



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



ENTERED

RECEIVED

OCT 23 2017

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

NMED
Hazardous Waste Bureau

Subject: Class 1* Permit Modification Notification to the Waste Isolation Pilot Plant Hazardous Waste Facility Permit Number: NM4890139088-TSDF

Dear Mr. Kieling:

Enclosed is the following:

Class 1* Permit Modification Notification

- Changes to Groundwater Sampling Procedures

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. George T. Basabilvazo at 575-234-7488.

Sincerely,

Todd Shrader, Manager
Carlsbad Field Office

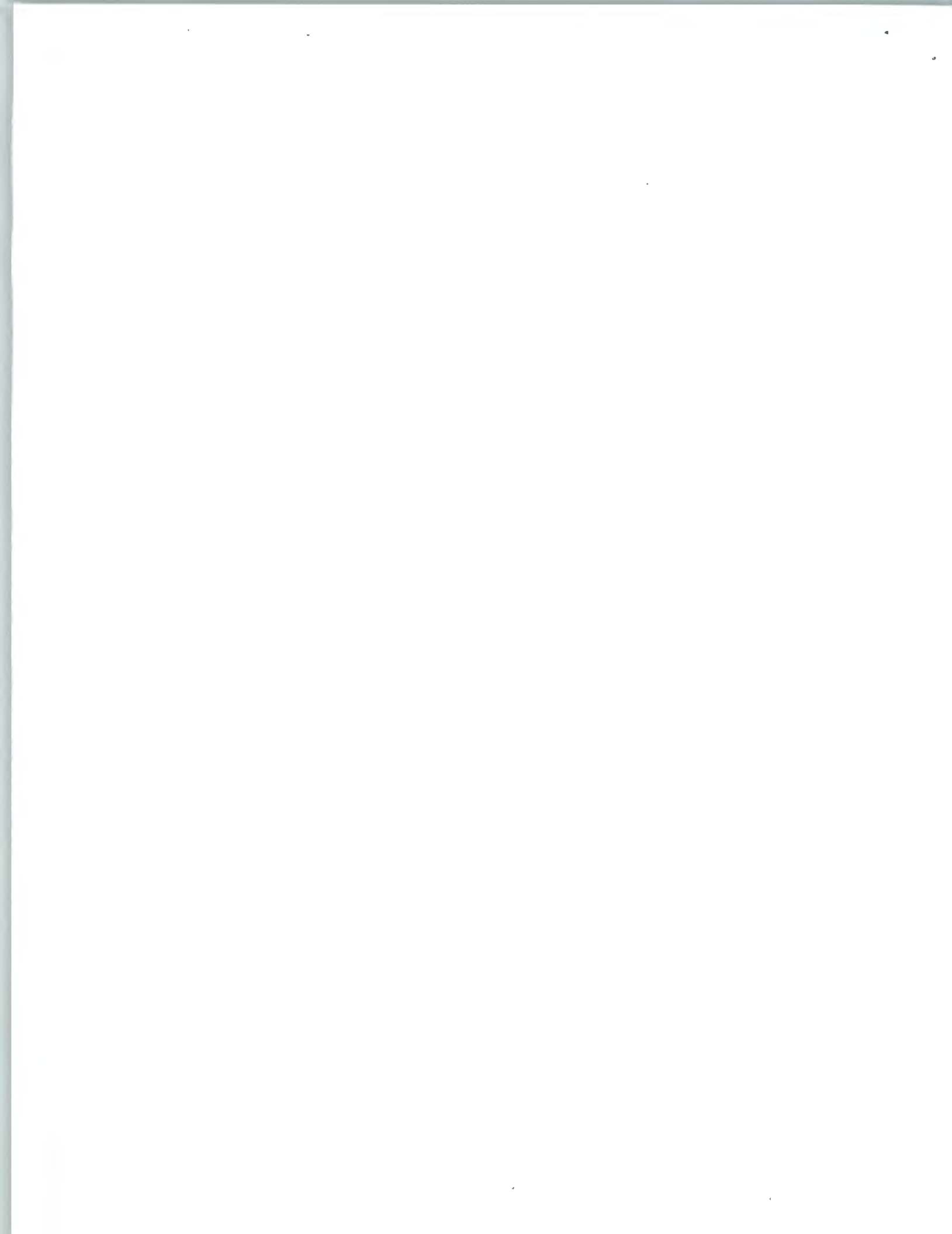
Bruce C. Covert, Project Manager
Nuclear Waste Partnership LLC

