GROUNDWATER MONITORING DATA RELEASE
2010 SAMPLING EVENT
LUCKEY FUSRAP SITE

U.S. Army Corps of Engineers
Buffalo District

Building Strong®

March 2011

Formerly Utilized Sites Remedial Action Program (FUSRAP)

FUSRAP was initiated in 1974 to identify, investigate, and cleanup or control sites throughout the United States that were part of the Nation's early atomic weapons and energy programs during the 1940s, 1950s, and 1960s.

When implementing FUSRAP, the Corps follows the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

Site Description

The Luckey Site is located at 21200 Luckey Road near the Village of Luckey, Ohio, 22 miles southeast of Toledo. The site is bordered by Luckey Road to the west, Gilbert Road to the south, abandoned railroad tracks to the east, and bounded by farm fields to the north. The site is zoned industrial but is currently not being utilized for industrial processes. The Luckey Site covers approximately 40 acres and contains numerous open areas. Several of these open areas were previously used to store byproducts from magnesium and beryllium processing.

Purpose

The purpose of this environmental data release is to provide groundwater monitoring data that is regularly collected at the site. The U.S. Army Corps of Engineers (USACE) Buffalo District is posting this data to the Luckey Site webpage available at: http://www.lrb.usace.army.mil/fusrap/luckey. Included are annual groundwater monitoring data and the USACE interpretation of these data.

Results and Interpretation

Figure 1 shows the location of the groundwater monitoring wells sampled at the Luckey Site in 2010. All monitoring wells with the exception of MW-51(S) and MW-52(I) (installed and sampled in December 2010) were sampled in July 2010. Six (6) of the monitoring wells (MW-50(I), MW-51(S), MW-53(I), MW-54(S), MW-55(I), and MW-56(I)) are new to the groundwater monitoring program and were installed in

the spring of 2010. Monitoring well MW-24(S) was replaced by MW-24R(S) in the spring of 2010 due to improper construction. All new wells, as well as the existing wells, were thoroughly developed prior to sampling.

Groundwater surface elevations measured at the groundwater wells during the July 2010 monitoring event are presented in Table 1 and were plotted as groundwater contours in Figures 2 and 3 for the shallow and intermediate water bearing zones, respectively. Figure 4 presents the groundwater surface elevations measured for the deep water bearing zone. The data indicate that groundwater flow within the shallow, intermediate and deep water bearing zones is northerly and northwesterly, with the former production wells exerting less influence on site groundwater gradient and flow than observed during active production.

Analytical results for the July 2010 monitoring event are presented in Table 2. Environmental Protection Agency (EPA) Maximum Containment Levels (MCLs) were developed as guidelines for drinking water. Analytical results above the EPA MCLs include beryllium (MW-01(I), -02(S), -26(S), PW(W)), lead (MW-21(I) and PW(E)), and uranium (MW-21(I)), which are consistent with previous results. All of the wells that contain constituents of concern (COCs) above the EPA MCLs are located onsite. Exceedances of the MCL are not impacting human health, because the onsite wells are not utilized for drinking water. Samples in residential wells do not show MCL exceedances. The data indicate that COC concentrations in groundwater do not exhibit long-term increasing trends.

