AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

Example table of results

	pCi/sample						Bq/sample				
Analyte	Result	Lab Flag	MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Result	MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross beta	1.9E+01		1.1E+00	3.2E+00	4.3E+00	Yes	7.0E-01	4.1E-02	1.2E-01	1.6E-01	Yes

How to interpret the table

The **Lab Flag** is a qualifier to the result. A **"U" flag** means the material was analyzed for, but was not detected above the **MDA** (or MDC). A U flag may be interpreted as a non-detection. A **"J" flag** means the associated numerical value is an estimated quantity. A J flag may be interpreted to mean the material was detected but is too small to quantify. Multiple flags may be used at borderline measurements.

MDA is the **minimum detectable activity** (or concentration) defined as the smallest concentration of radioactivity in a sample that can be detected with a 5% probability of erroneously detecting radioactivity, when in fact none was present (Type I error) and also, a 5% probability of not detecting radioactivity, when in fact it is present (Type II error). Often used interchangeably with **Minimum Detectable Concentration (MDC)**, since the difference between the two terms is only one of units. The MDC is the minimum detectable activity measured in concentration units.

TPU is the **total propagated uncertainty**. The values of experimental measurements have uncertainties due to measurement limitations (e.g., instrument precision, chemical separation, etc.). These uncertainties propagate with the combination of variables in the function. The **uncertainty** is usually defined by the absolute error Δx. In measurements of radioactivity, TPU is an expression of the confidence that the actual value lies within a plus or minus range. **"1 TPU"** is plus or minus one standard deviation. This means that the true value of the measurement (the result) is within the range of plus or minus the TPU of the value with a certainty or confidence of about **68.3%**. The confidence that the actual measurement lies within the range of **2 TPU** (plus or minus 2 standard deviations) is about **95.5%**. Three standard deviations provides about 99.7% confidence that the actual measured value lies within the calculated range of possible values.
There is a 95.5% probability that the actual measurement for gross beta in the chart above exists within the range of 15.8 to 22.2 pico Curies per sample (pCi/Sample). In other words, we can say with 95.5% confidence that the actual measurement of beta activity is between 15.8 and 22.2 pCi/sample, or about 19 pCi.

The 95% confidence level detection. Many data users (such as US DOE CBFO and NWP) use a test of the MDA ± 2 times the TPU to determine the significance of the measurement.

The Becquerel (**Bq**) is the International System of Units (SI) derived unit of radioactivity and is defined as the activity of a quantity of radioactive material in which one nucleus decays per second.

1	Becquerel (Bq) equals	2.70E-11	Curies (Ci)
1	pico curies (pCi) equals	0.037	Becquerel (Bq)
1	pico curies (pCi) equals	one trillionth of a curie	

DOE Oversight Bureau
New Mexico Environment Department

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND THE VICINITY CARLSBAD, NEW MEXICO

WPL01 WIPP Salt Shaft

February 21, 2014 to February 28, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	1.6E+00		5.5E-01	5.0E-01	1.1E+00	Yes	5.9E-02	2.0E-02	1.9E-02	3.9E-02	Yes
Gross beta	1.9E+01		1.1E+00	3.2E+00	4.3E+00	Yes	7.0E-01	4.1E-02	1.2E-01	1.6E-01	Yes
Alpha and beta emitters											
Americium-241	3.2E-03	U	3.3E-02	1.7E-02	5.0E-02	ND	1.2E-04	1.2E-03	6.3E-04	1.9E-03	ND
Plutonium-238	5.2E-03	U	1.9E-02	1.3E-02	3.2E-02	ND	1.9E-04	7.0E-04	4.7E-04	1.2E-03	ND
Plutonium-239/240	7.7E-03	U	2.4E-02	1.4E-02	3.8E-02	ND	2.8E-04	8.9E-04	5.1E-04	1.4E-03	ND
Strontium-90	8.4E-02	U	5.8E-01	2.6E-01	8.4E-01	ND	3.1E-03	2.1E-02	9.6E-03	3.1E-02	ND
Gamma emitters											
Actinium-228	6.3E+00	U	1.4E+01	8.4E+00	2.2E+01	ND	2.3E-01	5.2E-01	3.1E-01	8.3E-01	ND
Americium-241	-4.1E+00	U	1.5E+01	8.6E+00	2.4E+01	ND	-1.5E-01	5.6E-01	3.2E-01	8.7E-01	ND
Beryllium-7	9.4E+01		2.3E+01	2.2E+01	4.5E+01	Yes	3.5E+00	8.5E-01	8.1E-01	1.7E+00	Yes
Bismuth-212	2.0E+00	U	4.9E+01	2.8E+01	7.7E+01	ND	7.4E-02	1.8E+00	1.0E+00	2.8E+00	ND
Bismuth-214	8.3E+00	J	7.0E+00	4.6E+00	1.2E+01	ND	3.1E-01	2.6E-01	1.7E-01	4.3E-01	ND
Cesium-134	-2.4E+00	U	3.9E+00	2.2E+00	6.1E+00	ND	-8.9E-02	1.4E-01	8.1E-02	2.3E-01	ND
Cesium-137	1.5E-01	U	3.6E+00	2.0E+00	5.6E+00	ND	5.6E-03	1.3E-01	7.4E-02	2.1E-01	ND
Cobalt-60	8.1E-02	U	4.8E+00	2.8E+00	7.6E+00	ND	3.0E-03	1.8E-01	1.0E-01	2.8E-01	ND
Iodine-131	-5.4E-01	U	3.5E+00	2.0E+00	5.5E+00	ND	-2.0E-02	1.3E-01	7.4E-02	2.0E-01	ND
Lead-212	4.7E+00		3.5E+00	2.4E+00	5.9E+00	ND	1.7E-01	1.3E-01	8.9E-02	2.2E-01	ND
Lead-214	4.3E+00	UJ	5.1E+00	3.2E+00	8.3E+00	ND	1.6E-01	1.9E-01	1.2E-01	3.1E-01	ND
Potassium-40	9.3E+01		5.0E+01	3.8E+01	8.8E+01	Yes	3.4E+00	1.9E+00	1.4E+00	3.3E+00	Yes
Protactinium-234m	-5.1E+01	U	6.4E+02	3.6E+02	1.0E+03	ND	-1.9E+00	2.4E+01	1.3E+01	3.7E+01	ND
Sodium-22	6.1E-01	U	3.9E+00	2.2E+00	6.1E+00	ND	2.3E-02	1.4E-01	8.1E-02	2.3E-01	ND
Thallium-208	2.6E+00	U	3.4E+00	2.2E+00	5.6E+00	ND	9.6E-02	1.3E-01	8.1E-02	2.1E-01	ND
Thorium-234	7.7E+01		2.8E+01	2.2E+01	5.0E+01	Yes	2.8E+00	1.0E+00	8.1E-01	1.9E+00	Yes

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND THE VICINITY CARLSBAD, NEW MEXICO