Enclosure

cc: w/enclosure
R. Maestas, NMED * ED
D. Biswell, NMED ED
CBFO M&RC
*ED denotes electronic distribution

171023





Class 1* Permit Modification Notification
Changes to Groundwater Sampling Procedures
Waste Isolation Pilot Plant
Carlsbad, New Mexico
WIPP Permit Number - NM4890139088-TSDF

October 2017

Table of Contents

Transmittal Letter	
Table of Contents.....	i
Acronyms and Abbreviations.....	ii
Overview of the Permit Modification Notification.....	1
Attachment A Description of the Class 1* Permit Modification Notification	A-1
Table 1. Class 1* Hazardous Waste Facility Permit Modification Notification.....	A-2
Item 1.....	A-3
Description	A-3
Basis	A-3
Discussion.....	A-4
Proposed Revised Permit Text:	A-8

Acronyms and Abbreviations

CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
DMP	Detection Monitoring Program
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
Permit	Waste Isolation Pilot Plant Hazardous Waste Facility Permit
Permittees	U.S. Department of Energy and Nuclear Waste Partnership LLC
PMN	Permit Modification Notification
WIPP	Waste Isolation Pilot Plant

Overview of the Permit Modification Notification

This document contains a Class 1* Permit Modification Notification (**PMN**) requiring prior agency approval for the Waste Isolation Pilot Plant (**WIPP**) Hazardous Waste Facility Permit (**Permit**) Number NM4890139088-TSDF.

This PMN 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 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**) §270.42(a)(2)). The PMN in this document is necessary to notify the New Mexico Environment Department (**NMED**) of a change which impacts the WIPP facility. This change does not reduce the ability of the Permittees to provide continued protection to human health and the environment.

This modification to the Permit and any related supporting documents are provided in this PMN. 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.

Attachment A
Description of the Class 1* Permit Modification Notification

Table 1. Class 1* Hazardous Waste Facility Permit Modification Notification

Affected Permit Section	Change Description	Category
<p>Attachment L, Section L-4c(1) <i>Groundwater Surface Elevation Monitoring Methodology</i>, Page L-10</p> <p>Attachment L, Table L-3 <i>Standard Operating Procedures Applicable to the DMP</i>, Page L-33</p> <p>Attachment L, Table L-4 <i>List of Culebra Wells in the WLMP, Current as of February 2014</i>, Page L-34</p>	<p>This Permit modification proposes revisions to the following sections of the Permit:</p> <ul style="list-style-type: none"> • Attachment L, Section L-4c(1), <i>Groundwater Surface Elevation Monitoring Methodology</i> • Attachment L, Table L-3, <i>Standard Operating Procedures Applicable to the DMP [Detection Monitoring Program]</i> • Attachment L, Table L-4, <i>List of Culebra Wells in the WLMP [WIPP Groundwater Level Monitoring Program], Current as of February 2014</i> <p>The Permittees are proposing to modify the groundwater sampling procedures by using the groundwater density measurements taken at well H-19b0 with an in-situ pressure transducer to correct for freshwater head for the other Culebra groundwater wells on the H-19 well pad (H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7). Currently, manual measurements are being performed at each of the other wells on the H-19 well pad. The change to groundwater sampling procedures proposed in this modification is to discontinue the manual density measurements and, instead, use the in-situ pressure transducer at well H-19b0 to obtain an annual fluid density measurement that is functionally equivalent to the manual fluid density measurements at the other wells on the H-19 pad. The freshwater heads, based on the in-situ pressure transducer measurements, are calculated by Sandia National Laboratories using the formula in Permit Attachment L, Section L-4c(1), <i>Groundwater Surface Elevation Monitoring Methodology</i>, and are provided to the Permittees.</p> <p>The Permittees are also proposing to remove the procedure, WP 02-EM1021, <i>Fluid Density Survey</i>, which provides the steps for making the manual measurements and determining the average fluid densities in wells H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7, from Permit Attachment L, Table L-3, because it will no longer be used for Permit-related groundwater sampling.</p> <p>Additionally, the Permittees are proposing to revise the text in the footnote to Permit Attachment L, Table L-4, to clarify that water level measurements will be taken monthly for well H-19b0 on the H-19 well pad, which is consistent with the current Permit, and to indicate that the H-19b0 well will be the only well where groundwater density measurements will be taken on the H-19 well pad.</p> <p>The Permittees are also proposing to update Permit Attachment L, Table L-4, by changing "February 2014" to "October 2017" in the title and by adding an "R" to wells "H-10c" and "H-12" to indicate that these wells are replacement wells for H-10c and H-12 which have been plugged and abandoned.</p>	<p>C.2</p>