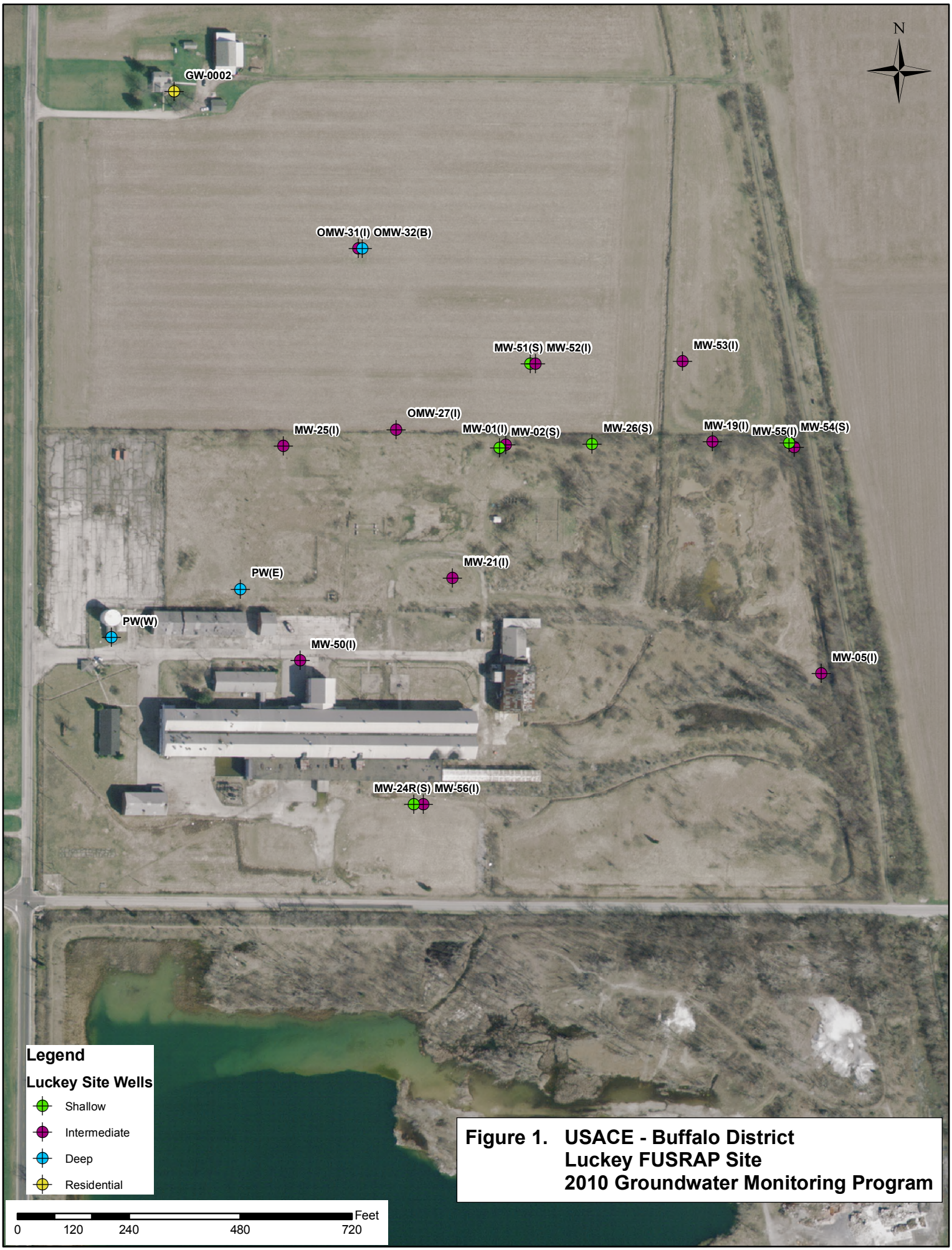

Figure 1. USACE - Buffalo District
Luckey FUSRAP Site
2010 Groundwater Monitoring Program

Figure 2. USACE - Buffalo District Luckey FUSRAP Site Potentiometric Map, July 2010 Shallow Water Bearing Zone

