

Basic Data Report for Well Plugging and Abandonment Activities for Fiscal Year 2006

Waste Isolation Pilot Plant

U.S. Department of Energy
Carlsbad Field Office

Revision 1

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DOE/WIPP-07-3326, Rev. 1**

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Basic Data Report
For Well Plugging and Abandonment
Activities for Fiscal Year 2006

Waste Isolation Pilot Plant

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ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
BLM	U.S. Bureau of Land Management
DOE	U.S. Department of Energy
FY	fiscal year
NMOSE	New Mexico Office of the State Engineer
P&A	plugging and abandonment
PIP	production-injection packer
TCLP	Toxicity Characteristic Leaching Procedure
WIPP	Waste Isolation Pilot Plant

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1.0 INTRODUCTION

The Waste Isolation Pilot Plant (WIPP) is a U.S. Department of Energy (DOE) facility disposing of transuranic mixed waste under a permit issued by the New Mexico Environment Department. WIPP is located 26 miles southeast of Carlsbad, New Mexico, in eastern Eddy County (Figure 1). Disposal panels are mined in the Permian Salado Formation at a depth of 2,150 feet below ground surface (bgs).

The fiscal year 2006 (FY 2006) program was initiated on July 24, 2006, and concluded on October 12, 2006. The FY 2006 program included plugging and abandonment (P&A) of four wells, which permanently removed them from the monitoring network.

This report presents the summary in the same order that the wells were worked in the field.

2.0 PROGRAM METHODOLOGY

For this program, the general approach for each type of work was identical between wells. All wells were processed by first removing all appurtenances, like tubing, packers, and bridge plugs. All wells were scraped to remove oxidation scale from the casing to allow a good bond between the casing and cement. After scraping, the wells were circulated to remove debris from the well to total depth, followed by cementing. The following sections describe the general process. Individual well sections describe specific requirements, nuances, and problems encountered during the process.

2.1 Removal of Well Appurtenances - Retrieval Tools

All the wells in the FY 2006 program contained packers used as bridge plugs. For some wells, the process was simple and the equipment was removed without incident. For others, because of equipment age or the age of the well, difficulties were encountered and, in some cases, packers were driven to the bottom of the well and cemented in place with permission of the New Mexico Office of the State Engineer (NMOSE).

Well WIPP-27 had an inflatable packer that was attached to 2.38-inch tubing. Removal of packers in this type of configuration involved attaching the tubing to the drilling rig elevators and pulling on the tubing to release the packer pressure. Once the packer was released, the tubing was removed one joint at a time until the packer was removed from the well at the surface.

Wells P-17, DOE-1, and WIPP-26 had inflatable packers that were set in the wells without tubing. For these three cases, the packers were released and removed from the well using retrieval tools, such as J-hooks or a combination of overshot and grapples. The tools were similar to those originally used to set the plug, and were attached to the drill rig 2.875-inch tubing one joint at a time until reaching the packer. The J-tool then was inserted over the packer and turned until latching onto the packer

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lugs. Once attached, the packer pressure was released and the packer was removed from the well.

2.2 Casing Preparation

Well WIPP-27, in the FY 2006 program, was totally cased, while WIPP-26, DOE-1, and P-17 were only partially cased. To ensure that the well casing was cleaned of residue and scale, each was scraped using various sizes of Weatherford Type E casing scrapers. The scraper was attached to the drill rig tubing (2.875-inch) and placed into the well one tubing joint at a time. At each tubing joint interval, the tool was moved up and down the full length of the tubing joint for at least three passes, or until there was no longer any resistance from the tool and casing. This process was repeated for the entire length of the casing for each applicable well.

2.3 Well Circulation

After scraping, the debris was removed from the well to total depth. First, the well was fitted with a flow nipple to direct circulated water into a tub for collection. Then the well was circulated by using the 2.875-inch tubing as a tremmie pipe installed into the well until the top of the collected debris was encountered. The tremmie pipe was plumbed to the drill rig pumps that were plumbed to a freshwater transport truck. Water was circulated into the hole through the tremmie pipe and flowed out of the hole at the surface via a well mounted flow nipple. The circulated water and debris were captured at the surface by a tub, then pumped into a storage tank. The well was circulated until clear return water appeared at the surface. At this point, the well was ready for cement.

2.4 Well Cementing

After the well appurtenances were removed from the well and the existing casing was scraped to remove scale, the scraping tool was removed from the hole and the hole was reentered with tremmie pipe (2-3/8 inch upset pipe) to the total depth of the hole. The tremmie pipe was pulled back so that the open end was eight to ten feet from total depth, which in some case may be the top of the driven packer. At this point, the hole was filled with Portland cement slurry mixed with fresh water in a ratio of one sack of cement to seven gallons of fresh water, which yielded 1.4 cubic feet of cement slurry.

All cement was premixed and brought on-site by cement trucks. For deep wells, the cement was poured into a tub and extracted via the drill rig pumps and into the tremmie pipes to the bottom of the hole. For shallow wells, the grout pump transported the cement slurry directly to the tremmie pipe. Each cement truck emptied approximately one half of each load into the hole before any tremmie pipe was removed, thus submerging approximately 300 feet of pipe (10 joints), and ensuring a continuous plug from the bottom of the hole to the surface. This process was followed until all cement was placed into the hole. All cement quantities placed throughout this program closely matched the theoretical calculated borehole volume, and indicated no voids in the cement and no large openings in the uncased formations.

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For one well, DOE-1, salt-saturated cement was used to cement to well portion where there was no casing intersecting the Salado Formation. Emplacement was identical as described above.

2.5 Well Monuments

The U.S. Bureau of Land Management (BLM) requires that wells that were permanently abandoned be marked with a monument. The monument must be at least four inches in diameter and long enough to include the following information welded onto the steel: county, section, township, range, NMOSE #, WIPP, and the BLM right-of-way reservation number. These monuments must also be painted per BLM visual contrast requirements. Monuments were installed at all well locations to meet with the above specifications.

2.6 Contractors

Washington Regulatory and Environmental Services, an affiliate of Washington TRU Solutions LLC, the WIPP management and operating contractor, managed this program, which included technical, regulatory, contracts, financial, and field oversight.

The prime subcontractor was Stewart Brothers Drilling Company of Milan, New Mexico. Stewart Brothers employed Weatherford Tools of Hobbs, New Mexico; and Southeast Ready Mix of Carlsbad, New Mexico, for cement.

3.0 WASTE MANAGEMENT PRACTICES

During P&A activities, native brine water in the borehole was displaced to the surface. The water was captured from the wellhead casing through a right-angle flow nipple at the surface, then into a tub. A transfer pump moved the water from the tub into a 500-barrel tank for storage prior to disposal. The captured water was characterized for disposal by analyses using Toxicity Characteristic Leaching Procedure (EPA SW-846, Method 1311) (TCLP). The TCLP analyses were performed for Resource Conservation and Recovery Act metals. For all water, the analyses (whether by well or well composites) indicated that the brine water was nonhazardous. Following receipt of the analytical results, the brine water collected from the wells was disposed of at Sundance Services, Inc. in Eunice, New Mexico.

Trash and debris from construction were disposed of in a centralized open-top dumpster located on the H-3 well pad. After the FY 2006 program was completed, the trash was disposed of at Lea Land, Inc.

4.0 REGULATORY INTERFACE

For these wells, the NMOSE had regulatory primacy over P&A and reconfiguration activities. The NMOSE Roswell representative was briefed during each well plugging activity and made frequent visits to observe the cementing process while plugging the

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wells. The NMOSE was always consulted during this program when the planned activities for a well changed. Plans were typically changed when a packer, tubing, or other down-hole equipment could not be taken out of the well and needed to be left in the well when cementing. For all cases where "equipment" was cemented in the hole, prior approval from the NMOSE was obtained before completion. Within ten days after the activities occurred at each well, a NMOSE Form wr-20, New Mexico Office of the State Engineer Well Record and Drilling Log, was completed and submitted by Stewart Brothers to the NMOSE to document the activities.

5.0 WELL WIPP-27

Well WIPP-27 (NMOSE File #C-2722) is located in east-central Eddy County, New Mexico, in the northwest quarter of Section 21, Township 21 south, Range 30 east (Figure 2). This well was drilled in September 1978 to a depth of 592 feet bgs (Powers and Shaffer, 1979).

