

Texas Commission on Environmental Quality  
**RADIOACTIVE MATERIAL LICENSE**

LICENSE NUMBER	AMENDMENT NUMBER
R 05807	INITIAL DRAFT

91. A. The Licensee shall conduct the following radiological and non-radiological environmental monitoring program until the license is terminated.

Sample	Station Location Reference	Location <sup>7</sup>	Method	Frequency	Type of Analysis <sup>5</sup>
Air Particulate	1	East of guard house	high-vol. sampler	Continuous <sup>6</sup>	Analyze samples monthly or as required due to dust loading from each location for: gross alpha, gross beta Alpha isotopic <sup>1</sup> , Monthly Composite Gamma Isotopic <sup>2</sup> , Liquid Scintillation <sup>3</sup>
	3	Northwest of RCRA landfill			
	4	North of RCRA landfill			
	6	Northwest facility fence line			
	7	North fence line center of RCRA permit area			
	8	Southeast rail yard			
	9	Control station 3.5 mi. east of TX/NMex state line, south of Hwy 176			
	P11	East of by-product facility and west of Federal facility (operational only)			
	26	About center of east edge of RCRA permit area (north of old ranch house)			
	27	Southeast of facility operational area (upwind prevalent wind direction)(future)			
	P30	North of by-product facility (operational only)			
	P31	Southwest of facility (approximately 1.4 mile west of Texas/New Mexico border (future))			
	P32	North of rail road spur (operational only)			
Radon	1	East of guard house	track-etch detector	quarterly	radon
	3	Northwest of RCRA landfill			
	4	North of RCRA landfill			
	6	Northwest facility fence line			
	7	North fence line center of RCRA permit area			
	8	Southeast rail yard			
	9	Control station 3.5 mi. east of TX/NMex state line, south of Hwy 176			
	P11	East of by-product facility (operational only)			
	26	About center of east edge of RCRA permit area (north of old ranch house)			
	27	Southeast of facility operational area			
	P30	North of by-product facility (operational only)			
	P31	Southwest of facility (approximately 1.4 mile west of Texas/New Mexico border)			
	P32	North of rail road spur (operational only)			





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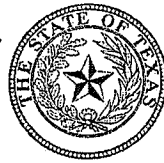
Sample	Station Location Reference	Location <sup>7</sup>	Method	Frequency	Type of Analysis <sup>5</sup>
	PM-06	area Well in the "225-foot zone" located northeast of compact facility	grab	annually	
	PM-07	OAG well located in eastern portion of RCRA permit area, northwest of old ranch house	grab	quarterly	
	TP-14	OAG well located northeast of federal facility	grab	quarterly	
	TP-18	OAG well located just outside the northeast corner of federal facility	grab	quarterly	
	TP-19	OAG well located north of the compact facility	grab	quarterly	
	TP-20	OAG well just north of RCRA permit area, between stations 7 and 16	grab	quarterly	
	TP-31	OAG well located at Bakers Springs	grab	quarterly	
	TP-46	OAG well located south of the federal facility	grab	quarterly	
	Vadose Zone Wells	All wells completed in the "125-foot zone" located along all sides of the by-product landfill. <sup>10</sup>	grab	quarterly <sup>4</sup>	
Vegetation	3 6 8 9	Northwest of RCRA landfill Northwest facility fence line Southeast rail yard Control station 3.5 mi. east of TX/NMex state line, south of Hwy 176	grab	spring and autumn	Analyze samples from each location for: gross alpha, gross beta Alpha isotopic <sup>1</sup> , Gamma Isotopic <sup>2</sup> , Liquid Scintillation <sup>3</sup>
Soil	3 6 8 9 22 26	Northwest of RCRA landfill Northwest facility fence line Southeast rail yard Control station 3.5 mi. east of TX/NMex state line, south of Hwy 176 Northwest corner, by-product facility fence line About center of east edge of RCRA permit area (north of old ranch house)	grab	quarterly	Analyze samples from each location for: gross alpha, gross beta Alpha isotopic <sup>1</sup> , Gamma Isotopic <sup>2</sup> , Liquid Scintillation <sup>3</sup>
Fauna	General Site Area	Primary herbivore	grab	annually	Analyze samples from each location for: gross alpha, gross beta Alpha isotopic <sup>1</sup> , Gamma Isotopic <sup>2</sup> , Liquid Scintillation <sup>3</sup>
Closed disposal unit sumps		Liquid, if present Exterior surface of standpipe cover Monitoring system sump	grab wipe wipe	monthly monthly monthly	Analyze samples from each location for:



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Sample	Station Location Reference	Location <sup>7</sup>	Method	Frequency	Type of Analysis <sup>5</sup>
					gross alpha, gross beta Alpha isotopic <sup>1</sup> , Gamma Isotopic <sup>2</sup> , Liquid Scintillation <sup>3</sup> Also record level in sumps and volume of any leachate pumped.
Meteorological	Onsite Met. Station	2 meters	reading	10 minute averages <sup>8</sup>	precipitation, barometric pressure, solar radiation scalar wind speed and direction, temperature, relative humidity, standard deviation scalar wind direction
Meteorological	Onsite Met. Station	10 meters	reading	10 minute averages <sup>8</sup>	vector wind speed and direction, scalar wind speed and direction, temperature, relative humidity, standard deviation vector and standard deviation scalar wind direction
Direct radiation	1 3 4 6 7 8 9 P11 12 13 14 15 16	East of guard house Northwest of RCRA landfill North of RCRA landfill Northwest facility fence line North fence line center of RCRA permit area Southeast rail yard Control station 3.5 mi. east of TX/NMex state line, south of Hwy 176 East of by-product facility and west of Federal facility (operational only) Southwest of facility (approx. 1.2 mile west of Texas NM border) <sup>4</sup> Southwest corner of property line. North of proposed Federal facility Northwest corner of Texas – NM border Northeast corner of RCRA permit area	TLD (for all locations)	quarterly (for all locations)	Direct gamma radiation measurements taken at each location.