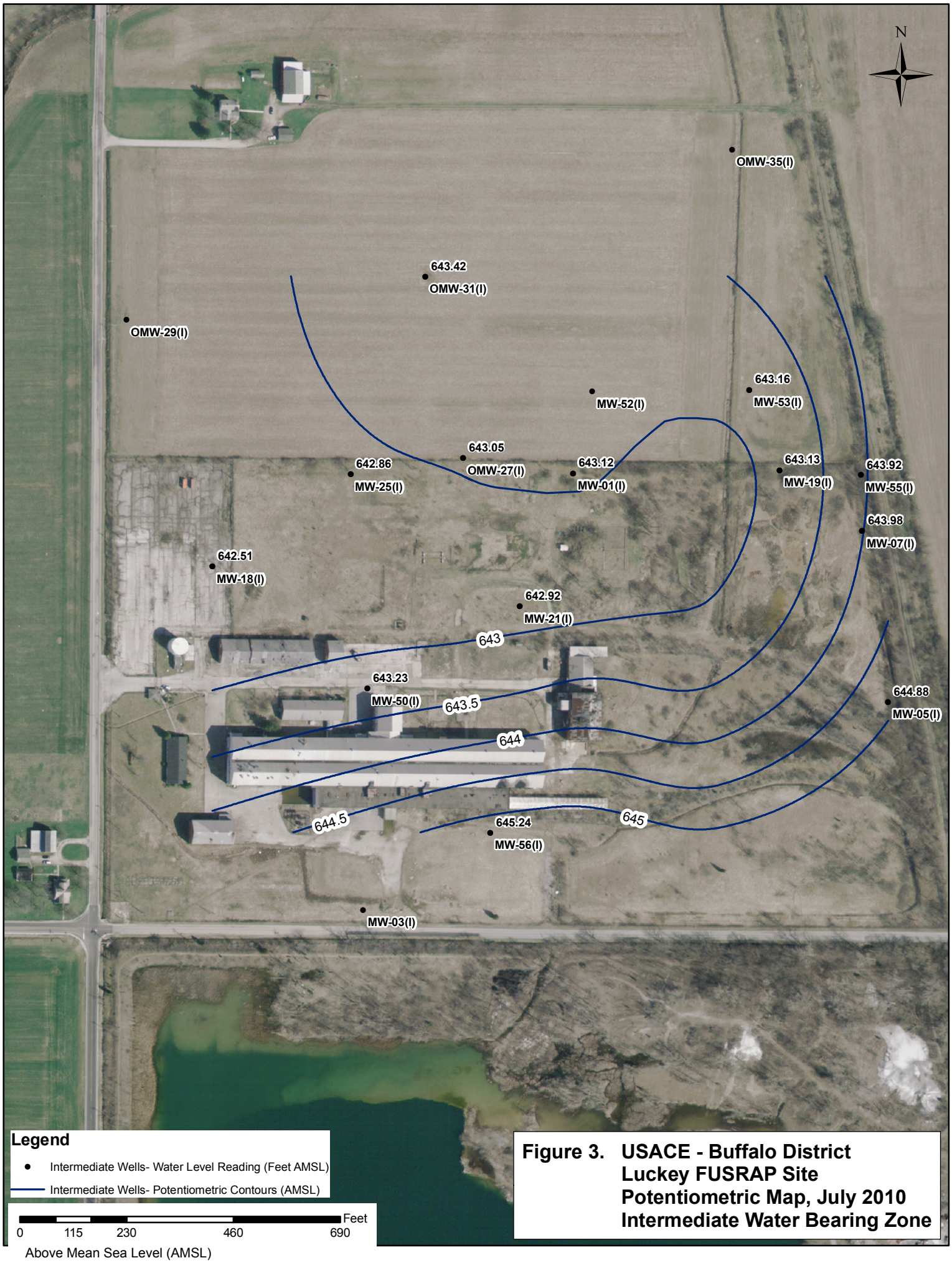

Figure 3. USACE - Buffalo District Luckey FUSRAP Site Potentiometric Map, July 2010 Intermediate Water Bearing Zone

**Figure 4. USACE - Buffalo District
Luckey FUSRAP Site
Water Level Readings, July 2010
Deep Water Bearing Zone**

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Table 1
Luckey FUSRAP Site
Groundwater Elevations
July 26, 2010

Well ID	Top of Casing Elev (ft AMSL)	Depth to Water (ft TOC)	WL Elev (ft AMSL)
MW-01(I)	650.52	7.40	643.12
MW-02(S)	650.27	7.26	643.01
MW-03(I)	651.66	N/M	---
MW-04(S)	651.53	4.34	647.19
MW-05(I)	653.26	8.38	644.88
MW-06(S)	652.49	8.11	644.38
MW-07(I)	650.21	6.23	643.98
MW-08(S)	650.77	7.88	642.89
MW-13(S)	651.03	8.08	642.95
MW-14(S)	649.05	N/M	---
MW-17(S)	652.23	Dry at 7.8	---
MW-18(I)	647.54	5.03	642.51
MW-19(I)[1]	651.03	7.90	643.13
MW-20(S)	653.71	9.89	643.82
MW-21(I)	651.45	8.53	642.92
MW-22R(I)	N/A	6.98	---
MW-23(S)	652.58	7.78	644.8
MW-24R(S)	653.84	9.27	644.57
MW-25(I)	649.31	6.45	642.86
MW-26(S)	650.44	7.40	643.04
OMW-27(I)	649.97	6.92	643.05
OMW-28(B)	649.99	6.74	643.25

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Luckey FUSRAP Site
Groundwater Elevations
July 26, 2010