WPL02 Far Field

February 21, 2014 to February 28, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	2.1E+00		5.4E-01	5.6E-01	1.1E+00	Yes	7.8E-02	2.0E-02	2.1E-02	4.1E-02	Yes
Gross beta	2.6E+01		1.1E+00	4.2E+00	5.3E+00	Yes	9.6E-01	4.1E-02	1.6E-01	2.0E-01	Yes
Alpha and beta emitters											
Americium-241	4.5E-03	U	3.5E-02	1.8E-02	5.3E-02	ND	1.7E-04	1.3E-03	6.7E-04	2.0E-03	ND
Plutonium-238	1.5E-02		8.2E-03	1.5E-02	2.3E-02	ND	5.6E-04	3.0E-04	5.6E-04	8.6E-04	ND
Plutonium-239/240	6.0E-03	U	2.8E-02	1.5E-02	4.3E-02	ND	2.2E-04	1.0E-03	5.5E-04	1.6E-03	ND
Strontium-90	-6.2E-02	U	5.6E-01	2.6E-01	8.2E-01	ND	-2.3E-03	2.1E-02	9.6E-03	3.0E-02	ND
Gamma emitters											
Actinium-228	5.9E+00	U	1.0E+01	6.2E+00	1.6E+01	ND	2.2E-01	3.7E-01	2.3E-01	6.0E-01	ND
Americium-241	-5.5E+00	U	3.2E+01	1.9E+01	5.1E+01	ND	-2.0E-01	1.2E+00	6.9E-01	1.9E+00	ND
Beryllium-7	1.3E+02		2.0E+01	2.2E+01	4.2E+01	Yes	4.8E+00	7.4E-01	8.1E-01	1.6E+00	Yes
Bismuth-212	1.1E+01	U	3.5E+01	2.0E+01	5.5E+01	ND	4.1E-01	1.3E+00	7.4E-01	2.0E+00	ND
Bismuth-214	5.8E+00	J	5.1E+00	3.4E+00	8.5E+00	ND	2.1E-01	1.9E-01	1.3E-01	3.1E-01	ND
Cesium-134	4.2E-01	U	2.6E+00	1.5E+00	4.1E+00	ND	1.6E-02	9.6E-02	5.6E-02	1.5E-01	ND
Cesium-137	5.0E-02	U	2.6E+00	1.5E+00	4.1E+00	ND	1.9E-03	9.6E-02	5.6E-02	1.5E-01	ND
Cobalt-60	1.4E-01	U	3.1E+00	1.8E+00	4.9E+00	ND	5.2E-03	1.1E-01	6.6E-02	1.8E-01	ND
Iodine-131	-1.3E-01	U	2.8E+00	1.6E+00	4.4E+00	ND	-4.8E-03	1.0E-01	5.9E-02	1.6E-01	ND
Lead-212	-1.9E-01	U	5.2E+00	3.0E+00	8.2E+00	ND	-7.0E-03	1.9E-01	1.1E-01	3.0E-01	ND
Lead-214	2.2E+00	UJ	4.2E+00	2.6E+00	6.8E+00	ND	8.1E-02	1.6E-01	9.6E-02	2.5E-01	ND
Potassium-40	-2.8E+01	U	7.0E+01	4.0E+01	1.1E+02	ND	-1.0E+00	2.6E+00	1.5E+00	4.1E+00	ND
Protactinium-234m	4.7E+01	U	4.2E+02	2.4E+02	6.6E+02	ND	1.7E+00	1.6E+01	8.9E+00	2.4E+01	ND
Sodium-22	3.1E-01	U	2.8E+00	1.6E+00	4.4E+00	ND	1.1E-02	1.0E-01	6.0E-02	1.6E-01	ND
Thallium-208	2.4E+00		2.3E+00	1.5E+00	3.8E+00	ND	8.9E-02	8.5E-02	5.4E-02	1.4E-01	ND
Thorium-234	2.2E+01	U	5.3E+01	3.2E+01	8.5E+01	ND	8.1E-01	2.0E+00	1.2E+00	3.1E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND THE VICINITY CARLSBAD, NEW MEXICO

WPL03 Met Tower

February 21, 2014 to February 28, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	2.0E+00		4.9E-01	5.2E-01	1.0E+00	Yes	7.4E-02	1.8E-02	1.9E-02	3.7E-02	Yes
Gross beta	2.2E+01		1.1E+00	3.6E+00	4.7E+00	Yes	8.1E-01	4.1E-02	1.3E-01	1.7E-01	Yes
Alpha and beta emitters											
Americium-241	-4.0E-04	U	3.4E-02	1.7E-02	5.1E-02	ND	-1.5E-05	1.3E-03	6.2E-04	1.9E-03	ND
Plutonium-238	0.0E+00	U	1.7E-02	1.1E-02	2.8E-02	ND	0.0E+00	6.3E-04	4.1E-04	1.0E-03	ND
Plutonium-239/240	9.2E-03		6.2E-03	1.1E-02	1.8E-02	ND	3.4E-04	2.3E-04	4.2E-04	6.5E-04	ND
Strontium-90	-9.8E-02	U	6.2E-01	2.8E-01	9.0E-01	ND	-3.6E-03	2.3E-02	1.0E-02	3.3E-02	ND
Gamma emitters											
Actinium-228	8.0E+00	U	2.1E+01	1.3E+01	3.4E+01	ND	3.0E-01	7.8E-01	4.7E-01	1.2E+00	ND
Americium-241	5.0E-02	U	3.3E+00	1.9E+00	5.2E+00	ND	1.9E-03	1.2E-01	7.2E-02	1.9E-01	ND
Beryllium-7	1.4E+02		2.4E+01	2.6E+01	5.0E+01	Yes	5.2E+00	8.9E-01	9.6E-01	1.9E+00	Yes
Bismuth-212	1.5E+01	U	7.1E+01	4.2E+01	1.1E+02	ND	5.6E-01	2.6E+00	1.6E+00	4.2E+00	ND
Bismuth-214	3.9E+00	UJ	7.4E+00	4.6E+00	1.2E+01	ND	1.4E-01	2.7E-01	1.7E-01	4.4E-01	ND
Cesium-134	1.1E+00	U	3.4E+00	2.0E+00	5.4E+00	ND	4.1E-02	1.3E-01	7.4E-02	2.0E-01	ND
Cesium-137	9.8E-01	U	3.1E+00	1.9E+00	5.0E+00	ND	3.6E-02	1.1E-01	6.9E-02	1.8E-01	ND
Cobalt-60	-1.7E+00	U	4.2E+00	2.2E+00	6.4E+00	ND	-6.3E-02	1.6E-01	8.1E-02	2.4E-01	ND
Iodine-131	-6.2E-01	U	3.5E+00	2.0E+00	5.5E+00	ND	-2.3E-02	1.3E-01	7.3E-02	2.0E-01	ND
Lead-212	7.1E-01	U	5.9E+00	3.6E+00	9.5E+00	ND	2.6E-02	2.2E-01	1.3E-01	3.5E-01	ND
Lead-214	1.9E+00	UJ	8.4E+00	5.0E+00	1.3E+01	ND	7.0E-02	3.1E-01	1.9E-01	5.0E-01	ND
Potassium-40	-2.4E+01	U	7.6E+01	4.4E+01	1.2E+02	ND	-8.9E-01	2.8E+00	1.6E+00	4.4E+00	ND
Protactinium-234m	-1.1E+02	U	5.9E+02	3.2E+02	9.1E+02	ND	-4.1E+00	2.2E+01	1.2E+01	3.4E+01	ND
Sodium-22	-1.2E+00	U	4.1E+00	2.2E+00	6.3E+00	ND	-4.4E-02	1.5E-01	8.1E-02	2.3E-01	ND
Thallium-208	8.2E-01	U	5.5E+00	3.2E+00	8.7E+00	ND	3.0E-02	2.0E-01	1.2E-01	3.2E-01	ND
Thorium-234	5.9E+00	U	3.8E+01	2.2E+01	6.0E+01	ND	2.2E-01	1.4E+00	8.1E-01	2.2E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND THE VICINITY CARLSBAD, NEW MEXICO

WPL03 Met Tower (laboratory duplicate)

