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Final Report - Effectiveness of the Perched Aquifer Pump and Treat System

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**Evaluation of DOE Report:
Annual Report in Support of Compliance Plan No. CP-50284-000, April 1, 2005**

**Effectiveness of the Perched Aquifer Pump and Treat System
December 2005**

This is an evaluation of the Department of Energy's (DOE) report: *Annual Report in Support of Compliance Plan No. CP-50284-000*¹. This evaluation was performed for STAND, an organization of concerned citizens.

The Annual Report contains little original information. It briefly summarizes information contained in other DOE reports regarding clean-up activities at Pantex. It does not present a thorough analysis of the effectiveness of DOE's clean-up activities. Because of this lack of information, DOE's quarterly reports of analytical results² were examined to evaluate the effectiveness of one of the major clean-up systems at Pantex - the perched aquifer pump and treat system.

This evaluation presents a preliminary assessment. The explosive RDX was chosen as the indicator of clean-up effectiveness because it is one of the most widespread contaminants in the perched aquifer.

Table 1 presents RDX data for selected monitor wells in the perched aquifer. Graphs depicting the changes in RDX concentrations are presented in figures one through seven.

The RDX data leads to the preliminary conclusion that DOE's perched aquifer pump and treat system has been marginally effective.

To date, cleanup appears to have been effective in only one of the selected wells: PTX06-1005 (figure 1). Between 1999 and 2005, RDX concentrations dropped from approximately 1000 µg/L to 20 µg/L. This is less than the TCEQ Industrial Risk Reduction Standard 2 level of 26 µg/L³. However it is higher than the EPA lifetime health advisory of 2 µg/L⁴. Well PTX06-1005 is near a clean-up system injection well⁵. This may be the reason RDX concentrations have decreased as much as they have.

RDX concentrations have declined in some wells (e.g., PTX06-1042, figure 4) and increased in others (e.g., PTX06-1046, figure 5). Still, except for well PTX06-1005, RDX concentrations remain high in all the wells (figures 2 – 7), far above any standards established to protect human health.

The evaluation presented here is preliminary. A complete evaluation of the effectiveness of the pump and treat system would require an assessment of the temporal distribution additional contaminants (e.g., chromium, TCE, TNT), as well as the assessment of additional monitor wells.

¹ DOE, 2005a.

² DOE, 1998 – 2005.

³ DOE, 2005a, figure 19.1.

⁴ EPA, 2004.

⁵ PTX06-1005 is less than 200 feet from injection well PTX06-INJ-8 (DOE, 2005a, figure 17.3).

Table 1
RDX Concentrations in Perched Aquifer Wells⁶
Q3 1998 – Q4 2004
(µg/L)

Date	PTX06-1005	PTX06-1030	PTX06-1039A	PTX06-1042	PTX06-1046	PTX06-1050	PTX08-1002
1998-Q3	NA ⁷	NA	288/535	NA	NA	NA	21
1998-Q4	NA	NA	NA	NA	NA	NA	NA
1999-Q1	362, 846	NA	1130/1180	NA	NA	NA	158/176
1999-Q2	NA	NA	1300	NA	NA	NA	NA
1999-Q3	NA	NA	NA	NA	NA	NA	NA
1999-Q4	NA	NA	NA	NA	NA	NA	NA
2000-Q1	1340	NA	1180/671	526/1430	450	NA	93/90
2000-Q2	NA	NA	NA	451/959	NA	NA	NA
2000-Q3	NA	NA	NA	1700	624/467	164	NA
2000-Q4	NA	NA	NA	NA	358/685	190/210	NA
2001-Q1	1050/622	NA	120	1500/1900	686	250/280	NA
2001-Q2	NA	NA	NA	NA	366/717	270/296	234/252
2001-Q3	NA	NA	NA	NA	NA	NA	NA
2001-Q4	NA	NA	0/1360	982/2650	540/746	NA	NA
2002-Q1	NA	NA	NA	NA	NA	NA	NA
2002-Q2	NA	NA	NA	NA	NA	NA	NA
2002-Q3	NA	543/832	NA	NA	NA	332/376	NA
2002-Q4	NA	NA	627/1010	636/1050	514/702	NA	NA
2003-Q1	520/768	598/2080	NA	NA	NA	NA	NA
2003-Q2	NA	NA	526/840	1040/146 (?)	507/732, 771/356	NA	238/277
2003-Q3	NA	845/1130	NA	576/891	705/375	474/546, 481/336	NA
2003-Q4	NA	NA	621/336	NA	NA	NA	NA
2004-Q1	NA	1500/1610	NA	998/1000	760/782	NA	NA
2004-Q2	15.6/16.5	NA	557/567	NA	NA	NA	NA
2004-Q3	NA	1520/1830	NA	1110/1150	816/831	NA	NA
2004-Q4	NA	NA	NA	NA	NA	222/499	84.8
2005-Q1	NA	1480/1710 1340/1750	NA	824/87, 970/1000	673/685, 841/855	NA	
2005-Q2	22.2/23.5	NA	498/406	NA	NA	NA	NA