This well was drilled to investigate stratigraphy of surface and near surface formations in the area of Nash Draw. The borehole was drilled using an 8.75-inch bit to a depth of 200 feet bgs. The remaining depth of the borehole from 200 to 592 feet bgs was drilled using a 7.88-inch bit. Following drilling, a 5.5-inch outside diameter casing was installed and cemented in place to a depth of 588 feet bgs (Powers and Shaffer, 1979).

After installation of the well, a series of hydraulic tests were performed in the well. To test the various horizons, the well was shot perforated to access these zones. In March 1980 the well casing was shot perforated in the upper part of the Rustler Formation-Salado Formation contact, followed by testing. The perforations were placed at a depth of 426 to 460 feet bgs and from 480 to 510 feet bgs (Figure 3) (Richey, 1987).

After testing the Rustler-Salado contact, an inflatable packer was installed in August 1980 below the Culebra Member of the Rustler Formation at a depth of 395 feet bgs. The well was shot perforated at a depth of 290 to 320 feet bgs across the Culebra (Figure 3). Culebra testing followed the perforation of this zone (Richey, 1987).

After testing the Culebra, the Magenta Member of the Rustler Formation was tested. In September 1980 an inflatable packer was installed in the well below the Magenta to separate the other water-bearing horizons (Figure 3). The zone was then shot perforated from 175 to 195 feet bgs (Richey, 1987).

The inflatable packer installed for the Magenta testing was removed in July 1983 and replaced with a production-injection packer (PIP) at 227 feet bgs with 2.375-inch tubing extending to the surface. This configuration remained until the fall of 2005.

An attempt was made to remove and replace the PIP in WIPP 27 during December 2005. Three joints of tubing were removed from the well in separate pieces. The tubing

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was severely corroded and the PIP could not be removed. Figure 3 shows the configuration of WIPP-27 before P&A.

P&A of Well WIPP-27 began on July 24, 2006, and ended on August 9, 2006. Removal of the upper packer in this well proved difficult, requiring multiple fishing tools and several attempts. Eventually the upper packer was removed on August 7, 2006. Following removal the well casing was scraped and circulated to the depth of the lower packer. The lower packer was removed with a J-tool on the first attempt.

After removal, the entire well casing was scraped and the well circulated in preparation for cementing. The well was cemented from a depth of 588 feet bgs to the surface using 148.5 cubic feet of Portland cement slurry (Figure 4). The well location was marked with a monument upon completion.

6.0 WELL P-17

Well P-17 (NMOSE File #C-2774) is located in Eddy County, New Mexico, in Section 4, Township 23 south, Range 31 east (Figure 5). This well was originally drilled in 1976 to investigate potash resources and was completed as a monitoring well. The well was drilled at a diameter of 7.88-inches to a depth of 755 feet bgs (Figure 6). The borehole was then cased with 4.5-inch casing to 741 feet bgs and cemented to surface. The well was then deepened by coring a borehole to total depth at 1,660 feet bgs. Following coring the borehole was cemented from 1,660 to 731 feet bgs (Stensrud et al., 1987).

In January 1977, the casing was shot perforated across the Rustler-Salado contact from 702 to 726 feet bgs. In April 1977, the casing was shot perforated across the Culebra from 558 to 586 feet bgs. A PIP was installed to separate the perforated units and provide access to each for monitoring. In March 1983, the PIP was removed and an inflatable packer was installed at 683 feet bgs (Figure 6) to allow future monitoring of the Culebra (Stensrud et al., 1987).

Over the years a significant amount of scale had accumulated on top of the packer. Removal of the packer started with using a casing scraper until down-hole refusal. At refusal, the scraper was removed and all the debris was circulated out of the well. After all the debris was circulated out of the hole, it was realized that the packer had either fallen to the total depth of the hole prior to P&A activities, or the packer had crept slowly to the bottom of the well while the scraping and circulating were being performed. Further, the top of the packer was reached at 741 feet bgs, meaning that the cement plug was 10 feet lower than reported. Several attempts were made to remove the packer with an overshot and grapple tool, but the packer would not catch. At this point the NMOSE was consulted and authorization was received to cement the packer in place at the bottom of the well.

The well was cemented from 741 feet bgs to the surface using 81 cubic feet of Portland cement slurry (Figure 7). The well location was marked with a monument upon completion.

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7.0 WELL DOE-1

Well DOE-1 (NMOSE File #C-2757) is located in Section 28, Township 22 south, Range 31 east in Eddy County, New Mexico (Freeland et al., 1982) (Figure 8). This well was drilled in 1982 to a depth of 4,057 feet bgs.

The borehole was drilled at the WIPP site to investigate stratigraphic, hydrologic, and structural data. The well is constructed of a 14.5-inch borehole to 1,123 feet bgs with 10.75-inch casing cemented to the surface. The bottom of the borehole is a 7.88-inch open-hole 1,123 to 4,057 feet bgs (Figure 9).

After drilling, the casing was shot-perforated from 820 to 843 feet bgs. A packer was initially installed below the perforations, but later self-deflated and fell to the bottom of the casing. Another packer was installed at a depth of 882.3 feet bgs to the top of the packer nipple.

P&A activities at DOE-1 began on August 20, 2006, and, due to difficulties experienced in removing packers, the project finished on September 30, 2006, with some breaks in between. After several attempts using multiple fishing tools, the first packer was removed on August 22, 2006, using a grapple and spear. The second and deeper packer was a more difficult task.

Removal of the second packer began on August 23, 2007. The packer was first tagged at the depth indicated in Figure 9; however, as the J-tool was further applied to the top of the packer, it slipped deeper into the open-hole section until it got stuck at 1,137 feet bgs. At this point it proved difficult for the fishing tool to grab onto the packer. It appeared that the packer nipple was tilted in the hole and a secure hold was not possible. A down-hole camera was employed and confirmed it was indeed off-center due to it being deflated. A shoe was then installed onto the fishing tool to centralize the packer down-hole to attempt to remove it.

As the shoe and tool were advanced on the packer, the packer went deeper into the open-hole to a depth of 1,287 feet bgs, which was approximately 164 feet bgs deeper than the bottom of the cased portion of the well. Further attempts to retrieve the packer through tripping in and out of the hole caused rock fall from the open hole to fall on top of the packer. The methodology was changed to drilling in an attempt to remove the rock from the hole to expose the packer enough to use a fishing tool to remove it.

Drilling commenced at 1,255 feet bgs where rock had fallen onto the packer after tripping out of the hole with fishing tools. After drilling out the rock fall a mill bit was used to attempt to grind the packer nipple to a point where an overshot tool could be used to pull the packer out. However, the mill deviated on the side of the packer. The drill bit was then used to drill out the packer. As drilling continued, the packer went deeper into the hole. After drilling, a wash-over shoe was used to try to remove the packer. The wash-over shoe did not remove the packer as it was stuck in the open-hole at 2,620 feet bgs. After conferring with the DOE, NMOSE and the U.S. Environmental

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Protection Agency, it was determined to leave the packer in the hole at this depth and plug and abandon the packer in place.

Because the open-hole of this well intersected the Salado Formation, the well was planned to be plugged across this section with brine (salt) saturated cement as required in the WIPP compliance certification application. This was accomplished using BJ Services, which mixed the brine saturated cement on location. A cement mixture of 15-pounds-per-gallon brine-saturated cement (with no more than 3 percent calcium chloride) was used. Brine-saturated cement was used to fill the borehole from 2,620 feet bgs to inside the casing at 1,118 feet bgs. The brine-saturated cement was allowed to cure overnight, at which point Portland cement mixed with fresh water at 15 pounds per gallon (with no more than 3 percent calcium chloride) was used to cement from 1,118 feet bgs to the surface (Figure 10).

Following cementing, a well monument was installed. After completion of the plugging process, the well driller completed, and submitted to the NMOSE, a well report documenting the plugging process.

8.0 WELL WIPP-26

Well WIPP-26 (NMOSE File #C-2724) is located in eastern Eddy County, New Mexico, in Section 29, Township 22 south, Range 30 east (Figure 11). WIPP-26 was drilled in 1978 to a depth of 503 feet bgs. The hole was drilled to 6.13-inch diameter to total depth. The upper portion of the hole was reamed to 8.75-inches in diameter to a depth of 281 feet bgs. The lower portion of the hole (281 to 503 feet bgs) was reamed to a diameter of 7.88-inches. Casing (5.5-inch outside diameter) was set to 502 feet bgs (Figure 12) and cemented into place, leaving the well ready for conversion into a hydrologic monitoring well (Sandia National Laboratories and U.S. Geological Survey, 1979).