February 21, 2014 to February 28, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gamma emitters											
Actinium-228	-2.5E-01	U	3.2E+01	1.8E+01	5.0E+01	ND	-9.3E-03	1.2E+00	6.6E-01	1.8E+00	ND
Americium-241	2.4E+00	U	6.8E+00	4.0E+00	1.1E+01	ND	8.9E-02	2.5E-01	1.5E-01	4.0E-01	ND
Beryllium-7	1.3E+02		4.6E+01	4.2E+01	8.8E+01	Yes	4.8E+00	1.7E+00	1.6E+00	3.3E+00	
Bismuth-212	-2.9E+01	U	1.4E+02	7.6E+01	2.2E+02	ND	-1.1E+00	5.2E+00	2.8E+00	8.0E+00	ND
Bismuth-214	-3.4E+00	UJ	1.9E+01	1.1E+01	3.0E+01	ND	-1.3E-01	7.0E-01	4.0E-01	1.1E+00	ND
Cesium-134	-4.1E-01	U	7.1E+00	4.0E+00	1.1E+01	ND	-1.5E-02	2.6E-01	1.5E-01	4.1E-01	ND
Cesium-137	1.8E+00	U	7.2E+00	4.2E+00	1.1E+01	ND	6.7E-02	2.7E-01	1.6E-01	4.2E-01	ND
Cobalt-60	-2.6E+00	U	1.0E+01	5.0E+00	1.5E+01	ND	-9.6E-02	3.7E-01	1.9E-01	5.6E-01	ND
Iodine-131	1.1E+00	U	8.3E+00	4.8E+00	1.3E+01	ND	4.1E-02	3.1E-01	1.8E-01	4.8E-01	ND
Lead-212	3.4E-01	U	7.8E+00	4.4E+00	1.2E+01	ND	1.3E-02	2.9E-01	1.6E-01	4.5E-01	ND
Lead-214	3.6E+00	UJ	1.5E+01	9.2E+00	2.4E+01	ND	1.3E-01	5.6E-01	3.4E-01	9.0E-01	ND
Potassium-40	5.5E+00	U	1.2E+02	6.8E+01	1.9E+02	ND	2.0E-01	4.4E+00	2.5E+00	7.0E+00	ND
Protactinium-234m	1.1E+02	U	1.2E+03	6.4E+02	1.8E+03	ND	4.1E+00	4.4E+01	2.4E+01	6.8E+01	ND
Sodium-22	-3.4E+00	U	9.9E+00	4.8E+00	1.5E+01	ND	-1.3E-01	3.7E-01	1.8E-01	5.4E-01	ND
Thallium-208	6.0E-01	U	8.3E+00	4.8E+00	1.3E+01	ND	2.2E-02	3.1E-01	1.8E-01	4.8E-01	ND
Thorium-234	1.5E+01	U	6.2E+01	3.6E+01	9.8E+01	ND	5.6E-01	2.3E+00	1.3E+00	3.6E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND THE VICINITY CARLSBAD, NEW MEXICO

Filter Blank

February 21, 2014 to February 28, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	-5.0E-02	U	5.8E-01	3.4E-01	9.2E-01	ND	-1.9E-03	2.1E-02	1.3E-02	3.4E-02	ND
Gross beta	-4.8E-01	U	1.1E+00	6.8E-01	1.8E+00	ND	-1.8E-02	4.1E-02	2.5E-02	6.6E-02	ND
Alpha and beta emitters											
Americium-241	-2.3E-03	U	3.5E-02	1.7E-02	5.2E-02	ND	-8.5E-05	1.3E-03	6.1E-04	1.9E-03	ND
Plutonium-238	1.3E-02	U	2.4E-02	1.6E-02	4.0E-02	ND	4.8E-04	8.9E-04	6.0E-04	1.5E-03	ND
Plutonium-239/240	0.0E+00	U	3.5E-02	1.6E-02	5.1E-02	ND	0.0E+00	1.3E-03	5.9E-04	1.9E-03	ND
Strontium-90	1.9E-01	U	6.0E-01	2.8E-01	8.8E-01	ND	7.0E-03	2.2E-02	1.0E-02	3.3E-02	ND
Gamma emitters											
Actinium-228	2.6E+00	U	1.7E+01	1.0E+01	2.7E+01	ND	9.6E-02	6.3E-01	3.8E-01	1.0E+00	ND
Americium-241	2.4E+01	U	4.8E+01	3.0E+01	7.8E+01	ND	8.9E-01	1.8E+00	1.1E+00	2.9E+00	ND
Beryllium-7	-3.0E+00	U	2.1E+01	1.2E+01	3.3E+01	ND	-1.1E-01	7.8E-01	4.5E-01	1.2E+00	ND
Bismuth-212	-8.8E+00	U	4.0E+01	2.2E+01	6.2E+01	ND	-3.3E-01	1.5E+00	8.1E-01	2.3E+00	ND
Bismuth-214	5.4E+00	UJ	6.8E+00	4.2E+00	1.1E+01	ND	2.0E-01	2.5E-01	1.6E-01	4.1E-01	ND
Cesium-134	-8.9E-01	U	3.4E+00	2.0E+00	5.4E+00	ND	-3.3E-02	1.3E-01	7.3E-02	2.0E-01	ND
Cesium-137	2.2E-01	U	3.0E+00	1.8E+00	4.8E+00	ND	8.1E-03	1.1E-01	6.6E-02	1.8E-01	ND
Cobalt-60	1.2E+00	U	3.3E+00	2.0E+00	5.3E+00	ND	4.4E-02	1.2E-01	7.4E-02	2.0E-01	ND
Iodine-131	-9.1E-01	U	3.3E+00	1.9E+00	5.2E+00	ND	-3.4E-02	1.2E-01	7.0E-02	1.9E-01	ND
Lead-212	-2.9E-01	U	6.6E+00	4.0E+00	1.1E+01	ND	-1.1E-02	2.4E-01	1.5E-01	3.9E-01	ND
Lead-214	2.1E+00	UJ	8.1E+00	4.8E+00	1.3E+01	ND	7.8E-02	3.0E-01	1.8E-01	4.8E-01	ND
Potassium-40	1.4E+01	U	6.7E+01	4.0E+01	1.1E+02	ND	5.2E-01	2.5E+00	1.5E+00	4.0E+00	ND
Protactinium-234m	-2.8E+01	U	6.4E+02	3.6E+02	1.0E+03	ND	-1.0E+00	2.4E+01	1.3E+01	3.7E+01	ND
Sodium-22	9.7E-01	U	2.9E+00	1.7E+00	4.6E+00	ND	3.6E-02	1.1E-01	6.4E-02	1.7E-01	ND
Thallium-208	2.0E+00	U	4.7E+00	2.8E+00	7.5E+00	ND	7.4E-02	1.7E-01	1.0E-01	2.8E-01	ND
Thorium-234	1.7E+01	U	6.8E+01	4.2E+01	1.1E+02	ND	6.3E-01	2.5E+00	1.6E+00	4.1E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND THE VICINITY CARLSBAD, NEW MEXICO

