

INITIAL EVALUATION OF PHOTOGRAPHIC DATA OF F- AND H-AREA
SEEPAGE BASIN OUTCROPS

by

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INTRODUCTION

Photographic data for the Savannah River Plant (SRP) were reviewed for 1961 through 1987 to determine the value of this photography in estimating the timing and extent of the F- and H-Area seepage basin outcrops along the upper Four Mile Creek floodplain. In excess of 15,000 frames of photography of the SRP were reviewed. The quality of the photography varied widely and included panchromatic (black and white), natural color, and false color infrared. Altitudes of the photography ranged from 2,000 feet above ground level (AGL) to 40,000 feet AGL. Sources of photography included SRP records (1961, 1973, 1974), U.S. Forest Service (1966, 1974, 1979, 1982, 1986), U.S. Geological Survey (1977, 1981), Savannah River Ecology Laboratory (SREL) (1978), and EG&G, Inc. (1974, 1975, 1980, 1982, 1983, 1984, 1985, 1986, 1987) (Appendix A).

For each year the best photography at the lowest altitude was evaluated to determine the presence of vegetation damage downslope of the F- and H-Area seepage basins. A stereoscope was used to view overlapping stereo-pairs of photography where these were available. Criteria of (1) no visible evidence of vegetation (forest canopy) damage, (2) initial evidence of vegetation or canopy damage, (3) canopy thinning, (4) tree mortality, and (5) expansion of vegetation damage and/or tree mortality zones were applied to each of the photographs. In this initial evaluation, only the largest of the outcrops below and the seepage basins were evaluated. The smaller outcrops in both of these areas will be evaluated later when improved copies and/or enhanced versions of the photography have been obtained or processed at the SRL Remote Sensing Laboratory. Tables 1 and 2 summarize the data from this initial review.

For both the F- and H-Area seepage basin outcrops, visible effects (initial, canopy thinning, and tree mortality) were observed in the September 1980, EG&G natural color photography of the Four Mile Creek area. No evidence was observed in the March 1979 Forest Service photography indicating that the vegetation changes occurred in 1979 or 1980. Expansion of both areas (especially the H-Area outcrop) has been observed in photography from 1980 through 1987. These outcrops have also been confirmed in the EG&G airborne multispectral scanner (MSS) data for the spring of 1982, 1985, 1986, and 1987, and in SPOT satellite MSS data for April and October 1987.

TABLE 1

Visible Effects at the F-Area Seepage Basin Outcrops

<u>Date</u>	<u>Observation</u>				
	<u>No</u> <u>Visible</u> <u>Effect</u>	<u>Initial</u> <u>Visible</u> <u>Effect</u>	<u>Canopy</u> <u>Thinning</u>	<u>Tree</u> <u>Mortality</u>	<u>Tree Mortality</u> <u>With Apparent</u> <u>Expansion</u>
3/15/61	x				
5/05/66	x				
3/18/73	x				
2/13/74	x				
5/14/74	x				
12/11/75	x				
2/21/77*	-				
10/01/78	x				
3/07/79	x				
9/02/80		x	x	x	
2/27/81	Winter photography difficult to evaluate				
8/26/82				x	
6/25/83				x	
-/--/84					
5/14/85				x	
4/01/86				x	
4/21/87				x	x

* Photography not available, to be ordered.

TABLE 3

Visible Effects at the H-Area Seepage Basin Outcrops

<u>Date</u>	<u>Observation</u>				
	<u>No</u> <u>Visible</u> <u>Effect</u>	<u>Initial</u> <u>Visible</u> <u>Effect</u>	<u>Canopy</u> <u>Thinning</u>	<u>Tree</u> <u>Mortality</u>	<u>Tree Mortality</u> <u>With Apparent</u> <u>Expansion</u>
3/15/61	x				
5/05/66	x				
3/18/73	x				
2/13/74	x				
5/14/74	x				
12/11/75	x				
2/21/77*	-				
10/01/78	x				
3/07/79	x				
9/02/80		x	x		
2/27/81	Winter photography difficult to evaluate				
8/26/82			x	x	
6/25/83			x	x	
6/09/84				x	
5/14/85			x	x	x
4/01/86			x	x	x
4/21/87				x	x

* Photography not available, to be ordered.

