

## Richard Healey (adpce.ad)

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**From:** Charles McDowell <CMcDowell@lsbindustries.com>  
**Sent:** Friday, March 1, 2024 2:44 PM  
**To:** Richard Healey (adpce.ad); Water-Enforcement-Report  
**Cc:** Keith Long; Howard Stevens  
**Subject:** EDCC, NPDES Permit AR0000752  
**Attachments:** EDC Weekly Update 2024-3-1.docx; 2023-24 Waste Water Data.xlsx

Mr Healey,  
Attached is the weekly update with the effluent data.

If you have any questions, feel free to contact me.

**Charles McDowell** | Environmental Leader | LSB INDUSTRIES, Inc. (NYSE: LXU) | El Dorado Chemical Plant | 4500 North West Avenue, El Dorado, Arkansas 71731

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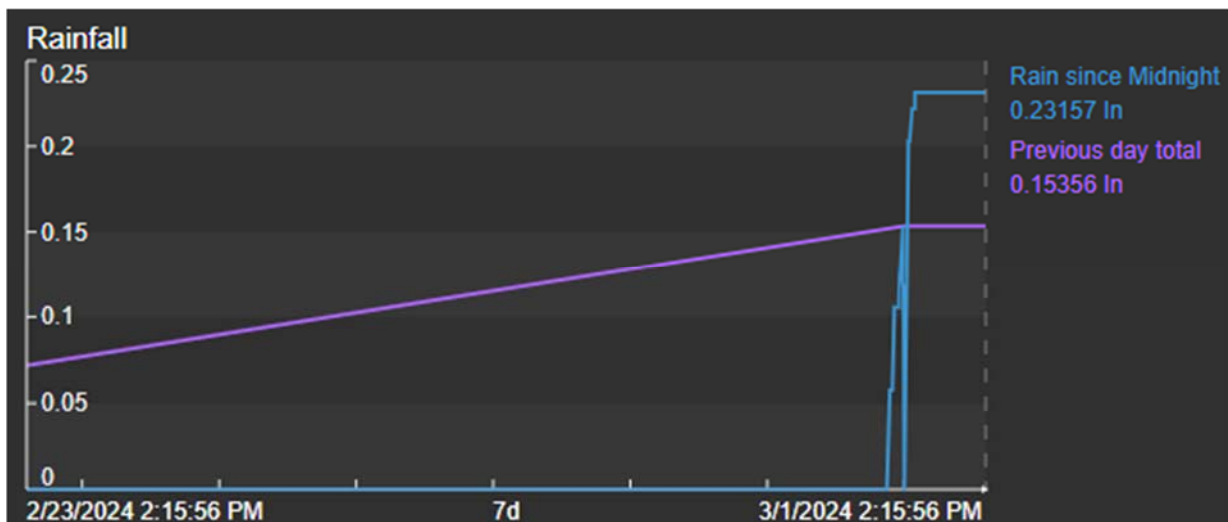
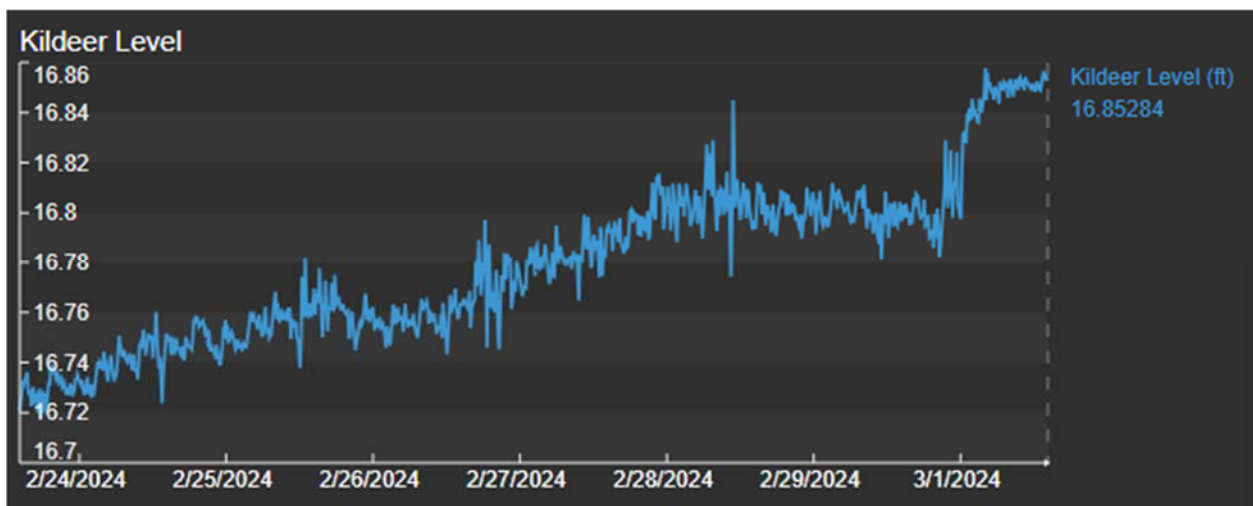
## Weekly Report Required by Interim Measures Letter dated 8/4/2023