Item 1

Description

This Permit modification proposes revisions to the following sections of the Permit:

- Attachment L, Section L-4c(1), *Groundwater Surface Elevation Monitoring Methodology*
- Attachment L, Table L-3, *Standard Operating Procedures Applicable to the DMP [Detection Monitoring Program]*
- Attachment L, Table L-4, *List of Culebra Wells in the WLMP [WIPP Groundwater Level Monitoring Program], Current as of February 2014*

The Permittees are proposing to modify the groundwater sampling procedures by using the groundwater density measurements taken at well H-19b0 with an in-situ pressure transducer to correct for freshwater head for the other Culebra groundwater wells on the H-19 well pad (H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7). Currently, manual measurements are being performed at each of the other wells on the H-19 well pad. The change to groundwater sampling procedures proposed in this modification is to discontinue the manual density measurements and, instead, use the in-situ pressure transducer at well H-19b0 to obtain an annual fluid density measurement that is functionally equivalent to the manual fluid density measurements at the other wells on the H-19 pad. The freshwater heads, based on the in-situ pressure transducer measurements, are calculated by Sandia National Laboratories using the formula in Permit Attachment L, Section L-4c(1), *Groundwater Surface Elevation Monitoring Methodology*, and are provided to the Permittees.

The Permittees are also proposing to remove the procedure, WP 02-EM1021, *Fluid Density Survey*, which provides the steps for making the manual measurements and determining the average fluid densities in wells H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7, from Permit Attachment L, Table L-3, because it will no longer be used for Permit-related groundwater sampling.

Additionally, the Permittees are proposing to revise the text in the footnote to Permit Attachment L, Table L-4, to clarify that water level measurements will be taken monthly for well H-19b0 on the H-19 well pad, which is consistent with the current Permit, and to indicate that the H-19b0 well will be the only well where groundwater density measurements will be taken on the H-19 well pad.

The Permittees are also proposing to update Permit Attachment L, Table L-4, by changing "February 2014" to "October 2017" in the title and by adding an "R" to wells "H-10c" and "H-12" to indicate that these wells are replacement wells for H-10c and H-12 which have been plugged and abandoned.

Basis

This change is classified as "Changes in ground-water sampling or analysis procedures or monitoring schedule, with prior approval of the Director" and is, therefore, a Class 1* modification, requiring prior agency approval, pursuant to 20.4.1.900 NMAC (incorporating 40 CFR 270.42(a)(2) and Appendix I, C.2). The Permittees have identified this as the appropriate classification because the proposed process for determining fluid density no longer uses the procedure listed in the Permit; instead, in-situ pressure transducer data from the H-19b0 well will be used to meet the requirements of the Permit.

Discussion

Permit Attachment L, Section L-4c(1) states:

To monitor the hydraulic gradients of the hydrologic flow systems accurately, actual groundwater surface elevation measurements will be monitored at the frequencies specified in Table L-2, and the Culebra groundwater densities of the fluids in the wells listed in Table L-4 will be measured annually.

Table L-4 includes the wells on the H-19 pad. These wells are designated as H-19b0, H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7. Wells H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7 are measured manually using standard operating procedure WP 02-EM1021, *Fluid Density Survey*. The other accessible wells indicated in Permit Attachment L, Table L-4 (including H-19b0), are measured through the use of in-situ pressure transducers that take continuous pressure measurements from which fluid densities are calculated.

