

APPENDIX F
Geologic Formations Crossed by the Leach XPress Project

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Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
Dunkard Group	LEX	2.0	21.3	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
		21.6	25.2				
		26.0, RR-5	38.7				
		38.8	40.6				
		40.7	41.4				
		41.5	41.8				
		42.0	43.9				
		44.0	45.0				
		45.1	48.0				
		48.1	48.3				
		48.4	48.5				
		48.5	48.7				
		48.9	49.2				
		49.3	49.3				
		49.6	49.7				
		49.8	49.8				
		50.1	50.2				
		50.4	50.5				
		51.8	51.9				
		51.9	52.0				
		52.1	52.2				
		52.7	52.8				
		54.4	54.5				
57.4	57.4						
73.9	74.0						
74.9	75.0						
75.2	75.2						
75.8	75.9						
76.2	76.3						
77.0	77.1						
77.3	77.4						
77.9	78.0						
78.3	78.4						
Mainline Valve 1		3.1	3.1				

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Dunkard Group	Mainline Valve 2	18.6, RR-4	18.6, RR-4	Permian, Pennsylvanian	Sandstone	Siltstone	Non-marine cyclic sequences of sandstone, siltstone, shale, limestone, and coal.
	Mainline Valve 3	31.7	31.7				
	Mainline Valve 4	49.3	49.3				
	Lone Oak CS	7.4	7.4				
Monongahlea Group	LEX	0.0	0.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
		1.6	2.0				
		21.3	21.6				
		25.2	25.6, RR-5				
		25.6, RR-5	26.0, RR-5				
		38.7	38.8				
		40.6	40.7				
		41.4	41.5				
		41.8	42.0				
		43.9	44.0				
		45.0	45.1				
		48.0	48.1				
		48.3	48.4				
		48.5	48.5				
		48.7	48.9				
		49.2	49.3				
		49.3	49.6				
		49.7	49.8				
		49.8	50.1				
		50.2	50.4				
		50.5	50.8, RR-6				
51.0, RR-6	51.2						
51.3	51.8						
51.9	51.9						
52.0	52.1						
52.2	52.4						
52.5	52.7						
52.8	54.4						
54.5	55.3, RR-7						
55.5, RR-7	57.4						

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Monongahlea Group	LEX	57.4	57.8	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
		58.2	58.7				
		58.8	59.0				
		59.2	59.5				
		60.0	60.1				
		60.5	61.1				
		62.4	62.5				
		62.5	63.2				
		63.4	63.5				
		64.1	64.2				
		64.5	64.6				
		68.0	68.2				
		71.3	73.9				
		74.0	74.9				
		75.0	75.2				
		75.2	75.8				
		75.9	76.2				
		76.3	77.0				
		77.1	77.3				
		77.4	77.9				
		78.0	78.3				
		78.4	79.1				
		83.0	83.1				
		84.0	86.0				
		86.3	86.5				
		87.0	87.2				
88.4	88.4						
88.7	89.0						
90.2	90.3						
90.4	90.8						
90.9	91.3						
91.7	91.8						
92.4	92.5						
92.6	92.6						

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Geologic Formation/ Unit	Facility	Begin MP	End MP	Period/Era	Primary Lithology	Secondary Lithology	Description
		93.4	93.6				
	Summerfield CS	57.1	57.1				
	Mainline Valve 6	84.3	84.3				
Monongahlea Group	LEX launcher	0.0	0.0	Pennsylvanian	Sandstone	Siltstone	Black, red, gray, and green shale, siltstone, and mudstone
Conemaugh Group	LEX	50.8, RR-6	50.9, RR-6	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.
		51.2	51.3				
		52.4	52.5				
		55.3, RR-7	55.5, RR-7				
		57.8	58.2				
		58.7	58.8				
		59.0	59.2				
		59.5	60.0				
		60.1	60.5				
		61.1	62.4				
		62.5	62.5				
		63.2	63.4				
		63.5	64.1				
		64.2	64.5				
		64.6	68.0				
		68.2	71.3				
		79.1	83.0				
		83.1	84.0				
		86.0	86.3				
		86.5	87.0				
		87.2	88.4				
		88.4	88.7				
		89.0	90.2				
		90.3	90.4				
		90.8	90.9				
		91.3	91.7				
		91.8	92.4				
		92.5	92.6				
		92.6	93.4				

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Conemaugh Group	LEX	93.6	98.2	Pennsylvanian	Siltstone	Shale	Black, red, gray, and green shale, siltstone, and mudstone.	
		98.4	99.9					
		100.3	101.9					
		102.1	102.6					
		103.1	105.4					
		105.4	105.9					
		105.9	106.2					
		106.3	106.6					
		106.7	107.1					
		107.3	109.4					
Allegheny and Pottsville Groups, Undivided	BM-111 Loop	111.2	111.3	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.	
		0.8	2.6					
		65.6	65.6					
	Mainline Valve 5	104.2	104.2					
		LEX	98.2					98.4
			99.9					100.3
	101.9		102.1					
	102.6		103.1					
	105.4		105.4					
	105.9		105.9					
	106.2		106.3					
	106.6		106.7					
	107.1		107.3					
	109.4		111.2					
	111.3		117.4					
	117.5		117.6					
	117.7		117.9					
	118.4		118.6					
119.3	119.6							
119.7	119.8							
120.3	121.1							
R-801 Loop	121.6	121.8						
	1.8	1.8						
	3.8	4.0						

