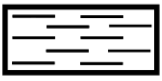




Shale



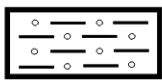
Blocky peds



Mudstone



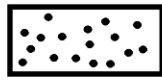
Slickensides



Interlaminated sandy shale or silty sandstone



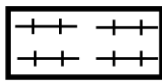
Carbonate nodules



Sandstone



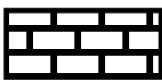
Brachiopods (whole and fragmented)



Siltstone



Crinoid fragments



Limestone



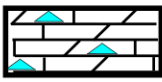
Gastropods



Shaley limestone



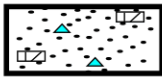
Foraminifera



Cherty dolomitic limestone



Brachiopods



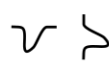
Sandy cherty dolomitic-limestone conglomerate



Bioturbation



Lithoclasts Shale Dolomite Chert



Burrowing (vertical and horizontal)



Low-angle cross beds



Organic or carbonaceous debris



Heterolithic (lenticular) laminae



Root Traces



Heterolithic (wavy) laminae



Stylolites



Heterolithic (flaser) laminae



Pyrite



Mud Drapes



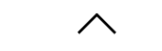
Phosphate



Asymmetric ripples



Siderite



Symmetric ripples

--- Gradational contact



Convolute laminae

— Sharp contact



Desorbed sample

2.01a

Facies photograph

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1060 - 1080 ft		PAGE 3 OF 41			
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 28-30			
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005			
DEPTH (feet)	LITHOLOGY	SEDIMENTARY STRUCTURES			FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX
		CLAY Z	SAND V F F M C	CARBONATES EVAP MUDST WCKST POKST GRNST BNDST					
1060							Dark gray shelly lag, disarticulated brachiopods, gastropods, and crinoids.		
1062							Rooted dark-gray carbonaceous shale. Slickensides and burrows.		
							Black pyritic coal.		
1064									
1066							Rooted medium gray blocky mudstone. Carbonaceous partings.		29
1068							Sharp contact.		
1070									
1072							Light- gray bioclastic wackestone. Bioturbated.		
1074									
1076									30
1078									
1070							Silty wackestone.		

WELL NAME				Hopp #1-16 (15-043-20027)				INTERVAL				1080 - 1100 ft				PAGE				4 OF 41											
LOCATION												S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS												BOXES				30-32			
COMPANY						Forest City LLC						DESCRIBED BY						W.M. Brown						DATE				January 2005			
DEPTH (feet)		LITHOLOGY		CARBONATES		CLASTICS		SEDIMENTARY STRUCTURES		FOSSILS		POST-DEPOSITIONAL / DIAGENETIC FEATURES		DESCRIPTION - NOTES				SURFACES, FACIES, INTERVAL, and COMMENTS				BOX									
				EVAP MUDST WCKST POKST GRNST BNDST		CLAY SAND Z V F F M C								<ul style="list-style-type: none"> - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic 																	
1080														Silty greenish-gray wackestone. Mottled and complete fossils.				-----													
1082														Greenish-gray finely laminated siltstone with light bluish-gray carbonate nodules.				-----													
1084														Dark-gray to black sideritic shale.				Anna Shale, top of the Anna Interval				31									
1086														Sharp contact.				-----													
1088														2.05a Very light to light-gray wackestone.				-----													
1090														Whole fossils of brachiopods, crinoids, and bivalves.				-----													
1092														Gradational contact.				-----													
1094														Dark-gray organic-rich blocky sandstone. Burrowed, and rooted with slickenslides.				-----				32									
1096														Gradational contact.				-----													
1098														Light bluish-gray carbonate nodules.				-----													
1100														Dark gray shale				-----													

WELL NAME		Hopp #1-16 (15-043-20027)		INTERVAL		1120 - 1140 ft		PAGE		6 OF 41			
LOCATION		S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES		35-37			
COMPANY		Forest City LLC				DESCRIBED BY		W.M. Brown		DATE		January 2005	
DEPTH (feet)	LITHOLOGY	CARBONATES				SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX		
		EVAP	MUDST	WCKST	POKST							GRNST	BNDST
1120	[Lithology pattern: brick-like]								Light to dark-gray wackestone.				
1122						~			Greenish-gray shale	-----			
1124	[Lithology pattern: brick-like]					~			Greenish-gray shale.	-----			
1126									Occasional faint laminations.	-----			
1128	[Lithology pattern: brick-like]								Transition from limestone to siltstone to black shale.	-----	36		
1130								Ph	Phosphatic black shale. Phosphate is in nodular form (3-4 cm).				
1132	[Lithology pattern: brick-like]								1' black shale with disarticulated fossil fragments.				
1134													
1136	[Lithology pattern: brick-like]					[D]			Medium-gray very finely-laminated shale.				
1138									Shelly lag.				
1140	[Lithology pattern: brick-like]								Medium-gray blocky mudstone		37		
									Light-gray mudstone.				