APPENDIX A

Photography of F- and H-Area Seepage Basin Outcrops

Area of Coverage	Date	Source*	Type**	Scale	Identification Number***
1. F Area	3/3/87	EG&G	FCIR	1:7960	5622-134
2. F Area	3/3/87	EG&G	FCIR	1:7960	5622-135
3. F Area	3/3/87	EG&G	FCIR	1:7960	5622-136
4. F Area	3/3/87	EG&G	FCIR	1:7960	5622-137
5. F Area	3/3/87	EG&G	FCIR	1:7960	5622-138
6. F Area	3/3/87	EG&G	NC	1:7960	5621-133
7. F Area	3/3/87	EG&G	NC	1:7960	5621-134
8. F Area	3/3/87	EG&G	NC	1:7960	5621-135
9. F Area	3/3/87	EG&G	NC	1:7960	5621-136
10. F Area	3/3/87	EG&G	NC	1:7960	5621-137
11. F Area	3/3/87	EG&G	NC	1:7960	5621-138
12. F Area	4/21/87	EG&G	NC	1:8560	5641-128
13. F Area	4/21/87	EG&G	NC	1:8560	5641-129
14. F Area	4/-/86	EG&G	NC	-	5337-27
15. F Area	4/-/86	EG&G	NC	-	5337-28
16. F Area	4/-/86	EG&G	NC	-	5337-29
17. F Area	4/-/86	EG&G	B&W	-	5366-26
18. F Area	4/-/86	EG&G	B&W	-	5366-28
19. F Area	6/21/86	EG&G	NC	1:16520	5354-47
20. F Area	6/21/86	EG&G	NC	1:16520	5354-48
21. F Area	6/21/86	EG&G	NC	1:16520	5354-57
22. F Area	6/21/86	EG&G	NC	1:16520	5354-58
23. F Area	6/21/86	EG&G	NC	1:16520	5354-59
24. F Area	5/14/85	EG&G	FCIR	1:11900	4992-60
25. F Area	5/14/85	EG&G	FCIR	1:11900	4992-61
26. F Area	5/14/85	EG&G	FCIR	1:11900	4992-68
27. F Area	5/14/85	EG&G	FCIR	1:11900	4992-69
28. F Area	5/14/85	EG&G	NC	1:11900	4991-60
29. F Area	5/14/85	EG&G	NC	1:11900	4991-61
30. F Area	5/14/85	EG&G	NC	1:11900	4991-68
31. F Area	5/14/85	EG&G	NC	1:11900	4991-69
32. F Area	5/18/85	EG&G	FCIR	1:19900	4996-91
33. F Area	5/18/85	EG&G	FCIR	1:19900	4996-92
34. F Area	5/18/85	EG&G	NC	1:19900	4995-91
35. F Area	5/18/85	EG&G	NC	1:19900	4995-92
36. F Area	5/17/85	EG&G	NC	1:19900	4991-195
37. F Area	6/25/83	EG&G	FCIR	1:7960	4339-83
38. F Area	6/25/83	EG&G	FCIR	1:7960	4339-84
39. F Area	7/30/83	EG&G	NC	1:19900	4377-10
40. F Area	2/20/82	FS	NC	-	F16 SRP SC 2-245
41. F Area	3/8/82	FS	NC	-	F16 SRP SC 2-273
42. F Area	3/8/82	FS	NC	-	F16 SRP SC 2-274
43. F Area	3/8/82	FS	NC	-	F16 SRP SC 2-275