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Allegheny and Pottsville Groups, Undivided		4.4	4.5	Pennsylvanian	Shale	Siltstone	Gray, olive, and greenish shale, siltstone, and underclay. Locally contains marine fossils.
		6.0	6.4				
		8.1	8.2				
		9.4	11.5				
		11.8	12.1				
		12.3	13.3				
		13.5	13.6				
		13.8	15.5				
		15.6	16.3				
		16.4	19.7				
		19.7	24.2				
	BM-111 Loop	0.0	0.1				
	Benton Regulator Station	12.8	12.8				
	RS-1286 Regulator Station	21.6	21.6				
McArthur Regulator Station	24.2	24.2					
BM-111 Loop Launcher	0.0	0.0					
Oak Hill Compressor Station	51.50 ^a	51.50 ^a					
Mainline Valve 9	9.7	10.7					
R-130 Odorization Site	37.08 ^a	37.08 ^a					
R-300 / R-500 Odorization Site	88.02 ^a	88.02 ^a					
R-486 Odorization Site	34.72 ^a	34.72 ^a					
R-543 Odorization Site	53.68 ^a	53.68 ^a					
Black Hand Sandstone Member of Cuyahoga Formation	LEX	121.2	121.5	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
		122.0	123.7				
		124.0	124.2				
		124.4	124.6				
		125.1	125.3				
		126.1	126.1				
		127.0	127.1				
		127.6	128.2				
	129.1	129.2					

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		129.7	131.3				
	LEX1	0.6	1.2				
	R-801 Loop	0.0	0.5				
		0.7	1.0				
		1.1	1.7				
		2.0	2.4				
Black Hand Sandstone Member of Cuyahoga Formation		3.1	3.6	Mississippian	Sandstone	Conglomerate	Yellow-gray to white sandstone and conglomerate that grades laterally into shale and siltstone.
		4.8	4.9				
		5.0	5.2				
		6.7	6.8				
		7.6	7.7				
		8.6	9.0				
	R-System RS	0.0	0.0				
	LEX1 receiver	1.2	1.2				
	Crawford CS	0.00 ^a	0.00 ^a				
	Benton CS	5.19 ^b	5.19 ^b				
Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	LEX	117.4	117.5	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
		117.6	117.7				
		117.9	118.4				
		118.6	119.3				
		119.6	119.7				
		119.8	120.3				
		121.1	121.2				
		121.5	121.6				
		121.8	122.0				
		123.7	124.0				
		124.2	124.4				
		124.6	125.1				
		125.3	126.1				
		126.1	127.0				
		127.1	127.6				
		128.2	129.1				
		129.2	129.7				
	LEX1	0.0	0.6				

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Maxville Limestone; Rushville, Logan, and Cuyhoga Formations, Undivided	R-801 Loop	0.5	0.7	Mississippian	Shale	Siltstone	Gray, yellow, brown shale, siltstone, and sandstone.
		1.0	1.1				
		1.7	1.8				
		1.8	2.0				
		2.4	3.1				
		3.6	3.8				
		4.0	4.4				
		4.5	4.8				
		4.9	5.0				
		5.2	6.0				
		6.4	6.7				
		6.8	7.6				
		7.7	8.1				
		8.2	8.6				
		9.0	9.4				
		11.5	11.8				
		12.1	12.3				
		13.3	13.5				
		13.6	13.8				
15.5	15.6						
16.3	16.4						
19.7	19.7						
Quaternary Alluvium	K-260 RS	0.0	0.0	Quaternary	Alluvium	N/A	Alluvial deposits of sand, gravel, silt, and clay.
	Mainline Valve 8	122.0	122.0				
	LEX	25.6, RR-5	25.6, RR-5				
Greene Formation	LEX	0.1	0.8	Permian	Sandstone	Shale	Cyclic sequences of sandstone, shale, red beds, thin limestone, and thin, impure coal.
		2.6	2.9				
		2.9	2.9				
Washington Formation	LEX	0.6	0.6	Permian	Sandstone	Shale	Sequences of sandstone, red shale, limestone, and coal.
		0.8	1.1				
		0.5	0.6				
		0.6	0.8				
		1.1	1.2				

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Waynesburg Formation	LEX	0.0 1.2	0.5 1.6	Permian and Pennsylvanian	Sandstone	Shale	Sequences of sandstone, shale, limestone, and coal.
<p>^a Milepost is associated with Columbia's existing Line R-501. ^b Milepost is associated with Columbia's existing Line R-515. Source: USGS, 2005a-g.</p>							