In March 1980, the casing was perforated at the Rustler Formation-Salado Formation contact from 288 to 329 feet bgs. An inflatable packer was installed in 1980 below the Culebra at 264 feet bgs, followed by casing perforation at 185 to 210 feet bgs. An inflatable packer was installed in 1980 below the Magenta at 134 feet bgs, followed by perforating the casing at 50 to 100 feet bgs. This packer was removed in 1983 due to the Magenta being dry at this location (Richey, 1987).

P&A of WIPP-26 took place between October 1, 2006, and October 11, 2006, with one break in between. This well was planned to be plugged and abandoned because the casing had been displaced or sheared at around 30 feet bgs. This obstruction was drilled through with relative ease; however, additional obstructions were discovered at 85 feet bgs and 113 feet bgs. After using a mill tool at the 113-foot obstruction, the drill bit progressed further inside the casing, shear the well casing along the length. A down-hole camera was used to confirm the well condition.

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Many attempts were made to get the drill pipe and tubing into the well so that the packer could be removed. All attempts had failed and the total depth attained in this well was 245 feet bgs. This depth was below both the Magenta and Culebra perforation intervals. Discussions with the NMOSE resulted in authorization to plug and abandon the well at this depth. The well was circulated after scraping the casing and plugged from 245 feet bgs to the surface using 297 cubic feet of Portland cement mixed with fresh water at 15 pounds per gallon with no more than 3 percent calcium chloride (Figure 13).

The calculated volume of cement required to occupy the space from 245 feet bgs to the surface equals 102 cubic feet. The volume required from 265 feet bgs to the surface equals 110 cubic feet. Because the well was sheared vertically by drilling, the cement slurry bypassed the packer and should have plugged the bottom of the hole and surrounding formation material, given the amount of cement used, thereby providing a sufficient cement plug.

Following cementing, a well monument was installed and the driller completed, and submitted to the NMOSE, a well report documenting the plugging process.

9.0 REFERENCES

Freeland, M. H., D. K. Shakla, C. C. Little. 1982. Basic Data Report for Borehole DOE-1.

Powers, D. W., and S. E. Shaffer. 1979. *Basic Data Report for Drillhole WIPP-27 (Waste Isolation Pilot Plant - WIPP)*. SAND79-0281. Sandia National Laboratories, Albuquerque, NM.

Richey, S. F. 1987. *Preliminary Data for Wells Tested in Nash Draw, Near the Proposed Waste Isolation Pilot Plant Site, Southeastern New Mexico*. Open-File Report 87-37. Albuquerque, NM: U.S. Geological Survey.

Sandia National Laboratories and United States Geological Survey. 1979. *Basic Data Report for Drillhole WIPP-26 (Waste Isolation Pilot Plant-WIPP)*. SAND79-0280. Sandia National Laboratories, Albuquerque, NM.

Stensrud, W. A., M. A. Bame, K. D. Lantz, J. B. Palmer, and G. J. Saulnier, Jr. 1987. *WIPP Hydrology Program, Waste Isolation Pilot Plant, Southeastern New Mexico, Hydrologic Data Report #5*. SAND87-7125. Sandia National Laboratories, Albuquerque, NM.

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Stensrud, W. A., M. A. Bame, K. D. Lantz, T. L. Cauffman, J. B. Palmer, and G. J. Saulnier, Jr. 1988. *WIPP Hydrology Program, Waste Isolation Pilot Plant, Southeastern New Mexico, Hydrologic Data Report #6*. SAND87-7166. Sandia National Laboratories, Albuquerque, NM.

U.S. Environmental Protection Agency. 1990. Toxicity Characteristic Leaching Procedure (EPA SW-846, Method 1311). U.S. Environmental Protection Agency, Washington, D.C.

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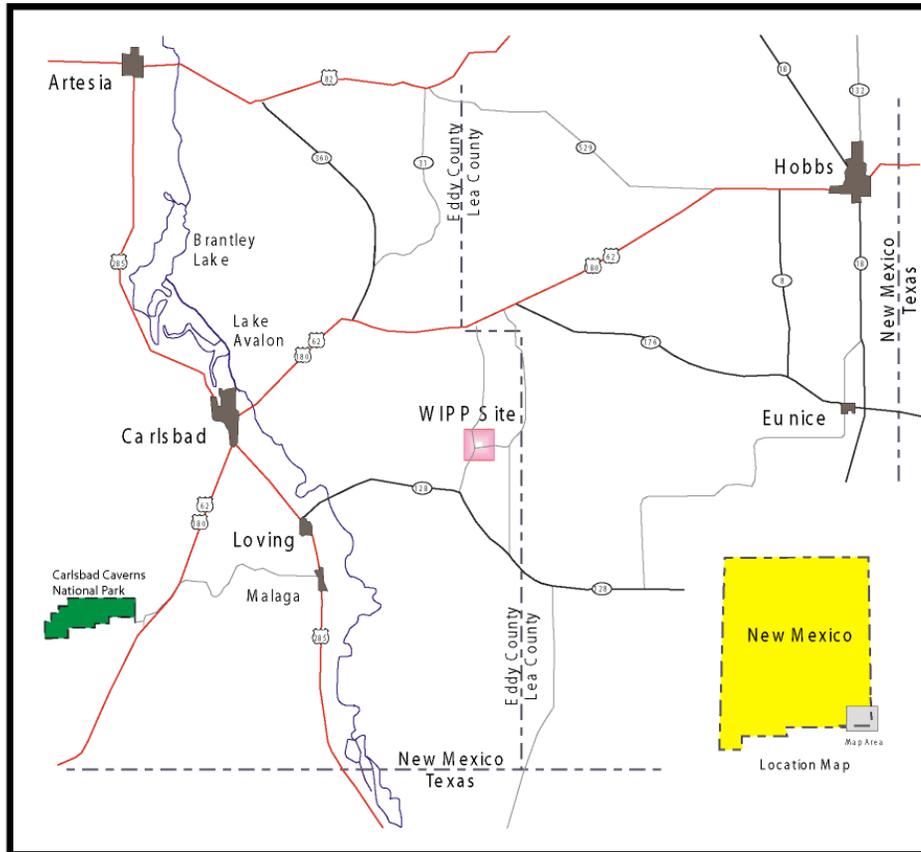
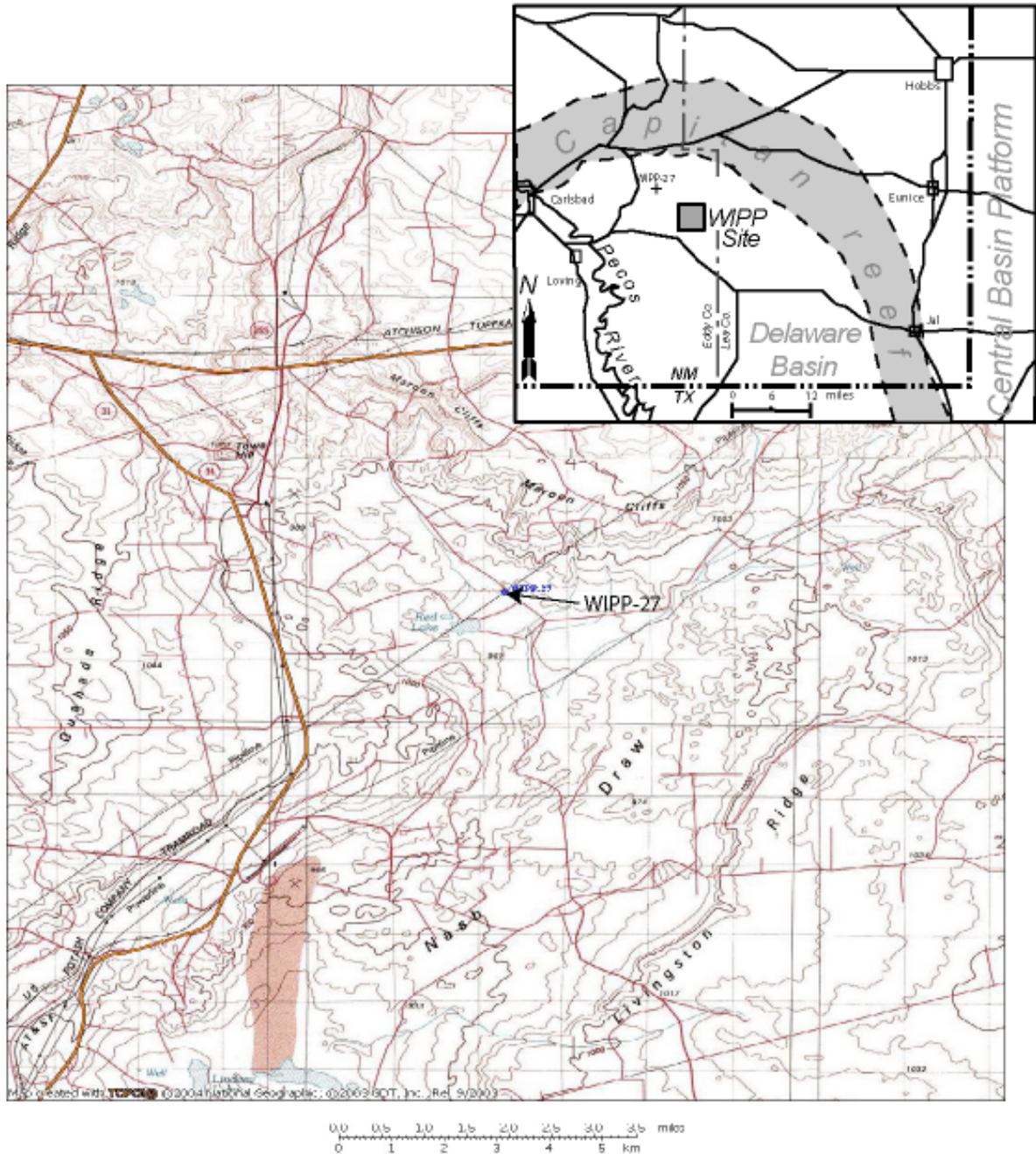