The Permittees are proposing to use the data from the in-situ pressure transducer at well H-19b0 to obtain an annual fluid density measurement that is functionally equivalent to the fluid density at the other wells on the H-19 pad and discontinue the manual downhole measurements. The rationale for making this change is as follows. The wells on the H-19 pad lie within a 71-foot radius of the H-19b0 well (see Figures 1 and 2). Data have shown that differences in the groundwater densities of the H-19 wells are negligible (see Table 1 below); therefore, using the data from the in-situ pressure transducer at the H-19b0 well is functionally equivalent to the data from individual measurements obtained from the H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7 wells. The groundwater density measurements taken at well H-19b0 may be used to correct for freshwater head for Culebra groundwater wells H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7. This change is needed to provide efficiencies in the Detection Monitoring Program (DMP) since the continuous in-situ pressure transducer measurements at well H-19b0 will replace the annual manual measurements at the other wells on the H-19 pad. This will allow the Permittees to discontinue the use of trailer-mounted measuring equipment and procedure WP 02-EM1021.

TABLE 1. Fluid Densities Measured at the H-19 Well Pad 2013 to 2016

Well	2013 Fluid Density Survey Result ¹	2013 Conversion to Specific Gravity at 70°F	2014 Fluid Density Survey Result ²	2014 Conversion to Specific Gravity at 70°F	2015 Fluid Density Survey Result ³	2015 Conversion to Specific Gravity at 70°F	2016 Fluid Density Survey Result	2016 Conversion to Specific Gravity at 70°F
	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)
H-19b0	1.064	1.066	1.067	1.069	1.064	1.066	1.064	1.062
H-19b2	1.066	1.068	1.070	1.072	1.070	1.072	1.069	1.071
H-19b3	1.064	1.066	1.073	1.075	1.070	1.072	1.070	1.072
H-19b4	1.064	1.066	1.069	1.071	1.070	1.073	1.070	1.072
H-19b5	1.067	1.069	1.072	1.074	1.072	1.074	1.072	1.074
H-19b6	1.068	1.070	1.073	1.075	1.074	1.076	1.074	1.076
H-19b7	1.068	1.070	1.073	1.075	1.073	1.075	1.073	1.075

Well	2013 Fluid Density Survey Result ¹	2013 Conversion to Specific Gravity at 70°F	2014 Fluid Density Survey Result ²	2014 Conversion to Specific Gravity at 70°F	2015 Fluid Density Survey Result ³	2015 Conversion to Specific Gravity at 70°F	2016 Fluid Density Survey Result	2016 Conversion to Specific Gravity at 70°F
	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)	Density (g/cm ³)

¹ U. S. Department of Energy (DOE), 2014, Waste Isolation Pilot Plant Annual Site Environmental Report for 2013 – EMENDED (DOE/WIPP-14-3532). Carlsbad, NM.

² U. S. Department of Energy (DOE), 2015, Waste Isolation Pilot Plant Annual Site Environmental Report for 2014 – EMENDED (DOE/WIPP-15-8866). Carlsbad, NM.

³ U. S. Department of Energy (DOE), 2016, Waste Isolation Pilot Plant Annual Site Environmental Report for 2015 (DOE/WIPP-16-3572). Carlsbad, NM.

As a result of the changes being made to Attachment L, Section L-4c(1), the Permittees are proposing to remove procedure WP 02-EM1021 from Permit Attachment L, Table L-3. Procedure WP 02-EM1021 is used only for wells H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7 which are not equipped with in-situ pressure transducers. Because the Permittees are proposing to obtain annual density measurements from the H-19b0 well only, which is equipped with an in-situ pressure transducer, there is no longer a need for this procedure. This change is needed to ensure consistency within the revised Permit text in Attachment L.

The Permittees are also proposing to revise the footnote in Permit Attachment L, Table L-4, to describe that the annual density measurement is made at the H-19b0 well only and to clarify that the only required monthly water level measurement at the H-19 pad is well H-19b0. Pursuant to the existing Permit, the remaining wells on the H-19 pad are not required to be measured on a monthly basis. This change is needed to ensure consistency within the revised Permit text as proposed in Attachment L and to provide clarification with respect to existing Permit language regarding water level measurements.

The Permittees are also proposing to update Permit Attachment L, Table L-4, by changing “February 2014” to “October 2017” in the title to indicate that the well listing is current as of October 2017, and by adding an “R” to wells “H-10c” and “H-12” to indicate that these wells are replacement wells for H-10c and H-12 which have been plugged and abandoned.

