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Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

OCT 25 2019

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Hazardous Waste
Bureau

Mr. John E. Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505

Subject: Permit Modification Request for the Waste Isolation Pilot Plant Hazardous Waste Facility Permit, Number NM4890139088-TSDF

Dear Mr. Kieling:

Enclosed please find the following Class 2 Permit Modification Request:

- Removal of Deteriorating/Non-Essential Water Level Monitoring Program Wells

We certify under penalty of law that this document and all attachments were prepared under our direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, please contact Mr. Michael R. Brown at (575) 234-7476.

Sincerely,

Kirk D. Lachman, Acting Manager
Carlsbad Field Office

Sean Dunagan, President & Project Manager
Nuclear Waste Partnership LLC

Enclosure

cc: w/enclosure
R. Maestas, NMED *ED
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*ED denotes electronic distribution

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CBFO:OEP:MB:ER:19-0260:UFC 5486.00

Class 2 Permit Modification Request

Removal of Deteriorating/Non-Essential Water Level Monitoring Program Wells

Waste Isolation Pilot Plant
Carlsbad, New Mexico

WIPP Permit Number - NM4890139088-TSDF

October 2019

Table of Contents

Acronyms and Abbreviations

Culebra	Culebra Dolomite Member of the Rustler Formation
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
DMP	Detection Monitoring Program
NMAC	New Mexico Administrative Code
Permit	Hazardous Waste Facility Permit
PMR	Permit Modification Request
WIPP	Waste Isolation Pilot Plant
WLMP	Water Level Monitoring Program

Overview of the Permit Modification Request

This document contains a Class 2 Permit Modification Request (**PMR**) for the Waste Isolation Pilot Plant (**WIPP**) Hazardous Waste Facility Permit (**Permit**) Number NM4890139088-TSDF.

This PMR is being submitted by the U.S. Department of Energy (**DOE**) and Nuclear Waste Partnership LLC, collectively referred to as the Permittees, in accordance with the Permit, Part 1, Section 1.3.1 (20.4.1.900 New Mexico Administrative Code (**NMAC**) incorporating Title 40 of the Code of Federal Regulations (**CFR**) Part 270 Section 270.42 Paragraph (b), i.e., §270.42(b)). The modification request proposes the following change:

- Removal of Deteriorating/Non-Essential Water Level Monitoring Program (**WLMP**) Wells

This modification request also proposes some administrative changes not specifically associated with removing the deteriorating/non-essential WLMP wells.

This change does not reduce the ability of the Permittees to provide continued protection to human health and the environment.

The requested modification to the Permit and related supporting documents are provided in this PMR. The proposed modification to the text of the Permit has been identified using red text and double underline and a ~~strikeout~~ font for deleted information. All direct quotations are indicated by italicized text. The following sections specifically address how this Class 2 PMR submission complies with the requirements of the Permit, Part 1, Section 1.3.1.

1. 20.4.1.900 NMAC (incorporating 40 CFR 270.42(b)(1)(i)) requires the applicant to describe the exact change to be made to the permit conditions and supporting documents referenced by the Permit.

The Permittees are proposing changes to the following in Permit Attachment L, *WIPP Groundwater Detection Monitoring Program Plan*:

- *List of Tables*
- *List of Figures*
- Section L-1a(2)(iii), *The Rustler*
- Section L-3a, *Scope*
- Table L-4, *List of Culebra Wells in the WLMP, Current as of October 2017*
- Figure L-2, *WIPP Facility Boundaries Showing 16-square-Mile Land Withdrawal Boundary*
- Figure L-5, *Culebra Freshwater-Head Potentiometric Surface*
- Figure L-6, *Detection Monitoring Well Locations*
- Figure L-14, *Groundwater Level Surveillance Wells*

The Permittees are proposing to remove the WLMP wells listed below from Permit Attachment L, Table L-4, *List of Culebra Wells in the WLMP, Current as of October 2017* (as shown in Table

1) and Permit Attachment L, Figure L-14, *Groundwater Level Surveillance Wells* (as shown in Figures 1 and 2).

- ERDA-9
- H-02b2
- H-03b2
- H-07b1
- H-17
- WIPP-13
- WIPP-19

The Permittees are proposing the following additional changes:

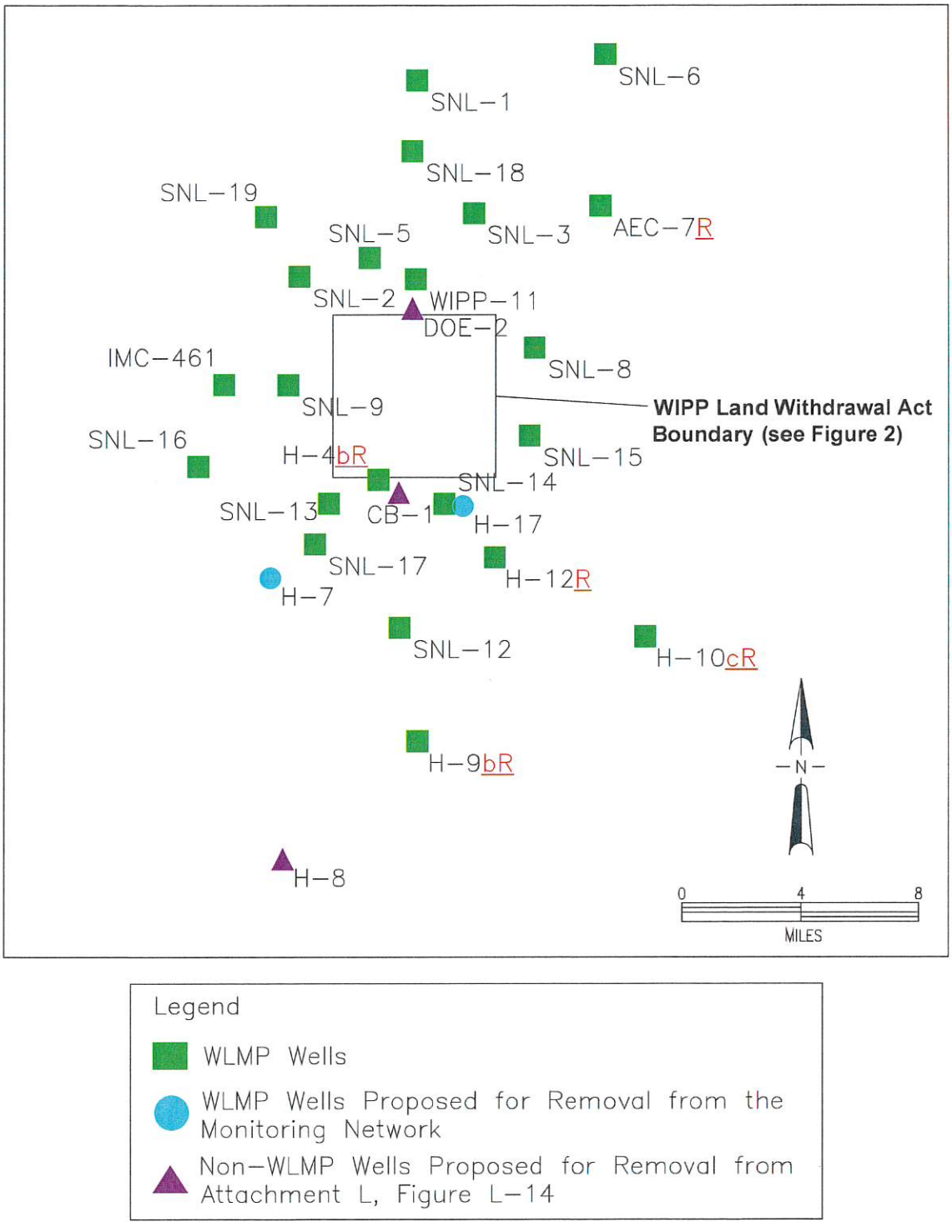
- Permit Attachment L, *List of Tables* – Change the table title from "List of Culebra Wells in the WLMP, Current as of February 2014" to "List of Culebra Wells in the WLMP, Current as of October 2019."
- Permit Attachment L, *List of Figures* – Delete "Figure L-5 Culebra Freshwater-Head Potentiometric Surface."
- Permit Attachment L, Section L-1a(2)(iii), *The Rustler* – Delete "(Figure L-5)."
- Permit Attachment L, Section L-3a, *Scope* – Delete "as of January 1, 2011."
- Permit Attachment L, Table L-4 – Change the table title from "List of Culebra Wells in the WLMP, Current as of October 2017" to "List of Culebra Wells in the WLMP, Current as of October 2019," add a period at the end of the table footnote, and change the well identification numbers (as shown in the redline/strikeout of Table L-4 in Table 1) as follows:
    - Change "H-04bR" to "H-4bR"
    - Change "H-05b" to "H-5b"
    - Change "H-06bR" to "H-6bR"
    - Change "I-461" to "IMC-461"
    - Change "SNL-01" to "SNL-1"
    - Change "SNL-02" to "SNL-2"
    - Change "SNL-03" to "SNL-3"
    - Change "SNL-05" to "SNL-5"
    - Change "SNL-06" to "SNL-6"
    - Change "SNL-08" to "SNL-8"
    - Change "SNL-09" to "SNL-9"
- Permit Attachment L, Figure L-2, *WIPP Facility Boundaries Showing 16-square-Mile Land Withdrawal Boundary* – Modify the Exclusive Use Area and Property Protection Area boundaries and add section labels for sections "20" and "21."