Well ID	Top of Casing Elev (ft AMSL)	Depth to Water (ft TOC)	WL Elev (ft AMSL)
OMW-31(I)[1]	648.68	5.26	643.42
OMW-32(B)	648.74	N/M	---
MW-40(B)	650.27	6.88	643.39
MW-41(B)	653.00	4.65	648.35
TW-42(S)	651.97	4.45	647.52
TW-43(S)	651.73	6.00	645.73
MW-50(I)	652.95	9.72	643.23
MW-51(S)	649.99	N/M	--
MW-52(I)	650.11	N/M	--
MW-53(I)	649.60	6.44	643.16
MW-54(S)	650.19	6.97	643.22
MW-55(I)	650.11	6.19	643.92
MW-56(I)	653.42	8.18	645.24
PW(E)	N/A	N/M	---
PW(W)	N/A	N/M	---

Notes:

ft amsl	feet above mean sea level
ft TOC	feet below top of casing
N/A	Not Available
N/M	Not Measured
R	Data has been rejected because of quality issues
1	Water Level was measured on July 27th.

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TABLE 2
Luckey FUSRAP Site
Groundwater Analytical Results
2002 - 2010

Well	Year	Beryllium	Beryllium (Filtered)	Gross Alpha	Gross Beta	Lead	Lead (Filtered)	Total Uranium (KPA)[2]	Total Uranium[1] (Alpha Spec)[2]	Uranium-234	Uranium-235	Uranium-238
Units		ug/L	ug/L	pCi/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
USEPA MCLs		*4*	*4*	*15*	*15*	*15*	*15*	*30*	*27*	*-*	*-*	*-*
GW0001	2002	ND	ND	6.3	7.66	ND	ND	0.48	0.57	0.31	ND	0.26
	2004	ND	NA	ND	6.88	1.7 J	NA	0.561	ND	ND	ND	ND
GW0002	2002	ND	ND	3.9	ND	ND	ND	0.18	0.33	0.33	ND	ND
	2004	ND	NA	2.39	3.97	ND	NA	0.371	1.35	1.35	ND	ND
	2005	ND	ND	ND	ND	0.8 J	1 J	ND	0.308 J	0.229 J	ND	0.079 J
	2006	ND	ND	ND	ND	0.6 J	ND	0.85 J	0.11 J	0.11 J	ND	ND
	2007	ND	ND	2.1	4.1 J	ND	ND	NA	0.215 J	0.147	ND	0.068 J
	2008	ND	ND	NA	NA	ND	3.8 J	ND	0.589	0.389	ND	0.2
	2009	0.17 J	0.076 J	NA	NA	0.96	0.14 J	ND	0.286 J	0.286 J	ND	ND
	2010	ND	ND	3.4	ND	0.58	0.094 J	ND	1.34 J	0.862 J	0.25	0.227
MW-01(I)	2002	**34**	**11**	6.97	8.86	ND	3	0.52	2.51 J	1.57	0.16 J	0.78
	2004	**31.1**	NA	2.46	7.41	ND	NA	3.16	3.52	1.88	ND	1.64
