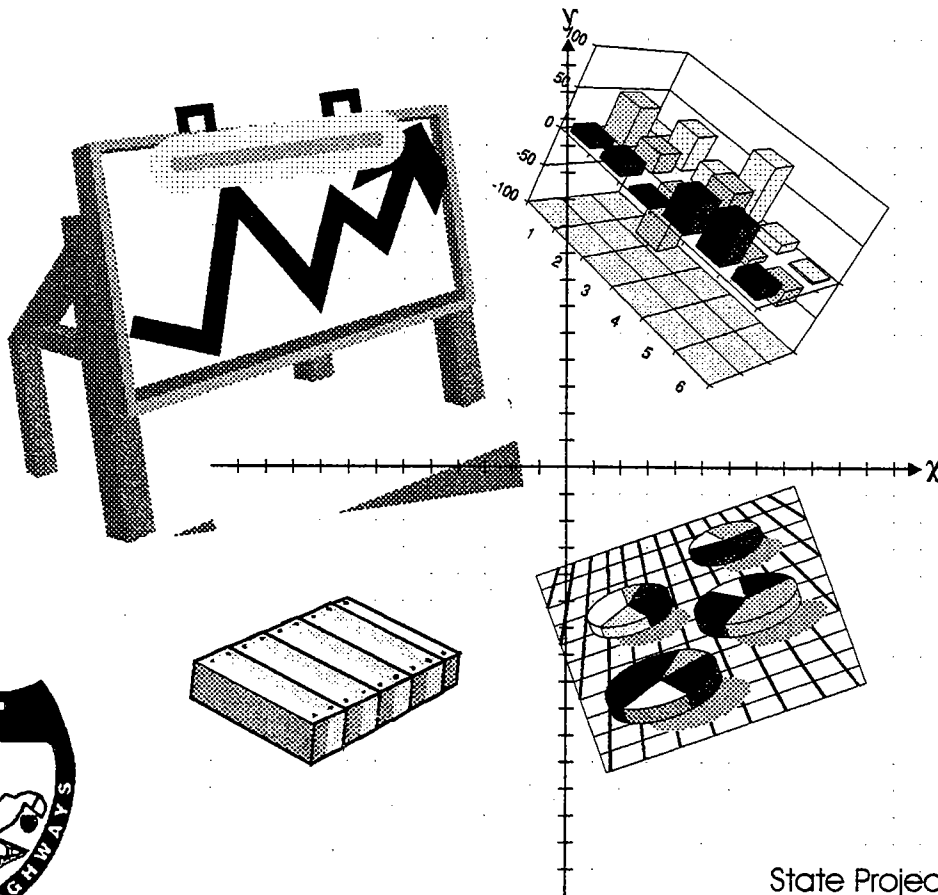


Appalachian Corridor **HI**

FINAL ENVIRONMENTAL IMPACT STATEMENT

Volume II

Tables, Exhibits, Figures & Appendices



State Project: X142-H-38.99 C-2
Federal Project: CHHD-484 (59)

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**TABLE S-1
PURPOSE AND NEED COMPARATIVE SUMMARY**

PURPOSE AND NEED	OBJECTIVES	MEASURES OF EFFECTIVENESS	NO-BUILD	Pref. Alt. ² WV	Line A ³ VA	IRA ¹	
						WV	VA
Legislation	Creation of Appalachian Development Highway System	Completion of Appalachian Corridor H	No	Yes	Yes	No	No
Improve System Linkage of Existing Transportation Network	Improve Access (System Linkage)	Improve Transportation Access at Regional Level	No	Yes	Yes	No	No
		Improve Transportation Access at Local Level	No	Yes	Yes	Partially	Yes
		Improve Access to Other Forms of Transportation	No	Yes	Yes	Partially	Partially
	Improve Efficiency of Transportation Network	Number of lanes provided yields LOS C or better	N/A	Yes	Yes	No	No
		Design Speed in 2013 (mph)	N/A	60	60	50	50
Improve Safety of Transportation Network	Minimize Accidents	Improve Access Control	N/A	Yes	Yes	No	No
		Passing Zone Opportunity	Limited	Unlimited	Unlimited	Restricted	Restricted
Improve Existing Roadway Facilities	Reduce Roadway Deficiencies by Improving Vertical Alignment	Maximum Grade	7% to 10%	6.5 %	6.0%	7.4 %	7.0 %
		Total Length Grade > 6%		3.9km (2.4mi)	0km (0mi)	45.8km (28.5mi)	5.9km (3.7mi)
	Reduce Roadway Deficiencies by Improving Horizontal Alignment	Maximum Degree Curve		4°45'	4°00'	16°30'	7° 30'
		Curves > 7°30"		0	0	8	1
		Curves > 4°45"		0	0	78	12
		Curves > 3°00"		7	1	120	16
Improve Socioeconomic Development Opportunities	Economic Growth	Temporary Jobs Created: On-Site Construction Jobs		9,300	1,200	3,700	300
		Off-Site Jobs		12,050	1,600	5,000	300
		Temporary Jobs Created		21,350	2,800	8,700	600
		Permanent Jobs Predicted:	0	8,100	9,723	984	273
		Predicted Tax Benefit	0	\$5,435,800	\$13,868,600	\$626,700	\$341,300
	Minimize Disruption to Existing Neighborhoods and Relocations	Number of Communities with cohesion impacts	0	4	1	0	0
		Number of businesses that are relocated	0	4	0	9	2
		Number of residences that are relocated	0	52	13	61	15

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

TABLE S-2
POTENTIAL IMPACT SUMMARY: CORRIDOR D5 COMPARISON WITH
ALIGNMENT SELECTION ALTERNATIVES

CORRIDOR D5 COMPARISON WITH ALTERNATIVES				
ISSUE	CORRIDOR D5* (Potential)	NO- BUILD	Pref. Alt. in WV ² & Line A in VA ³	IRA ¹ WV & VA
LENGTH	182 km (113 mi)	194 km (121 mi)	183 km (114 mi)	206 km (128 mi)
# Total Potential Relocations (residences & businesses)	561	0	<u>72</u>	<u>88</u>
CULTURAL RESOURCES:	891	0	<u>579</u>	593
PREHISTORIC SETTLEMENT PATTERN PROBABILITY ZONES:				
High	13%	N/A	<u>10%</u>	11%
Medium	25%	N/A	15%	17%
Low	62%	N/A	74%	72%
RECREATION RESOURCES:				
Trail Involvements	N/A	0	<u>10</u>	<u>13</u>
Local Parks	0	0	0	2
SENSITIVE VISUAL RESOURCES:				
Minimal Impacts	3	31	10	<u>9</u>
Moderate Impacts	1	0	17	<u>18</u>
High Impacts	0	0	4	4
HAZARDOUS MATERIALS:				
RCRA Sites	3	0	0	0
CERCLA Sites	0	0	0	0
Leaking UST Sites	0	0	0	0
Landfills	0	0	0	0
FARMLANDS:	2,071 ha (5,117 ac)	0 ha (0 ac)	<u>204 ha</u> (505 ac)	118 ha (291 ac)
WETLANDS:				
Total Area	300 ha (741 ac)	0	15.4 ha (38.1 ac)	8.7 ha (21.4 ac)
FLOOD ZONE ENCROACHMENT:				
Total Area of Encroachment	1,021 ha (2,528 ac)	0 ha (0 ac)	<u>15.0 ha (37.1 ac)</u>	23.1 ha (57 ac)
THREATENED & ENDANGERED SPECIES:				
# Federally Listed T & E Species	2	0	0	0
WILD & SCENIC RIVERS:				
NRI - Wild Status	0	0	0	0
NRI - Scenic Status	1	0	1	0
NRI - Recreation Status	1	0	0	0

*Corridor D5 is the preferred corridor in the 1993 Decision Document (Section II FEIS). Data presented for Corridor D5 are the sum of the resources within the 2,000' corridor width.

