake began pumping their well in 2001 at an average rate of approximately 400 gallons per minute. Approximately 1.5 billion gallons have been pumped from the well since 2001, or nearly 600 acre-feet per year. The water level in the well has dropped approximately 25 feet during that time. Homestake data also indicate that concentrations of natural uranium have increased during that time, from a minimum of 0.0272 mg/L on December 8, 2004, to a maximum of 0.047 mg/L on August 27, 2008. Homestake's most recent sample result from December 7, 2009, was 0.0367 mg/L. Water from this well is pumped to the Homestake mill site and is reportedly used as clean injection water for their groundwater remediation project.

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DOE strongly suspects that Homestake's production well is negatively impacting the groundwater system at the Bluewater site. The timeframe for the increasing rate of uranium concentrations in well T(M) corresponds with that of Homestake's well. Also, the water level in well T(M) has dropped approximately 10 feet since 2000, and point-of-exposure well X(M) has been dry for several years. Consequently, production from Homestake's well appears to be dewatering a portion of the alluvial aquifer on the DOE site and may be drawing contaminated water from our site through flow paths consisting of faults and fractures that connect the alluvial and bedrock aquifers.

We would appreciate your attention to this matter. Please call me at (202) 586-9034 if you have any questions.

Sincerely,

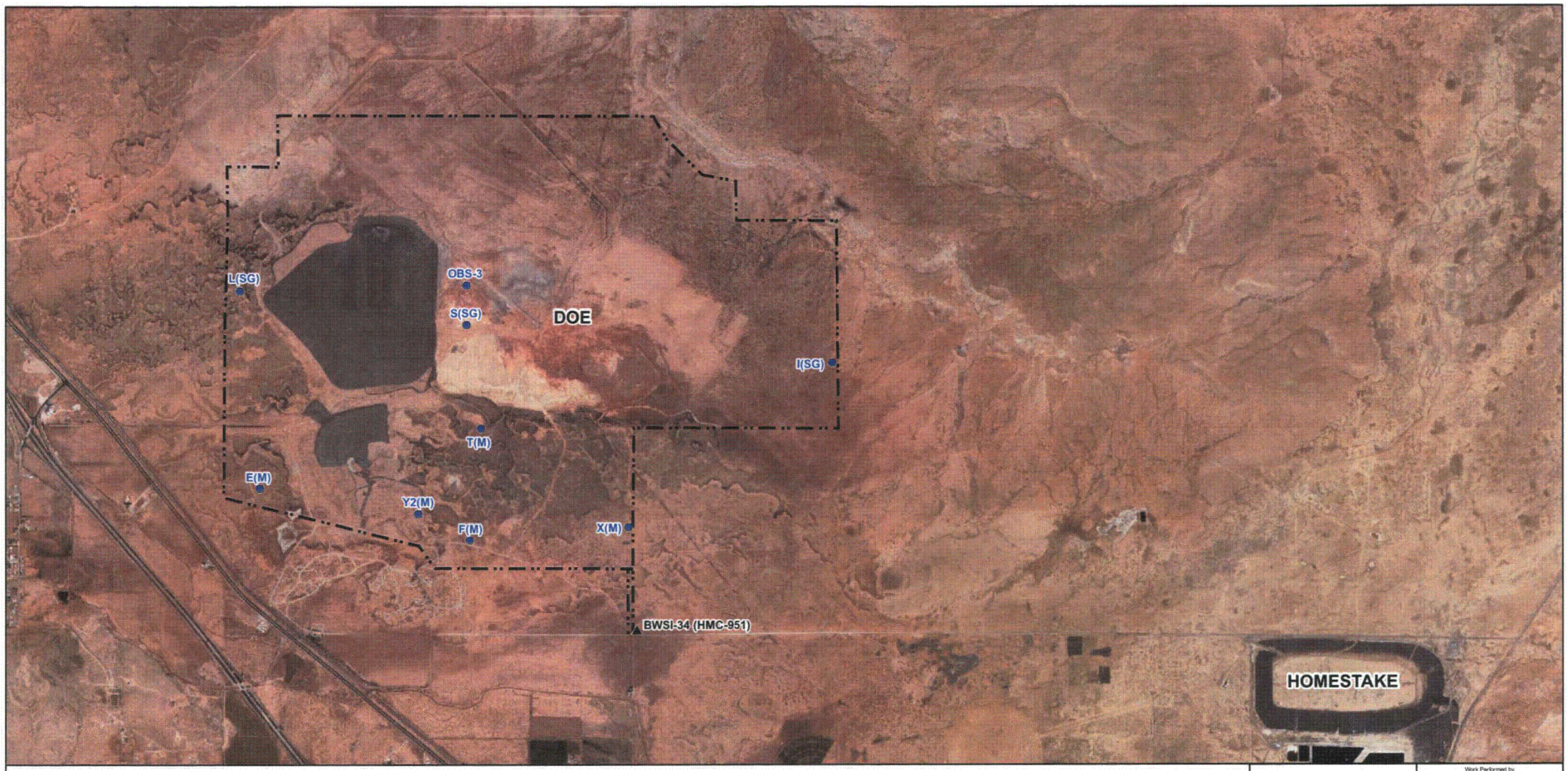
Digitally signed by Christopher J. Clayton
Date: 2010.05.25 10:12:09 -04'00'