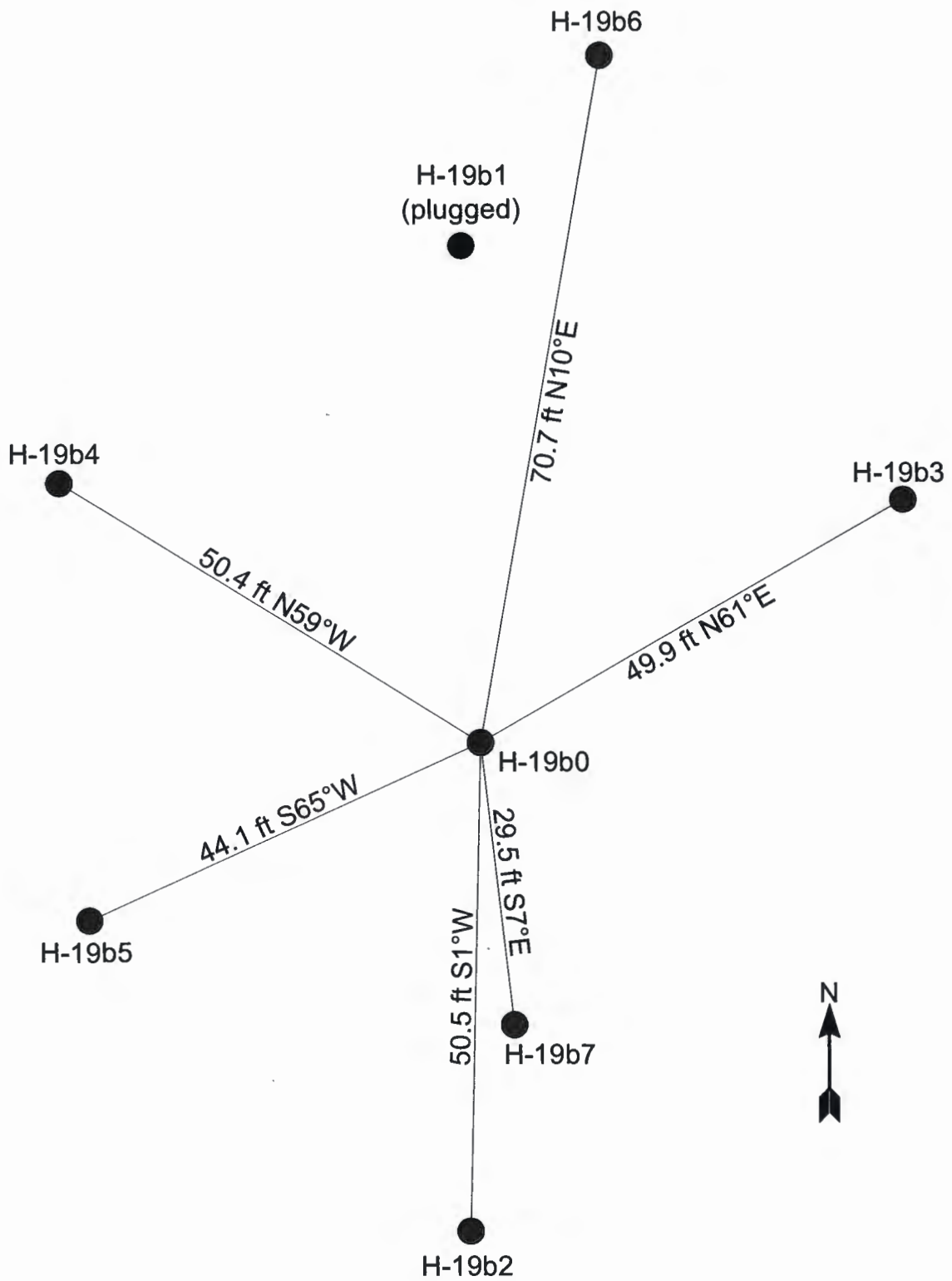


Figure 1. H-19 Well Pad Configuration



Figure 2. H-19 Well Pad

Proposed Revised Permit Text:

L-4c(1) Groundwater Surface Elevation Monitoring Methodology

Interpretation of groundwater surface elevation measurements and corresponding fluctuations over time is complicated at the WIPP facility by spatial variation in fluid density. To monitor the hydraulic gradients of the hydrologic flow systems accurately, actual groundwater surface elevation measurements will be monitored at the frequencies specified in Table L-2, and the Culebra groundwater densities of the fluids in the wells listed in Table L-4 will be measured annually. The fluid density measured at well H-19b0 will be used to correct for freshwater head for the other wells on H-19 pad (H-19b2, H-19b3, H-19b4, H-19b5, H-19b6, and H-19b7).