WELL NAME				Hopp #1-16 (15-043-20027)				INTERVAL				1140 - 1160 ft				PAGE				7 OF 41																			
LOCATION								S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS								BOXES								37-39															
COMPANY								Forest City LLC								DESCRIBED BY								W.M. Brown				DATE								January 2005			
DEPTH (feet)		LITHOLOGY		CARBONATES		CLASTICS		SEDIMENTARY STRUCTURES		FOSSILS		POST-DEPOSITIONAL / DIAGENETIC FEATURES		DESCRIPTION - NOTES				SURFACES, FACIES, INTERVAL, and COMMENTS				BOX																	
				EVAP MUDST WCKST POKST GRNST BNDST		CLAY SAND Z V F F M C								<ul style="list-style-type: none"> - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic 																									
1140														Light-gray transitioning below to darker-gray burrowed wackestone.																									
1142														Greenish-gray sandy-shale.																									
1144														Occasional light-bluish gray 10-30 mm carbonate nodules.																									
1146														Slickenslides.																									
1148														Calcareous.																									
1150														Lenticular, wavy, and flaser bedded.																									
1152														Light-gray, poorly laminated, wackestone.																									
1154														Bivalve, brachiopod, and crinoid fossils.																									
1156														Dark-gray shale underlain by dark-gray sandy shale.																									
1158														Black phosphatic shale.				Excello Shale, top of the Excello Interval.																					
1160																						38																	
																						39																	

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1180 - 1200 ft		PAGE 9 OF 41		
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 39-41		
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005		
DEPTH (feet)	LITHOLOGY	CARBONATES EVAP MUDST WCKST POKST GRNST BNDST CLASTICS CLAY SAND Z V F F M C	SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX
1180								
1182								
1184								42
1186						Medium-gray to dark-gray sideritic shale.		
1188								
1190								
1192								
1194						Shelly lag.		
1196								
1198					Ph	Phosphatic black fissile shale.		
1200						Carbonaceous shale. Black coal brightly banded. Calcite and pyrite mineralization. Blocky mudstone		

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1200 - 1220 ft		PAGE 10 OF 41		
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 43-46		
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005		
DEPTH (feet)	LITHOLOGY	CARBONATES EVAP - MUDST - WCKST - POKST - GRNST - BNDST CLASTICS CLAY SAND Z V F F M C	SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX
1200								
1202						Dark-gray blocky mudstone transitioning to organic rich, lenticular fine-grained, coarsening upwards sandstone.		44
1204						Heterolithic, flaser, wavy, and lenticular bedding. Ripple cross laminations. Mud drapes.		
1206						Convolute laminations.		
1208						Mud drapes.		
1210						Asymmetric ripples.		
1210					(P)	Bright pyritic rich coal		
1212						Root traces and burrows.		45
1214						Medium-gray interlaminated sandy shale and silty shale.		
1216					(S)	Dark-gray to black sideritic shale.		
1218								
1220					(S)	Organic material		46

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1220 - 1240 ft		PAGE 11 OF 41				
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 46-48				
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005				
DEPTH (feet)	LITHOLOGY	CARBONATES			SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX
		EVAP	MUDST	WCKST						
		CLASTICS								
		CLAY	SAND							
		Z	V	F	M	C				
1220								Dark gray to grayish-black very finely laminated shale.		
1222							<p>S 5-50 mm siderite bands throughout.</p> <p>Fissile.</p>			
1224							<p>P 3" pyritic and calcite rich coal.</p> <p>Medium gray blocky mudstone.</p> <p>Root casts, slickenslides, burrows and prismatic pedogenic features.</p>			
1226										
1228										
1230										
1232										
1234								Pale yellowish-brown carbonate nodules.		
1236										
1238								Weak relict bedding.		
1240								Weakly preserved laminations, heavy burrowing, rooting, and slickenslides.		
								Change at 1240', more blocky below, more relict above.		