Laboratory Method Blank

February 21, 2014 to February 28, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	8.2E-01		5.0E-01	3.6E-01	8.6E-01	ND	3.0E-02	1.9E-02	1.3E-02	3.2E-02	ND
Gross beta	1.2E+00		1.0E+00	6.8E-01	1.7E+00	ND	4.4E-02	3.7E-02	2.5E-02	6.2E-02	ND
Alpha and beta emitters											
Americium-241	2.6E-03	U	2.7E-02	1.4E-02	4.1E-02	ND	9.6E-05	1.0E-03	5.1E-04	1.5E-03	ND
Plutonium-238	4.5E-03	U	6.1E-03	1.1E-02	1.7E-02	ND	1.7E-04	2.3E-04	4.1E-04	6.4E-04	ND
Plutonium-239/240	6.8E-03	U	1.7E-02	1.1E-02	2.8E-02	ND	2.5E-04	6.3E-04	4.1E-04	1.0E-03	ND
Strontium-90	-7.0E-02	U	5.5E-01	2.4E-01	7.9E-01	ND	-2.6E-03	2.0E-02	8.9E-03	2.9E-02	ND
Gamma emitters											
Actinium-228	-4.9E+00	U	2.4E+01	1.4E+01	3.8E+01	ND	-1.8E-01	8.9E-01	5.1E-01	1.4E+00	ND
Americium-241	-3.8E-01	U	3.9E+00	2.2E+00	6.1E+00	ND	-1.4E-02	1.4E-01	8.1E-02	2.3E-01	ND
Beryllium-7	-8.2E+00	U	2.4E+01	1.3E+01	3.7E+01	ND	-3.0E-01	8.9E-01	4.8E-01	1.4E+00	ND
Bismuth-212	-1.4E+01	U	9.2E+01	5.4E+01	1.5E+02	ND	-5.2E-01	3.4E+00	2.0E+00	5.4E+00	ND
Bismuth-214	3.5E+00	UJ	7.7E+00	4.6E+00	1.2E+01	ND	1.3E-01	2.8E-01	1.7E-01	4.6E-01	ND
Cesium-134	8.5E-01	U	3.5E+00	2.0E+00	5.5E+00	ND	3.1E-02	1.3E-01	7.4E-02	2.0E-01	ND
Cesium-137	3.8E-01	U	3.5E+00	2.0E+00	5.5E+00	ND	1.4E-02	1.3E-01	7.4E-02	2.0E-01	ND
Cobalt-60	-6.5E-01	U	5.0E+00	2.8E+00	7.8E+00	ND	-2.4E-02	1.9E-01	1.0E-01	2.9E-01	ND
Iodine-131	1.1E-01	U	2.8E+00	1.6E+00	4.4E+00	ND	4.1E-03	1.0E-01	6.0E-02	1.6E-01	ND
Lead-212	1.1E+00	U	6.5E+00	4.0E+00	1.1E+01	ND	4.1E-02	2.4E-01	1.5E-01	3.9E-01	ND
Lead-214	7.0E+00	J	6.1E+00	4.0E+00	1.0E+01	ND	2.6E-01	2.3E-01	1.5E-01	3.7E-01	ND
Potassium-40	-8.5E+00	U	8.5E+01	4.8E+01	1.3E+02	ND	-3.1E-01	3.1E+00	1.8E+00	4.9E+00	ND
Protactinium-234	2.5E+02	U	6.0E+02	3.6E+02	9.6E+02	ND	9.3E+00	2.2E+01	1.3E+01	3.6E+01	ND
Sodium-22	-1.0E+00	U	4.9E+00	2.6E+00	7.5E+00	ND	-3.7E-02	1.8E-01	9.6E-02	2.8E-01	ND
Thallium-208	-1.9E+00	U	6.0E+00	3.4E+00	9.4E+00	ND	-7.0E-02	2.2E-01	1.3E-01	3.5E-01	ND
Thorium-234	1.6E+01	U	3.8E+01	2.2E+01	6.0E+01	ND	5.9E-01	1.4E+00	8.1E-01	2.2E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

WPL01 WIPP Salt Shaft

February 28, 2014 to March 11, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	3.2E+00		4.7E-01	6.8E-01	1.2E+00	YES	1.2E-01	1.7E-02	2.5E-02	4.3E-02	YES
Gross beta	3.2E+01		9.3E-01	5.2E+00	6.1E+00	YES	1.2E+00	3.4E-02	1.9E-01	2.3E-01	YES
Alpha and beta emitters											
Americium-241	4.0E-03	U	3.4E-02	1.8E-02	5.2E-02	ND	1.5E-04	1.3E-03	6.8E-04	1.9E-03	ND
Plutonium-238	-5.7E-03	U	3.0E-02	1.4E-02	4.4E-02	ND	-2.1E-04	1.1E-03	5.1E-04	1.6E-03	ND
Plutonium-239/240	0.0E+00	U	3.0E-02	1.4E-02	4.4E-02	ND	0.0E+00	1.1E-03	5.1E-04	1.6E-03	ND
Strontium-90	1.8E-01	U	5.7E-01	2.8E-01	8.5E-01	ND	6.7E-03	2.1E-02	1.0E-02	3.1E-02	ND
Gamma emitters											
Actinium-228	-8.0E+00	U	4.0E+01	2.0E+01	6.0E+01	ND	-3.0E-01	1.5E+00	7.4E-01	2.2E+00	ND
Americium-241	6.3E+01	U	1.3E+02	7.8E+01	2.1E+02	ND	2.3E+00	4.8E+00	2.9E+00	7.7E+00	ND
Beryllium-7	1.5E+02		5.5E+01	5.0E+01	1.1E+02	YES	5.6E+00	2.0E+00	1.9E+00	3.9E+00	YES
Bismuth-212	-8.9E+00	U	1.1E+02	6.0E+01	1.7E+02	ND	-3.3E-01	4.1E+00	2.2E+00	6.3E+00	ND
Bismuth-214	5.0E+00	UJ	1.6E+01	9.6E+00	2.6E+01	ND	1.9E-01	5.9E-01	3.6E-01	9.5E-01	ND
Cesium-134	-1.9E+00	U	9.6E+00	5.2E+00	1.5E+01	ND	-7.0E-02	3.6E-01	1.9E-01	5.5E-01	ND
Cesium-137	-1.7E+00	U	9.6E+00	5.0E+00	1.5E+01	ND	-6.3E-02	3.6E-01	1.9E-01	5.4E-01	ND
Cobalt-60	-1.1E+00	U	9.3E+00	4.4E+00	1.4E+01	ND	-4.1E-02	3.4E-01	1.6E-01	5.1E-01	ND
Iodine-131	-2.9E+00	U	1.0E+01	5.2E+00	1.5E+01	ND	-1.1E-01	3.7E-01	1.9E-01	5.6E-01	ND
Lead-212	2.3E+00	U	1.1E+01	6.4E+00	1.7E+01	ND	8.5E-02	4.1E-01	2.4E-01	6.4E-01	ND
Lead-214	-5.0E+00	UJ	1.7E+01	9.2E+00	2.6E+01	ND	-1.9E-01	6.3E-01	3.4E-01	9.7E-01	ND
Potassium-40	-2.0E+01	U	1.2E+02	5.8E+01	1.8E+02	ND	-7.4E-01	4.4E+00	2.1E+00	6.6E+00	ND
Protactinium-234m	-1.5E+02	U	1.4E+03	6.8E+02	2.1E+03	ND	-5.6E+00	5.2E+01	2.5E+01	7.7E+01	ND
Sodium-22	2.2E+00	U	6.5E+00	3.8E+00	1.0E+01	ND	8.1E-02	2.4E-01	1.4E-01	3.8E-01	ND
Thallium-208	-5.7E-01	U	9.2E+00	5.0E+00	1.4E+01	ND	-2.1E-02	3.4E-01	1.9E-01	5.3E-01	ND
Thorium-234	-4.6E+01	U	1.2E+02	6.6E+01	1.9E+02	ND	-1.7E+00	4.4E+00	2.4E+00	6.9E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