- Permit Attachment L, Figure L-5, *Culebra Freshwater-Head Potentiometric Surface* – Delete this figure.
- Permit Attachment L, Figure L-6, *Detection Monitoring Well Locations* – Modify the Exclusive Use Area boundary and the figure labels for "WIPP Site," "Exclusive Use Area," "Property Protection Area" and "Off Limits Area."
- Permit Attachment L, Figure L-14, *Groundwater Level Surveillance Wells*
    - Remove wells H-18, WIPP-18, H-14, DOE-2, CB-1, and H-8 (as shown in Figures 1 and 2).
    - Modify the Exclusive Use Area boundary.
    - Delete "ASER 3-11-09" from the bottom right corner of the figure.
    - Change the well identification numbers (as shown in Figures 1 and 2) in the figure as follows:
        - Change "AEC-7" to "AEC-7R"
        - Change "H-4" to "H-4bR"
        - Change "H-5" toH-5b"
        - Change "H-6" to "H-6bR"
        - Change "H-9" to "H-9bR"
        - Change "H-10" to "H-10cR"
        - Change "H-11b4" to "H-11b4R"
        - Change "H-12" to "H-12R"
        - Change "H-15" to "H-15R"
        - Change "H-19" to "H-19 pad"

Table 1. Proposed Changes to Table L-4, *List of Culebra Wells in the WLMP, Current as of October 2017*

WELL ID	WELL ID	WELL ID
AEC-7R	~~H-17~~	SNL-15
C-2737	H-19 pad*	SNL-16
~~ERDA-9~~	~~I-461~~IMC-461	SNL-17
~~H-02b2~~	~~SNL-01~~SNL-1	SNL-18
~~H-03b2~~	~~SNL-02~~SNL-2	SNL-19
~~H-04bR~~H-4bR	~~SNL-03~~SNL-3	WQSP-1
~~H-05b~~H-5b	~~SNL-05~~SNL-5	WQSP-2
~~H-06bR~~H-6bR	~~SNL-06~~SNL-6	WQSP-3
~~H-07b1~~	~~SNL-08~~SNL-8	WQSP-4
H-9bR	~~SNL-09~~SNL-9	WQSP-5
H-10cR	SNL-10	WQSP-6
H-11b4R	SNL-12	WIPP-11
H-12R	SNL-13	~~WIPP-13~~
H-15R	SNL-14	~~WIPP-19~~
H-16		

*The water level for the H-19b0 well on the H-19 pad is measured monthly; the fluid density measured annually at well H-19b0 will be used to correct for freshwater head for the other wells on the H-19 pad (H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7).



Legend

- WLMP Wells
- WLMP Wells Proposed for Removal from the Monitoring Network
- Non-WLMP Wells Proposed for Removal from Attachment L, Figure L-14

Figure 1. Proposed Changes to Wells in Permit Figure L-14, *Groundwater Level Surveillance Wells*

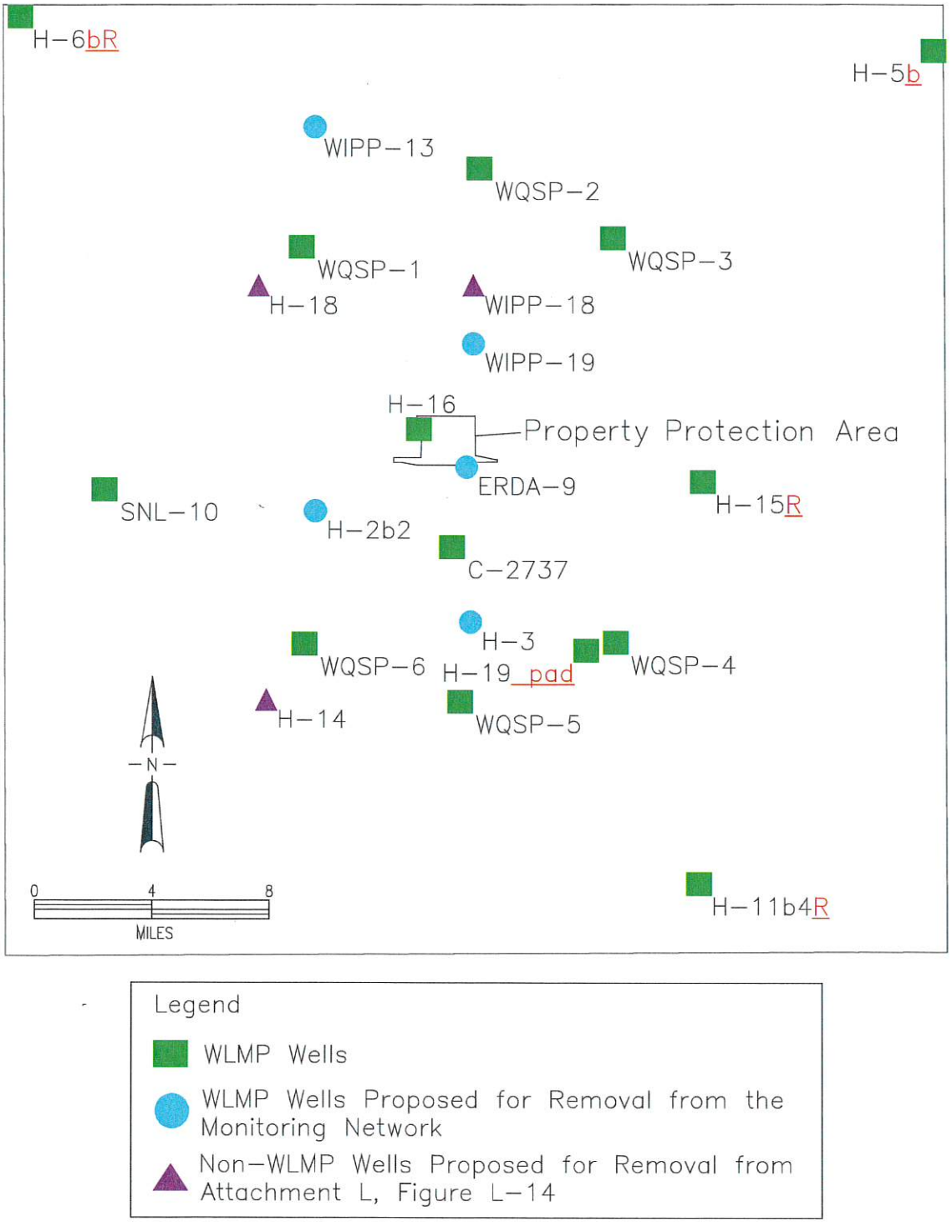


Figure 2. Proposed Changes to Wells within the Land Withdrawal Act Boundary in Permit Figure L-14, *Groundwater Level Surveillance Wells*

The Table of Changes (Appendix A) describes each change that is being proposed and the Proposed Revised Permit Text (Appendix B) shows the changes to the Permit text in redline strikeout.

2. 20.4.1.900 NMAC (incorporating 40 CFR 270.42(b)(1)(ii)), requires the applicant to identify that the modification is a Class 2 modification.

This PMR is classified as a Class 2 modification for the reason indicated below:

> *20.4.1.900 NMAC incorporating 40 CFR 270.42, Appendix I, Item C. "Ground-Water Protection, 1. Changes to wells: a. Changes in the number, location, depth, or design of upgradient or downgradient wells of permitted ground-water monitoring system...2"*

This PMR proposes to remove seven groundwater wells from the WLMP, thus changing the number of wells in the groundwater monitoring system.

3. 20.4.1.900 NMAC (incorporating 40 CFR 270.42(b)(1)(iii)), requires the applicant to explain why the modification is needed.

The Permittees are proposing to remove WLMP wells ERDA-9, H-02b2, H-03b2, H-07b1, H-17, WIPP-13, and WIPP-19 from Permit Attachment L, Table L-4, *List of Culebra Wells in the WLMP, Current as of October 2017,* and Permit Attachment L, Figure L-14, *Groundwater Level Surveillance Wells*. The wells proposed for removal are completed in the Culebra Dolomite (**Culebra**) of the Rustler Formation, overlying the repository. The WIPP facility disposal horizon is at approximately 2,150 feet below the ground surface. The Culebra in the vicinity of the WIPP facility is greater than 1,000 feet above the WIPP repository disposal horizon (see Permit Attachment L, Figure L-4). Groundwater monitoring at the WIPP facility focuses on the Culebra because it represents the most significant hydrologic pathway from the waste shaft to the accessible environment. As described in Permit Attachment L, Section L-1, *Introduction*, the Culebra is the most transmissive unit at the WIPP site. The fluid flow path in the Culebra is dominantly lateral and southward and is not anticipated to change over time; the transport time for groundwater in the Culebra from the Waste Shaft to the point of compliance specified in Permit Part 5, Section 5.2, *Identification of Point of Compliance*, is on the order of thousands of years.

The WIPP Groundwater Detection Monitoring Program satisfies the requirements prescribed in 20.4.1.500 NMAC (incorporating 40 CFR Part 264, Subparts F and X) and consists of the Detection Monitoring Program (**DMP**) and the WLMP, as described in Permit Part 5, *Groundwater Detection Monitoring*. The DMP focuses on the presence of hazardous waste contaminants that originate from the TRU mixed waste disposed at the facility. Contamination is determined using sampling and analysis of groundwater in six wells completed in the Culebra. The DMP is not the subject of this PMR.

Pursuant to Permit Attachment L, Section L-1, the WLMP focuses on the Culebra groundwater flow rate and direction in the Culebra. The requirements of this program are met through routine measurement of water levels. The Permittees are only proposing changes to the number of wells in the WLMP; these changes are needed to allow for the plugging and abandonment of wells ERDA-9, H-02b2, H-03b2, H-07b1, H-17, WIPP-13, and WIPP-19.

The WLMP consists of 43 wells, listed in Permit Attachment L, Table L-4, that are measured monthly pursuant to the Permit Attachment L, Section L-4a, *Monitoring Frequency*, to determine

if assumptions described in Permit Attachment L, Section L-3b, *Current WIPP DMP* regarding groundwater flow and direction remain valid. Monthly measurements of the water level in Culebra wells, coupled with annual determinations of water density, allow the reporting of equivalent freshwater heads over a broad network of monitoring wells. These data are used to monitor the general flow rate and direction of the groundwater in the Culebra as required by Permit Part 5, Section 5.8, *Groundwater Flow Determination*. The methodology for calculating [predicting] flow rate and direction using the deterministic groundwater flow model, MODFLOW, is described in Permit Attachment L, Section L-5c, *Semi-Annual Groundwater Surface Elevation Report and Annual Culebra Groundwater Report*. The groundwater flow model uses the water level measurements as the initial head input for running the model, as well as defining the boundary conditions of the model domain. The WLMP wells, as of October 2017, are presented in Permit Attachment L, Table L-4. As stated in Permit Attachment L, Section L-3a, *Scope*, the list of wells is subject to change due to plugging and abandonment and drilling of new wells. The data generated from these wells are submitted to the New Mexico Environment Department (**NMED**) semi-annually (by May 31 and November 30 of each year) in accordance with Permit Part 5, Section 5.10.2.2, *Groundwater Surface Elevation Results*.