APPENDIX A, Contd

Area of Coverage	Date	Source*	Type**	Scale	Identification Number***
44. F Area	8/20/82	EG&G	FCIR	1:19900	4127-80
45. F Area	8/26/82	EG&G	FCIR	1:19900	4127-97
46. F Area	8/26/82	EG&G	NC	1:19900	4126-81
47. H Area	4/21/87	EG&G	NC	1:8560	5641-126
48. H Area	4/21/87	EG&G	NC	1:8560	5641-127
49. H Area	3/3/87	EG&G	FCIR	1:7960	5622-127
50. H Area	3/3/87	EG&G	FCIR	1:7960	5622-128
51. H Area	3/3/87	EG&G	FCIR	1:7960	5622-129
52. H Area	3/3/87	EG&G	FCIR	1:7960	5622-130
53. H Area	3/3/87	EG&G	FCIR	1:7960	5622-131
54. H Area	3/3/87	EG&G	FCIR	1:7960	5622-98
55. H Area	3/3/87	EG&G	NC	1:7960	5621-127
56. H Area	3/3/87	EG&G	NC	1:7960	5621-128
57. H Area	3/3/87	EG&G	NC	1:7960	5621-129
58. H Area	3/3/87	EG&G	NC	1:7960	5621-130
59. H Area	3/3/87	EG&G	NC	1:7960	5621-98
60. H Area	4/-/86	EG&G	NC	-	5337-25
61. H Area	4/-/86	EG&G	NC	-	5337-26
62. H Area	4/-/86	EG&G	NC	-	5337-30
63. H Area	4/-/86	EG&G	NC	-	5337-31
64. H Area	4/-/86	EG&G	B&W	-	5336-30
65. H Area	4/-/86	EG&G	B&W	-	5336-31
66. H Area	5/14/85	EG&G	FCIR	1:11900	4992-62
67. H Area	5/14/85	EG&G	FCIR	1:11900	4992-63
68. H Area	5/14/85	EG&G	FCIR	1:11900	4992-64
69. H Area	5/14/85	EG&G	FCIR	1:11900	4992-66
70. H Area	5/14/85	EG&G	FCIR	1:11900	4992-67
71. H Area	5/14/85	EG&G	NC	1:11900	4991-62
72. H Area	5/14/85	EG&G	NC	1:11900	4991-63
73. H Area	5/14/85	EG&G	NC	1:11900	4991-64
74. H Area	5/14/85	EG&G	NC	1:11900	4991-66
75. H Area	5/14/85	EG&G	NC	1:11900	4991-67
76. H Area	5/17/85	EG&G	NC	1:19900	4991-193
77. H Area	5/18/85	EG&G	FCIR	1:19900	4996-89
78. H Area	5/18/85	EG&G	FCIR	1:19900	4996-90
79. H Area	5/18/85	EG&G	NC	1:19900	4995-90
80. H Area	6/9/84	EG&G	NC	1:10550	4736-81
81. H Area	6/9/84	EG&G	NC	1:10550	4736-82
82. H Area	6/9/84	EG&G	NC	1:10550	4736-95
83. H Area	6/25/83	EG&G	FCIR	1:7960	4339-87
84. H Area	7/30/83	EG&G	NC	1:19900	4377-12
85. H Area	8/20/82	EG&G	FCIR	1:4000	4118-115
86. H Area	8/20/82	EG&G	FCIR	1:4000	4118-116
87. H Area	8/20/82	EG&G	FCIR	1:4000	4118-119

