APPENDIX A. DEQ FORM 1 OPDES Application to Discharge and/or Dispose of Industrial Wastewater or Sludge General Information [REVOKED]

APPENDIX B. DEQ FORM 2SI OPDES Application to Discharge and/or Dispose of Industrial Wastewater or Sludge Surface Impoundments & Tank Systems [REVOKED]

APPENDIX C. DEQ FORM 2L Land Application [REVOKED]

APPENDIX C. TABLE OF RAINFALL AND EVAPORATION DATA [NEW]

County	Rainfall * (in inches)	Average Pan Evaporaton (in inches)	Average Lake Evaporation (in inches)	County	Rainfall * (in inches)	Average Pan Evaporaton (in inches)	Average Lake Evaporation (in inches)
Adair	60.16	65	47	LeFlore	62.22	65	48
Alfalfa	39.50	90	62	Lincoln	45.12	80	57
Atoka	54.83	75	53	Logan	51.58	85	60
Beaver	28.31	90	62	Love	52.40	80	58
Beckham	36.66	90	64	McClain	49.04	85	60
Blaine	39.07	90	62	McCurtain	67.76	65	49
Bryan	56.75	75	54	McIntosh	55.66	70	52
Caddo	35.74	90	63	Major	29.32	90	63
Canadian	43.46	90	62	Marshall	58.62	75	55
Carter	50.54	80	58	Mayes	47.79	70	49
Cherokee	57.00	70	48	Murray	56.81	80	58
Choctaw	56.33	70	52	Muskogee	56.72	80	50
Cimarron	24.24	90	58	Noble	41.73	85	59
Cleveland	46.07	85	60	Nowata	48.74	70	51
Coal	60.94	75	55	Okfuskee	56.98	75	55
Comanche	42.29	90	64	Oklahoma	41.19	85	60
Cotton	40.86	90	64	Okmulgee	52.33	75	53
Craig	49.49	70	49	Osage	55.04	75	54
Creek	48.68	75	55	Ottawa	50.98	65	47
Custer	43.38	90	64	Pawnee	44.11	80	56
Delaware	55.88	65	47	Payne	45.52	80	52
Dewey	34.38	90	63	Pittsburg	59.27	75	58
Ellis	31.37	90	64	Pontotoc	52.13	75	56
Garfield	39.58	90	61	Pottawatomie	46.49	80	58
Garvin	46.32	80	59	Pushmataha	60.50	70	50
Grady	44.52	90	62	Roger Mills	37.90	90	64
Grant	40.07	90	60	Rogers	55.99	70	51
Greer	39.67	90	64	Seminole	54.34	75	55
Harmon	36.71	90	64	Sequoyah	61.50	65	48
Harper	25.46	90	62	Stephens	45.65	85	62
Haskell	59.46	70	49	Texas	22.07	90	62
Hughes	58.60	75	54	Tillman	40.43	90	64
Jackson	42.18	90	64	Tulsa	46.88	75	53
Jefferson	38.33	85	61	Wagoner	52.10	70	51
Johnston	94.89 49.89	75	55	Washington	44.65	70	53
Kay	40.74	80	58	Washita	36.93	90	64
Kingfisher	39.36	90	62	Woods	35.92	90	62
Kiowa	36.24	90	64	Woodward	27.26	90	62
Latimer	68.60	70	50	* Rainfall data is the 90th percentile			

Source of data: OGS average rainfall data for 1988 – 1998; evaporation data from 1976 OSDH Design Guidelines

APPENDIX D. CLASS III SURFACE IMPOUNDMENT DESIGN [REVOKED]

APPENDIX D. CLASS III SURFACE IMPOUNDMENT DESIGN [NEW]

Facilities that wish to dispose of Class III wastewater into a single total retention surface impoundment may opt to use the design shown in this Appendix in lieu of hiring a Professional Engineer. This option is not available for designs of multiple or flow-through impoundment systems. To qualify for the use of this design, you must demonstrate that:

A. The bottom of the impoundment shall be a minimum of fifteen feet (15') from groundwater. This information must be submitted with the plan documents outlined below. If there is no water well data available, the facility must determine the depth of the groundwater and submit that data with the plan documents outlined below.