	2005	**41.2**	**33.8**	ND	8.1	ND	ND	3.32	2.37	1.35	0.056 J	0.96
	2006	**31.8**	**33.2**	NU	ND	ND	0.62 J	2.85	2.39 J	1.45 J	ND	0.94 J
	2007	**32.5**	**30.9**	2	6.1 J	ND	ND	NA	2.29 J	1.41	0.091 J	0.79
	2008	**31.1**	**31.5**	NA	NA	ND	ND	2.63	2.60	1.74	ND	0.862
	2009	**39**	**34**	NA	NA	0.57	0.46	2.39	2.47 J	1.15	0.341 J	0.982
	2010	**25**	**20**	ND	ND	0.74	0.35 J	2.91	3.94	2.46	0.402	1.08
MW-02(S)	2002	**60**	**60**	7.65	6.55	4	ND	6.46	4.25	2.37	ND	1.88
	2004	**77.8**	NA	5.01	7.64	1.7 J	NA	6.24	6.03	2.89	ND	3.14
	2005	**44.2**	**43**	ND	ND	1.5 J	2.3 J	5.23	4.46 J	2.33	0.133 J	2
	2006	**14.8**	**13.7**	ND	NU	1.8	1.4	4.13	3.43 J	1.69 J	0.16 J	1.58 J
	2007	**14.2**	**13.2**	3.9	7.3 J	ND	ND	NA	3.46 J	1.85	0.099 J	1.51
	2008	**13.2**	**12.4**	NA	NA	ND	ND	3.93	3.15	1.63	0.183 J	1.52
	2009	**14**	**22**	NA	NA	1.3	1.3	3.64	3.65	2.17	ND	1.48
	2010	**11**	3.1	5.67	8.18	1.3	0.72	4.17	4.55	2.35	0.482	1.72
MW-05(I)	2002	ND	ND	9.62	**19.1**	4	4	3.58	2.32	1.36	ND	0.96
	2004	ND	NA	1.79	**19.9**	ND	NA	2.79	1.97	1.97	ND	ND
	2005	ND	ND	8.5	**15.3**	2.6 J	3.4	3.23	2.50 J	1.37	0.07 J	1.06
	2006	ND	ND	NU	5.8	1.5	1.2	3.82	2.74 J	1.54 J	0.18 J	1.02 J
	2007	ND	ND	0.3	8.7 J	ND	ND	NA	2.06	1.17	ND	0.89
	2008	ND	ND	NA	NA	3.5 J	3.4 J	2.96	3.29 J	1.77	0.198 J	1.32
	2009	ND	ND	NA	NA	3.3	2.7	2.77	2.99	1.67	ND	1.32
	2010	0.52	0.084 J	7.46	7.94	3.3	2.6	3.36	2.46 J	1.44 J	ND	1.02
MW-07(I)	2002	ND	ND	7.16	8.96	ND	ND	2.48	2.12	1.44	ND	0.68
	2004	ND	NA	6.71	8.41	ND	NA	2.47	1.62	1.62	ND	ND
	2005	ND	ND	6.7	8.7	ND	ND	2.53	1.61 J	0.93	0.056 J	0.62
	2006	ND	ND	NU	4.8	ND	ND	2.73	1.62 J	0.87 J	ND	0.75 J
	2007	ND	ND	2.2	7.8 J	ND	ND	NA	2.30 J	1.15	0.083 J	1.07
	2008	ND	ND	NA	NA	ND	ND	2.36	2.21 J	1.4	0.195 J	0.617
	2009	ND	ND	NA	NA	0.067 J	0.21	2.17	2.50 J	1.65 J	ND	0.852 J