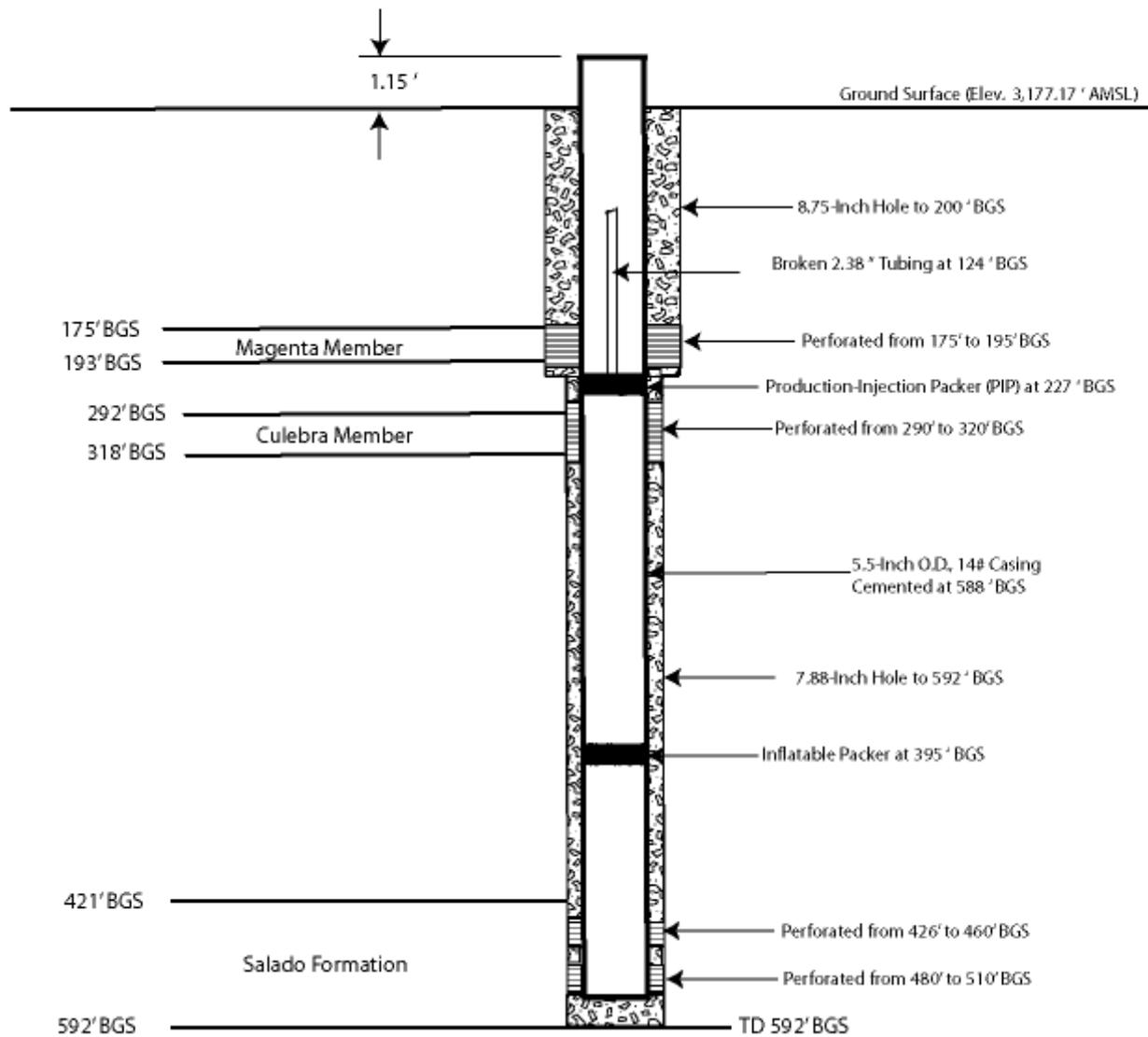
Figure 1 WIPP Location in Southeastern New Mexico

Figure 2
Well WIPP-27 Location Map



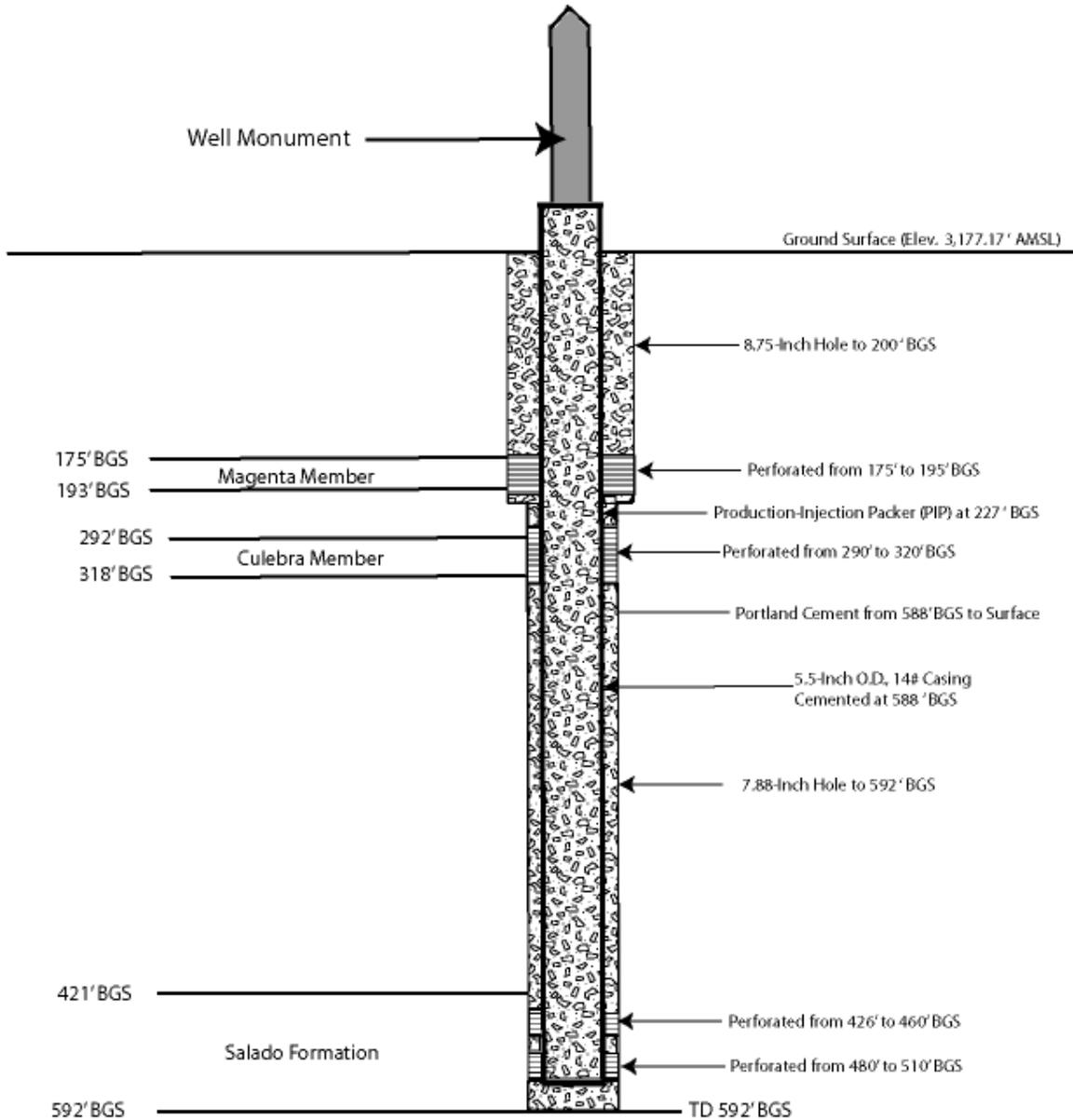
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Figure 3
Configuration of WIPP-27 Before P&A
(Not to Scale)