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1360 - 1380 ft		PAGE 18 OF 41														
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 61-64														
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005														
DEPTH (feet)	LITHOLOGY	SEDIMENTARY STRUCTURES				FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX										
		CARBONATES		CLASTICS							SAND									
		EVAP	MUDST	WCKST	POKST	GRNST	BNDST	CLAY	Z	V		F	M	C						
1360																				
1362																				
1364																				
1366																				
1368																				
1370																				
1372																				
1374																				
1376																				
1378																				
1380																				

WELL NAME **Hopp #1-16 (15-043-20027)**

INTERVAL **1360 - 1380 ft**

PAGE **18** OF **41**

LOCATION **S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS**

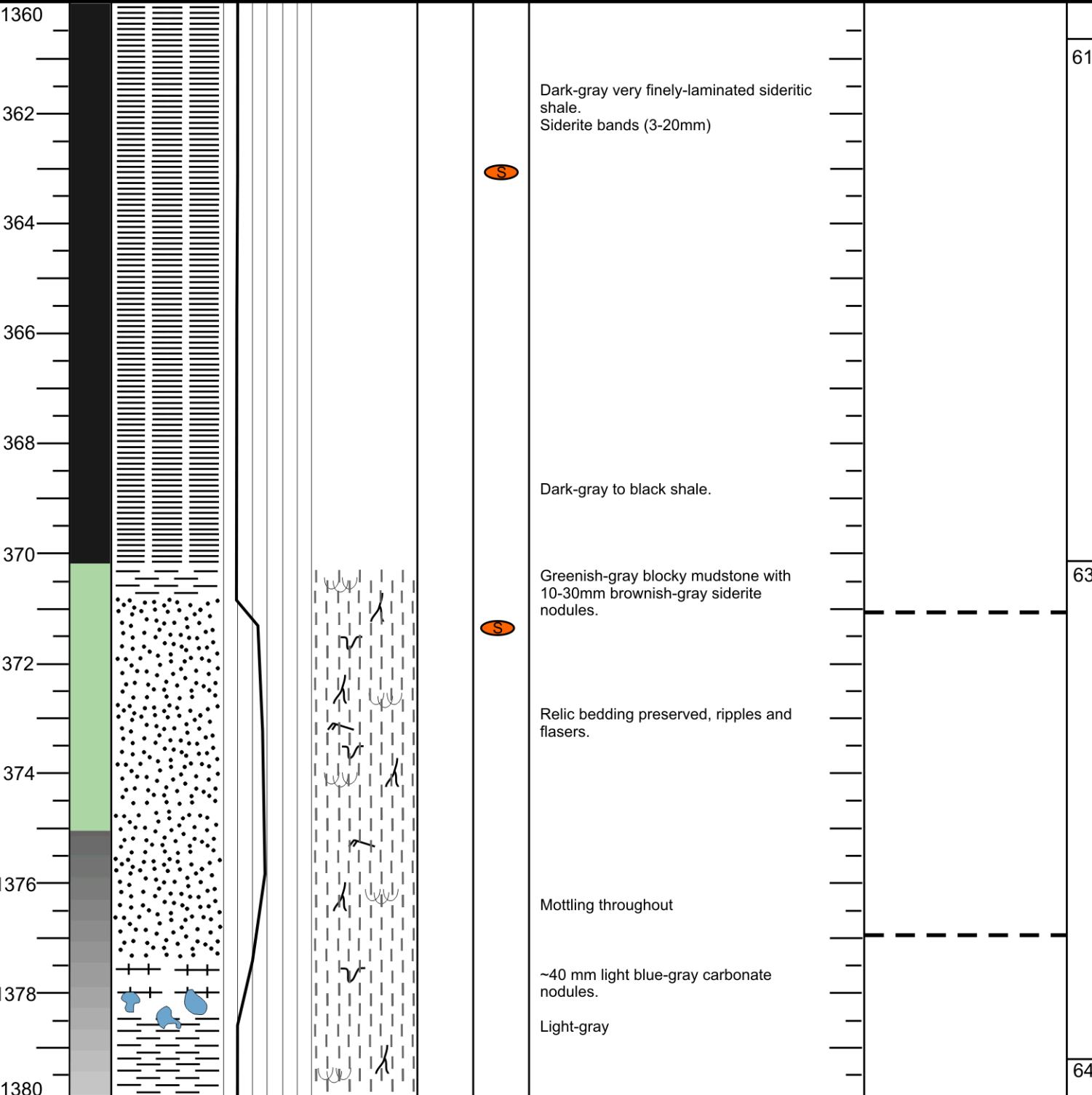
BOXES **61-64**

COMPANY **Forest City LLC**

DESCRIBED BY **W.M. Brown**

DATE **January 2005**

DEPTH (feet)	LITHOLOGY	SEDIMENTARY STRUCTURES				FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX
		CARBONATES		CLASTICS						



Dark-gray very finely-laminated sideritic shale.
Siderite bands (3-20mm)

Dark-gray to black shale.

Greenish-gray blocky mudstone with 10-30mm brownish-gray siderite nodules.

Relic bedding preserved, ripples and flasers.

Mottling throughout

~40 mm light blue-gray carbonate nodules.

Light-gray

61

63


64

WELL NAME				Hopp #1-16 (15-043-20027)				INTERVAL				1400 - 1420 ft				PAGE				20 OF 41											
LOCATION												S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS												BOXES				66-68			
COMPANY						Forest City LLC						DESCRIBED BY						W.M. Brown						DATE				January 2005			
DEPTH (feet)		LITHOLOGY		CARBONATES		CLASTICS		SEDIMENTARY STRUCTURES		FOSSILS		POST-DEPOSITIONAL / DIAGENETIC FEATURES		DESCRIPTION - NOTES				SURFACES, FACIES, INTERVAL, and COMMENTS				BOX									
				EVAP MUDST WCKST POKST GRNST BNDST		CLAY SAND Z V F F M C								<ul style="list-style-type: none"> - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic 																	
1400														Interlaminated shale and sandstone. Very fine-grained, lenticular and wavy. Mud drapes and double mud drapes, flaser and wavy bedding.																	
1402														Carbonaceous and organic debris. Asymmetric ripples throughout.																	
1404														Dark-gray blocky mudstone.																	