B. The ~~soil at a depth of eight (8) feet at the~~ proposed impoundment site must have a <u>one foot (1 ft.) compacted soil liner for the bottom and the sides of the impoundment that has a</u> permeability of ~~5~~ <u>5.4</u> X 10^{-7} cm/sec or less. A soil test result that documents the permeability of the impoundment site must be submitted with the plan below.

C. If a facility is able to comply the requirements of A and B above, then it can opt to use the design shown on the diagram on the following page. To use this Impoundment Design:

1. Send an attachment to the permit application stating an intent to use the following design and document the ability to meet the two qualifications shown above. Also submit the proposed wastewater flow in gallons/day.

2. Determine the top dimensions of a square or rectangle impoundment by using the Industrial Wastewater sizing Chart on the following pages. If constructing a rectangle impoundment, the length shall be no more than double of the width. If the proposed flow falls in between two flow values on the table, go the next highest flow value to determine the impoundment dimensions.

3. Copy the diagram shown on the following page. Write or type in the appropriate dimensions on the diagram. Submit this with the attachment. Design parameters include:

i. Minimum three feet of freeboard;

ii. Inner and outer dike slopes shall be 1 vertical to 3 horizontal (1:3);

iii. Total depth of eight feet;

iv. The top of the dikes shall be at least one foot above surrounding terrain to divert surface runoff; ~~and~~

v. Berms and dikes will be a minimum of four feet wide and provide a flat surface to facilitate inspection and maintenance<u>;</u>

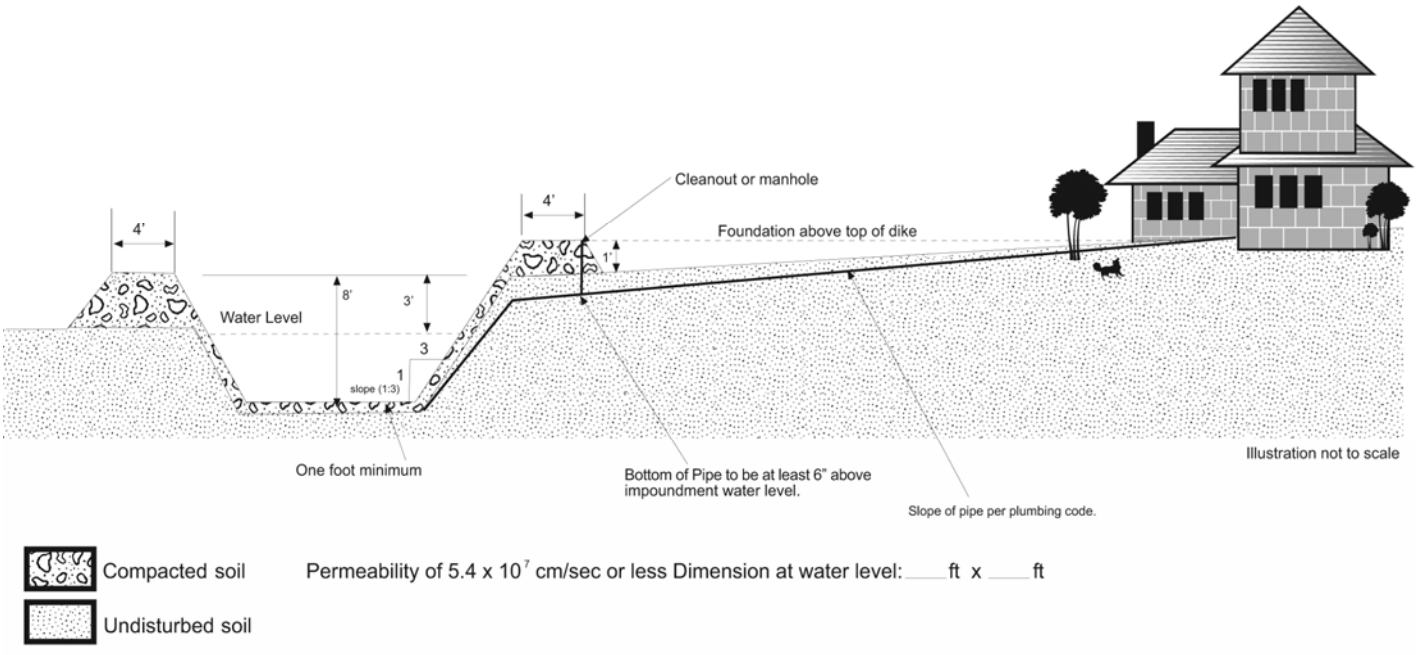
<u>vi. A one foot (1') liner thickness for the impoundment; and</u>