The seven monitoring wells proposed for removal in this PMR are steel-cased wells installed in the 1970s and 1980s. The steel casing in these wells is corroding due the high salinity of the Culebra water. Although at various stages of deterioration, these wells are nearing the point where they must either be replaced or plugged and abandoned. The poor condition of these wells poses a risk of causing comingling of groundwaters, which would result in a violation of the monitoring well permits issued by the New Mexico Office of the State Engineer.

The Permittees are proposing to remove these wells from the WLMP since they are not necessary for ongoing groundwater modeling efforts, which are used annually to generate the Culebra freshwater head potentiometric surface map. From 2004 through 2006, a number of new fiberglass wells were completed to provide information where data gaps were determined. The installation of the new wells increased the density of monitoring points in the model domain. It has been determined that removal of these select wells will not impact the ability of the groundwater flow model (i.e., MODFLOW) to predict flow rate and direction because of the increased density of new wells in the WLMP. Appendix C presents a memorandum from Sandia National Laboratories containing two potentiometric surface maps that were generated using MODFLOW. Appendix C, Figure 1 shows a potentiometric surface map generated without data collected from wells ERDA-9, H-02b2, H-03b2, H-07b1, H-17, WIPP-13, and WIPP-19. Appendix C, Figure 2 shows a potentiometric surface map generated with data from these wells. The differences in these figures are insignificant, and the figures demonstrate that removal of these wells from the WLMP network does not affect the Permittees' ability to reliably model groundwater flow and direction of the Culebra.

If this PMR is approved, the Permittees will proceed with plugging and abandoning these seven wells.

The Permittees are proposing changes to Permit Attachment L associated with removing the seven WLMP wells. The Permittees are also proposing some administrative changes to Permit Attachment L that are not associated with removing the seven WLMP wells. These changes are being proposed to update and ensure the accuracy of the Permit. The respective reason why these changes are needed is listed below:

- Permit Attachment L, *List of Tables* – The table title, "List of Culebra Wells in the WLMP, Current as of February 2014," needs to be changed to "List of Culebra Wells in the

WLMP, Current as of October 2019" to correspond with the date of this proposed Permit modification, consistent with the proposed changes to Permit Attachment L, Table L-4.

- Permit Attachment L, *List of Figures* – Delete "Figure L-5 Culebra Freshwater-Head Potentiometric Surface." This figure is proposed for removal, thus the list of figures needs to be revised.
- Permit Attachment L, Section L-1a(2)(iii), *The Rustler* – Delete "(Figure L-5)." This figure is proposed for removal, thus the figure reference needs to be removed.
- Permit Attachment L, Section L-3a, *Scope* – Permit text, "as of January 1, 2011," needs to be deleted since it is outdated; the correct date is captured in the revised table title for Permit Attachment L, Table L-4.
- Permit Attachment L, Table L-4 – The table title, "List of Culebra Wells in the WLMP, Current as of October 2017," needs to be changed to "List of Culebra Wells in the WLMP, Current as of October 2019" to correspond with the date of this proposed Permit modification. In addition, some of the well identification numbers in Table L-4 require revision to ensure consistency with the identification numbers in Figure L-14 and in the well permits issued by the New Mexico Office of the State Engineer, as listed in Permit Attachment B, *Hazardous Waste Permit Application Part A*, Appendix B1, *Other Environmental Permits*.
- Permit Attachment L, Figure L-2, *WIPP Facility Boundaries Showing 16-square-Mile Land Withdrawal Boundary* – The Exclusive Use Area and Property Protection Area require modification to more accurately depict the boundaries and ensure consistency with the Property Protection Area boundary in Figures L-6 and L-14. In addition, missing section labels need to be added for sections "20" and "21" for completeness.
- Permit Attachment L, Figure L-5, *Culebra Freshwater-Head Potentiometric Surface* – This figure is proposed for removal from the Permit since this figure is obsolete and is updated in the Annual Culebra Groundwater Report, which is provided to the NMED in accordance with Permit Part 5, Section 5.10.2.1, *Data Evaluation Results*.
- Permit Attachment L, Figure L-6, *Detection Monitoring Well Locations* – The Exclusive Use Area boundary requires revision to provide a more accurate depiction, and the figure labels for "WIPP Site," "Exclusive Use Area," "Property Protection Area" and "Off Limits Area." These changes need to be made to ensure accuracy of the Permit.
- Permit Attachment L, Figure L-14, *Groundwater Level Surveillance Wells*
    - Wells H-18, WIPP-18, H-14, DOE-2, CB-1, and H-8 need to be removed from this figure because they monitor the Bell Canyon Formation and the Magenta Dolomite Member of the Rustler Formation; the WLMP only consists of wells monitoring the Culebra, and as a result, wells H-18, WIPP-18, H-14, DOE-2, CB-1, and H-8 are not listed in Permit Attachment L, Table L-4. These wells had been included in the figure because they were part of the Annual Site Environmental Report in 2009. These wells need to be removed to provide an update to this figure and to assure accuracy and consistency with Table L-4.
    - The Exclusive Use Area requires modification to more accurately depict the boundary.
    - "ASER 3-11-09" needs to be deleted from the bottom corner of the figure because, with the proposed changes to the figure, it will become an incorrect reference.

- Some of the well identification numbers need to be changed to ensure consistency with the identification numbers in Table L-4 and in the well permits issued by the New Mexico Office of the State Engineer, as listed in Permit Attachment B, *Hazardous Waste Permit Application Part A*, Appendix B1, *Other Environmental Permits*.

4. 20.4.1.900 NMAC (incorporating 40 CFR 270.42 (b)(1)(iv)), requires the applicant to provide the applicable information required by 40 CFR 270.13 through 270.21, 270.62 and 270.63.

The regulatory crosswalk describes those portions of the Permit that are affected by this PMR. Where applicable, regulatory citations in this modification reference Title 20, Chapter 4, Part 1, NMAC, revised December 1, 2018, incorporating 40 CFR Parts 264 and 270. 40 CFR §§270.16 through 270.21, 270.62, and 270.63 are not applicable at the WIPP facility. Consequently, they are not listed in the regulatory crosswalk table.

5. 20.4.1.900 NMAC (incorporating 40 CFR 270.11(d)(1) and 40 CFR 270.30(k)), requires that any person signing under paragraph (a) or (b) must certify the document in accordance with 20.4.1.900 NMAC.

The transmittal letter for this PMR contains the signed certification statement in accordance with Permit Part 1, Section 1.9.