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Figure 4
Configuration of WIPP-27 After P&A
(Not to Scale)



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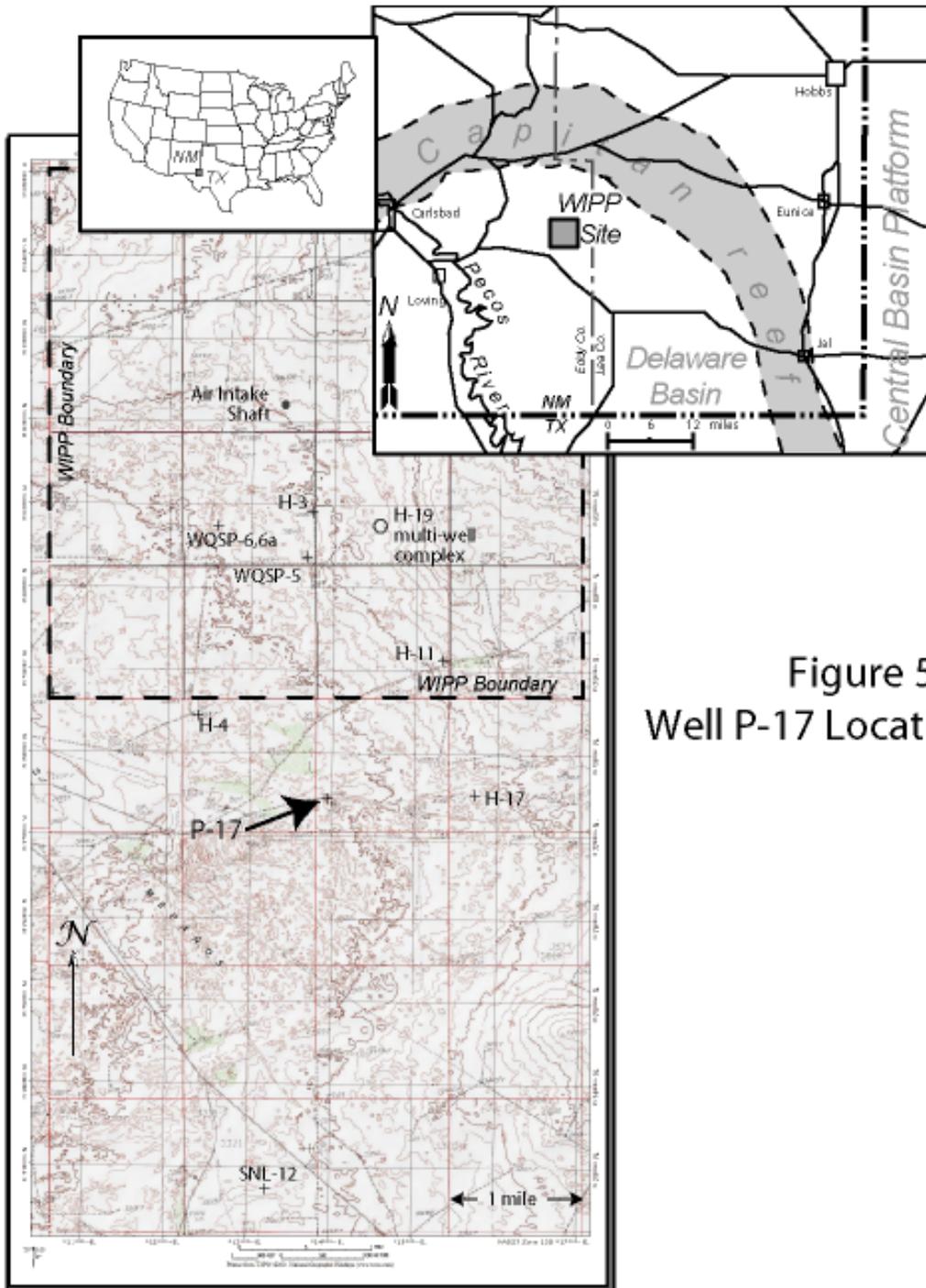
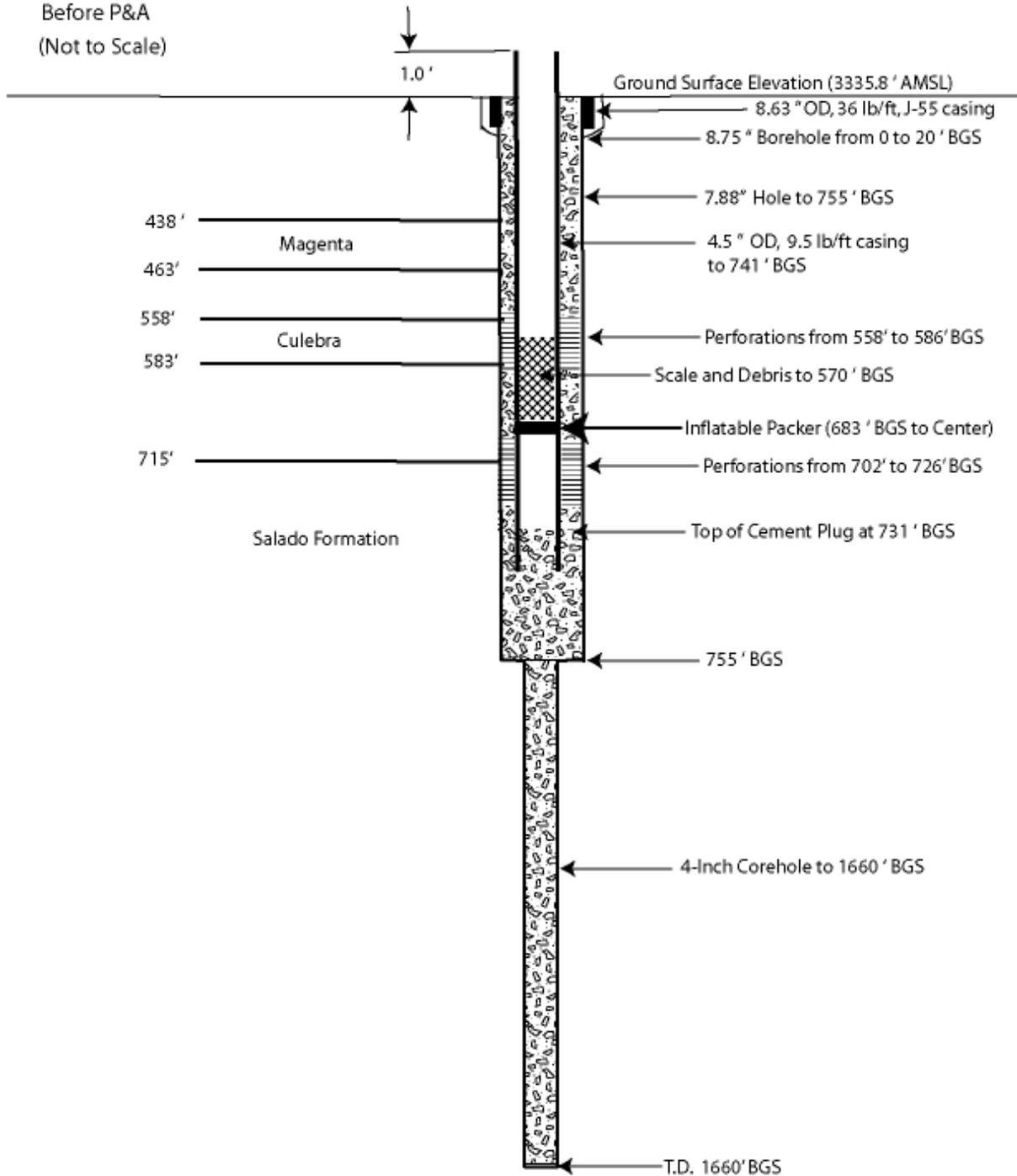