<u>vii. The liner shall have a coefficient of permeability of 5.4 X 10^{-7} cm/sec or less</u>.

4. After receiving approval from the DEQ to construct the impoundment, the impoundment should be built exactly as indicated on this plan. Once construction is completed a signed certification must be sent to the DEQ stating the impoundment was constructed in accordance with this plan. Facilities that need to deviate from this design in any way must contract the services of a professional engineer and notify the DEQ accordingly.

D. If a facility is not able to comply with the requirements of A, B and C above, then the facility must retain the services of a Registered Professional Engineer, licensed by the State of Oklahoma to design the impoundment(s).

APPENDIX D – CLASS III IMPOUNDMENT DESIGN DIAGRAM [NEW]



When using this chart to size a rectangular impoundment, calculate the area of a square impoundment and then modify the length and width of the sides of the impoundment to maintain the calculated area of the square impoundment, ensuring that the length of the impoundment is no more than double the width of the impoundment.

EXAMPLE:

If you are in Lincoln County and have 50 gallons per day design flow, as per the chart a square impoundment would have minimum top dimensions of 70 feet.

The area of this impoundment would be 4900 square feet.

Your site's limiting width dimension would allow a minimum top dimension of 50 feet so:

4900 square feet divided by 50 ft. will equal 98 ft.

So a rectangular impoundment of 50 ft. by 98 ft. is equivalent.

The length to width ratio of 2 to 1 is not exceeded so the impoundment dimensions are acceptable.