Regulatory Crosswalk

Regulatory Citation(s) 20.4.1.900 NMAC (Incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the Permit or Permit Application	Yes	No
§270.13		Contents of Part A permit application	Attachment B, Part A		✓
§270.14(b)(1)		General facility description	Attachment A		✓
§270.14(b)(2)	§264.13(a)	Chemical and physical analyses	Attachment C		✓
§270.14(b)(3)	§264.13(b)	Development and implementation of waste analysis plan	Attachment C		✓
	§264.13(c)	Off-site waste analysis requirements	Attachment C		✓
§270.14(b)(4)	§264.14(a-c)	Security procedures and equipment	Part 2.6		✓
§270.14(b)(5)	§264.15(a-d)	General inspection requirements	Attachment E		✓
	§264.174	Container inspections	Attachment E		✓
§270.23(a)(2)	§264.602	Miscellaneous units inspections	Attachment E		✓
§270.14(b)(6)		Request for waiver from preparedness and prevention requirements of Part 264 Subpart C	NA		✓
§270.14(b)(7)	264 Subpart D	Contingency plan requirements	Attachment D		✓
	§264.51	Contingency plan design and implementation	Attachment D		✓
	§264.52 (a) & (c-f)	Contingency plan content	Attachment D		✓
	§264.53	Contingency plan copies	Attachment D		✓
	§264.54	Contingency plan amendment	Attachment D		✓
	§264.55	Emergency coordinator	Attachment D		✓
	§264.56	Emergency procedures	Attachment D		✓
§270.14(b)(8)		Description of procedures, structures or equipment for:	Part 2.10		✓
§270.14(b)(8)(i)		Prevention of hazards in unloading operations (e.g., ramps and special forklifts)	Part 2.10		✓
§270.14(b)(8)(ii)		Runoff or flood prevention (e.g., berms, trenches, and dikes)	Part 2.10		✓
§270.14(b)(8)(iii)		Prevention of contamination of water supplies	Part 2.10		✓
§270.14(b)(8)(iv)		Mitigation of effects of equipment failure and power outages	Part 2.10		✓
§270.14(b)(8)(v)		Prevention of undue exposure of personnel (e.g., personal protective equipment)	Part 2.10		✓
§270.14(b)(8)(vi) §270.23(a)(2)	§264.601	Prevention of releases to the atmosphere	Part 4 Attachment A2 Attachment N		✓
	264 Subpart C	Preparedness and Prevention	Part 2.10		✓
	§264.31	Design and operation of facility	Part 2.10		✓
	§264.32	Required equipment	Part 2.10 Attachment D		✓
	§264.33	Testing and maintenance of equipment	Attachment E		✓
	§264.34	Access to communication/alarm system	Part 2.10		✓
	§264.35	Required aisle space	Part 2.10		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the Permit or Permit Application	Yes	No
	§264.37	Arrangements with local authorities	Attachment D		✓
§270.14(b)(9)	§264.17(a-c)	Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes	Part 2.10		✓
§270.14(b)(10)		Traffic pattern, volume, and controls, for example: Identification of turn lanes Identification of traffic/stacking lanes, if appropriate Description of access road surface Description of access road load-bearing capacity Identification of traffic controls.	Attachment A4		✓
§270.14(b)(11)(i) and (ii)	§264.18(a)	Seismic standard applicability and requirements	Part B, Rev. 6 Chapter B		✓
§270.14(b)(11)(iii-v)	§264.18(b)	100-year floodplain standard	Part B, Rev. 6 Chapter B		✓
	§264.18(c)	Other location standards	Part B, Rev. 6 Chapter B		✓
§270.14(b)(12)	§264.16(a-e)	Personnel training program	Part 2 Attachment F		✓
§270.14(b)(13)	264 Subpart G	Closure and post-closure plans	Attachment G & H		✓
§270.14(b)(13)	§264.111	Closure performance standard	Attachment G		✓
§270.14(b)(13)	§264.112(a), (b)	Written content of closure plan	Attachment G		✓
§270.14(b)(13)	§264.112(c)	Amendment of closure plan	Attachment G		✓
§270.14(b)(13)	§264.112(d)	Notification of partial and final closure	Attachment G		✓
§270.14(b)(13)	§264.112(e)	Removal of wastes and decontamination/dismantling of equipment	Attachment G		✓
§270.14(b)(13)	§264.113	Time allowed for closure	Attachment G		✓
§270.14(b)(13)	§264.114	Disposal/decontamination	Attachment G		✓
§270.14(b)(13)	§264.115	Certification of closure	Attachment G		✓
§270.14(b)(13)	§264.116	Survey plat	Attachment G		✓
§270.14(b)(13)	§264.117	Post-closure care and use of property	Attachment H		✓
§270.14(b)(13)	§264.118	Post-closure plan; amendment of plan	Attachment H		✓
§270.14(b)(13)	§264.178	Closure/containers	Attachment G		✓
§270.14(b)(13)	§264.601	Environmental performance standards-Miscellaneous units	Attachment G		✓
§270.14(b)(13)	§264.603	Post-closure care	Attachment G		✓
§270.14(b)(14)	§264.119	Post-closure notices	Attachment H		✓
§270.14(b)(15)	§264.142	Closure cost estimate	NA		✓
	§264.143	Financial assurance	NA		✓
§270.14(b)(16)	§264.144	Post-closure cost estimate	NA		✓
	§264.145	Post-closure care financial assurance	NA		✓
§270.14(b)(17)	§264.147	Liability insurance	NA		✓
§270.14(b)(18)	§264.149-150	Proof of financial coverage	NA		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the Permit or Permit Application	Yes	No
§270.14(b)(19)(i), (vi), (vii), and (x)		Topographic map requirements Map scale and date Map orientation Legal boundaries Buildings Treatment, storage, and disposal operations Run-on/run-off control systems Fire control facilities	Attachment B Part A		✓
§270.14(b)(19)(ii)	§264.18(b)	100-year floodplain	Attachment B Part A		✓
§270.14(b)(19)(iii)		Surface waters	Attachment B Part A		✓
§270.14(b)(19)(iv)		Surrounding Land use	Attachment B Part A		✓
§270.14(b)(19)(v)		Wind rose	Attachment B Part A		✓
§270.14(b)(19)(viii)	§264.14(b)	Access controls	Attachment B Part A		✓
§270.14(b)(19)(ix)		Injection and withdrawal wells	Attachment B Part A		✓
§270.14(b)(19)(xi)		Drainage on flood control barriers	Attachment B Part A		✓
§270.14(b)(19)(xii)		Location of operational units	Attachment B Part A		✓
§270.14(b)(20)		Other federal laws Wild and Scenic Rivers Act National Historic Preservation Act Endangered Species Act Coastal Zone Management Act Fish and Wildlife Coordination Act Executive Orders	Attachment B Part A		✓
§270.15	§264 Subpart I	Containers	Attachment A1		✓
	§264.171	Condition of containers	Attachment A1		✓
	§264.172	Compatibility of waste with containers	Attachment A1		✓
	§264.173	Management of containers	Attachment A1		✓
	§264.174	Inspections	Attachment E Attachment A1		✓
§270.15(a)	§264.175	Containment systems	Attachment A1		✓
§270.15(c)	§264.176	Special requirements for ignitable or reactive waste	Part 2		✓
§270..15(d)	§264.177	Special requirements for incompatible wastes	Part 2		✓
	§264.178	Closure	Attachment G		✓
§270.15(e)	§264.179	Air emission standards	Part 4 Attachment N		✓
§270.23	264 Subpart X	Miscellaneous units	Attachment A2		✓
§270.23(a)	§264.601	Detailed unit description	Attachment A2		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the Permit or Permit Application	Yes	No
§270.23(b)	§264.601	Hydrologic, geologic, and meteorologic assessments	Part 5 Attachment L	✓	
§270.23(c)	§264.601	Potential exposure pathways	Part 4 Attachment A2 Attachment N		✓
§270.23(d)		Demonstration of treatment effectiveness	NA		✓
	§264.602	Monitoring, analysis, inspection, response, reporting, and corrective action	Part 2 Part 4 Part 5 Attachment A2 Attachment N	✓	
	§264.603	Post-closure care	Attachment H Attachment H1		✓
	264 Subpart E	Manifest system, record keeping, and reporting	Part 2 Attachment C		✓

Appendix A
Table of Changes

Table of Changes

Affected Permit Section	Explanation of Change
Permit Attachment L, *List of Tables*	Changed "February 2014" to "October 2019."
Permit Attachment L, *List of Figures*	Deleted "Figure L-5 Culebra Freshwater-Head Potentiometric Surface."
Permit Attachment L, Section L-1a(2)(iii), *The Rustler*	Deleted "(Figure L-5)."
Permit Attachment L, Section L-3a, *Scope*	Deleted "as of January 1, 2011."
Permit Attachment L, Table L-4, *List of Culebra Wells in the WLMP, Current as of October 2017*	Changed "2017" to "2019." Deleted "ERDA-9." Deleted "H-02b2." Deleted "H-03b2." Changed "H-04bR" to "H-4bR." Changed "H-05b" to "H-5b" Changed "H-06bR" to "H-6bR" Deleted "H-07b1." Deleted "H-17." Changed "I-461" to "IMC-461." Changed "SNL-01" to "SNL-1." Changed "SNL-02" to "SNL-2." Changed "SNL-03" to "SNL-3." Changed "SNL-05" to "SNL-5." Changed "SNL-06" to "SNL-6." Changed "SNL-08" to "SNL-8." Changed "SNL-09" toSNL-9." Deleted "WIPP-13." Deleted "WIPP-19" Added a period at the end of the footnote.
Permit Attachment L, Figure L-2, *WIPP Facility Boundaries Showing 16-square-Mile Land Withdrawal Boundary*	Moved the Property Protection Area to the west. Moved the north Exclusive Use Area fence line to the north.
Permit Attachment L, Figure L-5, *Culebra Freshwater-Head Potentiometric Surface*	Deleted figure.
Permit Attachment L, Figure L-6, *Detection Monitoring Well Locations*	Moved the north Exclusive Use Area fence line to the north. Updated figure labels for "WIPP Site," "Exclusive Use Area," "Property Protection Area," "Off Limits Area" and added section labels for sections "20" and "21."
Permit Attachment L, Figure L-14, *Groundwater Level Surveillance Wells* *(inset represents the groundwater surveillance wells in WIPP Land Withdrawal Area)*	Deleted "H-18." Deleted "WIPP-18." Deleted "H-14." Deleted "DOE-2." Deleted "CB-1." Deleted "H-8." Moved the north Exclusive Use Area fence line to the north. Changed "AEC-7" to "AEC-7R."

Affected Permit Section	Explanation of Change
	Changed "H-4" to "H-4bR." Changed "H-5" to H-5b." Changed "H-6" to "H-6bR." Changed "H-9" to "H-9bR." Changed "H-10" to "H-10cR." Changed "H-11b4" to "H-11b4R." Changed "H-12" to "H-12R." Changed "H-15" to "H-15R." Changed "H-19" to "H-19 pad." Deleted "ASER 3-11-09" from the bottom right corner of the figure.

Appendix B
Proposed Revised Permit Text

Proposed Revised Permit Text:

LIST OF TABLES

LIST OF FIGURES

L-1a(2)(iii) The Rustler

The Culebra is the first continuous water-bearing zone above the Salado and is up to approximately 30 ft (9 m) thick. Water in the Culebra is usually present in fractures and is confined by overlying gypsum or anhydrite and underlying clay and anhydrite beds. The hydraulic gradient within the Culebra in the area of the WIPP facility is approximately 20 ft per mi (3.8 m per km) and becomes much flatter south and southwest of the site ~~(Figure L-5)~~. Culebra transmissivities in the Nash Draw range up to 1,250 square ft (ft^2) (116 square m [m^2]) per day; closer to the WIPP facility, they are as low as 0.007 to 74 ft^2 (0.00065 to 7.0 m^2) per day.

L-3a Scope

There are two separate components of the Groundwater Monitoring Program, the Detection Monitoring Program (DMP) and the Water Level Monitoring Program (WLMP). The first component consists of a network of six Detection Monitoring Wells (DMWs). The DMWs (WQSP 1-6) were constructed to be consistent with the specifications provided in the Groundwater Monitoring Technical Enforcement Guidance Document and constitute the RCRA groundwater monitoring network specified in the DMP. The DMWs were used to establish background groundwater quality in accordance with 20.4.1.500 NMAC (incorporating 40 CFR § 264.97 and 264.98 (f)). The second component of the Groundwater Monitoring Program is the WLMP, which is used to determine the groundwater surface elevation and flow direction. Table L-4 is a list of the wells used in the WLMP ~~as of January 1, 2011~~. The list of wells is subject to change due to plugging and abandonment and drilling of new wells.