WPL02 Far Field

February 28, 2014 to March 11, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	2.7E+00		5.3E-01	6.2E-01	1.2E+00	YES	1.0E-01	2.0E-02	2.3E-02	4.3E-02	YES
Gross beta	2.9E+01		9.2E-01	4.8E+00	5.7E+00	YES	1.1E+00	3.4E-02	1.8E-01	2.1E-01	YES
Alpha and beta emitters											
Americium-241	-4.7E-03	U	2.8E-02	1.2E-02	4.0E-02	ND	-1.7E-04	1.0E-03	4.6E-04	1.5E-03	ND
Plutonium-238	7.0E-03	U	1.7E-02	1.2E-02	2.9E-02	ND	2.6E-04	6.3E-04	4.3E-04	1.1E-03	ND
Plutonium-239/240	7.0E-03	U	2.5E-02	1.4E-02	3.9E-02	ND	2.6E-04	9.3E-04	5.3E-04	1.5E-03	ND
Strontium-90	6.5E-03	U	4.2E-01	2.0E-01	6.2E-01	ND	2.4E-04	1.6E-02	7.4E-03	2.3E-02	ND
Gamma emitters											
Actinium-228	2.1E+01	U	3.0E+01	1.9E+01	4.9E+01	ND	7.8E-01	1.1E+00	7.1E-01	1.8E+00	ND
Americium-241	1.8E+01	U	2.7E+01	1.7E+01	4.4E+01	ND	6.7E-01	1.0E+00	6.4E-01	1.6E+00	ND
Beryllium-7	1.8E+02		6.1E+01	5.4E+01	1.2E+02	YES	6.7E+00	2.3E+00	2.0E+00	4.3E+00	YES
Bismuth-212	3.0E+01	U	1.0E+02	5.8E+01	1.6E+02	ND	1.1E+00	3.7E+00	2.1E+00	5.8E+00	ND
Bismuth-214	4.1E+00	UJ	1.8E+01	1.1E+01	2.9E+01	ND	1.5E-01	6.7E-01	3.9E-01	1.1E+00	ND
Cesium-134	4.8E-01	U	8.2E+00	4.6E+00	1.3E+01	ND	1.8E-02	3.0E-01	1.7E-01	4.7E-01	ND
Cesium-137	-1.4E+00	U	8.5E+00	4.6E+00	1.3E+01	ND	-5.2E-02	3.1E-01	1.7E-01	4.8E-01	ND
Cobalt-60	4.7E+00	U	9.8E+00	6.0E+00	1.6E+01	ND	1.7E-01	3.6E-01	2.2E-01	5.8E-01	ND
Iodine-131	-8.4E-01	U	9.1E+00	5.0E+00	1.4E+01	ND	-3.1E-02	3.4E-01	1.9E-01	5.2E-01	ND
Lead-212	8.0E-01	U	9.7E+00	5.6E+00	1.5E+01	ND	3.0E-02	3.6E-01	2.1E-01	5.7E-01	ND
Lead-214	1.5E+00	UJ	1.4E+01	8.2E+00	2.2E+01	ND	5.6E-02	5.2E-01	3.0E-01	8.2E-01	ND
Potassium-40	-4.2E+01	U	1.7E+02	9.0E+01	2.6E+02	ND	-1.6E+00	6.3E+00	3.3E+00	9.6E+00	ND
Protactinium-234m	-4.6E+02	U	2.0E+03	1.0E+03	3.0E+03	ND	-1.7E+01	7.4E+01	3.8E+01	1.1E+02	ND
Sodium-22	-1.8E+00	U	1.0E+01	5.2E+00	1.5E+01	ND	-6.7E-02	3.7E-01	1.9E-01	5.6E-01	ND
Thallium-208	-1.2E+00	U	8.9E+00	4.8E+00	1.4E+01	ND	-4.4E-02	3.3E-01	1.8E-01	5.1E-01	ND
Thorium-234	-2.3E+01	U	9.5E+01	5.4E+01	1.5E+02	ND	-8.5E-01	3.5E+00	2.0E+00	5.5E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

WPL02 Far Field (laboratory duplicate)

February 28, 2014 to March 11, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gamma emitters											
Actinium-228	-1.9E+01	U	5.4E+01	2.6E+01	8.0E+01	ND	-7.0E-01	2.0E+00	9.6E-01	3.0E+00	ND
Americium-241	-1.7E+01	U	6.3E+01	3.4E+01	9.7E+01	ND	-6.3E-01	2.3E+00	1.3E+00	3.6E+00	ND
Beryllium-7	1.1E+02		5.3E+01	4.6E+01	9.9E+01	YES	4.1E+00	2.0E+00	1.7E+00	3.7E+00	YES
Bismuth-212	6.8E+01	U	1.5E+02	9.2E+01	2.4E+02	ND	2.5E+00	5.6E+00	3.4E+00	9.0E+00	ND
Bismuth-214	-3.4E+00	UJ	2.7E+01	1.5E+01	4.2E+01	ND	-1.3E-01	1.0E+00	5.5E-01	1.5E+00	ND
Cesium-134	-4.1E+00	U	1.3E+01	7.0E+00	2.0E+01	ND	-1.5E-01	4.8E-01	2.6E-01	7.4E-01	ND
Cesium-137	8.7E-01	U	9.7E+00	5.4E+00	1.5E+01	ND	3.2E-02	3.6E-01	2.0E-01	5.6E-01	ND
Cobalt-60	2.4E+00	U	1.5E+01	8.6E+00	2.4E+01	ND	8.9E-02	5.6E-01	3.2E-01	8.7E-01	ND
Iodine-131	-6.1E+00	U	1.3E+01	6.8E+00	2.0E+01	ND	-2.3E-01	4.8E-01	2.5E-01	7.3E-01	ND
Lead-212	1.0E+00	U	1.4E+01	8.4E+00	2.2E+01	ND	3.7E-02	5.2E-01	3.1E-01	8.3E-01	ND
Lead-214	-4.0E+00	UJ	2.0E+01	1.1E+01	3.1E+01	ND	-1.5E-01	7.4E-01	4.1E-01	1.1E+00	ND
Potassium-40	6.5E+01	U	1.6E+02	9.4E+01	2.5E+02	ND	2.4E+00	5.9E+00	3.5E+00	9.4E+00	ND
Protactinium-234m	-6.3E+01	U	1.8E+03	9.4E+02	2.7E+03	ND	-2.3E+00	6.7E+01	3.5E+01	1.0E+02	ND
Sodium-22	3.3E+00	U	1.3E+01	7.2E+00	2.0E+01	ND	1.2E-01	4.8E-01	2.7E-01	7.5E-01	ND
Thallium-208	3.2E+00	U	1.1E+01	6.6E+00	1.8E+01	ND	1.2E-01	4.1E-01	2.4E-01	6.5E-01	ND
Thorium-234	-4.0E+01	U	1.2E+02	6.6E+01	1.9E+02	ND	-1.5E+00	4.4E+00	2.4E+00	6.9E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

WPL03 Met Tower

February 28, 2014 to March 11, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	3.0E+00		4.8E-01	6.4E-01	1.1E+00	YES	1.1E-01	1.8E-02	2.4E-02	4.1E-02	YES
Gross beta	2.7E+01		9.3E-01	4.4E+00	5.3E+00	YES	1.0E+00	3.4E-02	1.6E-01	2.0E-01	YES
Alpha and beta emitters											
Americium-241	7.1E-03	U	3.0E-02	1.7E-02	4.7E-02	ND	2.6E-04	1.1E-03	6.1E-04	1.7E-03	ND
Plutonium-238	2.7E-02		2.4E-02	2.2E-02	4.6E-02	ND	1.0E-03	8.9E-04	8.1E-04	1.7E-03	ND
Plutonium-239/240	3.0E-02	U	3.1E-02	2.4E-02	5.5E-02	ND	1.1E-03	1.1E-03	8.9E-04	2.0E-03	ND
Strontium-90	-4.6E-01	U	7.1E-01	3.6E-01	1.1E+00	ND	-1.7E-02	2.6E-02	1.3E-02	4.0E-02	ND
Gamma emitters											
Actinium-228	-1.9E+00	U	5.5E+01	3.0E+01	8.5E+01	ND	-7.0E-02	2.0E+00	1.1E+00	3.1E+00	ND
Americium-241	-2.4E+01	U	6.4E+01	3.4E+01	9.8E+01	ND	-8.9E-01	2.4E+00	1.3E+00	3.6E+00	ND
Beryllium-7	1.7E+02		7.8E+01	6.4E+01	1.4E+02	YES	6.3E+00	2.9E+00	2.4E+00	5.3E+00	YES
Bismuth-212	-1.9E+01	U	1.7E+02	8.8E+01	2.6E+02	ND	-7.0E-01	6.3E+00	3.3E+00	9.5E+00	ND
Bismuth-214	4.3E+00	UJ	2.6E+01	1.5E+01	4.1E+01	ND	1.6E-01	9.6E-01	5.5E-01	1.5E+00	ND
Cesium-134	-2.7E+00	U	1.2E+01	6.4E+00	1.8E+01	ND	-1.0E-01	4.4E-01	2.4E-01	6.8E-01	ND
Cesium-137	8.7E-01	U	9.5E+00	5.2E+00	1.5E+01	ND	3.2E-02	3.5E-01	1.9E-01	5.4E-01	ND
Cobalt-60	-4.5E+00	U	1.6E+01	7.8E+00	2.4E+01	ND	-1.7E-01	5.9E-01	2.9E-01	8.8E-01	ND
Iodine-131	2.7E+00	U	1.3E+01	7.6E+00	2.1E+01	ND	1.0E-01	4.8E-01	2.8E-01	7.6E-01	ND
Lead-212	-1.0E+00	U	1.4E+01	8.0E+00	2.2E+01	ND	-3.7E-02	5.2E-01	3.0E-01	8.1E-01	ND
Lead-214	2.5E+00	UJ	2.0E+01	1.2E+01	3.2E+01	ND	9.3E-02	7.4E-01	4.4E-01	1.2E+00	ND
Potassium-40	2.6E+01	U	1.6E+02	9.2E+01	2.5E+02	ND	9.6E-01	5.9E+00	3.4E+00	9.3E+00	ND
Protactinium-234m	5.7E+02	U	1.9E+03	1.1E+03	3.0E+03	ND	2.1E+01	7.0E+01	4.0E+01	1.1E+02	ND
Sodium-22	-3.5E+00	U	1.6E+01	8.0E+00	2.4E+01	ND	-1.3E-01	5.9E-01	3.0E-01	8.9E-01	ND
Thallium-208	-4.9E+00	U	1.3E+01	6.8E+00	2.0E+01	ND	-1.8E-01	4.8E-01	2.5E-01	7.3E-01	ND
Thorium-234	1.8E+01	U	1.0E+02	6.0E+01	1.6E+02	ND	6.7E-01	3.7E+00	2.2E+00	5.9E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