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

TABLE S-3
IMPACT SUMMARY: ALTERNATIVE COMPARISON

ISSUE	NO-BUILD	Pref. Alt. ² WV	Line A ³ VA	IRA ¹	
				WV	VA
LENGTH	194 km (121 mi)	161 km (100 mi)	22 km (14 mi)	184 km (114 mi)	22 km (14 mi)
COST: Construction	n/a	<u>\$989,746,000</u>	\$122,583,000	\$387,778,000	\$28,019,000
COST: ROW Acquisition	n/a	\$26,198,000	\$3,934,000	\$24,021,000	\$5,905,300
COST: Mitigation	n/a	\$39,729,000	\$12,223,500	\$5,640,000	\$440,000
Total Costs	\$137,000,000	<u>\$1,055,673,000</u>	\$138,740,500	\$417,439,000	\$34,364,300
RELOCATIONS:					
Residences Potentially Relocated	0	<u>52</u>	13	61	15
Businesses Potentially Relocated	0	4	0	9	2
Poultry Houses	0	<u>3</u>	0	1	0
Total Potential Relocations	0	<u>59</u>	13	71	17
LAND USE CONVERSIONS:					
Total Area Converted	0	<u>1,384 ha</u> (3,419 ac)	171 ha (424 ac)	473 ha (1,170 ac)	66 ha (162 ac)
% Forested	0%	<u>76%</u>	82%	76%	53%
% Agricultural	0%	<u>16%</u>	13%	12%	21%
% Rangeland	0%	5%	3%	4%	3%
% Urban/Build-Up	0%	1%	2%	5%	21%
% Other	0%	3%	0%	3%	2%
WATER SUPPLY:					
Private Wells Impacted	0	6	0	1	0
Private Wells within 152 m (500 ft)	0	17	0	24	0
Public Water Sources Potentially Impacted	0	1 (Aquifer)	0	0	0
AIR: Year 2013 Worst Case 1-Hour CO (ppm)	7.9 in WV 3.0 in VA	5.5	4.4	6.1	4.8
NOISE:					
FHWA NAC Exceedances - Year 2013	218	<u>66</u>	8	286	52
Substantial Increase Exceedances	0	<u>85</u>	49	27	5
CULTURAL RESOURCES:					
No Effect	0	<u>331</u>	66	297	41
Effect	0	122	26	161	52

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE S-3 (CONT.)
IMPACT SUMMARY: ALTERNATIVE COMPARISON**

ISSUE	NO-BUILD	Pref. Alt. ² WV	Line A ³ VA	IRA ¹	
				WV	VA
PREHISTORIC SETTLEMENT PATTERN					
PROBABILITY ZONES:					
% Probability = High	N/A	11%	7%	12%	9%
% Probability = Medium	N/A	14%	26%	15%	41%
% Probability = Low	N/A	75%	67%	73%	50%
RECREATION RESOURCES:					
Trail Involvements	None	10	1	12	1
Local Parks	None	0	0	2	0
SENSITIVE VISUAL RESOURCES:					
Minimal Impacts	31	9	1	8	1
Moderate Impacts	0	12	5	13	5
High Impacts	0	4	0	4	0
HAZARDOUS MATERIALS:					
RCRA Sites	0	0	0	0	0
CERCLA Sites	0	0	0	0	0
UST Sites	0	0	0	1	0
Leaking UST Sites	0	0	0	0	0
Landfills	0	0	0	0	0
FARMLANDS:	0	177 ha (438 ac)	27 ha (67 ac)	101 ha (250 ac)	17 ha (41 ac)
WETLANDS					
Emergent	0	12.5 ha (31 ac)	0.1 ha (0.3 ac)	6.0 ha (14.8 ac)	0.2 ha (0.4 ac)
Scrub/Shrub	0	1.2 ha (2.9 ac)	0 ha (0 ac)	0.6 ha (1.4 ac)	0.3 ha (0.6 ac)
Forested	0	0.3 ha (0.7 ac)	0.1 ha (0.3 ac)	1.2 ha (3.0 ac)	0.1 ha (0.2 ac)
Open Water	0	1.1 ha (2.6 ac)	0.1 ha (0.2 ac)	0.4 ha (1.1 ac)	0 ha (0 ac)
Total Area	0	15.1 ha (37.2 ac)	0.3 ha (0.8 ac)	8.2 ha (20.3 ac)	0.5 ha (1.1 ac)
FLOOD ZONE ENCROACHMENT:					
Total Area of Encroachment:	0	18.7 ha (46.2 ac)	2.4 ha (5.9 ac)	19.8 ha (48.9 ac)	3.3 ha (8.1 ac)
THREATENED & ENDANGERED SPECIES:					
Federally Listed T & E Species	0	0	0	0	0
HABITAT UNIT NET LOSS: Habitat Units	0	6,405	827	3,035	164

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE S-3 (CONT.)
IMPACT SUMMARY: ALTERNATIVE COMPARISON**

ISSUE	NO-BUILD	Pref. Alt. ² WV	Line A ³ VA	IRA ¹	
				WV	VA
WILD & SCENIC RIVERS:					
NRI - Wild Status	0	0	0	0	0
NRI - Scenic Status	0	0	0	0	0
NRI - Recreation Status	0	0	0	0	0
STREAM ENCLOSURES					
Pipe	0	4,576 m (15,198 ft)	268 m (880 ft)	3,957 m (12,980 ft)	271 m (890 ft)
Box and Open Bottom Box Culverts	0	3,332 m (11,065 ft)	326 m (1,070 ft)	398 m (1,305 ft)	0 m (0 ft)
Total	0	7,845 m (26,055 ft)	594 m (1,950 ft)	4,355 m (14,285 ft)	271 m (890 ft)
STREAM RELOCATIONS	0	3,389 m (11,120 ft)	30 m (100 ft)	889 m (2,915 ft)	38 m (125 ft)
SECONDARY IMPACTS					
<i>Riparian Buffer Zones</i>					
Parallel Construction w/in 23 m (75 ft)	0	3,645 m (11,778 ft)	0 m (0 ft)	8,662 m (28,418 ft)	801 m (2,627 ft)
<i>Forest Fragmentation</i>					
Parcels created less than 150 ha (370 ac)	N/A	185	21	119	14
Parcels created less than 1 ha (2.5 ac)	N/A	90	20	70	21
<i>Stormwater Runoff</i>	N/A	minimal	minimal	minimal	minimal
<i>Cultural Resources</i>					
Partially impacted by commercial development	N/A	5	2	0	1
existing roads experiencing minor or moderate noise impacts	N/A	0	0	6	0
<i>Habitat Units</i>					
lost due to predicted development	N/A	5,339	4,519	65	16

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE S-4
IMPACT SUMMARY: OPTION AREA COMPARISON**