Figure 5
Well P-17 Location Map

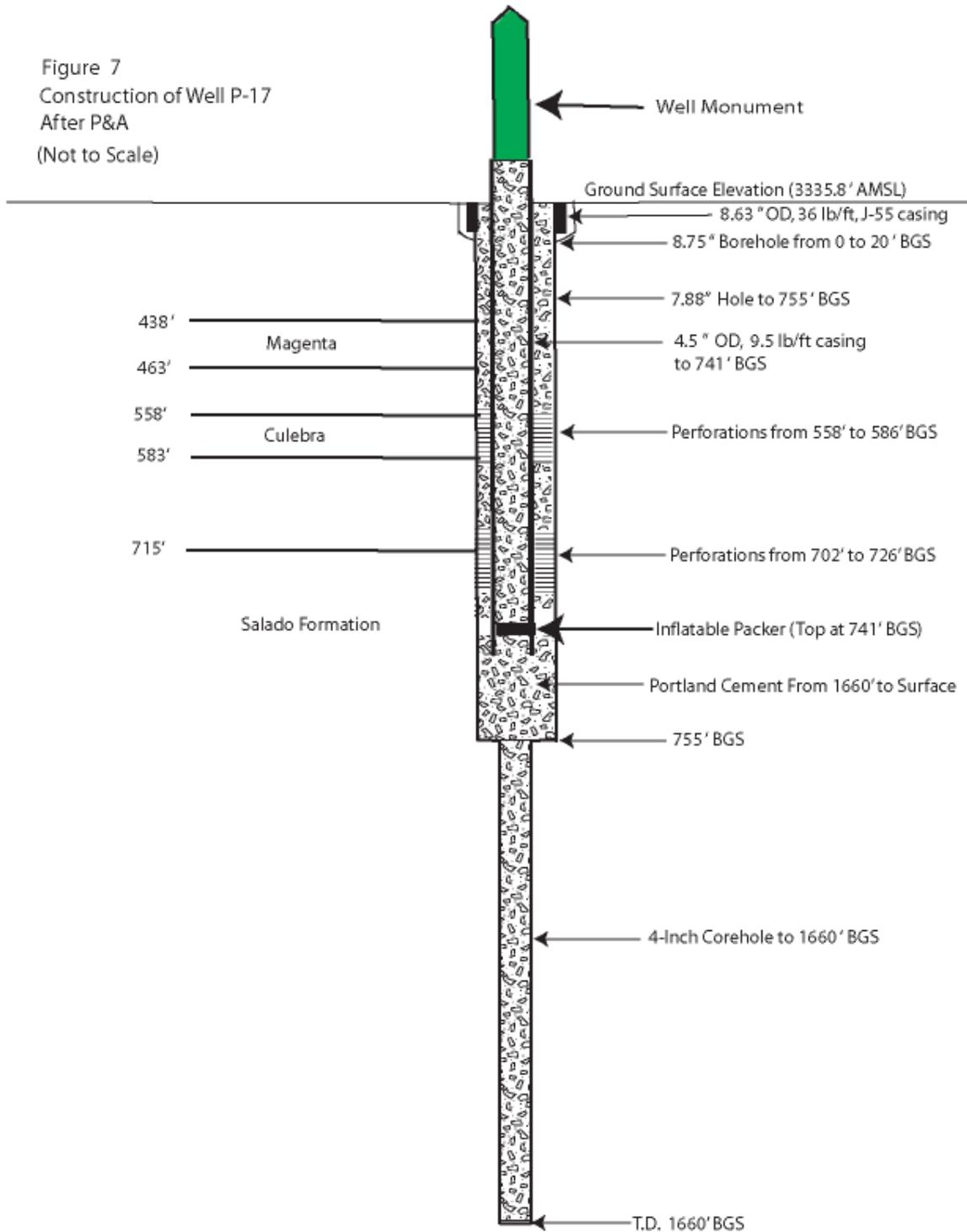
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Figure 6
Construction of Well P-17
Before P&A
(Not to Scale)



