EAST FORK OF BOX CANYON
SUBSIDENCE EFFECTS MONITORING

STATION	DATE	LOCATION DESCRIPTION	GPS COORDINATES	CRACK DESCRIPTION Width (ft)	CRACK DESCRIPTION Length (ft)	PICTURE Y/N	MITIGATION Y/N	DESCRIPTION	FOLLOW-UP MONITORING
	11/13/2003	Elusive Peacock Upper Shelter & Lower Overhang				Yes		The front tip of the lower overhang broke off back app. 10' to the crack that ran across the roof of the overhang as Mark Bunnell predicted might happen. It has also spalled off and domed out back another 10-15' from this crack.	11-17-03 The roof of both shelters sheared into a dome shape under compression after the longwall passed under the shelter. (See Subsidence caving profile drawing dated 11-18-03) 11-19-03 The upper shelter roof caved off onto the shelter floor and now rock covers the whole floor of the shelter. The floor of the shelter is still holding at this point. The lower overhang roof has also caved off more. 11-24-03 The roof and overhang above the upper shelter appears to be completely down. No visual evidence that the floor of the upper shelter has collapsed. 11-26-03 The shelter doesn't look much difference from the picture taken on 11-24-03. There is still no visual evidence that the floor of the upper shelter has collapse. 12/1/03 The shelter appeared to be unchanged. 12/3/03 Most of the ledge above the shelter has broken off along joint planes and the floor of shelter is covered by rubble. Approximately the south third of the shelter overhang is still visible. The entire floor liner has been covered with rubble, however. Because the floor area of the shelter is still in place, he assumes the underlying row of wood cribs that remained standing is doing its job. The lower overhang/cave is almost entirely covered by rubble with the exception of the south end where some block caving has left a small opening. Mark has updated his previous sketch profile of the shelter and underlying cave with his current observations. 12/8/03 The area appears to be unchanged. (4-5 inches new snow on ground in canyon) 12/11/03 The area appears to be unchanged. (2-3 inches new snow on ground in canyon) 12/17/03 The area appears to be unchanged.

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				Width (ft)	Length (ft)	Y/N	Y/N		
EFB-15	11/24/2003	At confluence of Spring 214 discharge and East Fork channel		0.015	~2.0	Yes	N	The crack was formed on the east side of the channel where flow from Spring 214 enters the main channel of the East Fork. The sandstone beds have been buckled up and the crack formed on the edge of the buckled area. The crack is oriented roughly N-S. Did not appear to be taking water.	11/26/03 Looked for this crack but the area was obscured by fresh snow that had been falling all day during the inspection. 12/1/03 The area appears to be unchanged. 12/3/03 The area appeared to be unchanged. 12/8/03 The area appears to be unchanged. (4-5 inches new snow on ground in canyon) 12/11/03 The area appears to be unchanged. (2-3 inches new snow on ground in canyon) 12/17/03 The area appears to be unchanged. 04/29/04 The area appears to be unchanged.
EFB-16	11/26/2003	Approx. 100' below EFB-11	N 4,317,595 E 471,238 NAD 27 UTM	?	?	Yes	N	The sandstone beds in the stream channel bottom is fractured and has buckled up. Area was obscured by ice and snow and the measurement of cracks was not possible at this time but they didn't appear to be of any size.	12/1/2003 There was an approximately 30 foot reach of the stream channel about 100 feet below EFB-11 that was dry. We plugged a few small holes in the stream bottom with native stream sediments. After that, stream flow was reestablished in the 30 foot reach. Stream flow gradually increased downstream in stream channel below the 30-foot reach. Erik walked down-canyon approximately 75 yards and the flow was steadily increasing. 12/3/03 The stream is flowing beneath the buckled zone. The stream reappears about 20 to 30 ft. downstream. 12/8/03 The area appears to be unchanged. (4-5 inches new snow on ground in canyon) 12/11/03 The area appears to be unchanged. (2-3 inches new snow on ground in canyon) 12/15/03 The area appears to be unchanged. 12/17/03 The area appears to be unchanged. 12/22/03 The area appears to be unchanged. 04/29/04 The area appears to be unchanged.
EFB-17	11/26/2003	Approx. 100' above EFB-11		Couple of hairline cracks	?	N	N	A couple of hairline cracks were observed in the stream channel. These cracks didn't appear to be affecting the stream flow.	12/1/03 The area appears to be unchanged. 12/3/03 The area appeared to be unchanged. 12/11/03 The area appears to be unchanged. (2-3 inches new snow on ground in canyon) 12/17/03 The area appears to be unchanged. 04/29/04 Flow now disappears for appr. 50 feet and reappears down stream.