LSB Chemical Company, NPDES Permit Number: AR0000752, AFIN: 70-00040

Weekly Report Date: February 23, Updated portions are underlined.

### Discharges and Implementation of Emergency Action Plan

Over the last week, the facility received less than 0.38 inches of rain. Lake Kildeer is currently at 16.85 feet and the discharge from Outfall 010 is 1.0 MDG. The forecast indicates that we will receive approximately 1.5 inch of rainfall over the next ten days. Due to anticipated rainfall, we expect to have to increase the discharge from Outfall 010 to 2.0 MGD. LSB is attempting to keep the levels of Kildeer below 17.00 feet. In the event of additional rain, LSB will manage the discharge from Kildeer as necessary to ensure water does not overtop the emergency spillway in accordance with the August 4, 2023 Interim Measures letter.



## Conduct Daily Sampling of Lake Lee, Lake Killdeer, and Pond 004

LSB commenced this required sampling on August 5, 2023. Updated Information is in the attached 2023/2024 spreadsheet.

## Provide Copies of Sampling of Lake Lee, Lake Killdeer, and Pond 004 Since January 1, 2023

Please see the LSB Interim Measures response dated August 9, 2023.

## Corrective Action Plan Activities [updates from the previous week are underlined]

During our August 17<sup>th</sup> conference call we discussed that these proposed activities may trigger a communication to the ADEQ and possible permit changes. We will continue to communicate plans and improvements to obtain ADEQ's guidance on proper permitting.

### Minimize Wastewater Contaminant Loading

#### Water Reuse:

LSB has evaluated its processes to assess locations where water can be reutilized in processes. Currently we are reusing as much wastewater as possible, that would otherwise flow into Pond 004, and are reusing some water from Pond 004 when the opportunity arises.

### Minimize Wastewater Inflow

The stormwater diversion project has been completed. LSB met with ADEQ on the 19<sup>th</sup> to discuss permit applicability. Based on the discussions this action will not require a construction permit. Physical work on the project has been completed and we can now divert a total of 30% of the stormwater flow from 004. This is currently a manual process, to automate additional work will be required.

Additionally, we have started an engineering study to divert additional water away from the Ammonia Nitrate facility. This project will focus on paving in and around the Ammonia Nitrate area and is upstream of any waste/process water connections and will not require a construction permit. LSB has utilized seven frac tanks to increase the storage capacity of Ammonia Nitrate water to reduce the overflow into Pond 004 from rain events.

### Maximize Treatment Efficiency and Capacity

#### Lake Lee Ammonia Stripper

LSB continues to operate the ammonia stripper with an approximate 20% efficiency. However, the stripper has to be shut down during freezing weather due to the lack of heat load on the stripper. Cold weather operation can/will cause freezing of the cooling tower.