ISSUE	WEST VIRGINIA														VIRGINIA ²				
	INTERCHANGE		SHAVERS FORK		PATTERSON CR.		FORMAN		LINE 5-D		BAKER		HANGING ROCK		DUCK RUN			LEBANON CH.	
	Line I ¹	Line A	Line S ¹	Line A	Line P	Line A ¹	Line F ¹	Line A	Line 5-D ¹	Line A	Line B ¹	Line A	Line R	Line A ¹	Line D1	Line D2	Line A	Line L	Line A
LENGTH: kilometers (miles)	2.4 (1.5)	2.4 (1.5)	4.3 (2.7)	4.2 (2.6)	6.8 (4.2)	6.5 (4.0)	5.1 (3.2)	5.0 (3.1)	3.2 (2.0)	3.5 (2.2)	5.3 (3.3)	5.5 (3.4)	3.4 (2.1)	3.7 (2.3)	9.0 (5.6)	8.4 (5.2)	8.7 (5.4)	7.3 (4.5)	8.5 (5.3)
CONSTRUCTION COST: \$ millions	15,790	17,545	52,000	33,119	43,813	44,510	27,908	40,417	13,736	23,438	35,402	35,532	26,863	33,348	62,329	68,497	70,775	33,663	32,247
POTENTIAL RELOCATIONS:																			
# Residences Potentially Relocated	1	2	0	1	3	0	1	2	0	0	4	2	0	0	8	4	6	4	3
# Businesses Potentially Relocated	1	0	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0
# Total Potential Relocations	2	2	0	1	4	0	1	2	0	1	5	2	0	1	8	4	6	4	3
WATER SUPPLY:																			
# Private Wells Impacted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# Private Wells within 152 m (500 ft)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# Public Water Sources Potentially Impacted	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOISE:																			
# FHWA NAC Exceedances-Year 2013	7	2	0	0	0	0	1	0	0	1	2	2	0	2	1	0	1	6	1
# Substantial Increase Exceedances	24	3	0	0	2	0	1	0	0	0	2	2	2	0	15	12	12	54	8
CULTURAL RESOURCES:	3	3	11	13	5	5	4	5	3	3	11	10	5	5	5	5	5	78	78
PREHISTORIC SETTLEMENT PATTERN PROBABILITY ZONES																			
% Probability = High	3%	9%	11%	21%	21%	15%	27%	53%	12%	0%	26%	26%	4%	4%	0%	0%	0%	12%	19%
% Probability = Medium	59%	67%	7%	6%	24%	24%	22%	12%	7%	16%	5%	5%	2%	8%	7%	4%	7%	60%	60%
% Probability = Low	38%	24%	82%	73%	55%	61%	51%	35%	81%	84%	69%	69%	94%	90%	93%	96%	93%	28%	21%
RECREATION RESOURCES:																			
# National Forests	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0
# Trail Involvements	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0
# Local Parks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SENSITIVE VISUAL RESOURCES:																			
# Minimal Impacts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
# Moderate Impacts	0	0	1	1	0	0	0	0	0	0	1	1	1	0	3	3	3	1	2
# High Impacts	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

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**TABLE S-4 (CONT.)
IMPACT SUMMARY: OPTION AREA COMPARISON**

ISSUE	WEST VIRGINIA														VIRGINIA ²				
	INTERCHANGE		SHAVERS FORK		PATTERSON CR.		FORMAN		LINE 5-D		BAKER		HANGING ROCK		DUCK RUN			LEBANON CH.	
	Line I ¹	Line A	Line S ¹	Line A	Line P	Line A ¹	Line F ¹	Line A	Line 5-D ¹	Line A	Line B ¹	Line A	Line R	Line A ¹	Line D1	Line D2	Line A	Line L	Line A
HAZARDOUS MATERIALS:																			
# RCRA Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# CERCLA Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# UST Sites/Leaking UST Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# Leaking UST Sites	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# Landfills	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FARMLANDS: ha (ac)	2.5 (6.0)	9.1 (22.5)	5.1 (12.5)	8.1 (20.1)	5.5 (13.7)	2.7 (6.7)	11.1 (27.2)	22.2 (54.9)	2.1 (5.3)	3.3 (8.2)	6.2 (15.4)	2.8 (7.0)	0.2 (1.2)	0.2 (1.2)	0.1 (0.2)	1.4 (3.5)	1.2 (2.9)	23.2 (57.3)	21.3 (52.4)
WETLANDS:																			
Total Area - ha (ac)	0.05 (0.13)	0.11 (0.27)	0.02 (0.04)	0.03 (0.08)	1.03 (2.56)	0.66 (1.62)	1.46 (3.62)	1.36 (3.37)	0.00 (0.00)	0.07 (0.18)	0.20 (0.51)	0.03 (0.07)	0.00 (0.00)	0.00 (0.00)	0.15 (0.36)	0.11 (0.28)	0.21 (0.52)	0.35 (0.87)	0.11 (0.27)
FLOOD ZONE ENCROACHMENT:																			
Total Area of Encroachment: ha (ac)	3.4 (8.3)	2.0 (5.0)	0.0 (0.0)	3.7 (9.7)	0.0 (0.0)	0.0 (0.0)	1.3 (3.3)	1.1 (2.6)	0.0 (0.0)	0.0 (0.0)	0.2 (0.5)	0.4 (0.9)	0.0 (0.0)	0.0 (0.0)	0.8 (2.1)	0.0 (0.0)	0.8 (2.0)	0.0 (0.0)	0.5 (1.2)
THREATENED & ENDANGERED:																			
# Federally Listed T & E Species	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HABITAT UNIT NET LOSS: # Units	91	71	279	213	292	259	171	174	185	152	198	149	140	149	414	481	449	133	165
WILD & SCENIC RIVERS:																			
# NRI - Wild Status	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# NRI - Scenic Status	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
# NRI - Recreation Status	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STREAM ENCLOSURES:																			
Length of Pipe - m (ft)	335 (1,110)	351 (1,150)	0 (0)	0 (0)	632 (2,075)	183 (600)	381 (1,250)	360 (1,180)	0 (0)	240 (592)	0 (0)	94 (310)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	107 (350)	189 (620)
Length of Box & Open Bottom Box Culverts m (ft)	0 (0)	0 (0)	0 (0)	0 (0)	351 (1,150)	137 (450)	152 (500)	152 (500)	211 (691)	141 (350)	198 (650)	0 (0)	0 (0)	0 (0)	0 (0)	137 (450)	137 (450)	0 (0)	158 (520)
Total Length - m (ft)	335 (1,100)	351 (1,150)	0 (0)	0 (0)	983 (3,225)	320 (1,050)	533 (1,750)	512 (1,680)	211 (691)	381 (942)	198 (650)	94 (310)	0 (0)	0 (0)	0 (0)	137 (450)	137 (450)	107 (357)	347 (1,140)
STREAM RELOCATIONS - m (ft)	305 (1,000)	305 (1,000)	183 (600)	183 (600)	116 (380)	116 (380)	625 (2,050)	351 (1,150)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	30 (100)

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Carroll H Final EIS

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE II-1A
EXISTING ROADWAY CHARACTERISTICS**

	Elkins to Strasburg	Elkins to Winchester
Total Length	121 miles	139 miles
Vertical Alignment:		
Total miles of Grade > 7% (50 mph; mountainous terrain)	29 miles	12 miles
Total miles of Grade > 4% (50 mph; level terrain)	48 miles	38 miles
Horizontal Alignment:		
No. of curves > 5 ⁰ 30' (55 mph; all rural terrain)	188 curves	155 curves
Average Speed (mph):		
Automobiles	35 mph	38 mph
Trucks	24 mph	26 mph
Average Accident Rates: (accidents per million vehicle miles traveled)	3.24	2.63
1992 Level of Service (LOS): Percent at LOS D or LOS E	82%	57%