⁶ DOE, 1998 – 2005. The graphs were constructed using the largest value reported for each quarter.

⁷ No Analysis

RDX, PTX06-1005

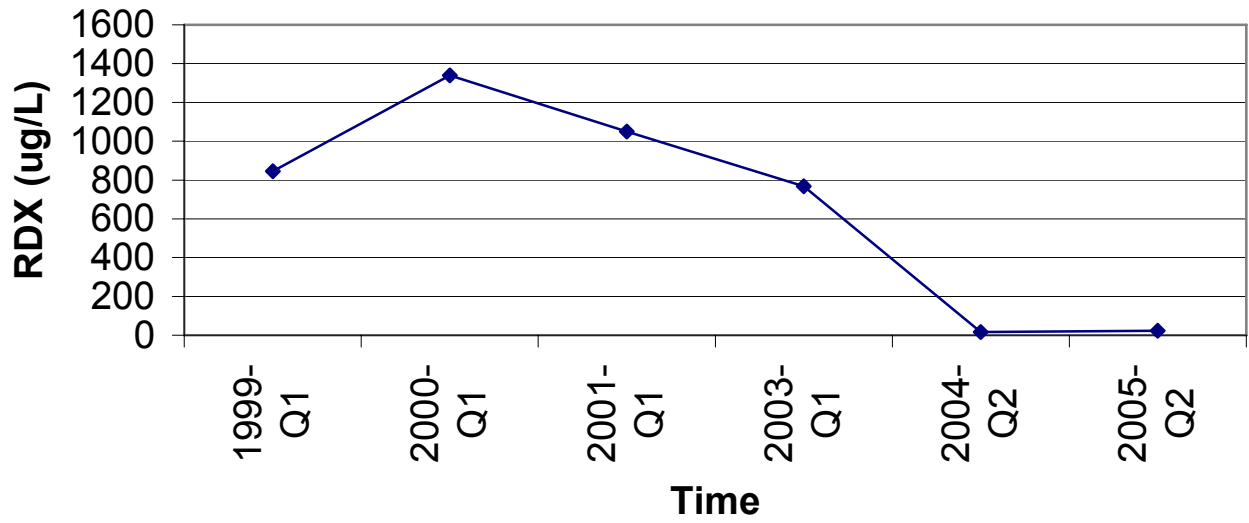