Table L-4
List of Culebra Wells in the WLMP, Current as of ~~October 2017~~October 2019

~~WELL ID~~	~~WELL ID~~	~~WELL ID~~
~~AEC-7R~~	~~H-17~~	~~SNL-15~~
~~C-2737~~	~~H-19 pad*~~	~~SNL-16~~
~~ERDA-9~~	~~I-461~~	~~SNL-17~~
~~H-02b2~~	~~SNL-01~~	~~SNL-18~~
~~H-03b2~~	~~SNL-02~~	~~SNL-19~~
~~H-04bR~~	~~SNL-03~~	~~WQSP-1~~
~~H-05b~~	~~SNL-05~~	~~WQSP-2~~
~~H-06bR~~	~~SNL-06~~	~~WQSP-3~~
~~H-07b1~~	~~SNL-08~~	~~WQSP-4~~
~~H-9bR~~	~~SNL-09~~	~~WQSP-5~~
~~H-10cR~~	~~SNL-10~~	~~WQSP-6~~
~~H-11b4R~~	~~SNL-12~~	~~WIPP-11~~
~~H-12R~~	~~SNL-13~~	~~WIPP-13~~
~~H-15R~~	~~SNL-14~~	~~WIPP-19~~
~~H-16~~		

~~*The water level for the H-19b0 well on the H-19 pad is measured monthly; the fluid density measured annually at well H-19b0 will be used to correct for freshwater head for the other wells on the H-19 pad (H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7)~~

WELL ID	WELL ID	WELL ID
AEC-7R	IMC-461	SNL-15
C-2737	SNL-1	SNL-16
H-4bR	SNL-2	SNL-17
H-5b	SNL-3	SNL-18
H-6bR	SNL-5	SNL-19
H-9bR	SNL-6	WQSP-1
H-10cR	SNL-8	WQSP-2
H-11b4R	SNL-9	WQSP-3
H-12R	SNL-10	WQSP-4
H-15R	SNL-12	WQSP-5
H-16	SNL-13	WQSP-6
H-19 pad*	SNL-14	WIPP-11

*The water level for the H-19b0 well on the H-19 pad is measured monthly; the fluid density measured annually at well H-19b0 will be used to correct for freshwater head for the other wells on the H-19 pad (H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7).

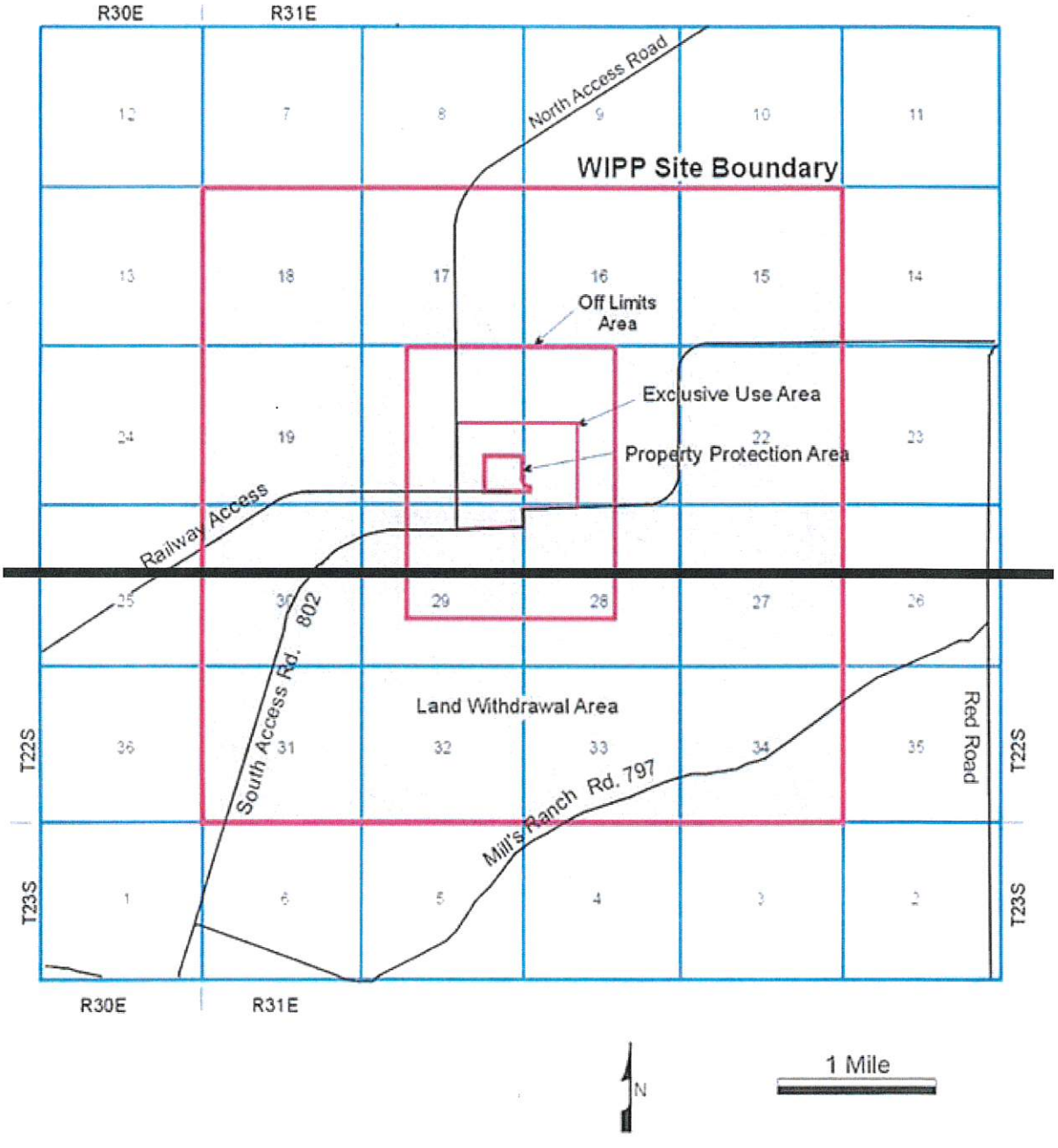


Figure L-2
WIPP Facility Boundaries Showing 16-square-Mile Land Withdrawal Boundary