#### Treatment of Pond 004

LSB met with Black & Veatch, a wastewater consulting firm, to determine the best treatment possibilities for Pond 004. Based on these initial conversations a biological system seems to be the best path forward. The B&V report was attached in the 13 Oct 2023 report.

Based on review of the Black and Veatch data, LSB is proceeding with biological treatment of 004, but we are still assessing how to address treatment barriers such as predilution, carbon addition, and sludge

generation. The design basis is complete. However, we do expect minor changes to occur as we move forward with this project.

The units are currently on site and are in a staging area. A construction permit will be submitted as soon as engineering is completed.

Black and Veatch is developing the processes to operate the plants and develop a written plan to use these package plants in the setup they are proposing. Once the plans are developed, we can propose permit modification to facilitate this. We are currently developing a list of longer lead time items (i.e. Transformers) to try to find alternative sources of procurement to prevent unforeseen delays. It was expected the transformer would be a potential long lead time element, with the design bases completed, we have sized transformers and this appears to no longer be the critical path. Ancillary equipment for these units is undergoing inspection and repaired as needed.

LSB internal engineering is evaluating siting and location for these package plants, this has been narrowed down to two locations. LSB contracted HSG to do site investigations for the foundation and to develop the foundation plans. Initial site survey has been completed. Today, ground penetrating radar is being used to determine any potential underground obstructions and to aid in choosing a site.

Additionally, we are evaluating possibilities of reuse of the process wastewater as an input into a product.

#### Increased Efficiency in Lake Killdeer Biological Activity

Based upon discussion with supplier of nitrification/denitrification bacteria, LSB will begin dosing Lake Killdeer with calcium carbonate or magnesium carbonate to increase the available of carbon and alkalinity in Lake Killdeer. Increasing available carbon should promote additional biological activity to reduce the amount of ammonia in Lake Killdeer and the effluent discharge. LSB has also ordered one ton of lime and will begin dosing Lake Lee with the lime in efforts to increase alkalinity in Lake Lee which flows into Lake Killdeer. Before any dosing begins a construction permit will be submitted.

#### Baffles in Lake Killdeer

LSB selected a vendor to install baffles in Lake Killdeer. As discussed in our August 17th conference call, this should promote longer residence time and further increase biological activity to reduce the amount of ammonia in Lake Killdeer and the effluent discharge. Baffles have arrived onsite. Construction drawings and design basis have been submitted to apply for the construction permit. The permit application was submitted on the 24<sup>th</sup> of January. The installation is expected to be completed in the first quarter of 2024 or as soon as approval is received from the ADEQ. ADEQ submitted the public notice on the 28<sup>th</sup> of February.

#### Water Quality Sampling Results

Water quality sampling required by the Interim Measures letter is included in the attached 2023 spreadsheet.

#### Water Column Profile Measurements

LSB has contracted with Alliance Technology Group (formerly GBMc) to complete the profile and sampling of Pond 004, Lake Lee, and Lake Killdeer. The field work was completed on September 28<sup>th</sup>.

## KT French Drain

KT French Drain is located southwest of the KT plant on the west edge of the facility. Water is collected in a wet well then pumped back into the facility, much like a municipality utilized lift stations. During the previous inspection the pump was not operating and the wet well was overflowing. LSB has implemented daily inspections to ensure that the pump remains operational.

As requested, LSB collected samples from KT Wier. Samples collected on December 8<sup>th</sup> were collected based on the December 7, 2023 conversation with ADEQ and before we received the official request thus all requested in-situ parameters were not collected. Data is presented below:

Date	Temp	pH	D.O.	Cond.	Ammonia mg/l	Nitrate mg/l	Nitrite mg/l	Total – N mg/l	Nitrate + Nitrite
12-8-2023	NA	4.35	NA	79,150	6,600	10,351	0.43	16,951.4	10,351.4
12-12-2023	16	4.40	5.63	79,250	6,500	10,633	0.41	16,833.4	10,633.4
12-14-2023	18	4.37	5.16	77,440	6,350	10,669	0.46	17,019.46	10,669.46
12-19-2023	16	4.35	6.16	78630	12080	11,477	ND	23,557	11,477
12-21-2023	18	4.35	5.43	77,750	9200	11,108	ND	20,308	11,108

## Other Actions

In this call LSB was informed we need to obtain a wastewater operator's license as quickly as possible. Charles McDowell is planning on completing the advanced industrial wastewater class in March. LSB currently has three certified operators. Second, ADEQ advised that LSB should coordinate with other Joint Pipeline members regarding discharges and volumes. We have initiated this communication.