Christopher Clayton
Site Manager

Enclosures

cc w/enclosures:
J. Buckley, NRC
D. Bahar, NMED
R. Chang, NRC
J. Schoeppner, NMED
R. Bush, DOE–LM
R. Plieness, DOE–LM
D. Johnson, Stoller
File: BLU 400.02 (Roberts)

Clayton/Bluewater/5-3-10 Uranium Concentrations NRC Ltr.doc



LEGEND

- DOE Monitoring Well
- Homestake Production Well
- Site Boundary

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SCALE IN MILES

0.5 0 0.5

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AM01-07LM00060
Figure 1 Monitoring Well Network Bluewater, NM, Disposal Site	
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Figure 2
DOE Bluewater Disposal Site
Alluvium Monitoring Well T(M)
Uranium Concentrations

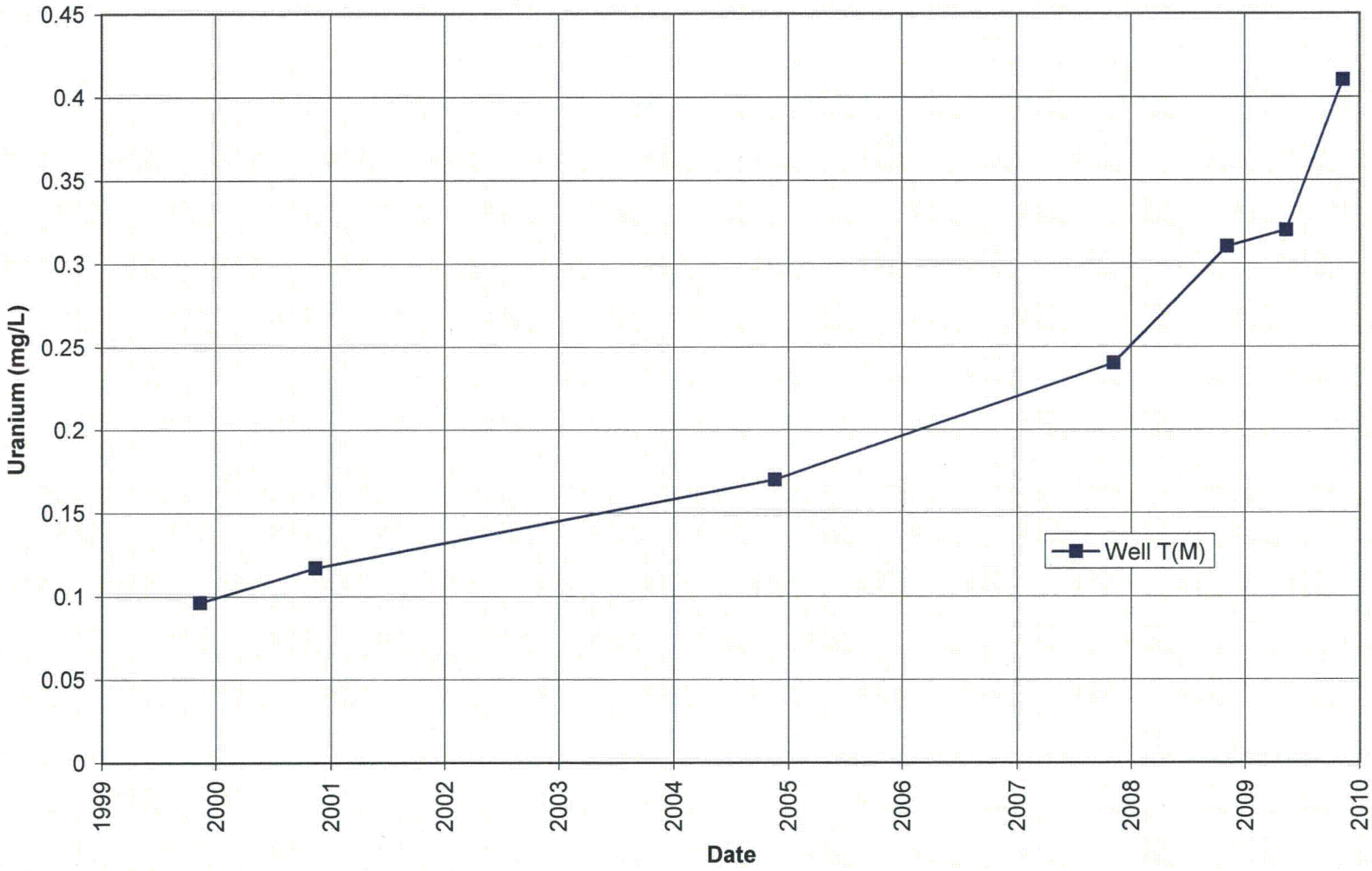

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Figure 3
Homestake San Andres Production Well
Uranium Concentrations
(Data Provided by NMED)