Figure 1

RDX, PTX06-1030

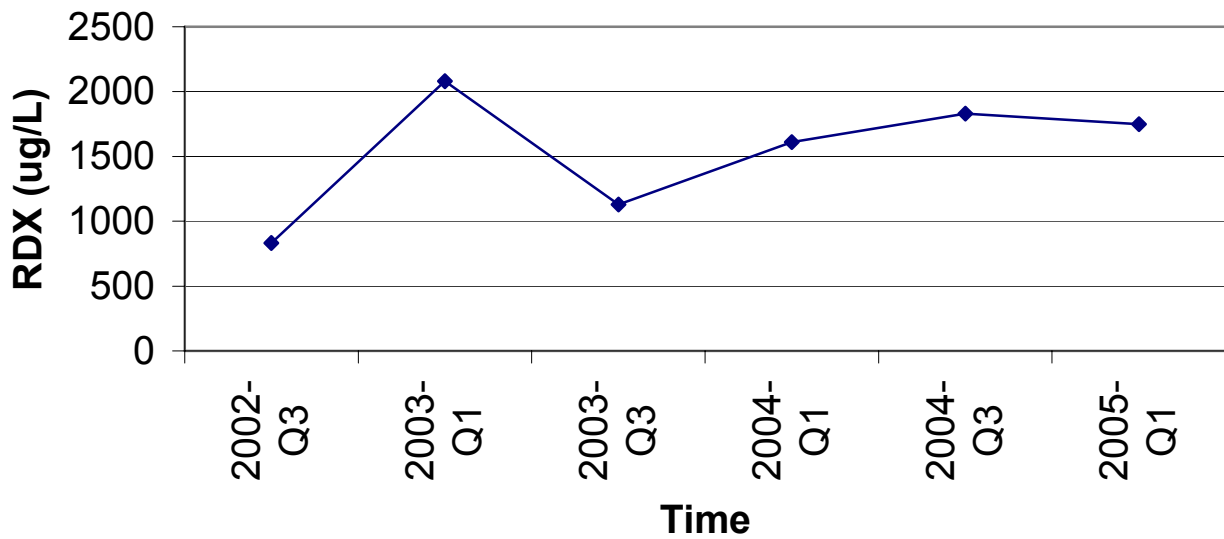
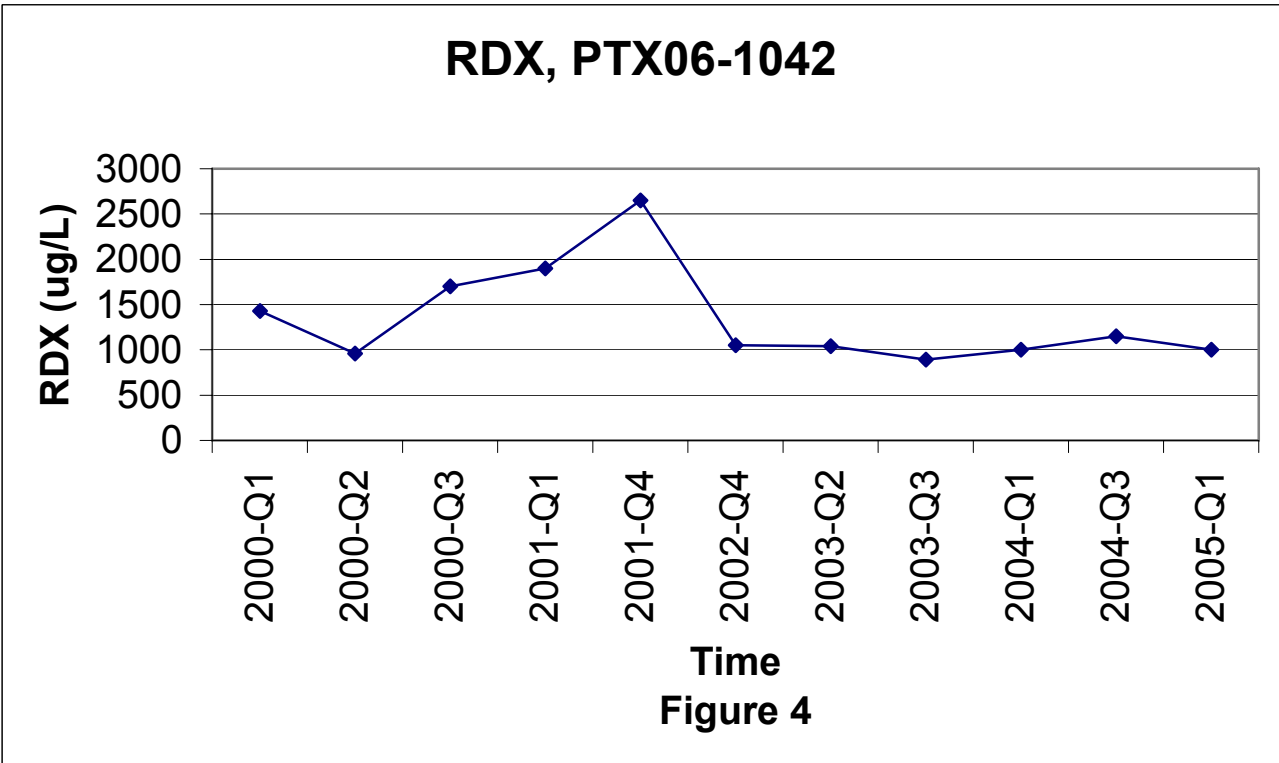
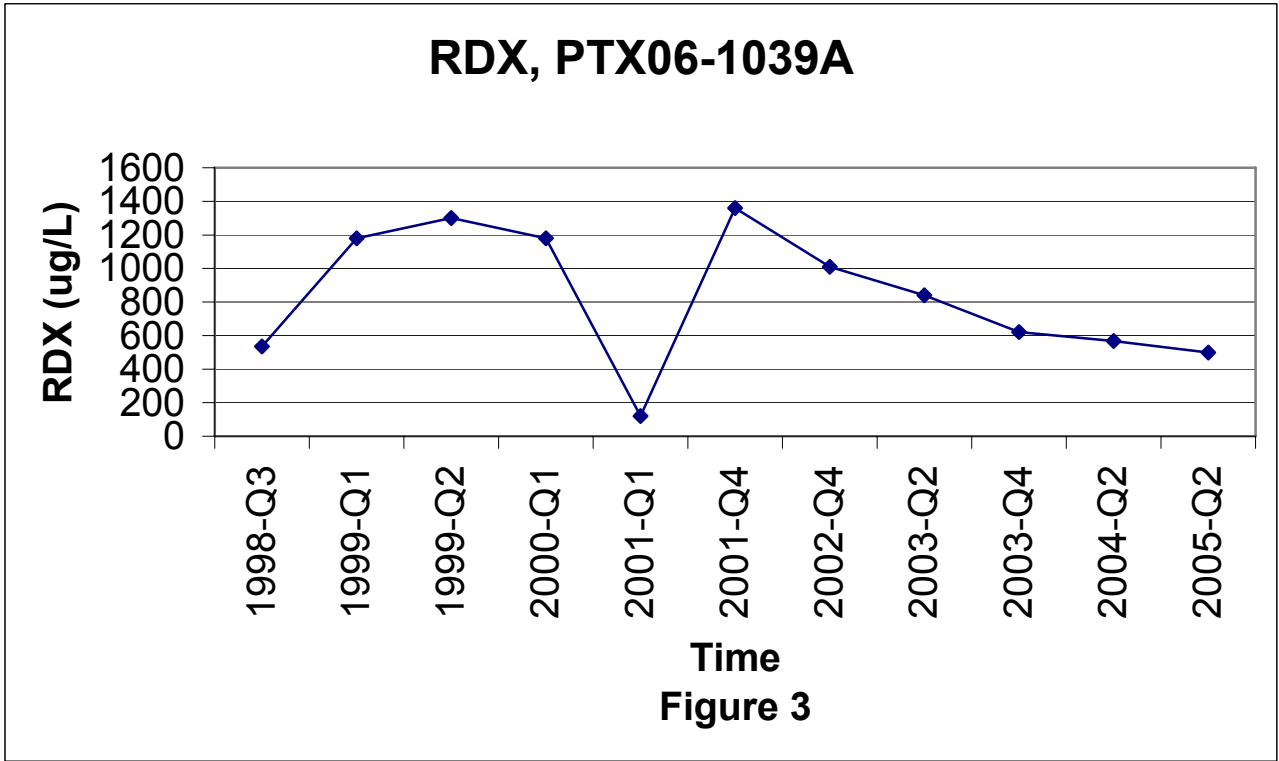