TABLE II-1B
A COMPARISON OF SENSITIVE RESOURCE INVOLVEMENTS*

Natural Resource Involvement:	SCHEME OPTION	
	D5	E2
Wetland (Acres)		
Palustrine Forested	17	36
Palustrine Scrub Shrub	5	6
Palustrine Emergent	46	37
Palustrine Open Water	<u>38</u>	<u>41</u>
Total	106	120
High Impact Potential for all Wetland Types (Acres)	3	30
National Resource Waters	13	3
High Quality Streams	16	25
Total Floodplains (Acres)	908	1,590
Section 4(f) Land:		
Historic Sites	36	86
Impacts on Section 4(f) Land	0	0
Social Resource Involvements:		
Potential Residential, Commercial, Facility and Service Displacements	370	1,081
Economic Resource Benefits:		
Industrial Parks	5	2
Best Access to Virginia Inland Port	Yes	No

*Note: D5 VS. E2, East of Bismarck within the 2,000 foot-wide corridor

**TABLE II-1C
DESIGN CRITERIA**

DESIGN ELEMENT	IRA ¹		Preferred Alternative ²	Line A ³
	West Virginia	Virginia	West Virginia	Virginia
Design Speed	80 kph (50 mph)	80 kph (50 mph)	100 kph (60 mph)	100 kph (60 mph)
Maximum Degree of Curvature	7° 30'	7° 30'	4° 45'	4° 30'
Minimum Stopping Sight Distance	122 m (400')	122 m (400')	160 m (525')	160m (525')
Maximum Gradient (Rolling Terrain)	5%	5%	4%	4%
Maximum Gradient (Mountainous Terrain)	7%	7%	7%	7%
Control of Access	None	None	Partial*	Partial*
Traffic Lane Width (Each Lane)	3.6 m (12')	3.6 m (12')	3.6 m (12)**	3.6 m (12)**
Inside Shoulder Width (Paved)	N/A	N/A	0.9 m (3')	0.9 m (3')
Inside Shoulder Width (Unpaved)	N/A	N/A	0.9 m (3')	1.5 m (5')
Outside Shoulder Width (Paved)	2.4 m (8')	2.4 m (8')	3 m (10')	2.4 m (8')
Outside Shoulder Width (Unpaved)	0.6 m (2')	0.6 m (2') <i>Cut</i> 1.5 m (5') <i>Fill</i>	0.6 m (2')	0.6 m (2') <i>Cut</i> 1.5 m (5') <i>Fill</i>
Median Width	N/A	N/A	13 m (42.65')	13 m (42.65')
Fill Slope Ratio	2:1	2:1	2:1	2:1
Cut Slope Ratio	1½:1	1½:1	1½:1	1½:1

* Access: Generally limited to two (2) at-grade intersections per 1.6 kilometers (per mile) per side.

** Traffic Lanes: Four-lane divided roadway with climbing lanes, as warranted by AASHTO.

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod, Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II:

TABLE II-2
SCENIC DESIGN FEATURES AND THEIR APPLICABILITY TO CORRIDOR H

SCENIC DESIGN FEATURE	DESCRIPTION OF DESIGN FEATURE	APPLICABLE
Bifurcation	A bifurcated roadway is one in which the opposing lanes of travel are split vertically and/or horizontally into two separate roadways. Typically, existing trees and vegetation are left between the roadways, outside of the established clear-zone. Traveling on a bifurcated roadway gives the user a greater sense of intimacy with his or her surroundings. The overall effect is more one of traveling on a two lane road, rather than the four-lane facility it really is.	Yes
Fit to Terrain	Fitting the roadway to the existing terrain involves more closely following existing topographic conditions.	No
Scenic Overlooks	Scenic overlooks are roadside areas provided for motorists to pull-off the highway in a protected parking area for safely viewing the scenery. Picnic areas are often provided. Overlooks can be provided to allow for leisurely viewing while maintaining the smooth flow of highway traffic.	Yes
Wood Guardrails	Guardrails are protective devices intended to make highways safer by reducing accident severity. Typically, guardrails are metal, purely functional in design, and not aesthetically pleasing. Where appropriate, the use of wooden guardrails can soften the overall effect of the roadway, helping it to blend in with its surroundings.	No
Grass Shoulders	Where appropriate, grass shoulders can be used instead of stabilized (paved or gravel) shoulders to provide a more natural appearance and to help the roadway blend in with the surrounding landscape. For safety and maintenance purposes, grass shoulders do not extend to the roadway edge of pavement.	Yes
Rounded Cut Slopes	Slope rounding is the shaping or contouring of roadside slopes to provide a curvilinear transition between several planes; e.g., cut slopes can be rounded at the top to present a softer transition between constructed and existing slopes, thereby providing a more natural effect.	Yes
Wildflower Plantings	Wildflower plantings are used adjacent to roadway shoulders as well as in the grassed medians. Such plantings contribute to the scenic beauty of the travel way.	Yes
Landscaping	Enhancing the natural features of the land through the design and use of vegetation and other materials.	Yes
Bikeways	Where appropriate, bikeways could be provided adjacent to the outside travel lanes.	Yes
Restricted Usage	Restricted usage refers to limiting the use of the facility to non-commercial vehicles.	No
Rock Cut Sculpturing	Rock cut sculpturing is similar to slope rounding but is used in areas of deeper cut rock. Typical rock cuts leave sheer faces of exposed rock. Rock cut sculpturing involves rounding the rock cuts to provide a more natural appearance.	Yes
Interpretive Facilities	Interpretive facilities can be provided adjacent to the roadway in areas of special interest. The facilities can range from a simple diorama or plaque at a scenic overlook to a visitor center with exhibits.	Yes
Architectural Bridge Treatments	Incorporating architectural bridge treatments provides bridge crossings that blend in rather than detract from the surrounding landscape. Treatments include attention to the overall aesthetic beauty of the bridge and the use of indigenous materials in its construction.	Yes

**TABLE II-3
POTENTIAL LOCATIONS FOR BIKEWAY FACILITIES**

WEST VIRGINIAN - PREFERRED ALTERNATIVE¹

LINE	POTENTIAL BIKEWAY FACILITY LOCATION	STATION*	LENGTH	OTHER FACTORS CONSIDERED
Line I ¹	From US 219 Interchange through CR 1 (Gilman Road) to US 219 at Kerens	Sta 490 to 660	5.1 km (3.2 miles)	CR 1 and US 219 at Kerens connect to the abandoned Western Maryland Railroad corridor rail trail connecting Kerens and Elkins.
Line A	From US 219 Interchange through CR 1 (Gilman Road) to CR 7	Sta 490 to 705	6.6 km (4.1 miles)	CR 1 connects to the abandoned Western Maryland Railroad corridor rail trail connecting Kerens and Elkins.
Line A	From CR 47 through CR 41 (Government Road), through US 219 connector at Porterwood to CR 219/7 connector (southeast of Parsons)	Sta 3300 to 3578	8.5 km (5.3 miles)	Would provide view of the Shavers Fork River Valley. Potential connection to the Allegheny and American Discovery Trails. Would provide view of the Black Fork River Valley.
Line A ¹	From US 219 connector (Backbone Mountain) through WV 32 Interchange at Davis through Brown Road (Grant CR/Tucker CR Line) to CR 42/1 near Bismarck	Sta 3904 to 5036	34.4 km (21.4 miles)	Would provide view of the North Fork of the Blackwater River. Potential connection to the Allegheny Trail. Additional access points. Access to Mount Storm Lake.
Line F ¹	From CR 3 (Knobly Road) to CR 5 near Forman	Sta 5603 to 5790	5.6 km (3.5 miles)	Potential connection to the American Discovery Trail. Access to Greenland Gap Preserve area. Additional access at CR 5/4 (Thorn Run Road).
Line A	From CR 3 (Knobly Road) to CR 5 near Forman	Sta 5603 to 5774	5.1 km (3.2 miles)	Potential connection to the American Discovery Trail. Access to Greenland Gap Preserve area.
Line A ¹	From CR 220/8 (Fish Pond Road) through US 220/WV 28 Interchange to CR 6 (Trough Road) connector	Sta 6158 to 6283	3.9 km (2.4 miles)	Would provide view of the South Branch of the Potomac River.
Line A ¹	From CR 1 (North River Road) to CR 23/3	Sta 6629 to 6694	1.9 km (1.2 miles)	
Line A ¹	From WV 55 through WV 259 to WV 55	Sta 6849 to 7340	15 km (9.3 miles)	Would provide view of the Lost River Valley and Appalachian Mountains, George Washington National Forest, and Hanging Rock. Additional at-grade connections within segment.
Line A ¹	From CR 23/10 (Trout Run Road) to CR 5/1 (Waites Run Road)	Sta 7509 to 7579	2.1 km (1.3 miles)	Possible connection to J. Allen Hawkins Community Park in Wardensville.