APPENDIX D. INDUSTRIAL WASTEWATER IMPOUNDMENT SIZING CHART

Minimum Top Dimensions in Feet

County	Wastewater flow into the impoundment in gallons/day																			
	50	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**	**700**	**750**	**800**	**850**	**900**	**950**	**1000**
Adair	161	171	179	187	195	202	208	215	221	227	232	237	243	248	252	257	262	266	271	275
Alfalfa	57	64	70	75	80	84	88	92	96	99	102	105	108	111	114	116	119	122	124	126
Atoka	96	104	112	118	124	130	135	140	145	149	153	157	161	165	169	173	176	179	183	186
Beaver	48	55	61	66	71	75	78	82	85	88	91	94	97	99	102	104	107	109	111	114
Beckham	55	62	68	73	77	82	86	89	93	96	99	102	105	108	110	113	116	118	120	123
Blaine	57	64	70	75	80	84	88	92	95	99	102	105	108	111	113	116	118	121	123	126
Bryan	102	111	118	125	131	136	142	147	151	156	160	164	169	172	176	180	183	187	190	194
Caddo	54	61	67	72	77	81	85	88	92	95	98	101	104	107	109	112	115	117	119	122
Canadian	61	68	74	80	84	89	93	97	100	104	107	110	113	116	119	122	124	127	129	132
Carter	79	87	93	99	105	110	115	119	123	127	131	135	138	142	145	148	151	154	157	160
Cherokee	117	125	133	140	147	153	159	164	169	174	179	184	188	192	197	201	204	208	212	216
Choctaw	114	123	130	137	144	150	156	161	166	171	176	180	185	189	193	197	201	205	208	212
Cimarron	48	53	58	63	68	72	75	79	82	85	88	91	93	96	98	101	103	106	108	110
Cleveland	67	75	81	87	92	96	101	105	109	112	116	119	122	125	128	131	134	137	140	142
Coal	118	127	134	141	147	153	159	164	169	174	179	183	187	192	196	199	203	207	211	214
Comanche	60	67	73	78	83	87	91	95	99	102	106	109	112	115	117	120	123	125	128	130
Cotton	58	66	72	77	82	86	90	94	97	101	104	107	110	113	115	118	121	123	126	128
Craig	90	99	106	113	119	125	130	135	140	144	149	153	157	160	164	168	171	175	178	181
Creek	81	89	96	103	108	113	118	123	127	131	135	139	143	147	150	153	157	160	163	166
Custer	61	68	74	79	84	89	93	97	100	104	107	110	113	116	119	122	124	127	129	132
Delaware	130	139	147	155	162	169	175	181	186	192	197	202	206	211	215	220	224	228	232	236
Dewey	53	60	66	71	75	80	83	87	90	94	97	100	103	105	108	111	113	115	118	120
Ellis	50	58	63	68	73	77	81	84	88	91	94	97	100	102	105	107	110	112	115	117
Garfield	57	64	70	76	80	85	88	92	96	99	102	105	108	111	114	117	119	122	124	126
Garvin	71	79	86	92	97	102	107	111	115	119	122	126	129	133	136	139	142	145	148	150
Grady	62	69	75	81	86	90	94	98	102	105	108	112	115	118	120	123	126	128	131	133
Grant	58	65	71	76	81	85	89	93	96	100	103	106	109	112	114	117	120	122	125	127
Greer	57	64	70	76	80	85	89	92	96	99	102	105	108	111	114	117	119	122	124	127
Harmon	55	62	68	73	77	82	86	89	93	96	99	102	105	108	111	113	116	118	121	123
Harper	46	53	59	64	69	73	76	80	83	86	89	92	94	97	100	102	104	107	109	111
Haskell	129	138	146	153	160	166	172	178	183	188	193	198	202	207	211	215	219	223	227	231
Hughes	109	117	125	131	137	143	149	154	159	163	168	172	176	180	184	188	192	195	199	202
Jackson	60	67	73	78	83	87	91	95	99	102	105	108	111	114	117	120	123	125	128	130
Jefferson	58	66	72	77	82	87	91	94	98	102	105	108	111	114	117	120	122	125	127	130
Johnston	73	81	88	94	99	104	109	113	118	122	125	129	133	136	139	142	146	149	151	154
Kay	64	71	78	84	89	93	98	102	106	109	113	116	120	123	126	129	131	134	137	140
Kingfisher	57	64	70	75	80	84	88	92	96	99	102	105	108	111	114	116	119	121	124	126
Kiowa	54	61	67	72	77	81	85	89	92	96	99	102	105	107	110	113	115	118	120	122
Latimer	213	222	231	239	246	253	260	267	273	279	285	291	296	301	307	312	317	322	326	331
LeFlore	183	192	201	209	217	224	231	238	244	250	256	261	267	272	277	282	287	292	296	301
Lincoln	70	77	84	90	95	100	105	109	113	117	120	124	127	130	133	136	139	142	145	148
Logan	75	83	89	95	100	105	110	114	118	122	125	129	132	136	139	142	145	148	151	153
Love	82	90	97	103	109	114	119	123	127	131	135	139	143	146	150	153	156	159	162	165
McClain	71	79	85	91	96	101	105	109	113	117	121	124	127	131	134	137	140	142	145	148