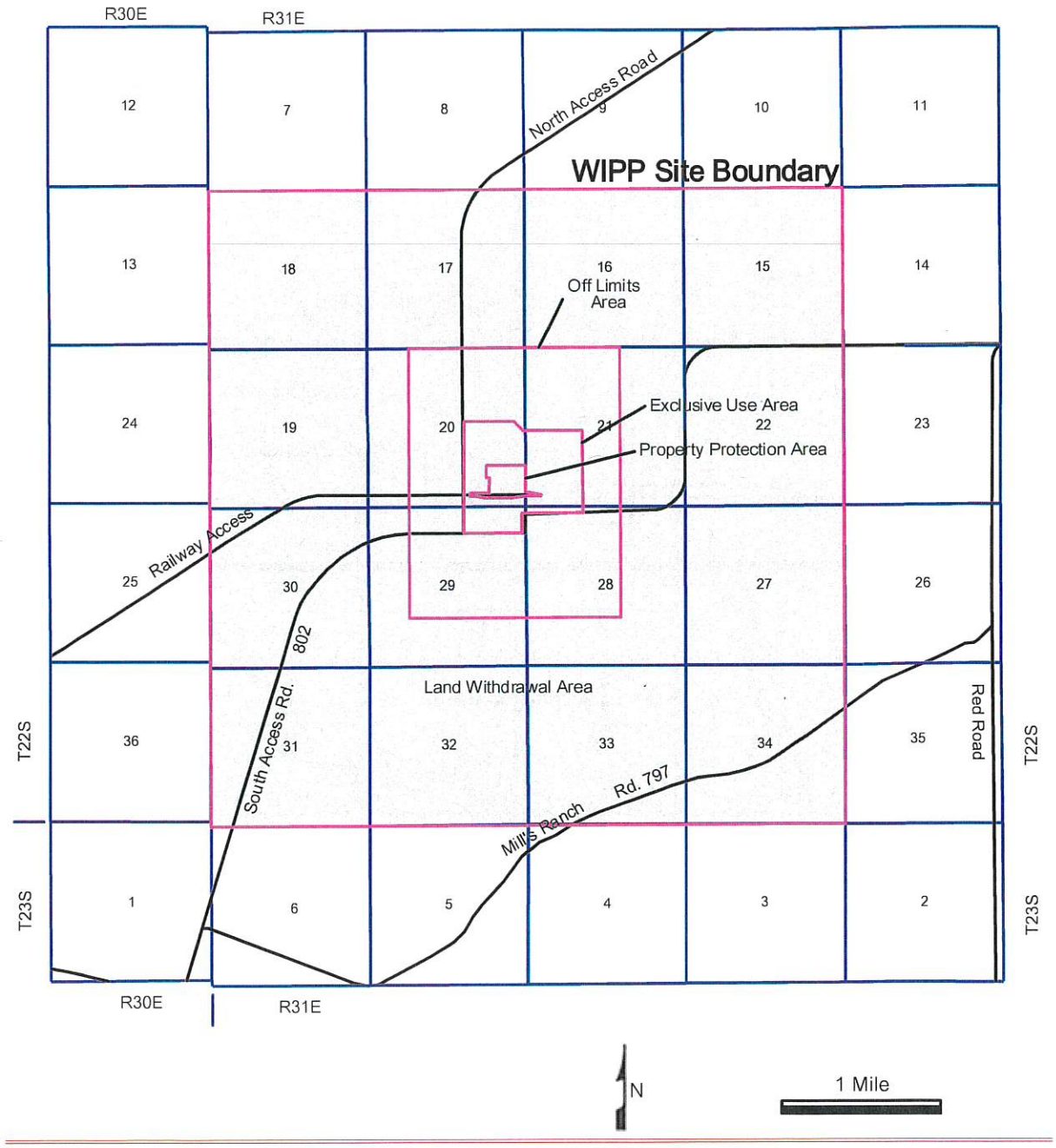
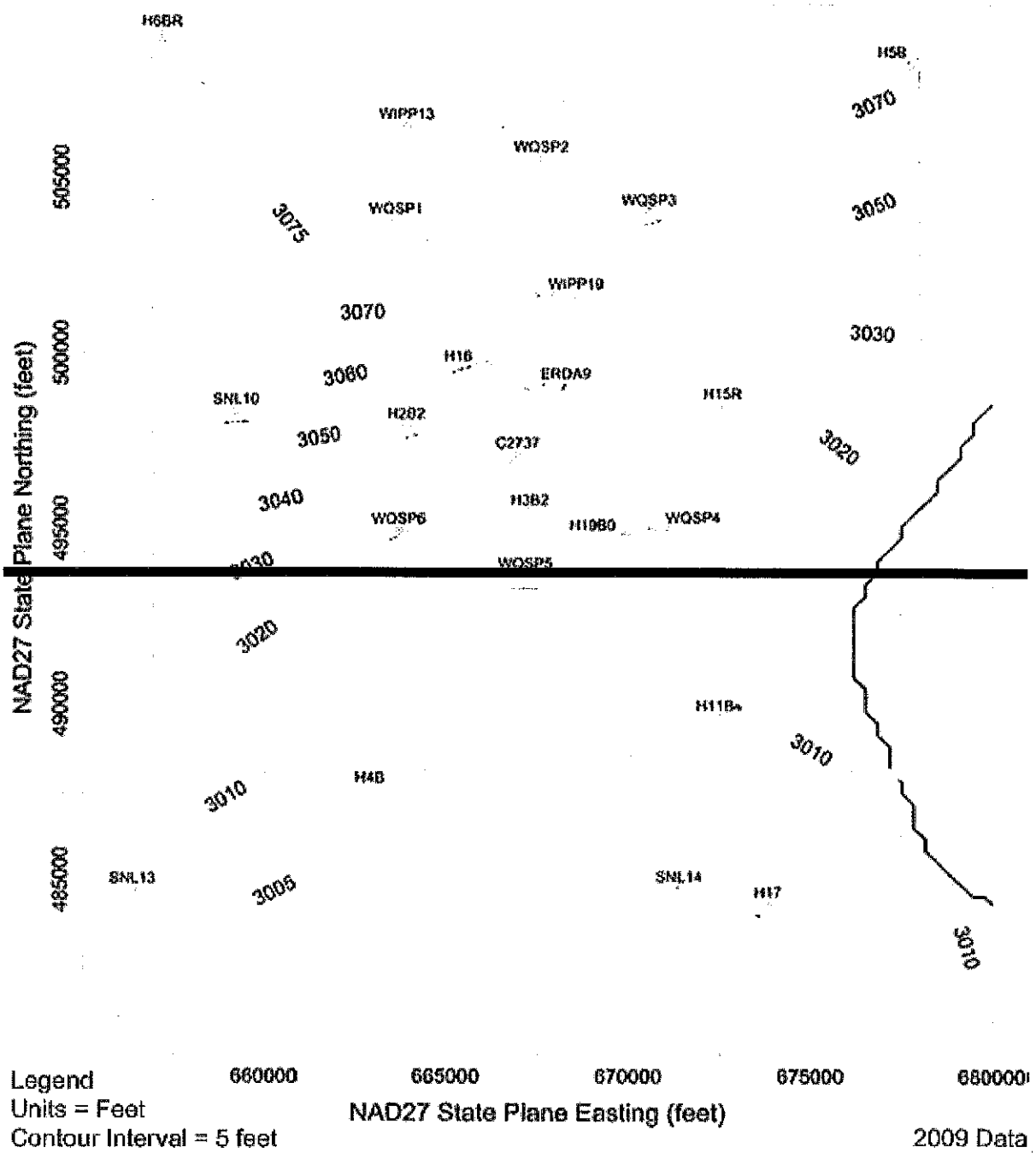
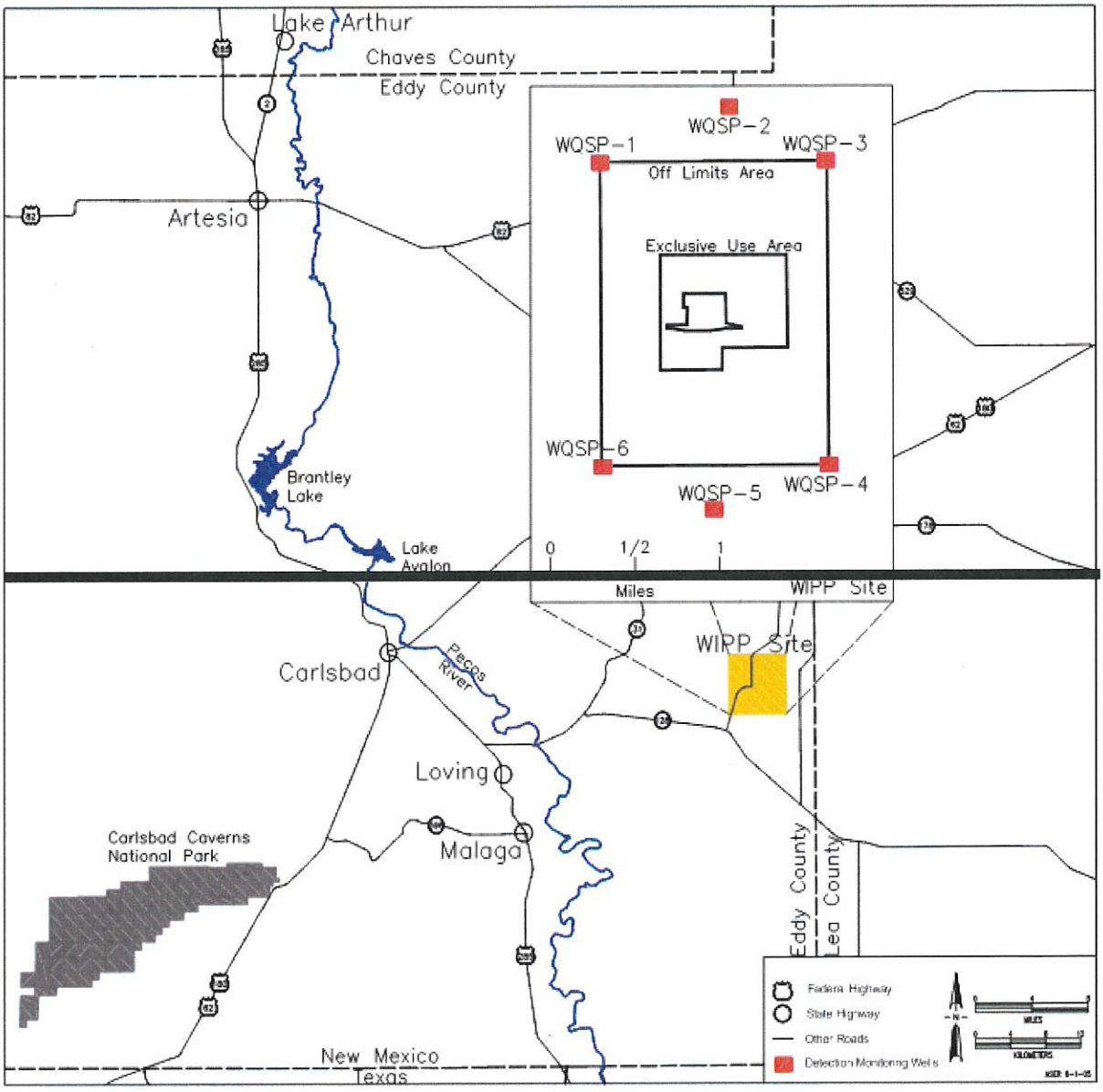


Figure L-2
WIPP Facility Boundaries Showing 16-square-Mile Land Withdrawal Boundary



~~Figure L-5~~
~~Culebra Freshwater Head Potentiometric Surface~~



NOTE: Point of compliance is defined in Part 5.3.1.