WPL10 Carlsbad (Guadalupe St.)

February 28, 2014 to March 11, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	2.6E+00		5.1E-01	6.0E-01	1.1E+00	YES	9.6E-02	1.9E-02	2.2E-02	4.1E-02	YES
Gross beta	2.4E+01		8.7E-01	3.8E+00	4.7E+00	YES	8.9E-01	3.2E-02	1.4E-01	1.7E-01	YES
Alpha and beta emitters											
Americium-241	-2.5E-03	U	2.8E-02	1.3E-02	4.1E-02	ND	-9.3E-05	1.0E-03	4.9E-04	1.5E-03	ND
Plutonium-238	1.6E-02		7.4E-03	1.4E-02	2.1E-02	ND	5.9E-04	2.7E-04	5.0E-04	7.8E-04	ND
Plutonium-239/240	2.2E-02		7.4E-03	1.6E-02	2.3E-02	ND	8.1E-04	2.7E-04	5.8E-04	8.6E-04	ND
Strontium-90	-1.0E-01	U	7.3E-01	3.6E-01	1.1E+00	ND	-3.7E-03	2.7E-02	1.3E-02	4.0E-02	ND
Gamma emitters											
Actinium-228	-2.1E+00	U	3.9E+01	2.0E+01	5.9E+01	ND	-7.8E-02	1.4E+00	7.4E-01	2.2E+00	ND
Americium-241	1.2E+01	U	9.6E+01	5.6E+01	1.5E+02	ND	4.4E-01	3.6E+00	2.1E+00	5.6E+00	ND
Beryllium-7	1.6E+02		6.5E+01	5.6E+01	1.2E+02	YES	5.9E+00	2.4E+00	2.1E+00	4.5E+00	YES
Bismuth-212	7.7E+01	U	1.0E+02	6.6E+01	1.7E+02	ND	2.8E+00	3.7E+00	2.4E+00	6.1E+00	ND
Bismuth-214	-2.6E+00	UJ	2.2E+01	1.2E+01	3.4E+01	ND	-9.6E-02	8.1E-01	4.4E-01	1.3E+00	ND
Cesium-134	-6.3E-01	U	9.2E+00	5.0E+00	1.4E+01	ND	-2.3E-02	3.4E-01	1.9E-01	5.3E-01	ND
Cesium-137	-1.2E+00	U	9.2E+00	4.8E+00	1.4E+01	ND	-4.4E-02	3.4E-01	1.8E-01	5.2E-01	ND
Cobalt-60	-3.7E+00	U	1.2E+01	5.6E+00	1.8E+01	ND	-1.4E-01	4.4E-01	2.1E-01	6.5E-01	ND
Iodine-131	3.5E+00	U	1.1E+01	6.8E+00	1.8E+01	ND	1.3E-01	4.1E-01	2.5E-01	6.6E-01	ND
Lead-212	-7.3E+00	U	1.4E+01	7.2E+00	2.1E+01	ND	-2.7E-01	5.2E-01	2.7E-01	7.8E-01	ND
Lead-214	6.5E+00	UJ	1.5E+01	8.8E+00	2.4E+01	ND	2.4E-01	5.6E-01	3.3E-01	8.8E-01	ND
Potassium-40	-4.9E+01	U	1.6E+02	7.8E+01	2.4E+02	ND	-1.8E+00	5.9E+00	2.9E+00	8.8E+00	ND
Protactinium-234m	-1.7E+02	U	1.6E+03	8.2E+02	2.4E+03	ND	-6.3E+00	5.9E+01	3.0E+01	9.0E+01	ND
Sodium-22	-1.3E+00	U	1.0E+01	4.8E+00	1.5E+01	ND	-4.8E-02	3.7E-01	1.8E-01	5.5E-01	ND
Thallium-208	3.9E+00	U	9.3E+00	5.6E+00	1.5E+01	ND	1.4E-01	3.4E-01	2.1E-01	5.5E-01	ND
Thorium-234	-3.6E+01	U	1.0E+02	5.6E+01	1.6E+02	ND	-1.3E+00	3.7E+00	2.1E+00	5.8E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

WPL11 Carlsbad Mobile Solar

March 5, 2014 to March 11, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	5.0E-01	U	7.5E-01	4.6E-01	1.2E+00	ND	1.9E-02	2.8E-02	1.7E-02	4.5E-02	ND
Gross beta	7.3E+00		1.0E+00	1.4E+00	2.4E+00	YES	2.7E-01	3.7E-02	5.1E-02	8.8E-02	YES
Alpha and beta emitters											
Americium-241	-1.0E-02	U	3.7E-02	1.6E-02	5.3E-02	ND	-3.7E-04	1.4E-03	5.9E-04	2.0E-03	ND
Plutonium-238	6.8E-03	U	1.7E-02	1.1E-02	2.8E-02	ND	2.5E-04	6.3E-04	4.1E-04	1.0E-03	ND
Plutonium-239/240	9.0E-03	U	2.1E-02	1.3E-02	3.4E-02	ND	3.3E-04	7.8E-04	4.7E-04	1.3E-03	ND
Strontium-90	1.2E-01	U	4.1E-01	2.0E-01	6.1E-01	ND	4.4E-03	1.5E-02	7.4E-03	2.3E-02	ND
Gamma emitters											
Actinium-228	1.2E+01	U	3.3E+01	2.0E+01	5.3E+01	ND	4.4E-01	1.2E+00	7.3E-01	2.0E+00	ND
Americium-241	3.9E+00	U	4.2E+01	2.4E+01	6.6E+01	ND	1.4E-01	1.6E+00	8.9E-01	2.4E+00	ND
Beryllium-7	5.1E+01	U	6.0E+01	3.8E+01	9.8E+01	ND	1.9E+00	2.2E+00	1.4E+00	3.6E+00	ND
Bismuth-212	3.9E+01	U	1.0E+02	6.4E+01	1.6E+02	ND	1.4E+00	3.7E+00	2.4E+00	6.1E+00	ND
Bismuth-214	1.7E+01	J	1.6E+01	1.0E+01	2.6E+01	ND	6.3E-01	5.9E-01	3.8E-01	9.7E-01	ND
Cesium-134	-6.6E+00	U	8.5E+00	4.8E+00	1.3E+01	ND	-2.4E-01	3.1E-01	1.8E-01	4.9E-01	ND
Cesium-137	3.3E+00	U	7.2E+00	4.4E+00	1.2E+01	ND	1.2E-01	2.7E-01	1.6E-01	4.3E-01	ND
Cobalt-60	-5.6E+00	U	1.1E+01	5.8E+00	1.7E+01	ND	-2.1E-01	4.1E-01	2.1E-01	6.2E-01	ND
Iodine-131	-4.6E+00	U	1.1E+01	6.2E+00	1.7E+01	ND	-1.7E-01	4.1E-01	2.3E-01	6.4E-01	ND
Lead-212	1.2E+01		1.0E+01	6.8E+00	1.7E+01	ND	4.4E-01	3.7E-01	2.5E-01	6.2E-01	ND
Lead-214	2.1E+01	J	1.3E+01	8.8E+00	2.2E+01	ND	7.8E-01	4.8E-01	3.3E-01	8.1E-01	ND
Potassium-40	1.7E+02		9.4E+01	6.8E+01	1.6E+02	YES	6.3E+00	3.5E+00	2.5E+00	6.0E+00	YES
Protactinium-234m	9.8E+02	U	1.3E+03	8.2E+02	2.1E+03	ND	3.6E+01	4.8E+01	3.0E+01	7.8E+01	ND
Sodium-22	-6.8E-01	U	9.4E+00	5.4E+00	1.5E+01	ND	-2.5E-02	3.5E-01	2.0E-01	5.5E-01	ND
Thallium-208	8.6E+00		7.8E+00	5.0E+00	1.3E+01	ND	3.2E-01	2.9E-01	1.9E-01	4.7E-01	ND
Thorium-234	1.5E+02		9.6E+01	6.4E+01	1.6E+02	ND	5.6E+00	3.6E+00	2.4E+00	5.9E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