VIRGINIA²

LINE	POTENTIAL BIKEWAY FACILITY LOCATION	STATION*	LENGTH	OTHER FACTORS CONSIDERED
Line A ²	From VA 55 at Laurel Hill through VA 741 to I-81 Interchange	Sta 8220 to 8495	8.5 km (5.3 miles)	Additional at grade-connections within segment.

*Stationing is shown on the *Alignment and Resource Location Plans*.

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II

TABLE II-4
STEPS IN THE ALIGNMENT DEVELOPMENT PROCESS

STEP #	PROCESS DESCRIPTION
1	An initial resource inventory was established prior to alignment development. This inventory was based on: <ul style="list-style-type: none"> ◆ The previous resource inventory from the corridor selection process, and ◆ The wetland photo interpretation undertaken for the alignment selection process.
2	Under the Build Alternative, Scheme Option D5 was then divided into 16 sections for alignment development within each section. Initial alignments for the IRA and the Build Alternative were developed to avoid or minimize environmental impacts based on the data available from Step #1. (These sections were numbered from Strasburg to Elkins, with Strasburg being the Section 1 and Elkins being Section 16.)
3	Under the Build Alternative, the initial alignments were alpha-numerically labeled according to each section (e.g.: in Section 1, there was Line 1-A; in Section 2, there was Line 2-A; etc.). <ul style="list-style-type: none"> ◆ To specifically avoid a sensitive resource, often multiple lines were developed within each section for this reason. These options were also alpha-numerically designated by section (e.g.: options within Section 1 included Line 1-B, Line 1-C, Line 1-D, and Line 1-E).
4	Following the development of initial alignments and options in each section, site-specific field evaluations were undertaken. Initial field work investigations focused on the environmental, socio-economic, and cultural resource impacts associated with each initial alignment and option.
5	Based on the initial alignment field work investigation, alignments and options were either: <ul style="list-style-type: none"> ◆ Eliminated from further consideration on the basis of environmental impacts. ◆ Maintained for further consideration as viable alignments and options; or ◆ Re-routed to avoid or reduce impacts to sensitive resources. The revised alignments and options were then maintained for further consideration.
6	Under the Build Alternative, re-routed alignments and options were identified with a decimal prefix. For example, in Section 4, Line 4-A was re-routed, changing its designation to Line 4-A.1 to indicate it as such. Additional field work was conducted, where necessary.
7	Under the Build Alternative, Resource Agency Field Reviews were held in each section following the completion of alignment and option re-routes. Under the IRA in West Virginia, a single Resource Agency Field Review was held to review the alignment in its entirety.
8	In response to comments received through the Resource Agency Field Review process, alignments were further shifted or revised where possible.
9	All alignments were then presented to the public via a series of Public Involvement Workshops held in West Virginia and Virginia. The comments and data received during these meetings were added to the existing database and shared with the participating resource agencies.
10	As a result of public input, additional alignments were considered. The corresponding field work was completed for these alignments. Two of these alignments have been carried forward for further consideration in the alignment selection process.
11	Alignment concurrence meetings were held in West Virginia and Virginia for the purpose of obtaining participating resource agency concurrence on alignments and option areas to be either eliminated or retained for further consideration.

**TABLE II-5
LENGTH AND TYPE OF CONSTRUCTION ACTIVITIES
FOR THE ASDEIS IRA¹**

CONSTRUCTION ACTIVITY	LENGTH OF CONSTRUCTION ACTIVITY			
	West Virginia		Virginia	
	kilometers	miles	kilometers	miles
No Change	6.2	3.9	0	0
Widening	58.0	36.0	13.8	8.5
Minor Relocation	70.5	43.8	8.8	5.5
Relocation	49.0	30.5	0	0
Totals	183.7	114.2	22.6	14.0

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

**TABLE II-6
CENTERLINE ALIGNMENTS CONSIDERED BUT ELIMINATED**

SECTION	LINE	BASIS FOR ELIMINATION
Section 15	15-B	<ul style="list-style-type: none"> ◆ Requires additional bridge for crossing of Pleasant Run ◆ Requires skewed bridge crossing ◆ Excessive earthwork
Section 15	15-D	<ul style="list-style-type: none"> ◆ Impacts Kerens Historic District ◆ Residential Impacts ◆ Impacts farms in floodplains
Section 14	14-C (USGS quad sheet study)	<ul style="list-style-type: none"> ◆ Excessive earthwork ◆ Poor access to Parsons and Porterwood ◆ Numerous stream crossings ◆ Excessive length through Monongahela National Forest
Section 9	9-C	<ul style="list-style-type: none"> ◆ Impacts to cultural resources ◆ Numerous residential and commercial displacements ◆ Impacts to Elklick Run ◆ Requires additional stream crossings
Section 7	6-B*	<p>*This is a continuation of Section 6's Line 6-B which begins in Section 7</p> <ul style="list-style-type: none"> ◆ Excessive length in river floodplain ◆ Requires skewed river crossing
Section 6	6-B	<ul style="list-style-type: none"> ◆ Impacts archaeological sites and historic structures
Section 5	5-B	<ul style="list-style-type: none"> ◆ Poor access potential ◆ Excessive earthwork ◆ Numerous displacements ◆ Impacts three additional intermittent tributaries to Baker Run and an additional wetland
	5-C	<ul style="list-style-type: none"> ◆ Requires additional crossing of tributary to Long Lick Run ◆ Considerable parallel impact to Long Lick Run ◆ Large wetland impact ◆ Excessive earthwork
Section 4	4-B	<ul style="list-style-type: none"> ◆ Requires substantial roadway relocation of WV 55 ◆ Requires additional displacements ◆ Impacts Lost River ◆ Poor access potential
	4-C	<ul style="list-style-type: none"> ◆ Construction parallel to Lost River channel too great and overall length too great ◆ Numerous impacts to wetlands ◆ Numerous impacts to historic structures and prehistoric sites ◆ Numerous residential relocations ◆ Excessive cut through Hanging Rock Ridge