1406														Dark-gray interlaminated shale and sandstone. Lenticular and wavy, flaser beds, complex internal geometries.																	
1408														Siderite.								67									
1410														Fissile.																	
1412														Dark-gray to black sideritic shale. Bands of siderite range from 3-50mm in thickness.																	
1414																															
1416																															
1418																															
1420																						68									

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1440 - 1460 ft		PAGE 22 OF 41		
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 70-72		
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005		
DEPTH (feet)	LITHOLOGY	CARBONATES EVAP - MUDST - WCKST - POKST - GRNST - BNDST CLASTICS CLAY SAND Z V F F M C	SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX
1440						Dark-gray to black sideritic shale.		
1442						Siderite bands up to 100 mm thick.		
1444						Nodules 50 mm in diameter.		71
1446						Sharp contact.		
1448						Very light-gray structureless fine-grained sandstone.		
1450						Poorly sorted and rounded.		
1452						Root casts common.		
1454						Blocky sandstone. Very fine-grained, poorly rounded and sorted. Mottled.		72
1456						Slickenslides in carbonaceous dark-gray shale.		
1458						Mottled medium-gray silty sandstone.		
1460						Black carbonaceous shale.		
						Structureless fine-grained silty sandstone.		

WELL NAME		Hopp #1-16 (15-043-20027)			INTERVAL		1460 - 1480 ft		PAGE		23 OF 41				
LOCATION		S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS							BOXES			72-75			
COMPANY		Forest City LLC					DESCRIBED BY		W.M. Brown			DATE		January 2005	
DEPTH (feet)	LITHOLOGY	CARBONATES					SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX			
		EVAP	MUDST	WCKST	POKST	GRNST							BNDST		
		CLASTICS													
		CLAY	SAND	Z	V	F	F	M	C						
1460															
1462										Ripple cross-laminated fine grained poorly sorted and rounded sandstone. Micaceous, arkosic.		73			
1464										Gradational contact. Medium-gray interlaminated shale and sandstone.					
1466										Flaser beds, lenticular and wavy bedding.					
1468															
1470															
1472										Dark-gray to black banded sideritic shale. Siderite is in 5-40mm bands.		74			
1474										Occasional carbonaceous layers and organic debris.					
1476															
1478										Black coal with calcite and some pyrite in cleats. Black carbonaceous shale overlying and underlying coal.					
1480										Dark-gray blocky very fine grained sandstone. Organic rich.		75			