WPL11 Carlsbad Mobile Solar (laboratory duplicate)

March 5, 2014 to March 11, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gamma emitters											
Actinium-228	3.7E+00	U	3.8E+01	2.2E+01	6.0E+01	ND	1.4E-01	1.4E+00	8.1E-01	2.2E+00	ND
Americium-241	-4.6E-01	U	4.0E+01	2.2E+01	6.2E+01	ND	-1.7E-02	1.5E+00	8.1E-01	2.3E+00	ND
Beryllium-7	5.0E+01	U	5.4E+01	3.6E+01	9.0E+01	ND	1.9E+00	2.0E+00	1.3E+00	3.3E+00	ND
Bismuth-212	-1.6E+01	U	1.2E+02	7.0E+01	1.9E+02	ND	-5.9E-01	4.4E+00	2.6E+00	7.0E+00	ND
Bismuth-214	2.5E+00	UJ	2.4E+01	1.4E+01	3.8E+01	ND	9.3E-02	8.9E-01	5.3E-01	1.4E+00	ND
Cesium-134	0.0E+00	U	7.8E+00	4.4E+00	1.2E+01	ND	0.0E+00	2.9E-01	1.6E-01	4.5E-01	ND
Cesium-137	-1.5E+00	U	8.4E+00	4.8E+00	1.3E+01	ND	-5.6E-02	3.1E-01	1.8E-01	4.9E-01	ND
Cobalt-60	-1.6E+00	U	9.8E+00	5.4E+00	1.5E+01	ND	-5.9E-02	3.6E-01	2.0E-01	5.6E-01	ND
Iodine-131	-7.5E+00	U	1.3E+01	7.4E+00	2.0E+01	ND	-2.8E-01	4.8E-01	2.7E-01	7.5E-01	ND
Lead-212	-2.7E+00	U	1.6E+01	9.4E+00	2.5E+01	ND	-1.0E-01	5.9E-01	3.5E-01	9.4E-01	ND
Lead-214	-3.3E+00	UJ	1.9E+01	1.1E+01	3.0E+01	ND	-1.2E-01	7.0E-01	4.0E-01	1.1E+00	ND
Potassium-40	-3.6E+01	U	1.5E+02	8.6E+01	2.4E+02	ND	-1.3E+00	5.6E+00	3.2E+00	8.7E+00	ND
Protactinium-234m	-2.7E+02	U	1.4E+03	7.8E+02	2.2E+03	ND	-1.0E+01	5.2E+01	2.9E+01	8.1E+01	ND
Sodium-22	-5.2E+00	U	9.4E+00	4.8E+00	1.4E+01	ND	-1.9E-01	3.5E-01	1.8E-01	5.3E-01	ND
Thallium-208	-4.5E+00	U	1.1E+01	6.2E+00	1.7E+01	ND	-1.7E-01	4.1E-01	2.3E-01	6.4E-01	ND
Thorium-234	-2.0E+01	U	1.5E+02	8.6E+01	2.4E+02	ND	-7.4E-01	5.6E+00	3.2E+00	8.7E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

Filter Blank

February 28, 2014 to March 11, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	-5.3E-01	U	6.0E-01	3.2E-01	9.2E-01	ND	-2.0E-02	2.2E-02	1.2E-02	3.4E-02	ND
Gross beta	2.3E-01	U	9.2E-01	5.6E-01	1.5E+00	ND	8.5E-03	3.4E-02	2.1E-02	5.5E-02	ND
Alpha and beta emitters											
Americium-241	-4.5E-03	U	2.8E-02	1.3E-02	4.1E-02	ND	-1.7E-04	1.0E-03	4.7E-04	1.5E-03	ND
Plutonium-238	2.3E-03	U	2.8E-02	1.4E-02	4.2E-02	ND	8.5E-05	1.0E-03	5.1E-04	1.5E-03	ND
Plutonium-239/240	1.1E-02		6.2E-03	1.1E-02	1.8E-02	ND	4.1E-04	2.3E-04	4.2E-04	6.5E-04	ND
Strontium-90	3.3E-01	U	6.0E-01	3.2E-01	9.2E-01	ND	1.2E-02	2.2E-02	1.2E-02	3.4E-02	ND
Gamma emitters											
Actinium-228	-1.5E+01	U	4.6E+01	2.2E+01	6.8E+01	ND	-5.6E-01	1.7E+00	8.1E-01	2.5E+00	ND
Americium-241	-1.3E+01	U	9.9E+01	5.4E+01	1.5E+02	ND	-4.8E-01	3.7E+00	2.0E+00	5.7E+00	ND
Beryllium-7	5.9E+00	U	7.6E+01	4.2E+01	1.2E+02	ND	2.2E-01	2.8E+00	1.6E+00	4.4E+00	ND
Bismuth-212	2.0E+01	U	1.5E+02	8.4E+01	2.3E+02	ND	7.4E-01	5.6E+00	3.1E+00	8.7E+00	ND
Bismuth-214	-5.2E+00	UJ	2.4E+01	1.3E+01	3.7E+01	ND	-1.9E-01	8.9E-01	4.7E-01	1.4E+00	ND
Cesium-134	-1.1E+00	U	9.8E+00	5.2E+00	1.5E+01	ND	-4.1E-02	3.6E-01	1.9E-01	5.6E-01	ND
Cesium-137	-4.6E-01	U	8.6E+00	4.4E+00	1.3E+01	ND	-1.7E-02	3.2E-01	1.6E-01	4.8E-01	ND
Cobalt-60	-2.5E+00	U	1.1E+01	4.4E+00	1.5E+01	ND	-9.3E-02	4.1E-01	1.6E-01	5.7E-01	ND
Iodine-131	-2.4E+00	U	1.3E+01	7.2E+00	2.0E+01	ND	-8.9E-02	4.8E-01	2.7E-01	7.5E-01	ND
Lead-212	1.1E+00	U	1.3E+01	7.6E+00	2.1E+01	ND	4.1E-02	4.8E-01	2.8E-01	7.6E-01	ND
Lead-214	-4.7E+00	UJ	2.1E+01	1.1E+01	3.2E+01	ND	-1.7E-01	7.8E-01	4.1E-01	1.2E+00	ND
Potassium-40	-3.3E+01	U	1.8E+02	9.6E+01	2.8E+02	ND	-1.2E+00	6.7E+00	3.6E+00	1.0E+01	ND
Protactinium-234m	-9.7E+01	U	1.8E+03	8.8E+02	2.7E+03	ND	-3.6E+00	6.7E+01	3.3E+01	9.9E+01	ND
Sodium-22	2.7E+00	U	1.1E+01	6.4E+00	1.7E+01	ND	1.0E-01	4.1E-01	2.4E-01	6.4E-01	ND
Thallium-208	-1.8E+00	U	1.2E+01	6.2E+00	1.8E+01	ND	-6.7E-02	4.4E-01	2.3E-01	6.7E-01	ND
Thorium-234	2.6E+00	U	1.0E+02	5.8E+01	1.6E+02	ND	9.6E-02	3.7E+00	2.1E+00	5.8E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