LSB has contracted Alliance Technology to conduct a bathometric survey of 004. The results of the study indicate that Pond 004 contains approximately 1.5 Million Gallons of water.

Date	Lake Killdeer (KD)									Lake Lee							Pond 004											
	KD Grab Sample	KD Grab Sample	KD Composite EDCC LAB	KD Grab Sample	KD Composite EDCC LAB	KD Composite EDCC LAB	KD Composite EDCC LAB	KD Composite EDCC LAB	KD Composite EDCC LAB	LEE Grab Sample	LEE Grab Sample	Lee Composite EDCC LAB	LEE Grab Sample	Lee Composite EDCC LAB	Lee Composite EDCC LAB	Lee Composite EDCC LAB	Lee Composite EDCC LAB	004 Grab	004 Grab	004 Grab	004 Grab	004 Grab	004 Grab	004 Grab	004 Grab			
	Time of Grab	Temp °C	pH	DO, ppm	Conductivity	NH <sub>3-N</sub> , ppm	NO <sub>3-N</sub> , ppm	P, ppm	SO <sub>4</sub> ppm	Time of Grab	Temp °C	pH	DO, ppm	NH <sub>3-N</sub> , ppm	NO <sub>3-N</sub> , ppm	Phosphorous, ppm	SO <sub>4</sub> ppm	DATE/ TIME	Temp °C	DO, ppm	pH	Conductivity	NH <sub>3-N</sub> , ppm	NO <sub>3-N</sub> , ppm	SO <sub>4</sub> ppm			
1/1/2023																												
1/2/2023			6.69		1073	54	70	0.10	107						3.82	341	301											
1/3/2023															4.00	296	298	0.36										
1/4/2023			7.10		1095	62	71		103					3.11	265	289												
1/5/2023														6.95	268	272												
1/6/2023			7.21		1114	63	75		103					7.60	195	197												
1/7/2023														7.71	178	180												
1/8/2023														7.66	126	150												
1/9/2023			7.10		1127	64	76	0.65	100					7.70	73	82												
1/10/2023														7.42	65	69	0.76											
1/11/2023			7.11		1154	71	81		102					7.34	92	103						1/10/23		7.64	34410	4720	4741	13
1/12/2023														7.69	96	101												
1/13/2023			7.18		1162	70	84		100					7.85	83	89												
1/14/2023														8.02	88	92												
1/15/2023														8.04	83	83												
1/16/2023			7.25		1185	60	89	0.04	97					7.73	65	72												
1/17/2023														8.41	88	62	2.31											
1/18/2023			7.15		1183	70	90		98					8.21	87	53												
1/19/2023														8.36	104	53												
1/20/2023			7.27		1202	81	89		94					7.94	125	93												
1/21/2023														8.45	225	173												
1/22/2023														8.51	234	197												
1/23/2023			7.49		1245	89	90	2.28	92					8.95	232	153												
1/24/2023														8.87	320	152	5.17											
1/25/2023			7.81		1248	82	90		82					8.81	342	128												
1/26/2023														8.67	252	158												
1/27/2023			7.83		1250	89	87		80					8.34	312	182												
1/28/2023														8.10	225	143												
1/29/2023														7.94	161	143												
1/30/2023			7.78		1286	77	97	2.59	81					7.78	142	134												
1/31/2023														7.18	154	167	2.93											