County	Wastewater flow into the impoundment in gallons/day																			
	50	**100**	**150**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**	**700**	**750**	**800**	**850**	**900**	**950**	**1000**
McCurtain	285	295	304	313	321	329	337	344	351	358	365	371	378	384	390	396	401	407	412	418
McIntosh	111	120	127	135	141	147	153	158	163	168	173	177	181	185	190	193	197	201	205	208
Major	49	56	62	67	71	75	79	83	86	89	92	95	98	100	103	105	108	110	112	115
Marshall	109	117	125	131	138	143	149	154	159	163	168	172	176	180	184	188	192	195	199	202
Mayes	86	95	102	109	115	120	125	130	135	139	143	147	151	155	159	162	166	169	172	175
Murray	93	101	108	114	120	125	130	135	139	143	147	151	155	159	162	166	169	172	175	178
Muskogee	92	100	107	114	119	125	130	134	139	143	147	151	155	158	162	165	169	172	175	178
Noble	62	69	76	81	86	91	95	99	102	106	109	113	116	119	122	124	127	130	132	135
Nowata	88	97	104	111	117	123	128	133	137	142	146	150	154	158	162	165	169	172	175	178
Okfuskee	103	111	119	125	131	137	142	147	152	157	161	165	169	173	177	181	184	188	191	195
Oklahoma	61	69	75	80	85	90	94	98	102	105	109	112	115	118	121	124	126	129	132	134
Okmulgee	89	98	105	111	117	123	128	132	137	141	145	149	153	157	160	164	167	171	174	177
Osage	97	105	112	119	125	131	136	141	145	150	154	158	162	166	170	173	177	180	183	187
Ottawa	106	115	123	131	137	143	149	155	160	165	169	174	178	183	187	191	194	198	202	205
Pawnee	68	76	83	88	94	98	103	107	111	115	118	122	125	128	132	135	137	140	143	146
Payne	70	78	85	91	96	101	105	109	113	117	121	124	128	131	134	137	140	143	146	149
Pittsburg	111	120	127	134	140	146	151	157	162	166	171	175	179	183	187	191	195	198	202	205
Pontotoc	89	97	104	111	117	122	127	132	136	141	145	149	153	156	160	163	167	170	173	176
Pottawatomie	72	80	86	92	97	102	107	111	115	119	123	126	130	133	136	139	142	145	148	151
Pushmataha	135	144	152	159	166	173	179	184	190	195	200	205	209	214	218	223	227	231	235	239
Roger Mills	56	63	69	74	79	83	87	90	94	97	100	103	106	109	112	115	117	120	122	124
Rogers	112	121	129	136	142	148	154	159	165	169	174	179	183	187	191	195	199	203	206	210
Seminole	95	103	110	117	123	128	134	138	143	147	152	156	160	164	167	171	174	178	181	184
Sequoyah	175	184	193	201	209	216	223	229	235	241	247	252	258	263	268	273	277	282	287	291
Stephens	67	74	80	86	91	96	100	104	108	112	115	118	122	125	128	131	133	136	139	141
Texas	44	51	57	62	66	70	74	77	80	83	86	89	92	94	97	99	101	104	106	108
Tillman	58	65	71	76	81	85	89	93	97	100	103	106	109	112	115	118	120	123	125	128
Tulsa	77	86	93	99	104	110	114	119	123	127	131	135	139	142	145	149	152	155	158	161
Wagoner	98	107	114	121	127	133	139	144	149	153	158	162	166	170	174	177	181	185	188	191
Washington	79	87	95	101	107	112	117	122	127	131	135	139	142	146	150	153	156	159	163	166
Washita	55	62	68	73	78	82	86	89	93	96	99	102	105	108	111	113	116	118	121	123
Woods	54	61	67	72	77	81	85	88	92	95	98	101	104	107	110	112	115	117	120	122
Woodward	50	55	60	65	70	74	78	81	84	87	90	93	96	99	101	104	106	108	110	113