WELL NAME				Hopp #1-16 (15-043-20027)				INTERVAL				1480 - 1500 ft				PAGE				24 OF 41											
LOCATION												S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS												BOXES				75-77			
COMPANY						Forest City LLC						DESCRIBED BY						W.M. Brown						DATE				January 2005			
DEPTH (feet)		LITHOLOGY		CARBONATES		CLASTICS		SEDIMENTARY STRUCTURES		FOSSILS		POST-DEPOSITIONAL / DIAGENETIC FEATURES		DESCRIPTION - NOTES				SURFACES, FACIES, INTERVAL, and COMMENTS				BOX									
				EVAP MUDST WCKST POKST GRNST BRDST		CLAY SAND Z V F F M C								<ul style="list-style-type: none"> - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic 																	
1480														Medium-gray blocky very fine-grained poorly sorted and poorly rounded sandstone. Rooted and burrowed throughout.																	
1482														Gradational contact with underlying medium gray laminated and lenticular shaley sandstone. Wavy beds and ripple-cross laminations.				-----													
1484																															
1486														Black sideritic shale.																	
1488														Dark-gray to black carbonaceous shale. Slickenslides. 1" coal.																	
1490														Black sideritic shale with slickenslides.																	
1492														Large 30mm siderite nodules. Blocky lt-medium gray very fine grained sandstone.								76									
1494														Siderite nodules. Gradational contact.				-----													
1496														Gradational contact.				-----													
1498														Dark-gray to black carbonaceous shale. Slickenslides, roots, and burrows. Black dull coal. Calcite with pyrite mineralization.																	
1500														Medium-gray blocky siltstone. Organic material.								77									

WELL NAME		Hopp #1-16 (15-043-20027)			INTERVAL		1500 - 1520 ft		PAGE		25 OF 41				
LOCATION		S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS							BOXES			77-79			
COMPANY		Forest City LLC				DESCRIBED BY			W.M. Brown			DATE		January 2005	
DEPTH (feet)	LITHOLOGY	CARBONATES		SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES		SURFACES, FACIES, INTERVAL, and COMMENTS	BOX					
		EVAP MUDST WCKST POKST GRNST BNDST	CLAY SAND Z V F F M C				CLASTICS	CLAY SAND Z V F F M C			CLASTICS	CLAY SAND Z V F F M C	CLAY SAND Z V F F M C	CLAY SAND Z V F F M C	
1500								Medium-gray blocky siltstone.							
1502								Gradational contact. Silty sandstone, lenticular and wavy bedding, medium-gray with blocky features and some relic bedding. Black silty sandstone, carbonaceous. Sharp contact.							
1504								Fine-grained low-angle cross-bedded, poorly sorted, and poorly rounded sandstone. Micaceous							
1506															
1508															
1510								Sharp contact.		78					
1512								Medium-gray to medium dark gray shaley sandstone, with lenticular, wavy and flaser bedding. Mud drapes and double mud drapes, ripple-cross lamination.							
1514								Sharp contact.							
1516								 Black shale with 10-50mm siderite bands.							
1518								Fissile Sharp contact.		79					
1520								Silty sandstone, wavy but not lenticular bedding. Parallel laminae 1-2mm thick.							

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1540 - 1560 ft		PAGE 27 OF 41			
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 81-83			
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005			
DEPTH (feet)	LITHOLOGY	CARBONATES EVAP - MUDST - WCKST - POKST - GRNST - BNDST	CLASTICS CLAY - SAND - Z V F F M C	SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX
1540									
1542							Dark-gray finely laminated sideritic shale.		
1544							Siderite is ~5% of total thickness and nodular (20-50mm in diameter) or laminar (2-20mm in thickness).		82
1546							2.13c		
1548									
1550									
1552									
1554									83
1556							Sharp contact with underlying interlaminated shaley sandstone. Ripple cross laminae.		
1558							4" coal		
							Blocky medium-gray silty sandstone.		
							Carbonaceous shale		
1560							Black coal, pyrite and calcite.		