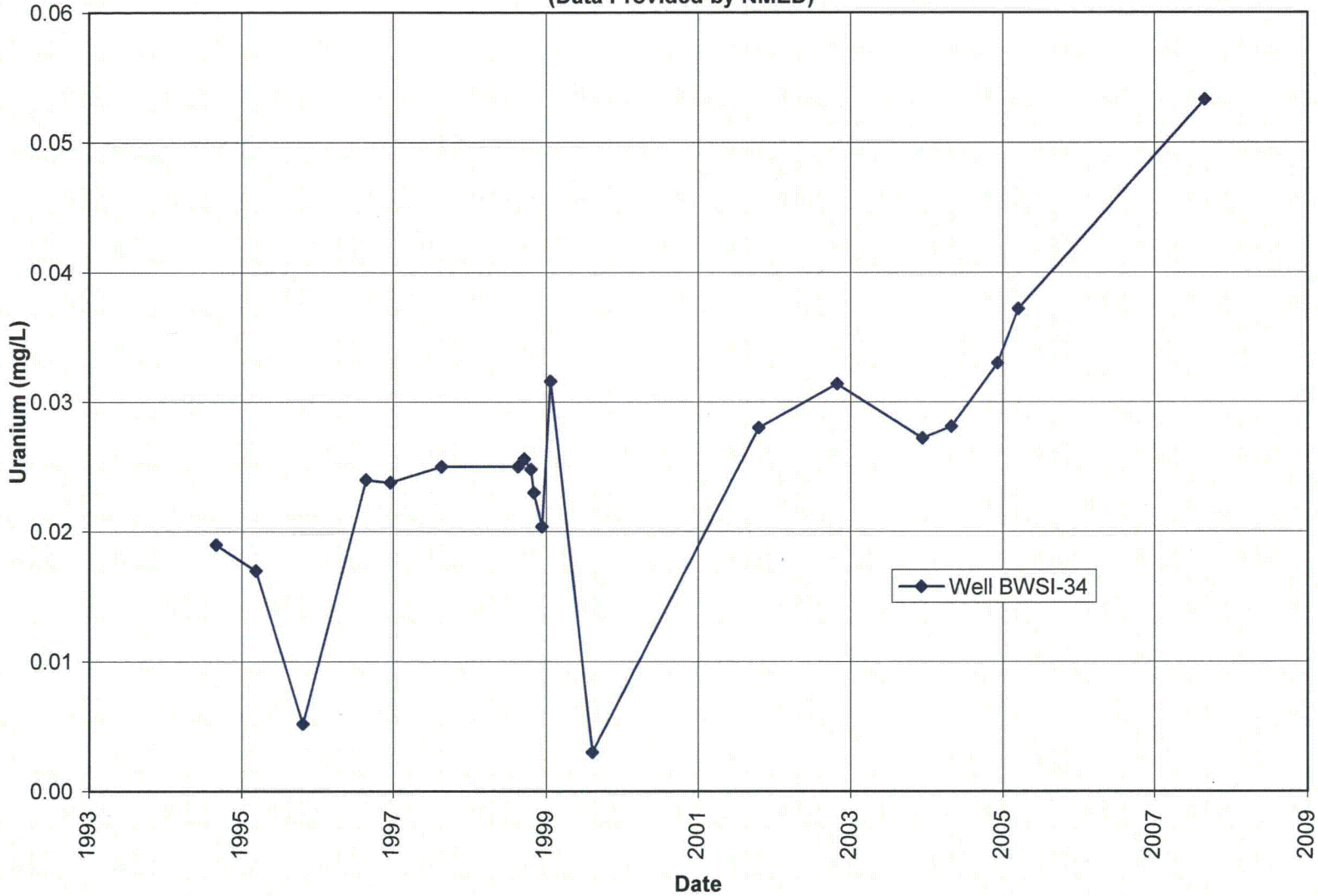

Figure 4
Homestake San Andres Production Well
Water Levels and Pumping Rates
(Data Provided by Homestake)