APPENDIX A, Contd

Area of Coverage		Date	Source*	Type**	Scale	Identification Number***
88.	H Area	8/20/82	EG&G	NC	1:4000	4117-115
89.	H Area	8/20/82	EG&G	NC	1:4000	4117-116
90.	H Area	8/20/82	EG&G	NC	1:4000	4117-117
91.	H Area	8/26/82	EG&G	FCIR	1:19900	4127-98
92.	H Area	8/26/82	EG&G	FCIR	1:19900	4127-99
93.	F & H Area	3/2/87	EG&G	NC	1:19900	5617-21
94.	F & H Area	3/2/87	EG&G	NC	1:19900	5617-22
95.	F & H Area	3/2/87	EG&G	NC	1:19900	5617-23
96.	F & H Area	2/3/86	EG&G	NC	-	5262-78
97.	F & H Area	2/3/86	EG&G	NC	-	5262-79
98.	F & H Area	2/3/86	EG&G	NC	-	5262-80
99.	F & H Area	2/3/86	EG&G	NC	-	5264-6
100.	F & H Area	5/17/85	EG&G	NC	1:19900	4991-194
101.	F & H Area	3/31/84	EG&G	NC	1:34400	4655-73
102.	F & H Area	3/31/84	EG&G	NC	1:34400	4655-74
103.	F & H Area	4/6/84	EG&G	NC	1:30200	4657-194
104.	F & H Area	7/30/83	EG&G	NC	1:19900	4377-11
105.	F & H Area	8/5/83	EG&G	FCIR	1:19900	4378-159
106.	F & H Area	8/5/83	EG&G	FCIR	1:19900	4378-160
107.	F & H Area	11/17/83	EG&G	NC	1:147800	4482-15
108.	F & H Area	2/20/82	FS	NC	-	F16 SRP SC 2-244
109.	F & H Area	9/23/82	EG&G	NC	-	4142-06
110.	F & H Area	9/23/82	EG&G	NC	-	4141-06
111.	F & H Area	8/26/82	EG&G	FCIR	1:19900	4127-98
112.	F & H Area	2/27/81	USGS	FCIR	-	377-63 33803 HAP 80F
113.	F & H Area	9/2/80	EG&G	NC	1:19800	3388-54
114.	F & H Area	9/2/80	EG&G	NC	1:19800	3388-55
115.	F & H Area	9/2/80	EG&G	NC	1:19800	3388-56
116.	F & H Area	9/2/80	EG&G	NC	1:39600	3389-72
117.	F & H Area	9/2/80	EG&G	NC	1:39600	3389-73
118.	F & H Area	9/2/80	EG&G	NC	1:39600	3389-74
119.	F & H Area	9/3/80	EG&G	NC	1:39600	3390-107
120.	F & H Area	9/3/80	EG&G	NC	1:39600	3390-108
121.	F & H Area	9/3/80	EG&G	NC	1:39600	3390-109
122.	F & H Area	9/3/80	EG&G	NC	1:39600	3390-110
123.	F & H Area	3/7/79	FS	NC	-	F16 SRP SC 279-23
124.	F & H Area	3/7/79	FS	NC	-	F16 SRP SC 279-48
125.	F & H Area	3/7/79	FS	NC	-	F16 SRP SC 279-49
126.	F & H Area	3/7/79	FS	NC	-	F16 SRP SC 279-80
127.	F & H Area	10/1/78	SREL	FCIR	-	7-14
128.	F & H Area	10/1/78	SREL	FCIR	-	7-15
129.	F & H Area	10/1/78	SREL	FCIR	-	8-13
130.	F & H Area	10/1/78	SREL	FCIR	-	8-14

APPENDIX A, Contd

Area of Coverage	Date	Source*	Type**	Scale	Identification Number***
132. F & H Area	10/1/78	SREL	FCIR	-	9-10
133. F & H Area	12/11/75	EG&G	NC	1:45000	888-49
134. F & H Area	12/11/75	EG&G	NC	1:45000	888-50
135. F & H Area	12/11/75	EG&G	NC	1:45000	888-51
136. F & H Area	2/13/74	SRP/FS	B&W	-	AEC FS 2-155
137. F & H Area	5/14/74	EG&G	NC	-	688-92
138. F & H Area	3/18/73	SRP	B&W	-	AEC FS 1-190
139. F & H Area	3/18/73	SRP	B&W	-	AEC FS 1-191
140. F & H Area	5/5/66	FS	B&W/FC	-	FS 2-105
141. F & H Area	5/5/66	FS	B&W/FC	-	FS 2-106
142. F & H Area	3/15/61	SRP	B&W	-	SRP 1-78

* Source: EG&G, Inc., Las Vegas, Nevada
 FS, U.S. Forest Service
 USGS, U.S. Geological Survey
 SREL, Savannah River Ecology Laboratory,
 University of Georgia, Aiken, SC
 SRP, E. I. du Pont de Nemours and Company,
 Savannah River Plant, Aiken, SC

** Type: FCIR, False Color Infra-Red
 NC, Natural Color
 B&W, Black and White (Panchromatic)
 B&W/FC, Black and White Print of False Color Film

*** Identification Number: Typically Proof Book and Frame Number
 with EG&G or Flight Line and Frame Number
 with Other Sources.