2/1/2023			7.60		1280	94	97		76					7.45	158	171												
2/2/2023														7.30	149	158												
2/3/2023			7.52		1308	99	100		76					7.55	194	150												
2/4/2023														7.38	167	158												
2/5/2023														7.36	169	176												
2/6/2023			7.35		1416	67	112	0.04	73					7.67	154	179												
2/7/2023														7.13	82	122	1.80											
2/8/2023			7.43		1294	98	100		75					7.50	129	121												
2/9/2023														7.52	152	120						02/08/23		8.05	47270	6440	6041	<1
2/10/2023			7.46		1315	94	99		76					6.93	135	120												
2/11/2023														7.67	150	134												
2/12/2023														7.72	192	191												
2/13/2023			7.30		1311	100	102	0.02	78					7.64	208	211												
2/14/2023														7.80	198	158	2.08											
2/15/2023			7.26		1340	110	106		82					7.75	207	159												
2/16/2023														7.60	255	161												
2/17/2023			7.39		1342	106	107		82					7.68	181	160												
2/18/2023														7.99	213	222												
2/19/2023														8.53	147	100												
2/20/2023			7.50		1446	117	119	0.03	85					8.00	152	97												
2/21/2023														7.96	128	122	1.47											
2/22/2023			7.48		1438	135	115		82					7.70	115	113												
2/23/2023														7.36	105	98												
2/24/2023			7.47		1440	118	116		82					7.21	114	104												
2/25/2023														7.23	131	126												
2/26/2023														7.36	117	152												
2/27/2023			7.33		1464	123	119	0.02	83					7.16	122	153												
2/28/2023														7.15	108	144	1.30											
3/1/2023			7.35		1460	130	116		82					6.95	105	135												
3/2/2023														6.88	80	107												
3/3/2023			7.26		1463	101	94		81					7.17	63	76												
3/4/2023														6.67	105	111												
3/5/2023														6.27	238	167												
3/6/2023			7.33		1846	131	131	1.67	81					6.55	186	156												
3/7/2023														6.59	187	158	3.04											
3/8/2023			8.23		1874	152	146		75					7.24	173	151												
3/9/2023														6.96	109	107												
3/10/2023			7.21		1672	124	137		78					7.06	139	123						03/09/23		8.22	54800	11000	7275	26
3/11/2023														7.08	136	148												
3/12/2023														6.84	122	149												
3/13/2023			7.36		1534	130	125	1.79	76					6.92	118	144												
3/14/2023														6.57	225	196	0.14											
3/15/2023			7.56		1595	127	133		76					7.00	238	212												
3/16/2023														7.35	225	195												
3/17/2023			7.38		1599	168	135		79					7.62	144	160												
3/18/2023														7.31	154	137												
3/19/2023														6.96	132	149												
3/20/2023			7.56																									