**TABLE II-6 (CONT.)
CENTERLINE ALIGNMENTS CONSIDERED BUT ELIMINATED**

SECTION	LINE	BASIS FOR ELIMINATION
Section 3	3-B	<ul style="list-style-type: none"> ◆ Numerous wetland impacts ◆ Proximity to cultural resources ◆ Proximity to Wardensville Spring ◆ Numerous roadway and residential relocations
Section 1	1-C	<ul style="list-style-type: none"> ◆ Impacts potential cultural resources ◆ Impacts a forested wetland. ◆ Requires substantial realignment of secondary roads ◆ Creates awkward intersections
	1-D	<ul style="list-style-type: none"> ◆ Crosses several additional drainage areas ◆ Poor access potential ◆ Numerous cultural resource sites prevent ability to continue west of Cedar Creek

**TABLE II-7
DEVELOPED ALIGNMENTS CONSIDERED BUT ELIMINATED**

SECTION	LINE	BASIS FOR ELIMINATION
Section 16	16-A	<ul style="list-style-type: none"> ◆ Wetland impact
	16-A.1 (sta. 500 to 619)	<ul style="list-style-type: none"> ◆ Excessive wetland impacts ◆ Requires additional displacement
	16-A.1 (sta. 620 to 735)	<ul style="list-style-type: none"> ◆ Impacts possible slave graves on Isner Farm ◆ Impacts farms in Leading Creek floodplain ◆ Substantially more displacements and/or residential impacts
	16-B (sta. 500 to 619)	<ul style="list-style-type: none"> ◆ Additional bridge cost ◆ Excessive floodplain impacts ◆ Closer proximity to residences, archaeological sites, and cemetery in Gilman
Section 15	15-A	<ul style="list-style-type: none"> ◆ Wetland impact
	15-A.1 (sta. 734 to 3260)	<ul style="list-style-type: none"> ◆ Excessive earthwork ◆ Impacts Wilmoth Run ◆ Requires relocation of CR 47 ◆ Alignment cuts off CR 47 access to 3 local roads to the south and 2 local roads to the north ◆ Impacts Leading Creek floodplain ◆ Wetland impacts ◆ Impacts Elkins Speedway
	15-C	<ul style="list-style-type: none"> ◆ Excessive earthwork
Section 14	14-B (sta. 3412 to 3500)	<ul style="list-style-type: none"> ◆ Requires channel relocation of Shavers Fork ◆ Within Shavers Fork floodplain ◆ Within Corrick's Ford Battlefield area
Section 13	13-A	<ul style="list-style-type: none"> ◆ Wetland impacts
	13-A.1 (sta. 3880 to 3970)	<ul style="list-style-type: none"> ◆ Excessive impacts to forested wetlands ◆ Impacts Tub Run
	13-B (sta. 3970 to 4123)	<ul style="list-style-type: none"> ◆ Impacts Douglas and Albert Highwall reclamation projects ◆ Longer, more costly bridge over the North Fork of the Blackwater River ◆ Crosses tributaries to Long Run
	13-C (sta. 3970 to 4123)	<ul style="list-style-type: none"> ◆ Impacts Douglas Historic District ◆ Impacts Long Run ◆ Impacts Albert and Douglas Highwall Reclamation projects
	13-E (sta. 3615 to 3700)	<ul style="list-style-type: none"> ◆ Unable to provide connection to US 219 ◆ Involves additional residential displacements
Section 12	12-A	<ul style="list-style-type: none"> ◆ Excessive wetland impacts ◆ Impacts potential historic structure
	12-A.1 (sta. 4170 to 4375 and sta. 4425 to 4515)	<ul style="list-style-type: none"> ◆ Excessive wetland impacts ◆ Impacts additional upland habitat
	12-B (sta. 4338 to 4445)	<ul style="list-style-type: none"> ◆ Excessive wetland impacts immediately adjacent to WV 93
	12-B (sta. 4186 to 4253)	<ul style="list-style-type: none"> ◆ Impacts forested wetlands

**TABLE II-7 (CONT.)
DEVELOPED ALIGNMENTS CONSIDERED BUT ELIMINATED**

SECTION	LINE	BASIS FOR ELIMINATION
Section 11	11-A	◆ Excessive wetland impacts
	11-A.1 (sta. 4775 to 4900)	◆ Excessive wetland impacts ◆ Area is undermined
	11-A.1 (sta. 4515 to 4785)	◆ Impacts additional upland habitat
	11-B	◆ Excessive wetland impacts
	11-C (sta. 4775 to 4900)	◆ Excessive wetland impacts ◆ Area is undermined
Section 10	10-A (sta. 4995 to 5110)	◆ Stream impacts ◆ Excessive wetland impacts
Section 9	9-A	◆ Excessive wetland impacts
	9-A.1 (sta. 5475 to 5580)	◆ Long culvert on Middle Fork of Patterson Creek
Section 8	8-A	◆ Excessive wetland impacts
	8-A.1 (sta. 5760 to 5910)	◆ Additional displacement
Section 7	7-A	◆ Excessive wetland impacts ◆ Requires realignment of Delta 4
	7-A.1 (sta. 5998 to 6188)	◆ Greater wetland impacts ◆ Requires relocation of Walnut Bottom Run
	7-B	◆ Excessive wetland impacts
Section 6	6-A	◆ Excessive earthwork ◆ Impacts perennial stream ◆ Displacements ◆ Impacts wetlands and structures
	6-C.1 (sta. 6307 to 6438)	◆ Requires additional earthwork and waste ◆ Requires additional bridge over CR 15
Section 5	5-A	◆ Requires displacements ◆ Requires realignment of CR 23/4
	5-D (sta. 6810 to 6940)	◆ Impacts wetlands ◆ Impacts perennial stream

TABLE II-7 (CONT.)
DEVELOPED ALIGNMENTS CONSIDERED BUT ELIMINATED

SECTION	LINE	BASIS FOR ELIMINATION
Section 4	4-A	<ul style="list-style-type: none"> ◆ Wetland impacts
	4-D (sta. 7090 to 7181)	<ul style="list-style-type: none"> ◆ Access to WV 55 not necessarily desirable at this location due to scenic nature of area. ◆ Parallels WV 55 through the water gap ◆ Excessive floodplain encroachments and wetlands impacts ◆ Cuts out top of gap ◆ Excessive earthwork
Section 3	3-A	<ul style="list-style-type: none"> ◆ Additional residential displacements ◆ Excessive earthwork
	3-C (sta. 7518 to 7674)	<ul style="list-style-type: none"> ◆ Numerous residential relocations ◆ Numerous wetland impacts ◆ Requires relocation of CR 5 ◆ Impacts J. Allen Hawkins Community Park ◆ Greater visual intrusion
Section 1	1-A (sta. 8143 to 8215)	<ul style="list-style-type: none"> ◆ Requires two additional residential displacements
	1-A (sta. 8340 to 8497)	<ul style="list-style-type: none"> ◆ Greater visual impact to VA 55 ◆ Requires additional displacements ◆ Longer bridge crossing of Mulberry Run