Figure L-6
Detection Monitoring Well Locations

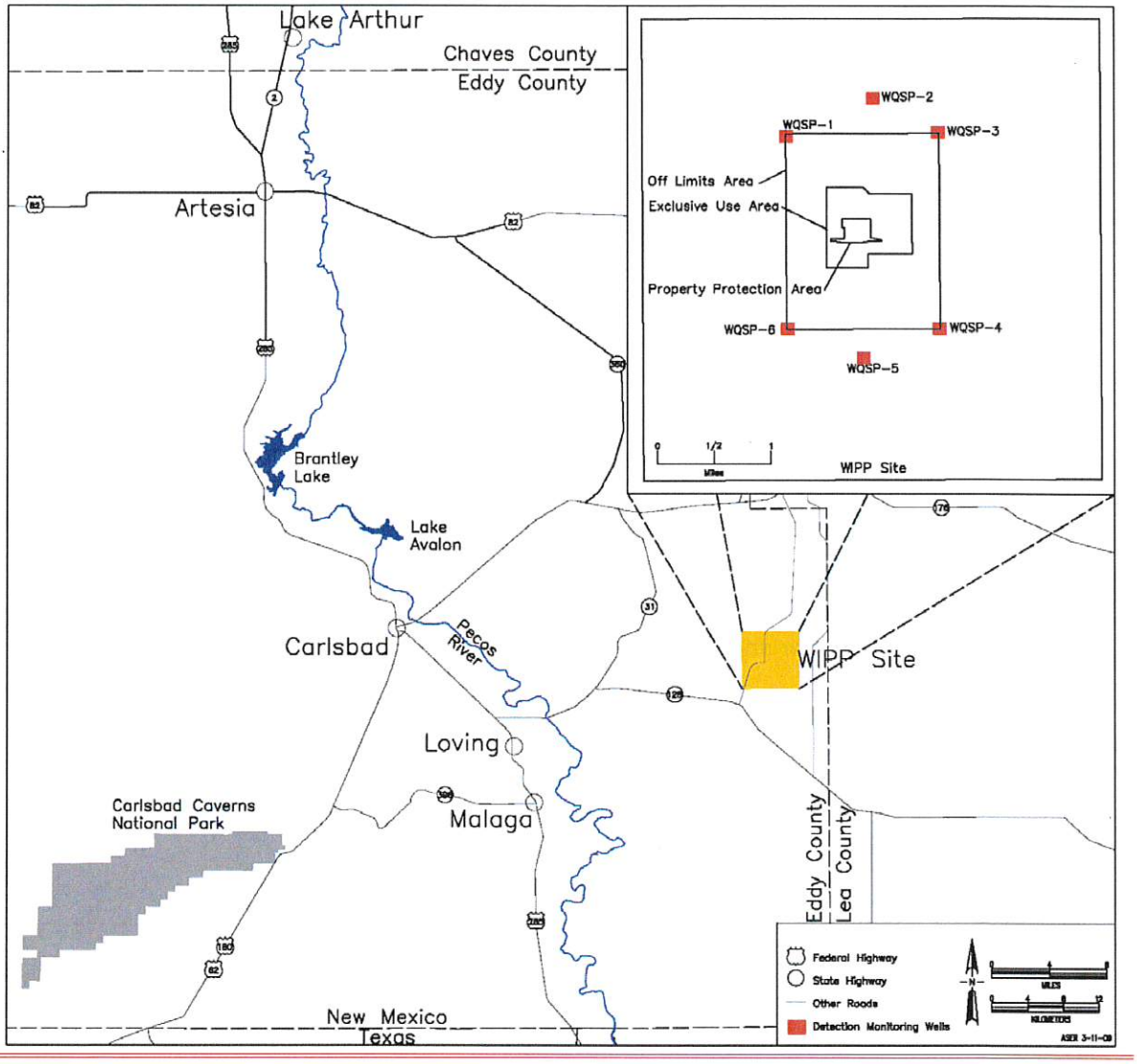


Figure L-6
Detection Monitoring Well Locations

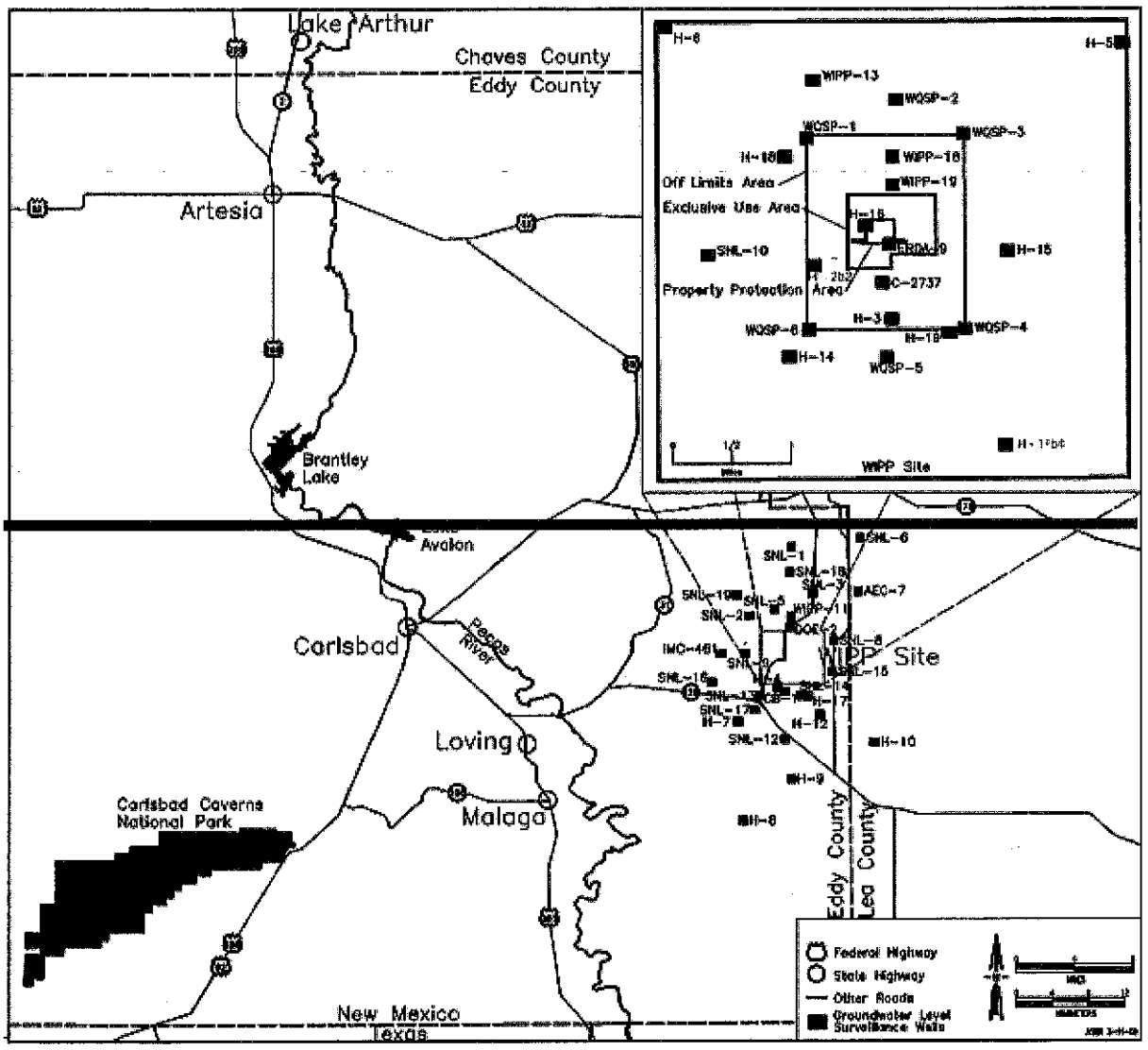


Figure L-14
Groundwater Level Surveillance Wells
(inset represents the groundwater surveillance wells in WIPP Land Withdrawal Area)

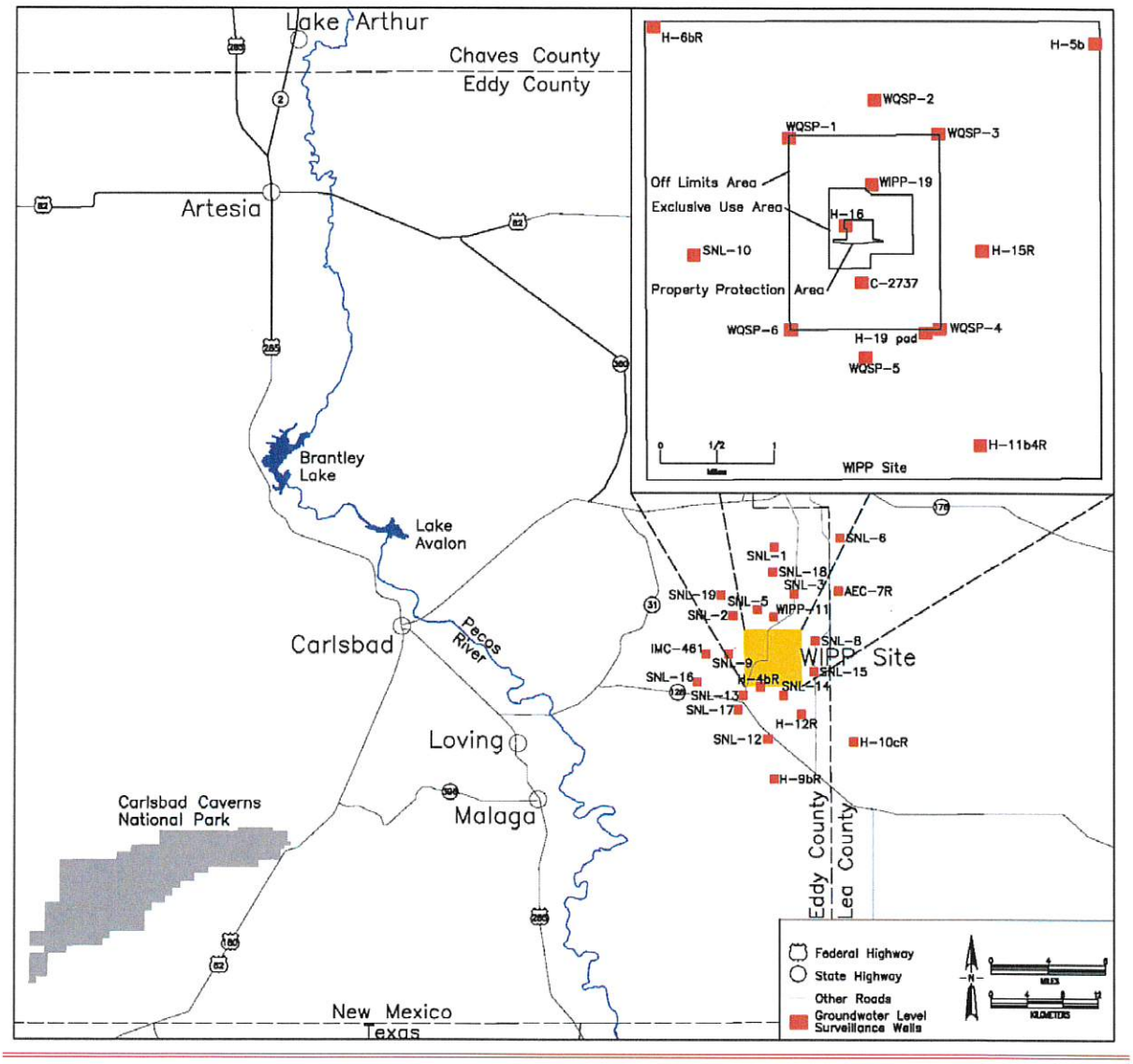


Figure L-14
Groundwater Level Surveillance Wells
(inset represents the groundwater surveillance wells in WIPP Land Withdrawal Area)

Appendix C
Potentiometric Surface Contour Map Excluding Potential Plugging and Abandonment Wells

Final
MRR
9-05-19

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Sandia National Laboratories

Operated for the United States Department of Energy
by National Technology and Engineering Solutions
of Sandia, LLC.

Albuquerque, New Mexico 87185-0101
Livermore, California 94551-0969

date: September 24, 2019

to: Rick Salness & Brett Seal

from: Amelia Hayes

subject: Potentiometric Surface Contour Map Excluding Potential Plugging and Abandonment Wells

Per your request (email attached), the contour map presented below in Figure 1 was created utilizing data from the 2018 Culebra potentiometric surface map reported in the *Analysis Report for Preparation of the 2018 Culebra Potentiometric Surface Contour Map* (Hayes, 2019), but with seven wells, ERDA-9, H-2b2, H-3b2, H-7b1, H-17, WIPP-13, and WIPP-19, removed from the analysis. This analysis is consistent with the Kuhlman, 2010 *Analysis Report AP-111* that discussed the Culebra water level monitoring network design and the minimal impact of removing these seven wells that were proposed for plugging and abandonment.

The analysis used to produce the map below was based on the same Specific Procedure (SP), *SP 9-9: Preparation of Culebra Potentiometric Surface Contour Maps* (Kuhlman, 2009), as the original 2018 contour map. Water level data from May 2018 were used in both analyses to provide an accurate comparison. The only difference between the 2018 contour map (Figure 2) and the map presented in Figure 1 is the exclusion of water level input data for the seven wells, ERDA-9, H-2b2, H-3b2, H-7b1, H-17, WIPP-13, and WIPP-19. Well H-7b1 is located outside the area presented in the map in Figure 1 which focuses on the land withdrawal area (LWA). Removing H-7b1 water-level data did not change the model area contour map presented in Figure 3.