Date	Lake Killdeer (KD)									Lake Lee								Pond 004							
	KD Grab Sample	KD Grab Sample	KD Composite EDCC LAB	KD Grab Sample	KD Composite EDCC LAB	KD Composite EDCC LAB	KD Composite EDCC LAB	KD Composite EDCC LAB	KD Composite EDCC LAB	LEE Grab Sample	LEE Grab Sample	Lee Composite EDCC LAB	LEE Grab Sample	Lee Composite EDCC LAB	Lee Composite EDCC LAB	Lee Composite EDCC LAB	Lee Composite EDCC LAB	004 Grab	004 Grab	004 Grab	004 Grab	004 Grab	004 Grab	004 Grab	004 Grab
Time of Grab	Temp °C	pH	DO, ppm	Conductivity	NH <sub>3-N</sub> , ppm	NO <sub>3-N</sub> , ppm	P, ppm	SO <sub>4</sub> ppm	Time of Grab	Temp °C	pH	DO, ppm	NH <sub>3-N</sub> , ppm	NO <sub>3-N</sub> , ppm	Phosphorous, ppm	SO <sub>4</sub> ppm	DATE/ TIME	Temp °C	DO, ppm	pH	Conductivity	NH <sub>3-N</sub> , ppm	NO <sub>3-N</sub> , ppm	SO <sub>4</sub> ppm	
6/21/2023				6.60	1688	115	131	138						7.31	141	153	201								
6/22/2023														6.86	123	130	322								
6/23/2023				6.68	1705	115	133	141						7.17	101	116	287								
6/24/2023														6.84	78	94	200								
6/25/2023														7.14	55	69	199								
6/26/2023				6.69	1690	119	130	1.32	143					6.72	49	54	184								
6/27/2023														7.02	125	136	180								
6/28/2023				6.75	1672	122	127	142						7.61	195	201	143								
6/29/2023														7.82	192	194	146								
6/30/2023				6.64	1720	119	133	141						7.97	132	164	167								
7/1/2023														7.59	108	126	167								
7/2/2023														7.23	75	100	167								
7/3/2023				6.69	1730	120	137	1.38	144					7.09	72	86	149								
7/4/2023														7.06	51	67	158								
7/5/2023				6.77	1724	125	133	142						6.82	102	116	152								
7/6/2023														6.96	188	209	172								
7/7/2023				6.74	1720	116	132	140						7.62	186	223	161								
7/8/2023														7.66	134	130	186								
7/9/2023														8.21	132	126	195								
7/10/2023				6.75	1780	130	136	5.24	140					8.16	209	231	155								
7/11/2023														7.88	157	196	125								
7/12/2023				6.64	1782	102	113	139						5.74	52	66	73								
7/13/2023														8.49	136	215	75								
7/14/2023				7.50	2240	179	69	34						8.22	281	119	36	07/14/23			9.02	24910	4320	2989	2
7/15/2023														8.29	278	323	109								
7/16/2023														8.50	231	270	110								
7/17/2023				6.98	1890	151	153	6.08	112					8.35	222	229	124								
7/18/2023														8.03	167	189	122								
7/19/2023				6.95	1820	143	143	104						7.92	133	143	110								
7/20/2023														8.17	128	137	170								
7/21/2023				6.91	1804	140	141	108						8.05	120	129	123								
7/22/2023														7.49	95	93	113								
7/23/2023														6.86	86	82	121								
7/24/2023				6.90	1763	125	136	2.03	110					7.69	86	90	133								
7/25/2023														7.38	72	79	146								
7/26/2023				6.85	1764	126	134	110						7.22	58	72	125								
7/27/2023														7.43	53	57	101								
7/28/2023				6.84	1753	120	132	110						8.14	36	42	121								
7/29/2023														8.27	16	30	107								
7/30/2023														6.99	10	24	121								
7/31/2023				6.83	1745	128	129	1.96	110					7.19	13	20	119								
8/1/2023														6.92	64	75	126								
8/2/2023				6.77	1726	114	128	111						7.09	38	51	122								
8/3/2023														8.10	16	32	113								
8/4/2023				6.79	1710	119	126	111						7.44	9	22	143								
8/5/2023	8:53AM	28	6.79	7.65	1703	114	125			6:00AM	26	6.60	6.03	6	17	1.22	147	11:20am	34	10.63	7.14	48920	5280	6293	25
8/6/2023	9:57AM	29	6.77	8.27	1676	105	123			6:00AM	25	6.45	6.12	6	15	125	147	9:50AM	28	5.61	7.07	49230	6200	6191	34
8/7/2023	8:25AM	26	6.80	6.45	1683	115	124	1.75	113	7:00AM	27	6.48	7.69	7	14	115	147	10:09AM	27	6.02	6.95	49870	6200	6657	20
8/8/2023	8:45AM	26	6.84	6.13	1678	114	124			7:00AM	26	6.81	6.08	10	18	111	147	8:40AM	30	6.5	6.84	49750	6240	6216	33
8/9/2023	8:13AM	27	7.11	7.34	1584	114	120			7:00AM	24	7.26	7.86	102	102	80	147	8:53AM	25	5.62	6.81	34560	4260	4281	22
																	80	8:39AM	25	6.63	6.63	29930	3660	3553	18