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Figure 7
Construction of Well P-17
After P&A
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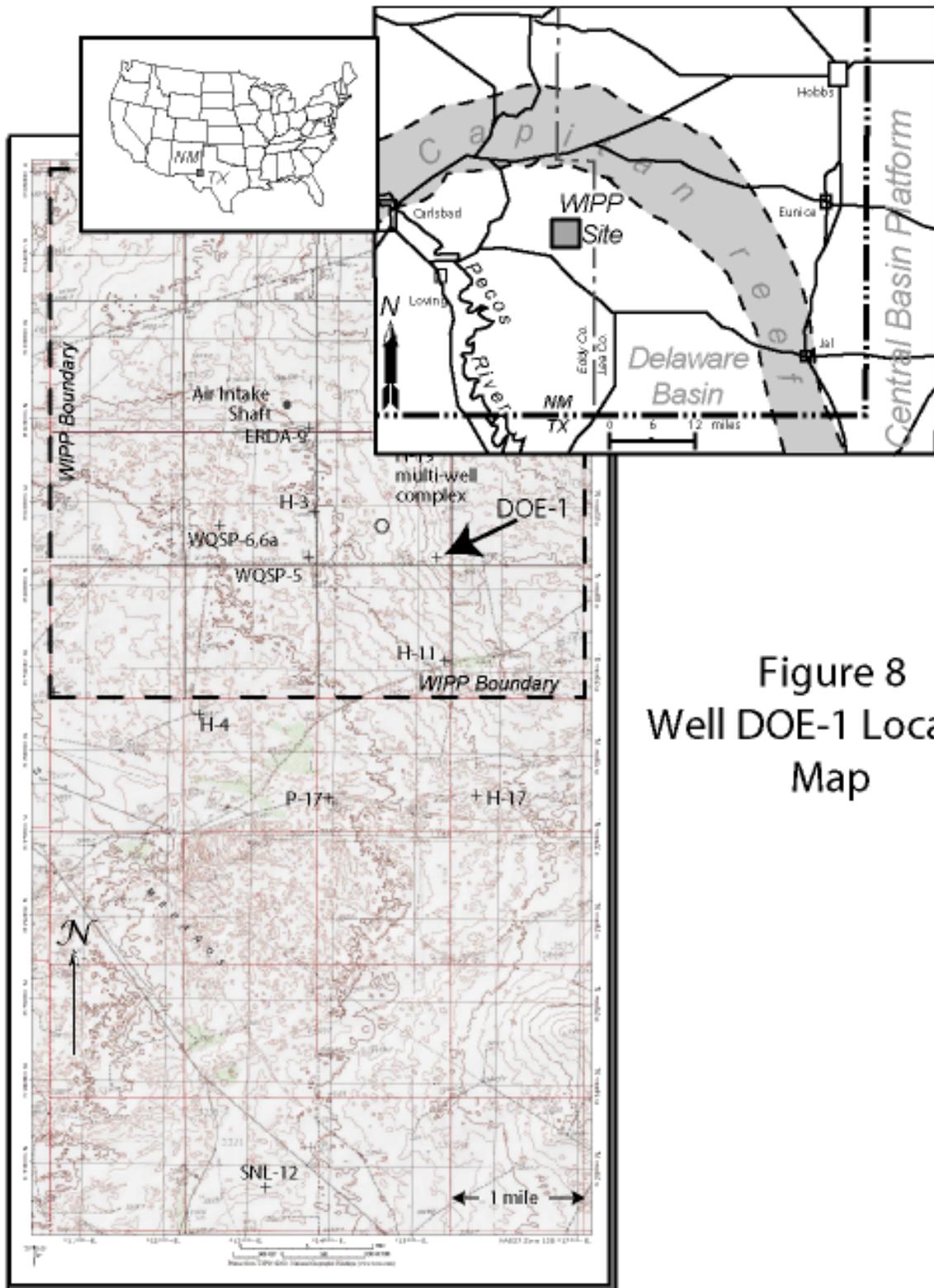
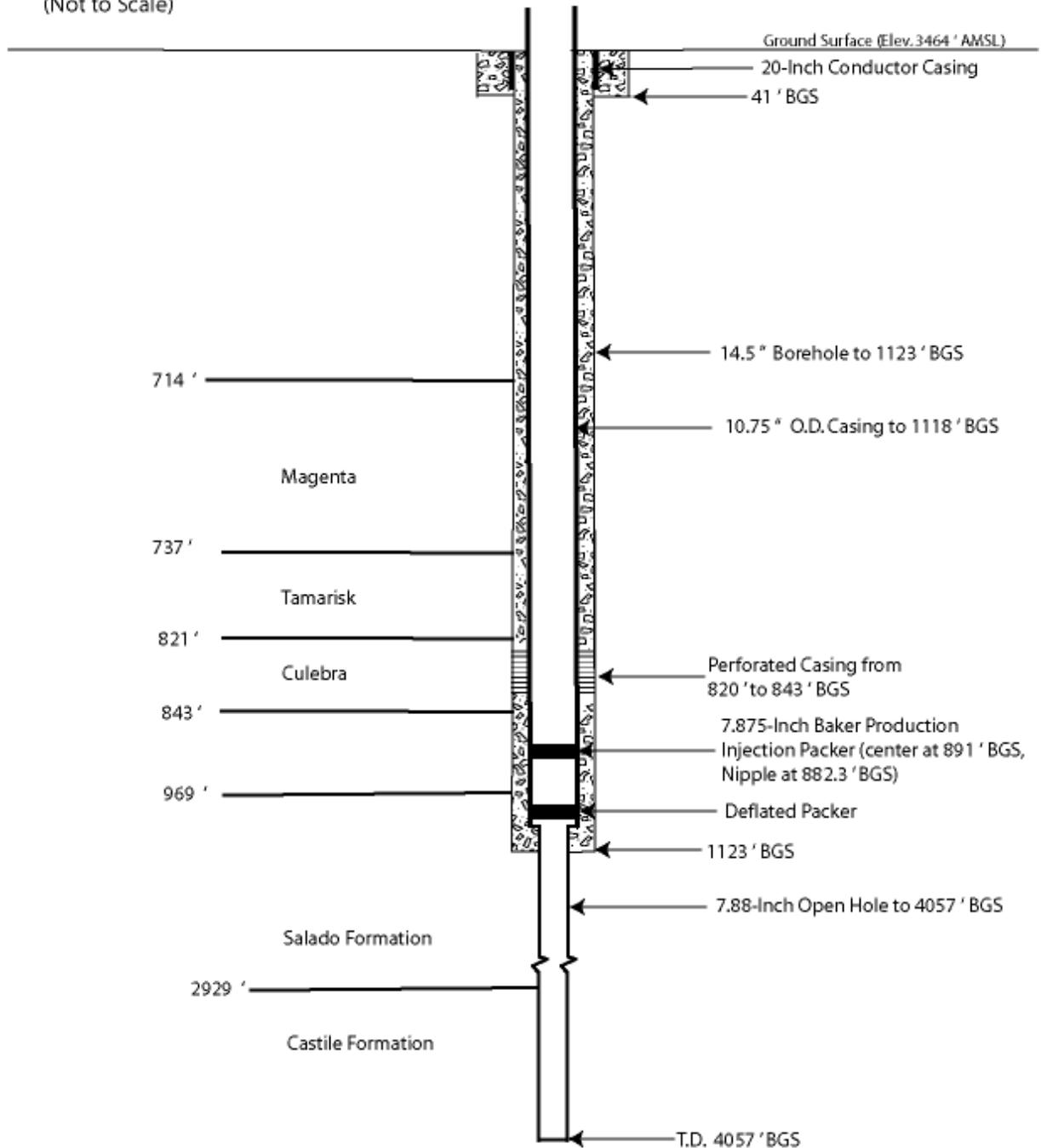


Figure 8
Well DOE-1 Location
Map

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Figure 9
Construction of Well DOE-1
Before P&A
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Figure 10
Construction of Well DOE-1
After P&A
(Not to Scale)