**TABLE II-8
AVERAGE DAILY TRAFFIC VOLUMES**

NETWORK LINK	1993 Existing	2013 No-Build	2013 IRA ¹	2013 PA in WV ² & Line A in VA ³
CORRIDOR H: DAVIS TO 9653B (SR 93)				11,000
CORRIDOR H: H455 TO H565				14,000
CORRIDOR H: H455 TO 9659B				23,000
CORRIDOR H: H565 TO H3055				15,000
CORRIDOR H: H565 TO 9662A				1,000
CORRIDOR H: H3055 TO H3470				12,000
CORRIDOR H: H3470 TO 9654B				1,000
CORRIDOR H: H3470 TO PARSONS B				11,000
CORRIDOR H: H3900 TO DAVIS				10,000
CORRIDOR H: H3900 TO PARSONS B				12,000
CORRIDOR H: H3900 TO H3900A				2,000
CORRIDOR H: H4790 TO H4970				10,000
CORRIDOR H: H4790 TO 9653B (SR 93)				10,000
CORRIDOR H: H4970 TO BISMARCK				10,000
CORRIDOR H: H4970 TO H4970A				1,000
CORRIDOR H: H5300 TO BISMARCK				9,000
CORRIDOR H: H5300 TO H5405				9,000
CORRIDOR H: H5405 TO H5600				8,000
CORRIDOR H: H5600 TO H5790				9,000
CORRIDOR H: H5790 TO H6225				10,000
CORRIDOR H: H6225 TO H6400				11,000
CORRIDOR H: H6400 TO H6630				12,000
CORRIDOR H: H6630 TO BEAN				1,000
CORRIDOR H: H6630 TO H7055				11,000
CORRIDOR H: H7055 TO H7515				10,000
CORRIDOR H: H7515 TO H7805				8,000
CORRIDOR H: H7805 TO H8090				8,000
CORRIDOR H: H8090 TO H8215				13,000
CORRIDOR H: H8090 TO STAR				1,000
CORRIDOR H: H8215 TO LEBANON CHURCH				13,000
CORRIDOR H: H8215 TO H8215A				1,000
CORRIDOR H: H8430 TO STRASBURG B				15,000
CORRIDOR H: H8430 TO LEBANON CHURCH				15,000
CORRIDOR H: H8430 TO H8430A				1,000
County 1: BEAN TO 9701B	1,000	1,000	1,000	1,000
County 1: ROCK OAK TO 9701B	1,000	1,000	1,000	1,000
County 2: OLD FIELDS TO WILLIAMSPORT	1,000	1,000		1,000
County 2: OLD FIELDS TO R6225			8,000	
County 2: WILLIAMSPORT TO R6225			1,000	
County 3: H5600 TO 9694C				1,000
County 3: H5600 TO 9695B				1,000
County 3/3: FORMAN TO 9694C	1,000	1,000	1,000	2,000
County 3/3: SCHERR TO H5405				1,000

**TABLE II-8
AVERAGE DAILY TRAFFIC VOLUMES**

NETWORK LINK	1993	2013	2013	2013
	Existing	No-Build	IRA ¹	PA in WV ² & Line A in VA ³
County 3/3: SCHERR TO 9694C	1,000	2,000	9,000	
County 3/3: H5405 TO 9694C				2,000
County 5: ARTHUR TO FORMAN	1,000	3,000	3,000	
County 5: ARTHUR TO H5790				3,000
County 5: BURLINGTON TO WILLIAMSPORT	1,000	3,000	3,000	3,000
County 5: FORMAN TO H5790				3,000
County 5: FORMAN TO 9694B	1,000	3,000	2,000	3,000
County 5: WILLIAMSPORT TO 9694B	2,000	4,000	3,000	4,000
County 7: AUGUSTA TO 9685A	1,000	3,000	3,000	3,000
County 7: BASS TO MOOREFIELD	1,000	1,000	1,000	1,000
County 7: BASS TO 9703B	1,000	1,000	1,000	1,000
County 7: ROCK OAK TO 9685A	1,000	1,000	1,000	2,000
County 12: BASS TO MATHIAS	1,000	1,000	1,000	1,000
County 14: CAPON BRIDGE TO 9686C	1,000	2,000	2,000	2,000
CR 14: YELLOW SPRING TO 9686C	1,000	1,000	1,000	1,000
County 16 & 23/10: LOST RIVER TO WARDENSVILLE	1,000	1,000	1,000	
County 16 & 23/10: LOST RIVER TO H7515				1,000
County 16 & 23/10: WARDENSVILLE TO H7515				3,000
County 28/7: COSNER GAP TO HOPEVILLE	1,000	1,000	1,000	1,000
County 45/4: CANAAN VALLEY TO DOLLY SODS	1,000	1,000	1,000	1,000
County 53: RIO TO ROCK OAK	1,000	1,000	1,000	1,000
I-81: GREENWOOD A TO 502C/511.98	32,000	51,000	52,000	55,000
I-81: GREENWOOD A TO GREENWOOD B	31,000	50,000	51,000	53,000
I-81: GREENWOOD B TO 509A	24,000	38,000	39,000	41,000
I-81: INWOOD TO 501/502B	28,000	47,000	47,000	47,000
I-81: STRASBURG A TO STRASBURG B	23,000	36,000	37,000	39,000
I-81: STRASBURG A TO 507	22,000	39,000	40,000	42,000
I-81: STRASBURG B TO 403	22,000	33,000	33,000	34,000
I-81: WOODSTOCK TO 403	23,000	35,000	35,000	35,000
I-81: WOODSTOCK TO 406A	23,000	36,000	36,000	36,000
I-81: 501/502B TO 502C/511.98	28,000	46,000	46,000	49,000
I-81: 506/508 TO 507	23,000	40,000	41,000	43,000
I-81: 506/508 TO 509A	26,000	42,000	43,000	45,000
IRA: SCHERR TO R5155			7,000	
IRA: R5255 TO 9702B			9,000	
IRA: R6225 TO 9694B			8,000	
IRA: 9659B TO 9662A			12,000	
IRA: 9694B TO 9694C			8,000	
LINK: A TO 9659B	11,000	23,000	28,000	28,000
LINK: B TO 9652D	1,000	2,000	2,000	2,000
LINK: C TO 9645	1,000	2,000	2,000	2,000
LINK: D TO 9642B	1,000	2,000	2,000	2,000
LINK: E TO OAKLAND	6,000	10,000	10,000	10,000

**TABLE II-8
AVERAGE DAILY TRAFFIC VOLUMES**

NETWORK LINK	1993 Existing	2013 No-Build	2013 IRA ¹	2013 PA in WV ² & Line A in VA ³
LINK: F TO 106	12,000	29,000	29,000	29,000
LINK: G TO 9684A	3,000	4,000	4,000	4,000
LINK: H TO PLEASANT DALE	2,000	3,000	3,000	3,000
LINK: I TO 503	5,000	8,000	8,000	8,000
LINK: J TO INWOOD	24,000	41,000	41,000	41,000
LINK: K TO STRASBURG A	14,000	32,000	32,000	33,000
LINK: L TO 406A	23,000	37,000	37,000	37,000
LINK: M TO 406B	1,000	1,000	1,000	1,000
LINK: N TO 9703C	2,000	3,000	3,000	3,000
LINK: O TO 9703B	1,000	1,000	1,000	1,000
LINK: P TO 9696A	3,000	4,000	4,000	4,000
LINK: Q TO 9704	2,000	3,000	3,000	3,000
LINK: R TO ALPENA	1,000	1,000	1,000	1,000
LINK: S TO MILL CREEK	3,000	6,000	6,000	6,000
LINK: T TO MILL CREEK	2,000	5,000	5,000	5,000
LINK: U TO 510.98	14,000	19,000	19,000	20,000
LINK: V TO 509B	9,000	15,000	15,000	15,000
LINK: W TO LOCK LYNN	5,000	8,000	8,000	7,000
LINK: X TO 509B	6,000	10,000	10,000	10,000
PR 19: DOLLY SODS TO HOPEVILLE	1,000	1,000	1,000	1,000
VA 7: GREENWOOD A TO 510.98	16,000	21,000	21,000	23,000
WV 28: HOPEVILLE TO SENECA ROCKS	2,000	4,000	3,000	3,000
WV 28: HOPEVILLE TO 9695A	2,000	4,000	3,000	3,000
WV 28: PETERSBURG A TO 9696B	8,000	12,000	11,000	13,000
WV 28: PETERSBURG A TO 9696C	15,000	25,000	24,000	26,000
WV 28: PETERSBURG B TO 9696C	14,000	23,000	22,000	23,000
WV 28: ROMNEY TO 9684A	5,000	8,000	8,000	8,000
WV 28: SENECA ROCKS TO 9704	2,000	3,000	3,000	3,000
WV 28: 9695A TO 9696B	3,000	6,000	5,000	5,000
WV 29: BAKER A TO RIO	1,000	1,000	1,000	1,000
WV 29: HANGING ROCK TO 9686B	3,000	5,000	5,000	5,000
WV 29: RIO TO 9686B	1,000	1,000	1,000	1,000
WV 32: CANAAN HEIGHTS TO CANAAN VALLEY	1,000	1,000	1,000	1,000
WV 32: CANAAN HEIGHTS TO DAVIS	2,000	3,000	3,000	4,000
WV 32: CANAAN VALLEY TO RED CREEK	1,000	1,000	1,000	1,000
WV 32: DAVIS TO THOMAS	5,000	7,000	13,000	5,000
WV 32: HARMON TO RED CREEK	1,000	1,000	1,000	1,000
VA 37: WINCHESTER A TO WINCHESTER B	12,000	21,000	20,000	25,000
VA 37: WINCHESTER A TO 502C/511.9	14,000	22,000	21,000	25,000
VA 37: WINCHESTER B TO 505D	8,000	13,000	12,000	16,000
VA 37: 505D TO 509A	12,000	19,000	19,000	23,000
WV 38: SAINT GEORGE TO 9652D	1,000	2,000	2,000	2,000
WV 42: ARTHUR TO 9695B	2,000	4,000	4,000	4,000