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Units		ug/L	ug/L	pCi/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
USEPA MCLs		*4*	*4*	*15*	*15*	*15*	*15*	*30*	*27*	*-*	*-*	*-*
MW-19(I)	2002	ND	ND	4.51	6.11	ND	ND	0.43	0.43	0.43	ND	ND
	2004	2.8 J	NA	2.8	4.47	ND	NA	0.554	1.67	1.67	ND	ND
	2005	3.1 J	2.9 J	ND	ND	ND	ND	0.492 J	0.448 J	0.204 J	ND	0.244 J
	2006	2.8	3.5	ND	4.4	ND	ND	ND	0.55 J	0.39 J	ND	0.16 J
	2007	2.2 J	2.1 J	-1.7	4.7	ND	ND	NA	NU	NU	NU	0.68
	2008	2.9 J	2.4 J	NA	NA	ND	ND	ND	0.261 J	0.261 J	ND	ND
	2009	3.9	**4.6**	NA	NA	0.25 J	0.16 J	ND	0.506 J	0.506 J	ND	ND
	2010	3	2.2	5.19	ND	0.55	0.25 J	ND	0.288	ND	ND	0.288
MW-21(I)	2002	ND	ND	**35.6**	**30.2**	**34**	**29**	27.6	17.4	8.64	0.76	7.97
	2004	ND	NA	9.76	13.2	**32.5**	NA	13.57	11.1	4.77	1.13	5.21
	2005	ND	ND	10	10.2	**25.5**	**25.7**	14.9	7.5	3.89	0.141	3.49
	2006	ND	ND	25	NU	**32.7**	**31.7**	**35**	12.8	6.8	0.16 J	6
	2007	ND	ND	14.8 J	**26.7 J**	**27.1**	**25.7**	NA	19.1	9.5	0.5	9.1
	2008	ND	ND	NA	NA	**39.6**	**32.9**	**37.7**	**31.1**	15.7	1.03	14.4
	2009	ND	ND	NA	NA	**84**	**58**	**34.1**	**32.5**	16.1	0.92	15.5
	2010	2.6	ND	**33.7**	ND	**62**	**53**	**44.4**	**32.8**	15.8	1.04	16
MW-22(I)	2008	ND	ND	NA	NA	ND	3.1 J	1.11	0.632	0.292	ND	0.34
	2009	ND	0.088 J	NA	NA	1.3	1.7	ND	1.15	0.743	ND	0.405
MW-23(S)	2008	ND	ND	NA	NA	ND	4.8 J	4.44	4.22	2.27	ND	1.95
	2009	0.10 J	0.034 J	NA	NA	0.6	1.1	2.64	3.44 J	1.71	0.38 J	1.35
MW-24(S)[3]	2002	ND	ND	**237**	**55**	12	12	**333**	**211 J**	99.8	11.8 J	99.9
	2004	ND	NA	**158**	**66.7**	9.4	NA	**273**	**186**	89	5.19	91.4
	2005	ND	ND	**84**	**34**	ND	4.2 J	**161**	**110**	52.7	2.78	54.5
	2006	0.38 J	0.17 J	**207**	**33.4**	6.8	6.1	**184**	**121 J**	59.7	3.29 J	57.6
	2007	ND	ND	**87.1 J**	**66.1 J**	6.1 J	7.1 J	**NA**	**136.5**	63	2.5	71
	2008	ND	ND	NA	NA	4.3 J	ND	**163**	**109**	52.1	4.17	52.5
	2009	0.79	0.61	NA	NA	5.9	6.7	**197**	**118**	57.6	3.55	56.9
MW-24R(S)	2010	0.88 J	ND	ND	ND	2.4	3	21.3	18	10.4	0.515	7.47
MW-25(I)	2008	ND	ND	NA	NA	ND	5.9 J	1.28	1.23	0.725	ND	0.509
	2009	0.20 J	0.21	NA	NA	0.59	0.11 J	ND	1.14	0.813	ND	0.331
	2010	0.056 J	ND	6.21	ND	0.42	0.072 J	3.3	4.26	2.72	0.301	1.24
MW-26(S)	2002	**119**	**103**	**19.1**	12.5	10	ND	13.8	8.01	4.88	ND	3.13
	2008	**8.9**	**9.1**	NA	NA	5 J	ND	6.72	4.79	2.56	ND	2.23
	2009	**15**	**18**	NA	NA	5.3	6.2	9.63	8.28	4.14	0.522	3.62
	2010	**9.2**	**8.4**	5.59	8.79	2.1	1.2	8.18	6.35	3.27	0.351	2.73
MW-27(I)	2008	ND	ND	NA	NA	ND	ND	1.89	3.37	2.16	0.357	0.852
	2009	ND	ND	NA	NA	0.73	0.54	1.41	2.18	1.42	ND	0.763
	2010	ND	ND	ND	ND	1.2	0.55	2.09	3.45	2	0.426	1.02
MW-40(B)	2002	ND	ND	6.5	8.83	4	3	1.03	1 J	0.67	ND	0.33 J
	2004	ND	NA	4.94	9.09	ND	NA	1.1	ND	ND	ND	ND
	2005	ND	ND	ND	ND	ND	ND	0.484 J	0.745 J	0.48 J	0.031 J	0.234 J
	2006	ND	ND	NU	ND	ND	0.49 J	ND	0.58 J	0.4 J	ND	0.18 J
	2007	ND	ND	2	6.2 J	ND	ND	NA	0.613	0.46	ND	0.153