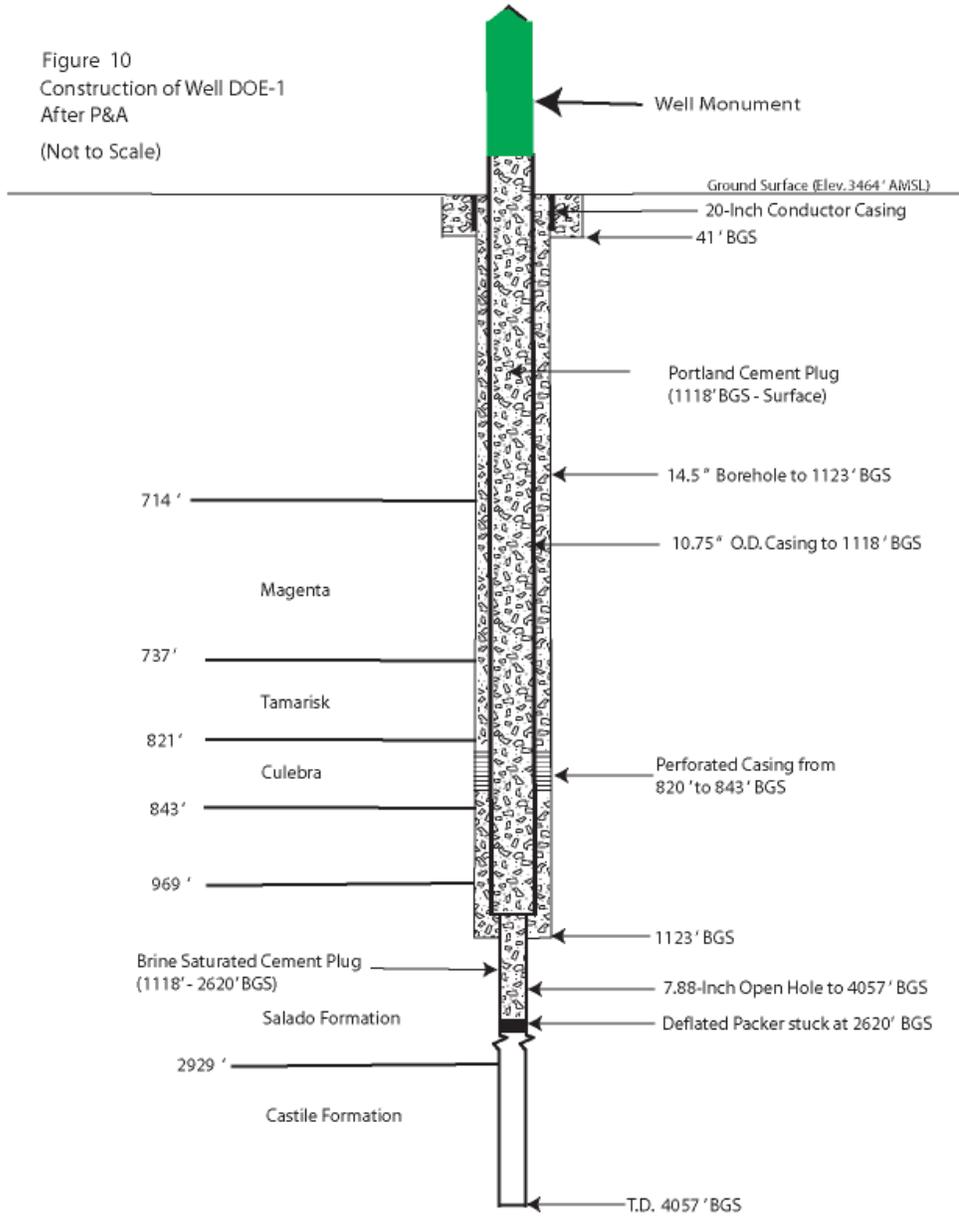
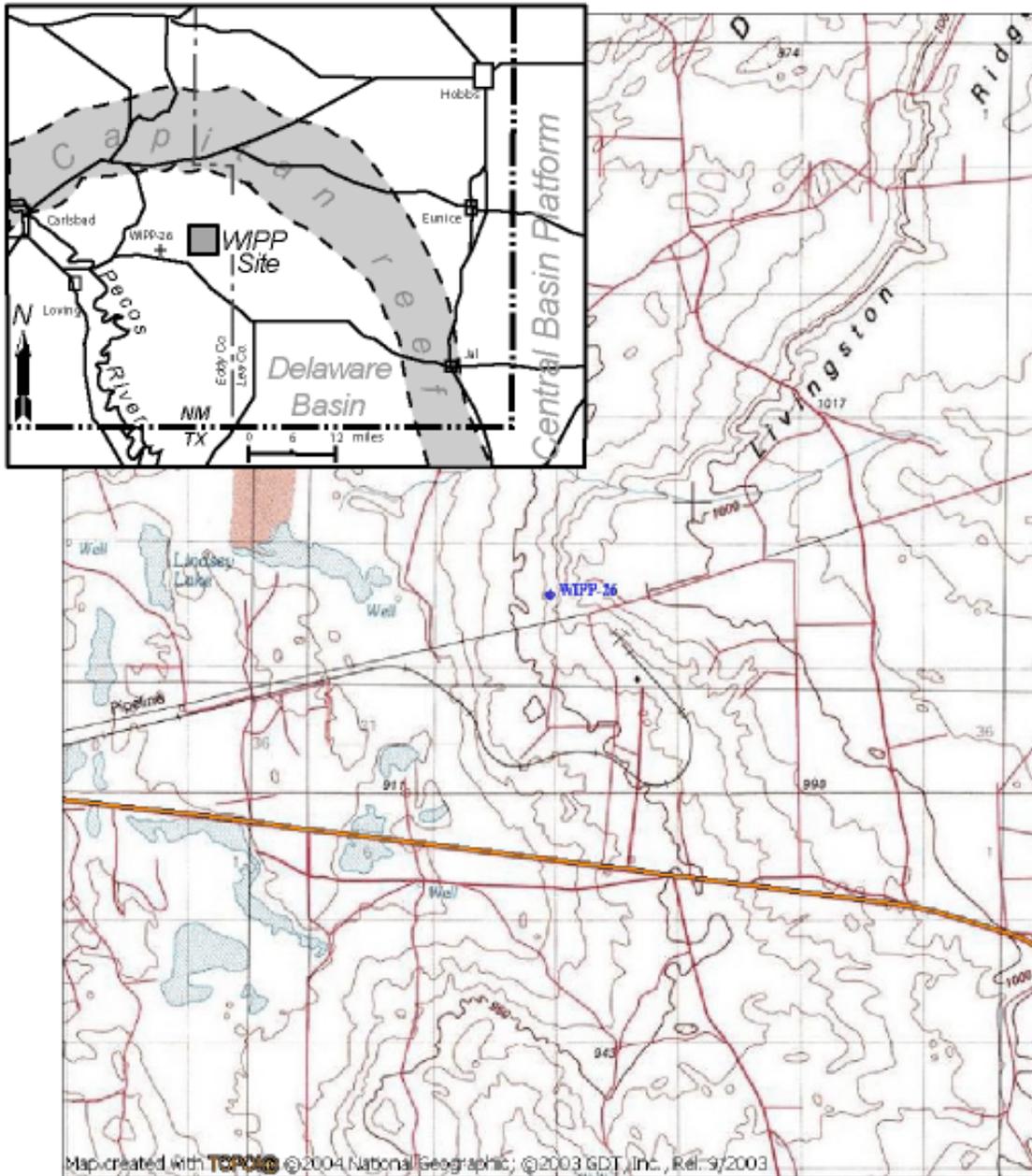
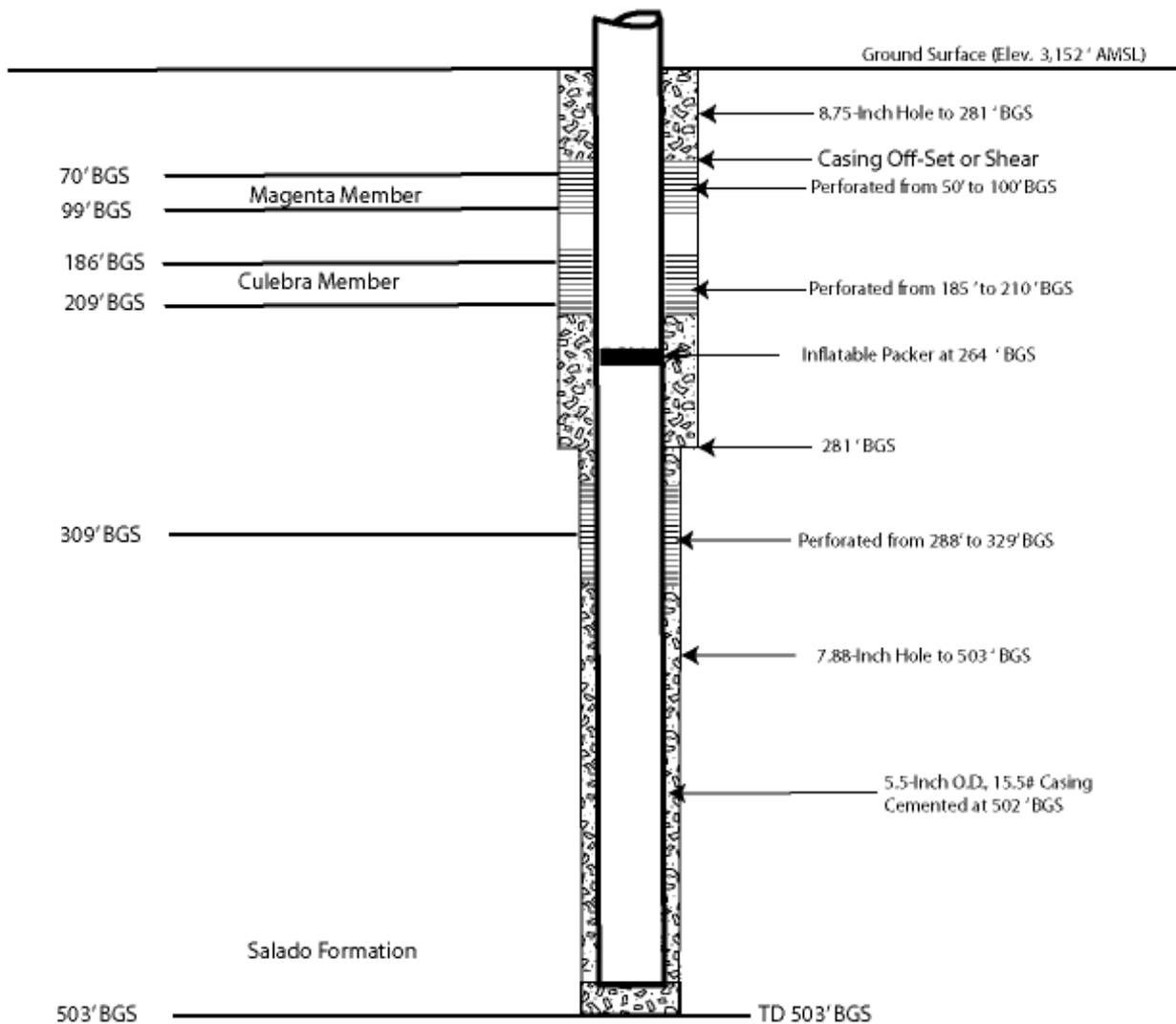


Figure 11
Well WIPP-26 Location Map



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Figure 12
Configuration of WIPP-26 Before P&A
(Not to Scale)



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Figure 13
Configuration of WIPP-26 After P&A
(Not to Scale)