The blue line in Figure 1 corresponds to the calculated path a water particle would take through the Culebra from the coordinates corresponding to the WIPP waste handling shaft to the Land Withdrawal Boundary. The particle track has a path length of 13355 ft (4070 m). The calculated travel time of the particle is 6019 years with an average speed of 2.2 ft/year (0.68 m/year). The original particle track length presented in Figure 2 had a path length of 13355 ft (4070 m) a calculated travel time of 5979 years and an average speed of 2.2 ft/year (0.68 m/year).

References:

Hayes, A. 2019. *Analysis Report for Preparation of the 2018 Culebra Potentiometric Surface Contour Map.* Sandia National Laboratories: Carlsbad, NM.

Kuhlman, K.L. 2009. *SP 9-9: Preparation of Culebra Potentiometric Surface Contour Maps.* Sandia National Laboratories: Carlsbad, NM. ERMS 552306

Kuhlman, K.L. 2010. *Analysis Report AP-111, Culebra Water Level Monitoring Network Design.* Sandia National Laboratories: Carlsbad, NM. ERMS 554054

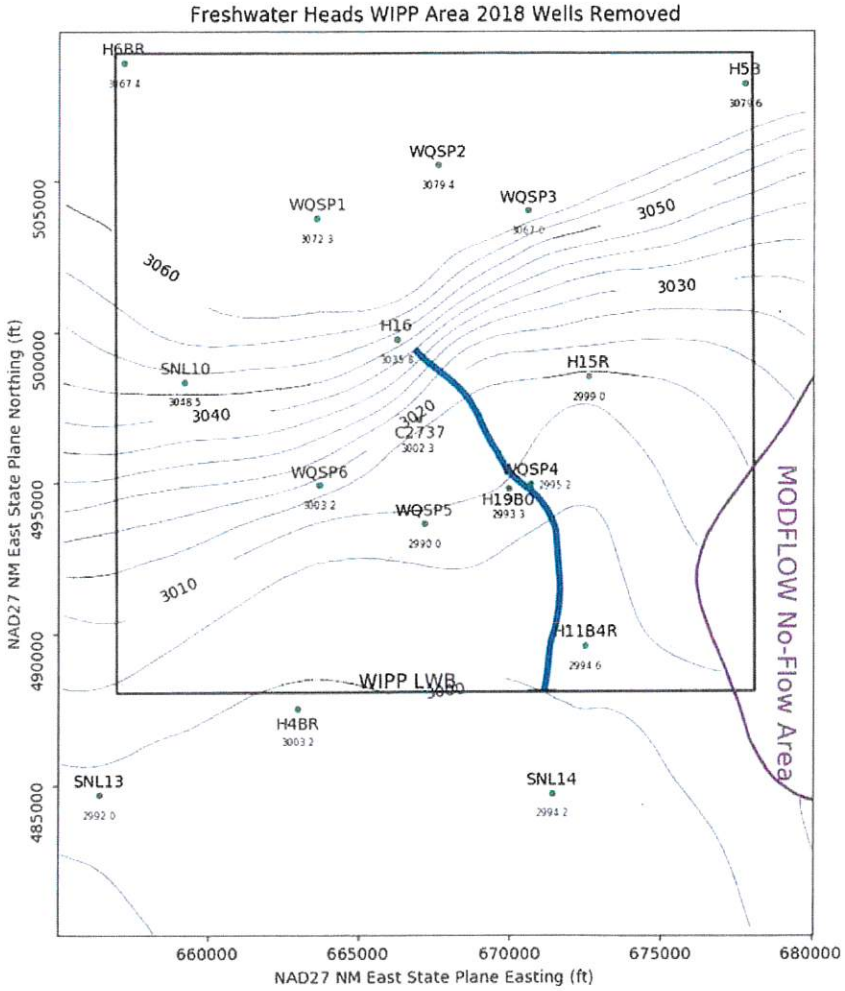

Figure 1. Model-generated May 2018 freshwater head contours with observed heads (ft) listed at each well. Wells ERDA-9, H-2b2, H-3b2, H-7b1, H-17, WIPP-13, and WIPP-19 were removed from the analysis and are therefore absent from the map. Contours are at are at 5 ft intervals with the blue line particle track from the waste handling shaft to the WIPP LWB. The purple line is a constant head boundary representing the Rustler halite margin.

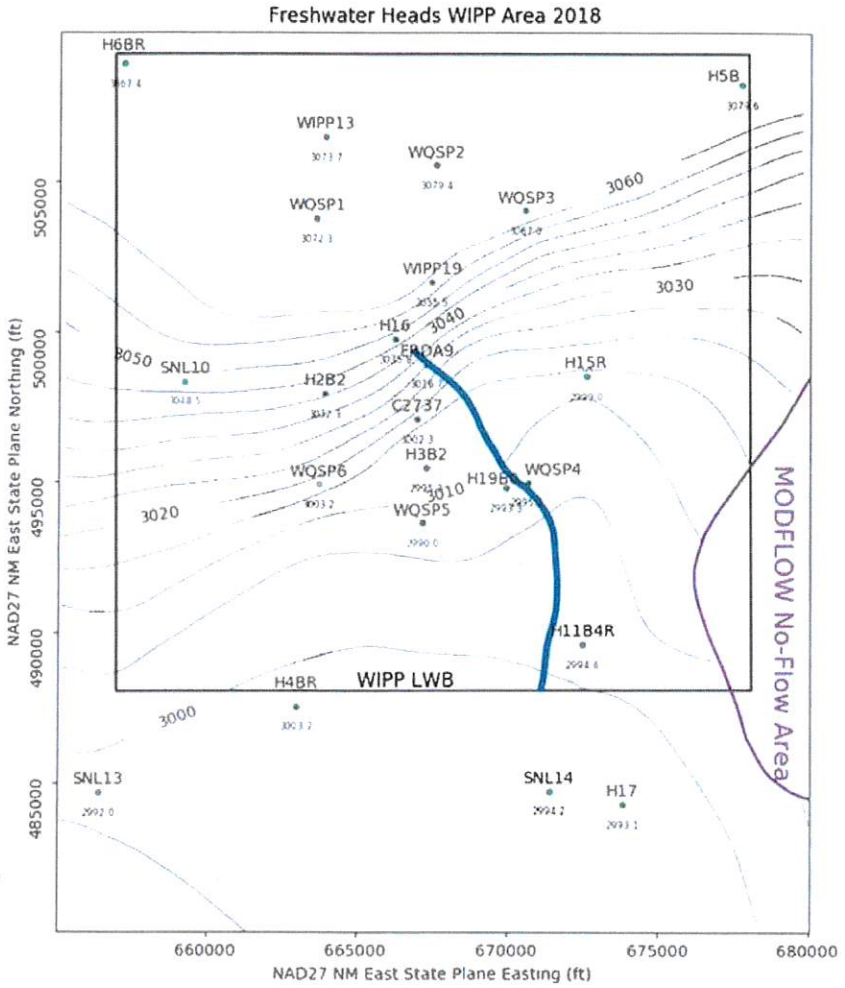

Figure 2. Model-generated May 2018 freshwater head contours with observed heads (ft) listed at each well (5-foot contour intervals) with blue line particle track from waste handling shaft to WIPP LWB. The purple line represents the Rustler halite margin (From Hayes, 2019)

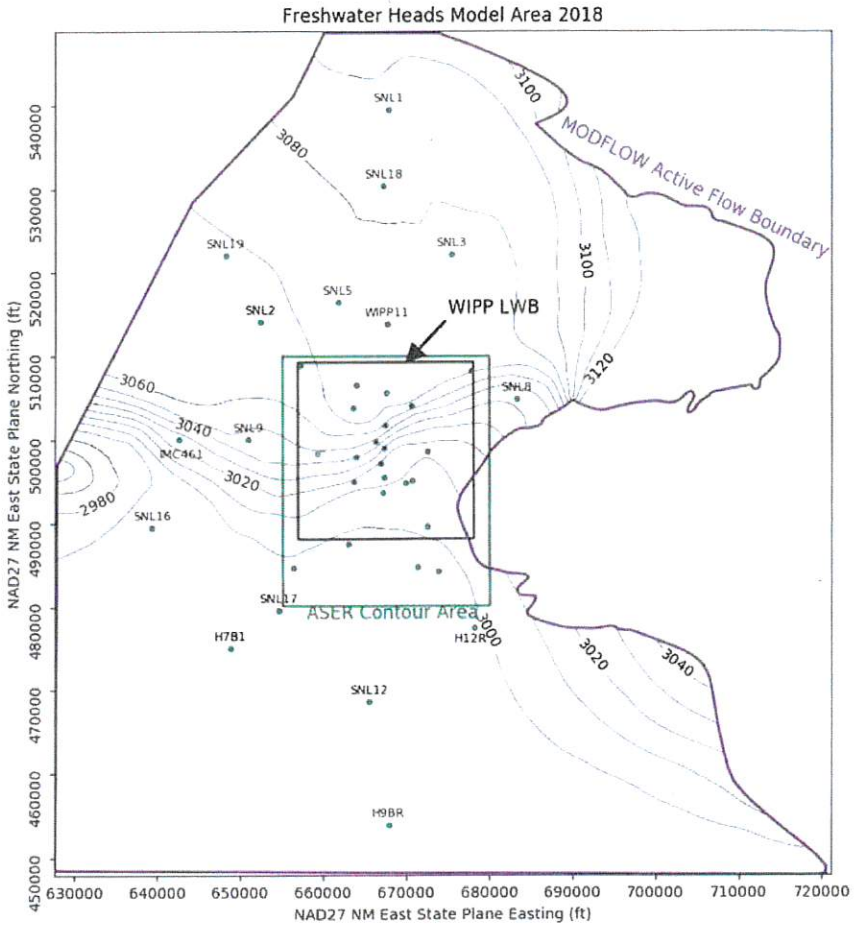

Figure 3. MODFLOW-modeled May 2018 heads for entire model domain (10-foot contour interval). Green rectangle indicates region contoured in Figure 2, inner black square is WIPP LWB. Wells within the ASER Contour Area (green box) are not labeled due to the high density of wells. Refer to Figure 2 for identification of wells within the ASER Contour Area (From Hayes, 2019).

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