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				Width (ft)	Length (ft)	Y/N	Y/N		
EFB-18	12/3/2003	Approx. 200-250' below EFB-11	N 4,317,603 E 471,210 NAD 27 UTM	?	?	Yes	N	Where the stream starts to cross over the western chain pillar line of the 3L panel the stream roughly parallels the principle joint orientation in this area and some of the joints in a sandstone layer in the substrate have opened up slightly in tension. At this point the stream disappears into the joints. It reappears again within approx. 30 to 40 ft. downstream.	12/8/03 The area appears to be unchanged. (4-5 inches new snow on ground in canyon) 12/11/03 The area appears to be unchanged. (2-3 inches new snow on ground in canyon) 12/15/03 The area appears to be unchanged. 12/22/03 The area appears to be unchanged. 04/29/04 The stream disappears and reappears at different flow rates throughout this area for appr. 60 feet.
EFB-19	12/8/2003	Between EFB-10 and EFB-11		N/A	N/A	Yes	N	Observed a new slump on the lower hillside between EFB-10 and EFB-11. (30 feet high x 40 feet wide) Some groundwater was observed leaking from the ground where the slump had occurred.	12/11/03 The slump has partially filled in the channel and is backing some water up in the stream at the waterfall pool below EFB-12. Groundwater was still observed leaking from the slump area. (2-3 inches new snow on ground in canyon) 12/15/03 The slump observed last week is essentially unchanged, but the slump material is now mostly frozen. Still creating a small pool in stream channel immediately above the slump. 12/17/03 The area appears to be unchanged. 12/22/03 The slump between EFB-10 and EFB-11 is essentially unchanged. The slump material is mostly frozen. We did not observe groundwater discharge from the slump material as occurred immediately after the slump occurred. The small pool created by the slump material in the stream channel appears unchanged from the previous monitoring event. 04/29/04 The area appears to be unchanged.
	12/17/2003	Approx. 20' south of EFB-12				Yes	N	A large rock and some smaller ones broke off the upper outcrop approx. 20' south of the spring area.	12/22/03 The area appears to be unchanged. 12/24/03 The area appears to be unchanged. 04/29/04 More rock has broken off during the winter months.
	12/17/2003	Above EFB-14		1"-2"		N	N	Observed two new cracks in the rock outcrop. Couldn't see if or where the cracks came down the slope.	12/24/03 Observed some more cracking in this area at the outcrop above the stream channel.

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EFB-20	12/22/2003	Approx. 120' below EFB-10				Yes	N	Observed some fractures in the stream channel approximately 40 yards below EFB-10. The fractures occur in thin-bedded silty sandstone in the channel bottom. All of the stream flow infiltrated into the fracture system at that point. The stream channel was dry to a point approximately 35 feet below the fracture. At that point the water (apparently all) reemerged into the stream channel. Because this reach of the stream was frozen during previous monitoring events, we could not determine if the fractures and stream infiltration are recent occurrences.	12/24/03 The stream is flowing beneath the fractured zone. The stream reappears about 35 ft. downstream. 04/29/04 The area appears to be unchanged.
EFB-21	4/29/2004	Approx. 100' above EFB-10				Yes	N	Observed a new fracture zone in the stream channel located approximately 100 feet above EFB-10. The fractures occur in thin-bedded silty sandstone in the channel bottom. All of the stream flow infiltrated into the fracture system at that point. The stream channel was dry for approximately 150-200 feet. At that point the water reemerged into the stream channel. Because this reach of the stream was buried under snow during previous monitoring events, the fractures and stream infiltration could possibly be an old occurrence that happened back in late December or early January and went unobserved.	
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