WELL NAME				Hopp #1-16 (15-043-20027)				INTERVAL				1580 - 1600 ft				PAGE				29 OF 41											
LOCATION												S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS												BOXES				85-87			
COMPANY						Forest City LLC						DESCRIBED BY						W.M. Brown						DATE				January 2005			
DEPTH (feet)		LITHOLOGY		CARBONATES		CLASTICS		SEDIMENTARY STRUCTURES		FOSSILS		POST-DEPOSITIONAL / DIAGENETIC FEATURES		DESCRIPTION - NOTES				SURFACES, FACIES, INTERVAL, and COMMENTS				BOX									
				EVAP MUDST WCKST POKST GRNST BNDST		CLAY SAND Z V F F M C								<ul style="list-style-type: none"> - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic 																	
1580								<i>h v h v</i>						Blocky mudstone at top, medium-gray.																	
1582														Very fine to fine-grained, light-gray sandstone. Moderately well sorted and well rounded. Not micaceous.																	
1584														Low-angle cross-bedding, with flasers and small scale ripple-cross laminations.																	
1586														Wavy bedding.																	
1588														Coarsening upwards profile.								86									
1590														Sharp contact.																	
1592														Black fissile shale, siderite bands and nodules.																	
1594														Slickensides								87									
1596																															
1598																															
1600																															

WELL NAME				Hopp #1-16 (15-043-20027)				INTERVAL				1600 - 1620 ft				PAGE				30 OF 41											
LOCATION												S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS												BOXES				87-89			
COMPANY						Forest City LLC						DESCRIBED BY						W.M. Brown						DATE				January 2005			
DEPTH (feet)		LITHOLOGY		CARBONATES		CLASTICS		SEDIMENTARY STRUCTURES		FOSSILS		POST-DEPOSITIONAL / DIAGENETIC FEATURES		DESCRIPTION - NOTES				SURFACES, FACIES, INTERVAL, and COMMENTS				BOX									
				EVAP MUDST WCKST GRNST BNDST		CLAY SAND Z V F F M C								<ul style="list-style-type: none"> - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic 																	
1600										C5C5				Dark-gray shale with light-gray disarticulated brachiopod and bivalve fossil fragments. Shelly lag.																	
1602										C5C5				Medium-gray interlaminated sandstone and shale.																	
														Gradational contact.																	
1604														Very light-gray, poorly-sorted, moderately well-rounded sandstone.																	
														Flaser bedded.																	
1606														2.11a																	
														Muddy drapes.																	
1608																															
1610																															
1611																															
1612														Shaley partings.																	
														2.11b																	
1614												P		Black banded coal with calcite mineralization in cleats.																	
														Medium light-gray blocky mudstone.																	
														Rooted and burrowed with slickenslides.																	
1616																															
1618																															
1620														Dark-gray blocky mudstone. Very carbonaceous.																	

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1640 - 1660 ft		PAGE 32 OF 41		
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 91-94		
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005		
DEPTH (feet)	LITHOLOGY	CARBONATES EVAP MUDST WCKST POKST GRNST BNDST CLAY SAND Z V F F M C	SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX
1640						Dark-gray laminated sandy shale with lenticular beds. Generally coarsening upwards. Siderite rich.		92
1642						Dark-gray sideritic shale.		
1644								
1646								
1648								
1650								
1652								
1654						Sharp contact Dark-gray shale with lt gray disarticulated bivalve fossil fragments. Sharp contact		
1656						Dark-gray silty-shale. Lenticular and wavy beds of silt in muddy matrix. Occasional ripples within silty laminae (4-5mm thick). Coarsening upwards		
1658								
1660		Carbonaceous.					94	

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1680 - 1700 ft		PAGE 34 OF 41				
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 96-98				
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005				
DEPTH (feet)	LITHOLOGY	CLASTICS			SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX
		CLAY Z	SAND V F F M C	CARBONATES EVAP MUDST WCKST POKST GRNST BNDST						
1680										96
1682										
1684										
1686										
1688										
1690										97
1692										
1694										
1696										
1698										98
1700										

CARBONATES

EVAP
MUDST
WCKST
POKST
GRNST
BNDST

CLASTICS

CLAY
Z
SAND
V F F M C

DESCRIPTION - NOTES

- Thickness
- Color
- Lithology (Grain Size, Sorting, Roundness)
- Composition
- Sedimentary Structures
- Contacts
- Body / Trace Fossils
- Post-Depositional and Diagenetic

SURFACES, FACIES,
INTERVAL,
and COMMENTS

BOX

S

Fissile very dark-gray to black shale.
Siderite rich.