Laboratory Method Blank

February 28, 2014 to March 11, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gross alpha and beta activity											
Gross alpha	5.5E-02	U	4.7E-01	2.8E-01	7.5E-01	ND	2.0E-03	1.7E-02	1.0E-02	2.8E-02	ND
Gross beta	6.6E-01	U	7.9E-01	5.0E-01	1.3E+00	ND	2.4E-02	2.9E-02	1.9E-02	4.8E-02	ND
Alpha and beta emitters											
Americium-241	-1.5E-03	U	2.4E-02	1.1E-02	3.5E-02	ND	-5.6E-05	8.9E-04	4.1E-04	1.3E-03	ND
Plutonium-238	8.2E-03		5.6E-03	1.0E-02	1.6E-02	ND	3.0E-04	2.1E-04	3.8E-04	5.8E-04	ND
Plutonium-239/240	8.2E-03		5.6E-03	1.0E-02	1.6E-02	ND	3.0E-04	2.1E-04	3.8E-04	5.8E-04	ND
Strontium-90	1.0E-01	U	3.5E-01	1.8E-01	5.3E-01	ND	3.7E-03	1.3E-02	6.5E-03	1.9E-02	ND
Gamma emitters											
Actinium-228	2.3E+00	U	3.1E+01	1.8E+01	4.9E+01	ND	8.5E-02	1.1E+00	6.5E-01	1.8E+00	ND
Americium-241	5.0E+01	U	1.0E+02	6.2E+01	1.6E+02	ND	1.9E+00	3.7E+00	2.3E+00	6.0E+00	ND
Beryllium-7	-9.8E+00	U	4.6E+01	2.4E+01	7.0E+01	ND	-3.6E-01	1.7E+00	8.9E-01	2.6E+00	ND
Bismuth-212	5.2E+01	U	8.5E+01	5.4E+01	1.4E+02	ND	1.9E+00	3.1E+00	2.0E+00	5.1E+00	ND
Bismuth-214	2.1E+00	UJ	1.7E+01	1.0E+01	2.7E+01	ND	7.8E-02	6.3E-01	3.7E-01	1.0E+00	ND
Cesium-134	-3.2E+00	U	8.1E+00	4.4E+00	1.3E+01	ND	-1.2E-01	3.0E-01	1.6E-01	4.6E-01	ND
Cesium-137	-8.7E-02	U	6.8E+00	3.8E+00	1.1E+01	ND	-3.2E-03	2.5E-01	1.4E-01	3.9E-01	ND
Cobalt-60	-2.6E+00	U	7.2E+00	3.2E+00	1.0E+01	ND	-9.6E-02	2.7E-01	1.2E-01	3.8E-01	ND
Iodine-131	-4.5E-01	U	4.5E+00	2.4E+00	6.9E+00	ND	-1.7E-02	1.7E-01	8.9E-02	2.6E-01	ND
Lead-212	1.7E+00	U	9.7E+00	5.6E+00	1.5E+01	ND	6.3E-02	3.6E-01	2.1E-01	5.7E-01	ND
Lead-214	-1.5E+00	UJ	1.2E+01	6.8E+00	1.9E+01	ND	-5.6E-02	4.4E-01	2.5E-01	7.0E-01	ND
Potassium-40	-6.0E+00	U	1.0E+02	5.4E+01	1.5E+02	ND	-2.2E-01	3.7E+00	2.0E+00	5.7E+00	ND
Protactinium-234m	3.4E+01	U	1.3E+03	7.2E+02	2.0E+03	ND	1.3E+00	4.8E+01	2.7E+01	7.5E+01	ND
Sodium-22	-1.8E+00	U	7.0E+00	3.2E+00	1.0E+01	ND	-6.7E-02	2.6E-01	1.2E-01	3.8E-01	ND
Thallium-208	-1.6E+00	U	7.7E+00	4.2E+00	1.2E+01	ND	-5.9E-02	2.8E-01	1.6E-01	4.4E-01	ND
Thorium-234	4.8E+01	U	7.2E+01	4.6E+01	1.2E+02	ND	1.8E+00	2.7E+00	1.7E+00	4.4E+00	ND

AMBIENT AIR MONITORING RESULTS AT THE WASTE ISOLATION PILOT PLANT (WIPP) AND VICINITY, CARLSBAD, NEW MEXICO

Laboratory Method Blank (laboratory duplicate)

February 28, 2014 to March 11, 2014

	pCi/sample						Bq/sample				
Analyte	Lab Result	Lab Flag	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level	Lab Result	Lab MDA	±2 s TPU	95% confidence level (MDA ±2 s TPU)	Detection at 95% confidence level
Gamma emitters											
Actinium-228	-5.1E+00	U	3.4E+01	2.0E+01	5.4E+01	ND	-1.9E-01	1.3E+00	7.3E-01	2.0E+00	ND
Americium-241	1.4E+01	U	3.5E+01	2.2E+01	5.7E+01	ND	5.2E-01	1.3E+00	8.1E-01	2.1E+00	ND
Beryllium-7	4.2E-01	U	4.5E+01	2.6E+01	7.1E+01	ND	1.6E-02	1.7E+00	9.6E-01	2.6E+00	ND
Bismuth-212	-2.5E+01	U	1.0E+02	5.8E+01	1.6E+02	ND	-9.3E-01	3.7E+00	2.1E+00	5.8E+00	ND
Bismuth-214	1.2E+01	UJ	1.4E+01	8.8E+00	2.3E+01	ND	4.4E-01	5.2E-01	3.3E-01	8.4E-01	ND
Cesium-134	8.8E-01	U	6.7E+00	4.0E+00	1.1E+01	ND	3.3E-02	2.5E-01	1.5E-01	4.0E-01	ND
Cesium-137	-2.0E+00	U	7.3E+00	4.0E+00	1.1E+01	ND	-7.4E-02	2.7E-01	1.5E-01	4.2E-01	ND
Cobalt-60	-9.0E-01	U	7.8E+00	4.4E+00	1.2E+01	ND	-3.3E-02	2.9E-01	1.6E-01	4.5E-01	ND
Iodine-131	-1.8E+00	U	6.7E+00	3.8E+00	1.1E+01	ND	-6.7E-02	2.5E-01	1.4E-01	3.9E-01	ND
Lead-212	1.4E+00	U	1.4E+01	8.2E+00	2.2E+01	ND	5.2E-02	5.2E-01	3.0E-01	8.2E-01	ND
Lead-214	-3.7E+00	UJ	2.1E+01	1.2E+01	3.3E+01	ND	-1.4E-01	7.8E-01	4.5E-01	1.2E+00	ND
Potassium-40	-1.8E-01	U	1.3E+02	7.8E+01	2.1E+02	ND	-6.7E-03	4.8E+00	2.9E+00	7.7E+00	ND
Protactinium-234m	5.8E+02	U	1.1E+03	6.6E+02	1.8E+03	ND	2.1E+01	4.1E+01	2.4E+01	6.5E+01	ND
Sodium-22	-1.9E-01	U	6.9E+00	3.8E+00	1.1E+01	ND	-7.0E-03	2.6E-01	1.4E-01	4.0E-01	ND
Thallium-208	2.0E+00	U	1.0E+01	6.0E+00	1.6E+01	ND	7.4E-02	3.7E-01	2.2E-01	5.9E-01	ND
Thorium-234	-1.2E+01	U	1.3E+02	7.6E+01	2.1E+02	ND	-4.4E-01	4.8E+00	2.8E+00	7.6E+00	ND