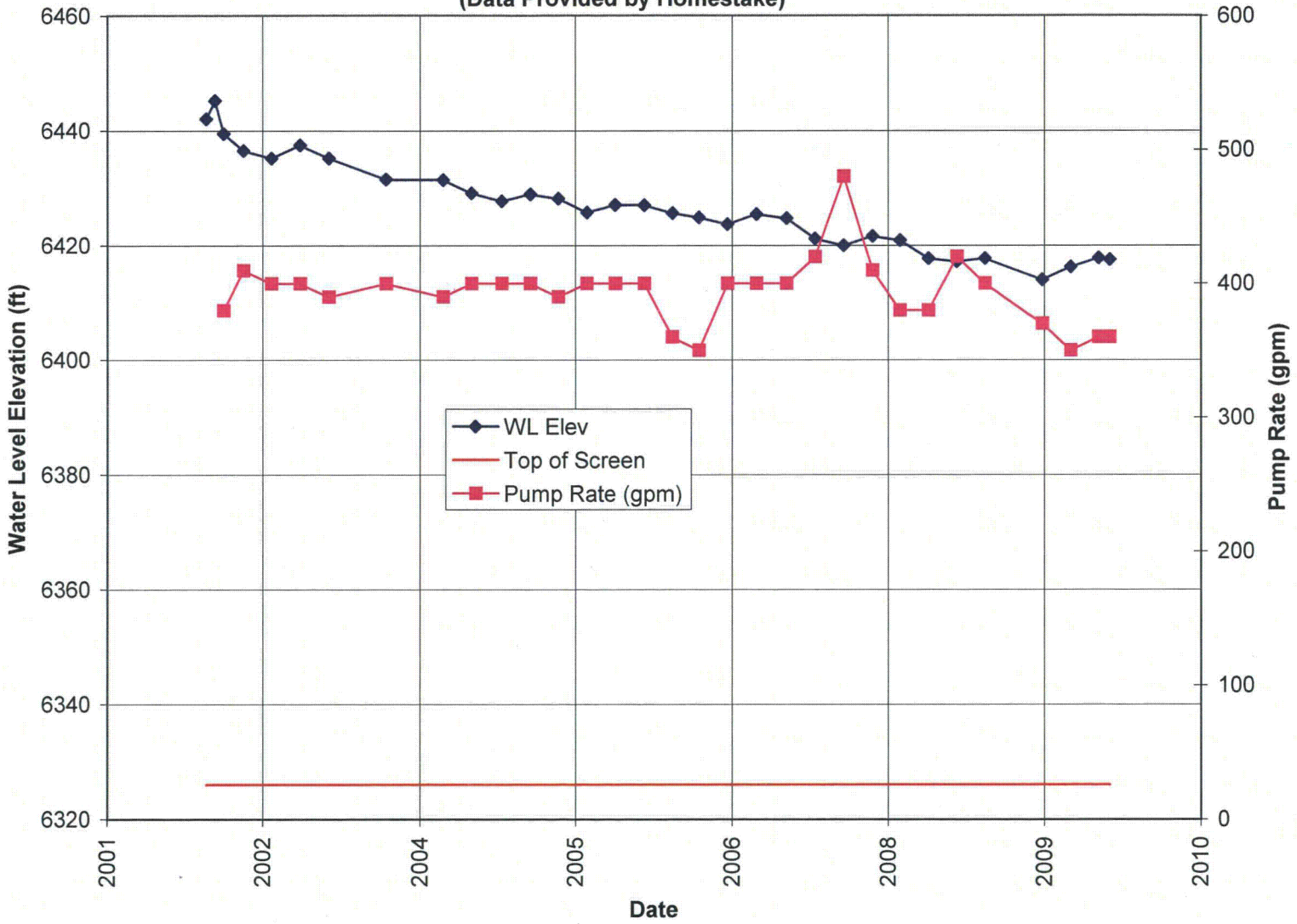
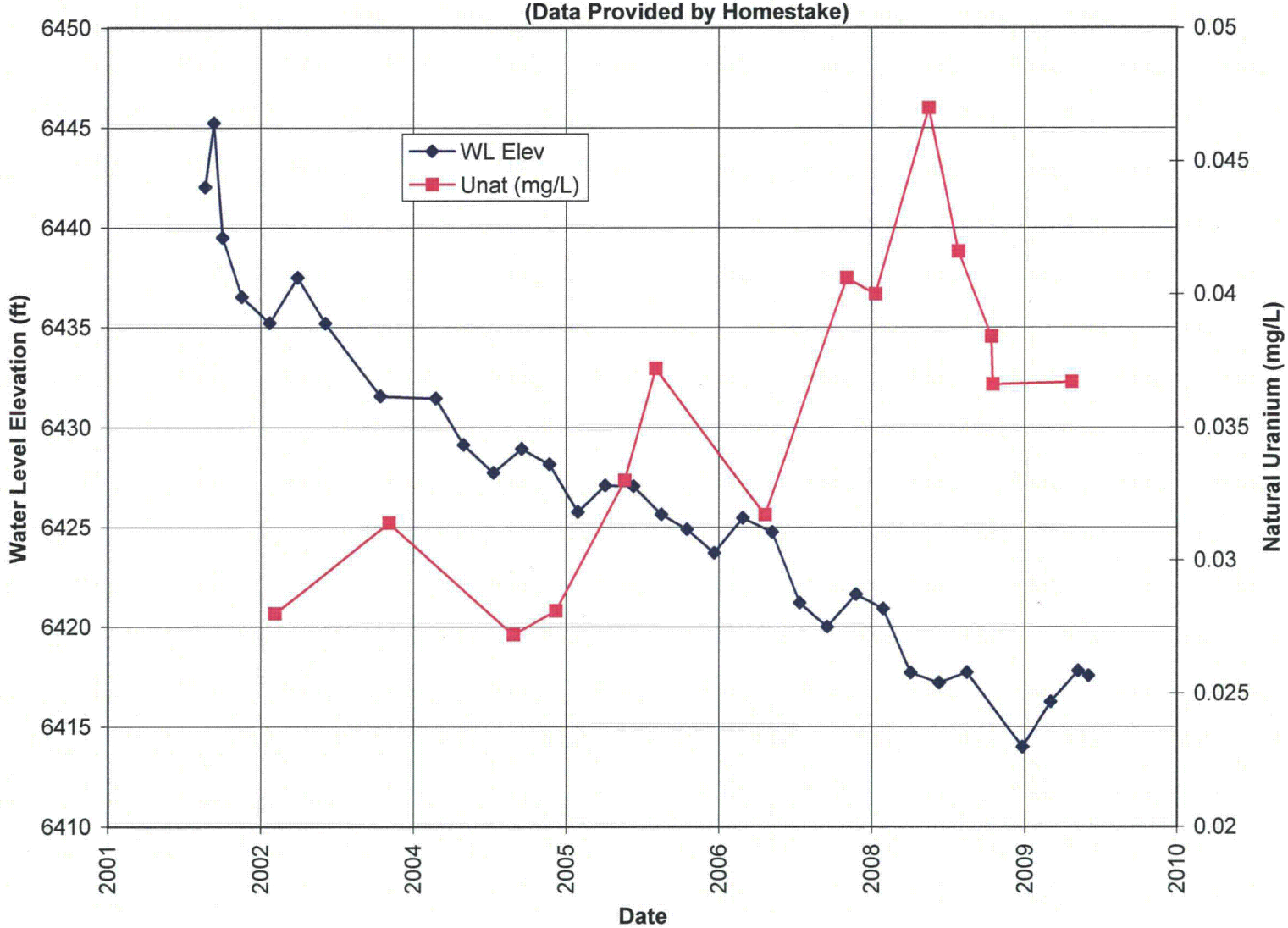
Figure 5
Homestake San Andres Production Well
Water Levels and Uranium Concentrations
(Data Provided by Homestake)