6080

Shelly layer of disarticulated bivalve and brachiopod fragments in a black shale matrix.
1" coal layer.

4

Strongly carbonaceous

4

4

S

Dark-gray to very dark-gray sideritic fissile shale

S

WELL NAME				Hopp #1-16 (15-043-20027)		INTERVAL		1700 - 1720 ft		PAGE		35 OF 41							
LOCATION				S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES				98-100					
COMPANY				Forest City LLC						DESCRIBED BY		W.M. Brown				DATE		January 2005	
DEPTH (feet)	LITHOLOGY	CARBONATES	CLASTICS	SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES				SURFACES, FACIES, INTERVAL, and COMMENTS		BOX						
		EVAP MUDST WCKST POKST GRNST BNDST	CLAY SAND Z V F F M C				<ul style="list-style-type: none"> - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic 												
1700																			
1702																			
1704																			
1706																			
1708																			
1710																			
1712																			
1714																			
1716																			
1718																			
1720																			

S

S

99

100

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1740 - 1760 ft		PAGE 37 OF 41	
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 102-104	
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005	
DEPTH (feet)	LITHOLOGY	CARBONATES EVAP MUDST WCKST POKST GRNST BNDST CLASTICS CLAY SAND Z VF F M C	SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic	SURFACES, FACIES, INTERVAL, and COMMENTS
1740							
1742							
1744							
1746							
1748							
1750							
1752							
1754							
1756							
1758							
1760							

S

Dark-gray to black fissile sideritic shale.

S

Gradational contact.
Burrowed, lenticular and wavy-bedded, fine-grained sandstone.
Ripple-cross laminated with flaser beds.

Fissile black shale.

103

104

BOX

WELL NAME Hopp #1-16 (15-043-20027)				INTERVAL 1800 - 1820 ft		PAGE 40 OF 41			
LOCATION S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS						BOXES 109-111			
COMPANY Forest City LLC				DESCRIBED BY W.M. Brown		DATE January 2005			
DEPTH (feet)	LITHOLOGY	SEDIMENTARY STRUCTURES			FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES - Thickness - Color - Lithology (Grain Size, Sorting, Roundness) - Composition - Sedimentary Structures - Contacts - Body / Trace Fossils - Post-Depositional and Diagenetic	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX
		CLAY Z	SAND V F F M C	EVAP MUDST WCKST POKST GRNST BNDST					
1800	[Lithology pattern]								
1802						S	Fissile dark-gray to black shale.		
1804						P	Pyrite and siderite common. Pyrite is nodular, siderite is nodular and banded.		
1806						S			110
1808						S			
1810									
1812						P			
1814						S			
1816									
1818						P			
1820					S				

WELL NAME		Hopp #1-16 (15-043-20027)			INTERVAL		1820 - 1831 ft		PAGE		41 OF 41		
LOCATION		S16-T2S-R19E, N-1/2, SW-SE-SE, Doniphan Co., KS							BOXES			111-112	
COMPANY		Forest City LLC				DESCRIBED BY		W.M. Brown		DATE		January 2005	
DEPTH (feet)	LITHOLOGY	CARBONATES			SEDIMENTARY STRUCTURES	FOSSILS	POST-DEPOSITIONAL / DIAGENETIC FEATURES	DESCRIPTION - NOTES	SURFACES, FACIES, INTERVAL, and COMMENTS	BOX			
		EVAP	MUDST	WCKST							POKST	GRNST	BNDST
		CLASTICS											
		CLAY	SAND										
		Z	V	F	M	C							
1820								Dark-gray siderite rich shale. Gradational contact.					
1822								Medium-gray very fine-grained structureless sandstone matrix with 1-5 cm clasts of light-gray chert and light-gray dolomitic limestone.					
1824								Burrowed with organic debris throughout.					
								2.18c					
1826								Extremely sharp contact. (Top Mississippian, 1824'-6")	Mississippian				
1828								Very light-gray mudstone.					
1830								Cherty dolomitic limestone.					
1832								Well and Core TD, 1831.					