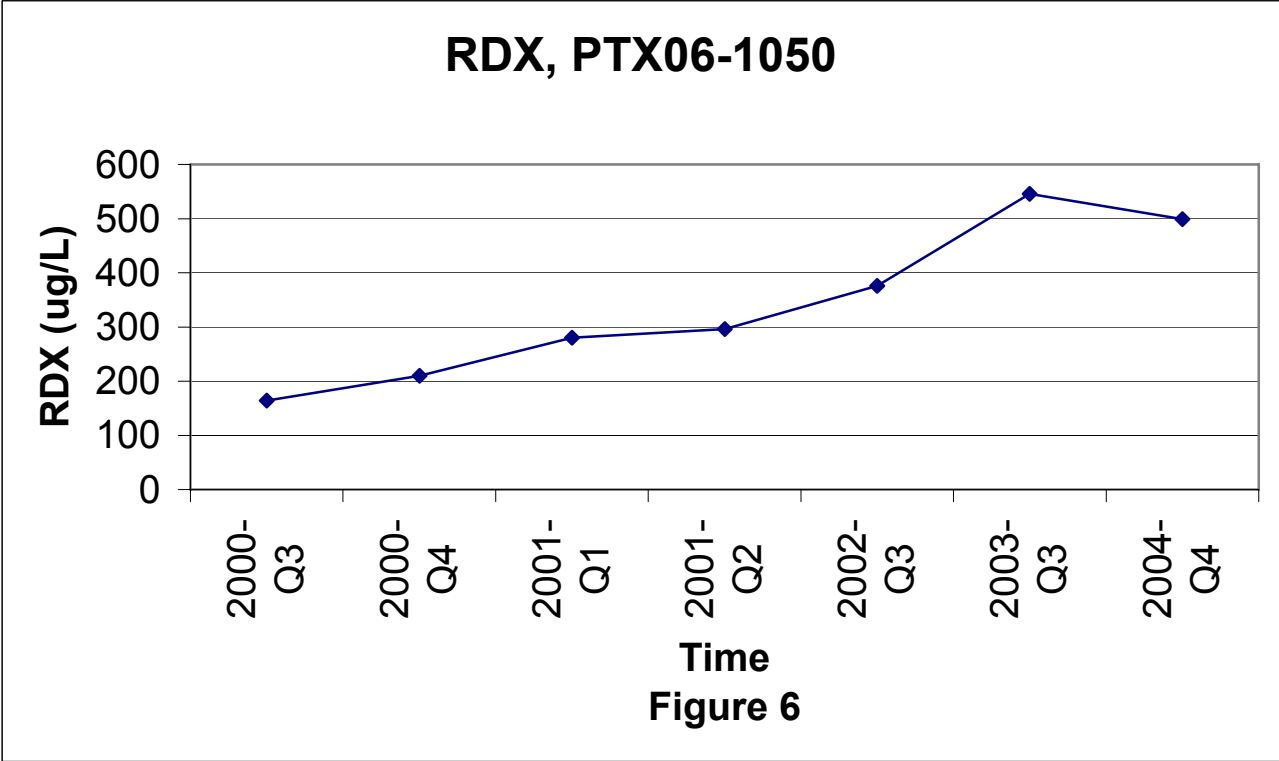
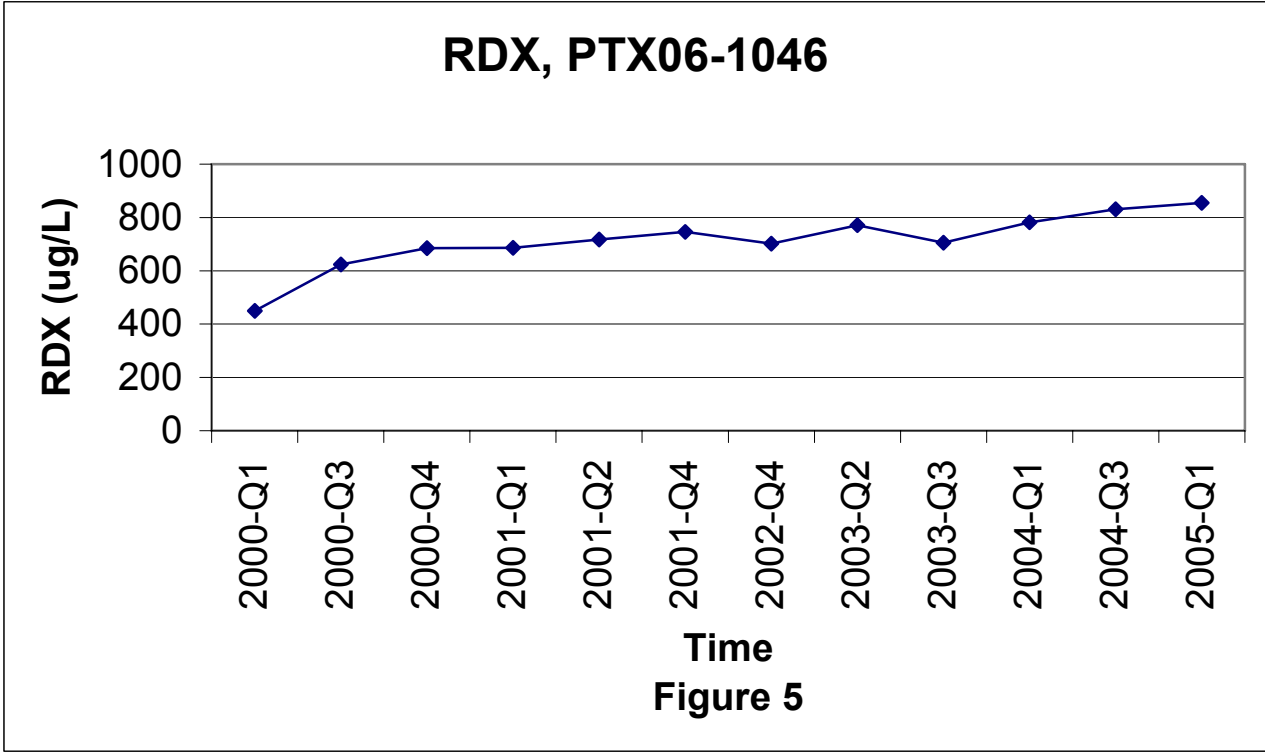
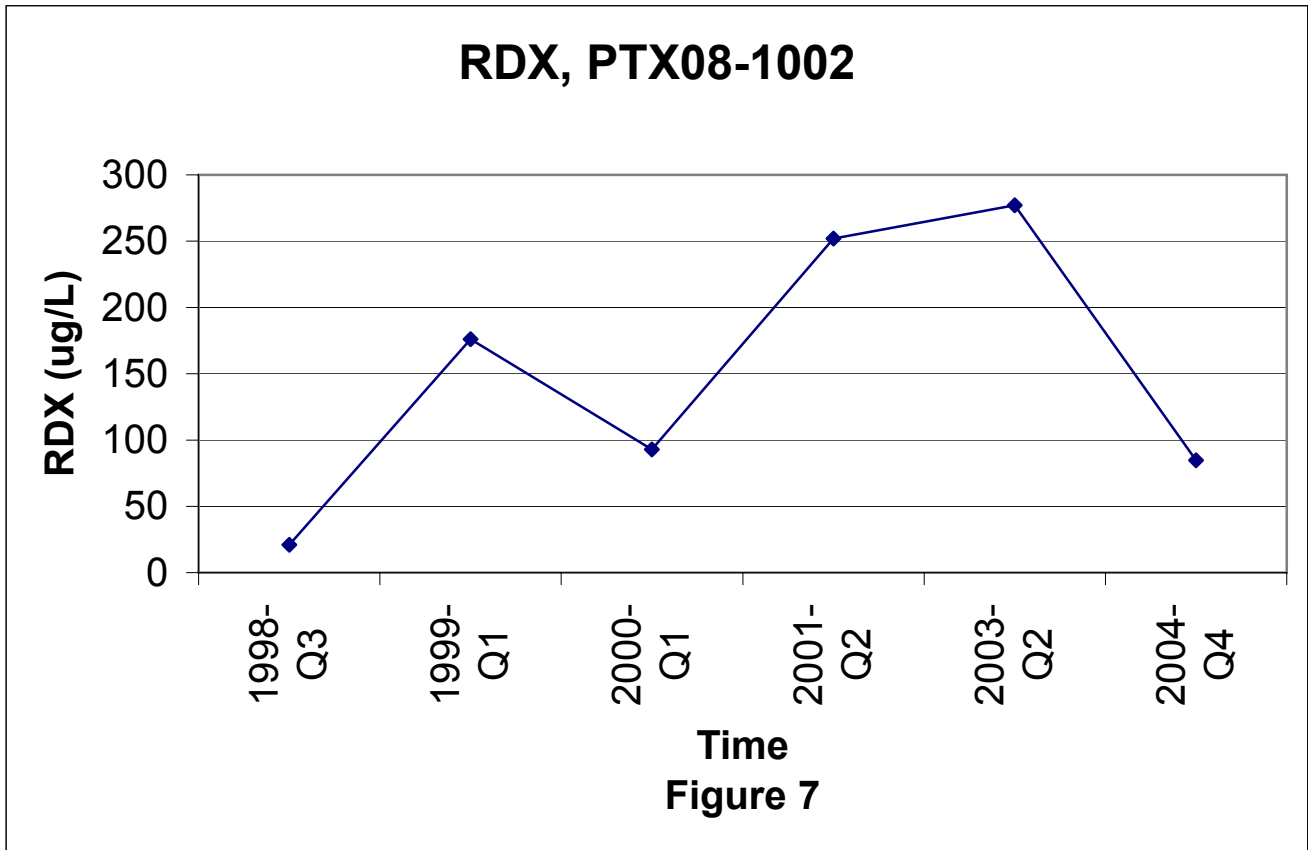


Figure 2







References

DOE, 1998 – 2005, *Environmental Monitoring Quarterly Reports*, posted on the Pantex web site: <http://www.pantex.com/environment/epd/index.shtml>

DOE, 2005a, *Annual Report in Support of Compliance Plan No. CP-50284-000*, April 1, 2005.

EPA, 2004, *2004 Edition of the Drinking Water Standards and Health Advisories*, EPA 822-R-04-005, Winter 2004.