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Units		ug/L	ug/L	pCi/L	pCi/L	ug/L	ug/L	ug/L	pCi/L	pCi/L	pCi/L	pCi/L
USEPA MCLs		*4*	*4*	*15*	*15*	*15*	*15*	*30*	*27*	*-*	*-*	*-*
OMW-29(I)	2002	ND	ND	3.68 J	ND	ND	ND	0.21	ND	ND	ND	ND
	2004	ND	NA	2.72	3.17	ND	NA	0.299	ND	ND	ND	ND
	2005	ND	ND	8.1	7.8	ND	ND	4.45	3.67 J	2.11	0.063 J	1.5
	2006	ND	ND	5.6	ND	ND	0.89 J	2.5	2.07 J	1.35 J	ND	0.72 J
	2007	ND	ND	2.8	4.3 J	ND	ND	NA	1.58	1.01	ND	0.57
OMW-31(I)	2002	ND	ND	ND	ND	ND	ND	0.67	0.57 J	0.3 J	ND	0.27 J
	2004	ND	NA	2.44	3.57	ND	NA	0.982	ND	ND	ND	ND
	2005	ND	ND	ND	ND	ND	ND	1.42	1.21	0.66	ND	0.55
	2006	ND	ND	NU	6.2	ND	ND	1.81 J	1.55 J	0.99 J	ND	0.56 J
	2007	ND	ND	1.6	4.6	ND	ND	NA	0.571	0.36	ND	0.211
	2008	ND	ND	NA	NA	ND	ND	ND	1.18	0.564	ND	0.615
	2009	ND	0.035 J	NA	NA	0.27 J	0.35	ND	0.36	0.36	ND	ND
	2010	ND	ND	ND	ND	0.66	0.22 J	ND	0.839 J	0.839 J	ND	ND
OMW-32(B)	2008	ND	ND	NA	NA	ND	ND	ND	0.498	0.498	ND	ND
	2009	ND	ND	NA	NA	0.13 J	0.28	ND	ND	ND	ND	ND
	2010	ND	ND	4.39	ND	0.18 J	0.18 J	ND	0.346 J	0.346 J	ND	ND
OMW-35(I)	2002	ND	ND	4.14	5.16	ND	ND	0.72	0.65 J	0.35 J	ND	0.3 J
	2004	ND	NA	2.68	2.76	ND	NA	0.763	ND	ND	ND	ND
	2005	ND	ND	ND	5.2	ND	ND	0.528 J	0.594 J	0.4 J	ND	0.194 J
	2006	ND	ND	ND	ND	1.6	1.5	1.91 J	1.6 J	0.96 J	ND	0.64 J
	2007	ND	ND	3	6.9 J	ND	ND	NA	2.32 J	1.17	0.099 J	1.05
PW(E)	2002	ND	ND	3.9	ND	ND	ND	0.18	ND	ND	ND	ND
	2004	ND	NA	1.59	5.35	ND	NA	0.502	ND	ND	ND	ND
	2008	ND	ND	NA	NA	**26.2**	4.0 J	ND	0.414	ND	ND	0.414
	2009	0.17 J	0.028 J	NA	NA	**26**	0.56	ND	ND	ND	ND	ND
	2010	0.098 J	ND	ND	ND	**16**	0.18	ND	0.993 J	0.637 J	ND	0.356
PW(W)	2004	**4.1 J**	NA	4.31	11.9	ND	NA	8.04	1.96	ND	ND	1.96
	2008	**11.3**	**11**	NA	NA	ND	ND	4.14	4.23	2.14	ND	2.09
	2009	**13**	**18**	NA	NA	2.2	1.6	3.74	4.21 J	2.03	0.33 J	1.85
	2010	**7.5**	**8.7**	ND	ND	1.3	0.85	3.73	5.58	3.15	0.735	1.69
MW-50(I)	2010	0.082 J	0.06 J	7.65	ND	0.72	0.15 J	2.17	2.09 J	1.05 J	0.331	0.705 J
MW-53(I)	2010	ND	ND	ND	ND	0.17 J	0.07 J	ND	1.087 J	0.764 J	ND	0.323
MW-54(S)	2010	0.11 J	ND	10.9	ND	0.21 J	0.072 J	4.98	4.02	2.42	ND	1.6
MW-55(I)	2010	ND	ND	9.46	ND	0.06 J	0.064 J	ND	0.783 J	0.508 J	ND	0.275
MW-56(I)	2010	0.25 J	0.08 J	6.74	6.77	0.48	0.3 J	3.45	3.45 J	1.29 J	ND	1.51

Notes:

NA	Not Analyzed
ND	Not Detected
NU	Result was not used because of quality issues
J	Estimated
µg/L	micrograms per liter
pCi/L	pico Curies per liter
1	MCL refers to the sum of Uranium Isotopes (MCL=27pCi/L or 30 µg/L)
2	Kinetic Phosphorescence Analysis (KPA) and Alpha Spec are the analytical methods used to measure Total Uranium and Uranium Isotopes, respectively.
3	MW-24(S) has been physically moved approximately 25 feet to the east and renamed IA09-MW-24R(S).