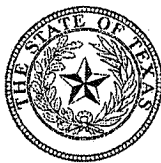


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Sample	Station Location Reference	Location <sup>7</sup>	Method	Frequency	Type of Analysis <sup>5</sup>
	17	Southeast corner near Hwy 176			
	18	Northeast corner, by-product facility fence line			
	19	North of proposed Federal facility			
	21	Northeast corner, by-product facility fence line.			
	22	Northeast corner, by-product facility fence line.			
	23	West of by-product facility			
	24	Southeast corner, by-product facility fence line.			
	25	Old ranch house on east edge of RCRA facility			
	26	About center of east edge of RCRA permit area			
	28	Approximately 1000 feet east of Station 8			
	P30	North of by-product facility (operations only)			
	P31	Southwest of facility (approximately 1.4 mile west of Texas/New Mexico border (future))			
	P32	North of proposed rail road spur (operations only)			

- Alpha isotopic analyses performed if gross alpha exceeds investigation limit (IL). Analyses will include radium, thorium, and uranium using the EPA and DOE modified analytical method used for the appropriate baseline analyses.
- Gamma isotopic analyses includes long-lived and primordial isotopes (Pb-210, Bi-212, Pb-212, Bi-214, Pb-214, Ac-228, Ra-228 (Ac-228), Th-234, U-235, U-238)
- Liquid scintillation analysis for primordial and man-made isotopes may be performed as designated by the RSO.
- Compositing of groundwater from any and all 125-ft vadose zone wells is permitted to obtain a sufficient groundwater sample volume for analysis.
- Unless noted otherwise, analysis frequency is same as sample collection frequency.
- Air particulate filters shall be replaced weekly or more frequently if excessive loading develops.
- Refer to Figure 4.1, "By-Product Disposal Facility Environmental Monitoring Locations." Some locations may vary due to construction of disposal units or other facility features.
- 90% data retrieval.
- Groundwater samples shall be collected in accordance with SWI No. 1.8 (January 10, 1995).
- The Licensee shall conduct operational non-radiological contaminant sampling and analysis, as required, as governed by the non-radiological hazardous constituents which are determined to be present in the by-product material which may be accepted for disposal in the by-product material disposal facility.



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- B. Duplicate Samples and Other Environmental Samples. The Licensee shall provide the executive director an opportunity to obtain duplicate samples concurrent with the Licensee's data collection schedule. In addition, the Licensee shall allow the executive director the ability to obtain any environmental media sample(s) the executive director deems necessary.
- C. Evaluation of Data. The Licensee shall evaluate monitoring data using a two-tiered environmental monitoring response system (i.e., investigation and action levels) as described in Volume 4, Appendix 4.B, Procedure BP-EV-1.1.0, Section VIII of the Licensee's application. The results of the evaluation must be included in the annual environmental monitoring report to the executive director.
- D. Transitional Monitoring Period. The Licensee shall provide for a transitional environmental monitoring period whenever program components, including sampling locations, equipment, techniques, or laboratories, are changed. This transitional monitoring period must include parallel monitoring with both the old and new conditions for at least one sampling period or as directed by the executive director.
- E. Pre-operational Monitoring Period. The Licensee shall provide one full year of baseline data on the site and its environs prior to operations. **The Licensee shall consult with the TCEQ to ensure that the proper samples methods and analyses are used for determining the baseline data, as required by the executive director.** (Although they have a year's worth of data for certain media (i.e., groundwater) the sample analysis method in some cases were deficient (e.g., did not filter water samples) so they should get with us to determine what they did wrong prior to obtaining this data. RAB)
- F. Control Charts and Nonparametric Prediction Limits. The Licensee shall develop control charts and/or nonparametric prediction limits for all environmental media measurements which will be used to determine investigative limits and action limits for determining whether contamination may be migrating from the site as seen by increasing trends in the periodic analyses. For whichever statistical monitoring method is used, one year of data is required for each parameter under review. Prior to the disposal of by-product material, the Licensee shall submit a report to the executive director that includes the control charts or prediction limits, baseline measurements, methods, and analyses for determining investigative limits and action limits. The Licensee shall follow any action limits, investigative limits, or method required by the executive director for determining whether contamination may be migrating from the disposal facility. (see WCS App., Vol. 4, Procedure BP-EV-1.1.0).
- G. Baker Spring Sampling Event. Prior to the disposal of by-product material, the Licensee shall conduct an additional surface water and sediment sampling event of the Baker Spring surface water feature using all EPA and DOE Methods shown at the bottom of Table 2.26, "Pre-Operational Data for Baker Spring."
- H. Pre-operational Fauna Samples. The Licensee shall conduct two (2) fauna sampling events at approximately six (6) month intervals and establish a baseline in which to compare these pre-operational fauna samples with fauna samples taken during the site's operational period. The Licensee shall analyze these fauna samples for the radionuclides and analytical methods listed in Table 2.25, "Pre-Operational Data Summary for Soil."
- I. Sampling of Non-Radiological Contaminants: The Licensee shall conduct quarterly baseline