**Table L-3
Standard Operating Procedures Applicable to the DMP**

Number	Title/Description
WP 02-EM1010	Field Parameter Measurements and Final Sample Collection: This procedure provides general instructions necessary to perform field analyses of serial samples in support of the DMP. Serial samples are collected and analyzed at the field laboratory for field indicators. Serial sample results help determine if pumped groundwater is representative of undisturbed groundwater within the formation. This procedure also describes the steps for collecting groundwater samples from the DMWs near the WIPP facility. Samples are collected and analyzed at the Field Laboratory until stabilization of the field parameters occurs. Final samples for Resource Conservation and Recovery Act (RCRA) analyses are collected and analyzed by a contract laboratory.
WP 02-EM1014	Groundwater Level Measurement: This document describes the method used for groundwater level measurements in support of groundwater monitoring at the WIPP facility using a portable electronic water-level probe.
WP 02-EM1021	Pressure Density Survey: This procedure defines the field methodology used to determine the average density of fluid standing in the well bores of groundwater level monitoring wells. The data derived from the survey are used to calculate equivalent freshwater heads at non-detection monitoring wells. Because most pressure densities are obtained by Sandia National Laboratories via pressure transducers installed in wells, this procedure is used to obtain pressure densities at wells not equipped with fixed transducers.
WP 02-EM1026	Water Level Data Handling and Reporting: This procedure provides instructions on handling water level data. Data are collected and recorded on field forms in accordance with WP 02-EM1014. This procedure is initiated when wells in the water surveillance program have been measured for a given month.
WP 02-EM3001	Administrative Processes for Environmental Monitoring and Hydrology Programs: This procedure provides the administrative guidance environmental monitoring personnel use to maintain quality control associated with environmental monitoring sampling and reporting activities. This administrative procedure does not pertain to volatile organic compound (VOC) monitoring, with the exception of Section 5.0 which pertains to the regulatory reporting review process.
WP 02-EM3003	Data Validation and Verification of RCRA Constituents: This procedure provides instructions on performing verification and validation of laboratory data containing the analytical results of groundwater monitoring samples. This procedure is applied only to the non-radiological analyses results for compliance data associated with the detection monitoring samples. The data reviewed for this procedure includes general chemistry parameters and RCRA constituents.
WP-02-RC.01	Hazardous and Universal Waste Management Plan: This plan describes the responsibilities and handling requirements for hazardous and universal wastes generated at the WIPP facility. It is meant to ensure that these wastes are properly handled, accumulated, and transported to an approved Treatment, Storage, Disposal Facility (TSDF) in accordance with applicable state and federal regulations, U.S. Department of Energy (DOE) Orders, and Management and Operating Contractor (MOC) policies and procedures. This plan implements applicable sections of 20.4.1.100-1102 New Mexico Administrative Code (NMAC), <i>Hazardous Waste Management</i> (incorporating 40 <i>Code of Federal Regulations</i> [CFR] Parts 260-268 and 273).
WP 10-AD3029	Calibration and Control of Monitoring and Data Collection Equipment: This procedure provides direction for the control and calibration of Monitoring and Data Collection (M&DC) equipment at the WIPP facility, and ensures traceability to NIST (National Institute of Standards and Technology) standards, international standards, or intrinsic standards. This procedure also establishes requirements and responsibilities for identifying recall equipment, and for obtaining calibration services for WIPP facility M&DC equipment.
WP 13-1	Management and Operating Contractor Quality Assurance Program Description: This document establishes the minimum quality requirements for MOC personnel and guidance for the development and implementation of QA programs by MOC organizations.

Table L-4
List of Culebra Wells in the WLMP, Current as of February 2014 ~~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	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		

~~*H-19b0 monthly~~ 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)