**TABLE II-8
AVERAGE DAILY TRAFFIC VOLUMES**

NETWORK LINK	1993	2013	2013	2013
	Existing	No-Build	IRA ¹	PA in WV ² & Line A in VA ³
WV 42: ARTHUR TO 9695C	3,000	6,000	6,000	7,000
WV 42: BISMARCK TO SCHERR	2,000	4,000	3,000	2,000
WV 42: BISMARCK TO 9694A	1,000	2,000	2,000	3,000
VA 42: COLUMBIA FURNANCE TO WOODSTOCK	6,000	9,000	9,000	9,000
VA 42: COLUMBIA FURNANCE TO 406B	1,000	1,000	1,000	1,000
WV 42: COSNER GAP TO SCHERR	1,000	3,000	3,000	3,000
WV 42: COSNER GAP TO 9695B	1,000	3,000	3,000	3,000
WV 42: MOUNT STORM TO 9694A	2,000	4,000	4,000	4,000
WV 42: PETERSBURG A TO 9695C	4,000	7,000	7,000	8,000
WV 55: BAKER A TO BAKER B	2,000	3,000	9,000	1,000
WV 55: BAKER A TO WARDENSVILLE	2,000	2,000	9,000	1,000
WV 55: BAKER B TO BEAN	1,000	2,000	8,000	1,000
WV 55: BEAN TO H6400				1,000
WV 55: BEAN TO 9702B	2,000	3,000	9,000	
VA 55: LEBANON CHURCH TO STAR	2,000	3,000	10,000	
VA 55: LEBANON CHURCH TO STRASBURG B	3,000	4,000	11,000	
VA 55: LEBANON CHURCH TO H8215A				1,000
VA 55: LEBANON CHURCH TO H8430A				1,000
WV 55: MOOREFIELD TO 9702B	4,000	6,000	4,000	5,000
WV 55: STAR TO WARDENSVILLE	2,000	3,000	10,000	1,000
VA 55: STAR TO H8215A				1,000
VA 55: STRASBURG B TO H8430A				1,000
WV 55: H6400 TO 9702B				6,000
WV 59: LOST CITY TO 402B	2,000	2,000	2,000	2,000
WV 72: MACOMBER TO 9642B	1,000	2,000	2,000	2,000
WV 72: MACOMBER TO 9652E	1,000	1,000	1,000	1,000
WV 72: PARSONS A TO 9654C	4,000	6,000	6,000	5,000
WV 72: PARSONS B TO 9653C	1,000	1,000	1,000	1,000
WV 72: RED CREEK TO 9653C	1,000	1,000	1,000	1,000
WV 72: SAINT GEORGE TO 9652C	1,000	1,000	1,000	1,000
WV 72: SAINT GEORGE TO 9652E	1,000	1,000	1,000	1,000
WV 72: 9652C TO 9654C	1,000	1,000	1,000	1,000
WV 90: GORMANIA TO PIERCE	1,000	1,000	1,000	1,000
WV 93: BISMARCK TO H4970A				1,000
WV 93: BISMARCK TO R5155			2,000	
WV 93: BISMARCK TO 9653B	1,000	2,000		
WV 93: CLAYSVILLE TO 9694D	2,000	5,000	4,000	4,000
WV 93: DAVIS TO 9653B	2,000	3,000	9,000	
WV 93: SCHERR TO 9694D	2,000	4,000	3,000	4,000
WV 93: H4790 TO H4970A				1,000
WV 93: R5155 TO 9653B			9,000	
WV 259: BAKER B TO LOST RIVER	1,000	2,000	2,000	
WV 259: BAKER B TO H7055				1,000

**TABLE II-8
AVERAGE DAILY TRAFFIC VOLUMES**

NETWORK LINK	1993 Existing	2013 No-Build	2013 IRA ¹	2013 PA in WV ² & Line A in VA ³
WV 259: GORE TO YELLOW SPRING	1,000	1,000	1,000	1,000
WV 259: LOST CITY TO LOST RIVER	2,000	3,000	3,000	3,000
WV 259: LOST CITY TO MATHIAS	2,000	2,000	2,000	2,000
WV 259: LOST RIVER TO H7055				4,000
WV 259: MATHIAS TO 9703C	2,000	3,000	3,000	3,000
WV 259: WARDENSVILLE TO YELLOW SPRINGS	1,000	1,000	1,000	2,000
MD 560: GORMANIA TO 7B/4A	4,000	5,000	5,000	6,000
MD 560: LOCH LYNN TO 7B/4A	5,000	8,000	8,000	7,000
VA 600: STAR TO 504B	1,000	1,000	1,000	1,000
VA 623: LEBANON CHURCH TO 402A	1,000	1,000	1,000	3,000
VA 628: LEBANON CHURCH TO 504C	1,000	1,000	1,000	3,000
VA 691: COLUMBIA FURNANCE TO 402B	2,000	2,000	2,000	2,000
US 17: GREENWOOD B TO 509 B	29,000	47,000	47,000	52,000
US 33: ALPENA TO BOWDEN	2,000	3,000	2,000	2,000
US 33: ALPENA TO 9663A	2,000	3,000	2,000	2,000
US 33: BOWDEN TO ELKINS B	6,000	11,000	10,000	10,000
US 33: ELKINS A TO 9660A	10,000	19,000	13,000	3,000
US 33: ELKINS A TO 9662B/9661	19,000	34,000	32,000	34,000
US 33: ELKINS B TO 9662B/9661	19,000	34,000	32,000	34,000
US 33: HARMAN TO SENECA ROCKS	2,000	3,000	2,000	2,000
US 33: HARMAN TO 9663A	2,000	4,000	3,000	2,000
US 33: 9659B TO 9660A	11,000	23,000	16,000	5,000
US 50: AUGUSTA TO PLEASANT DALE	7,000	12,000	11,000	12,000
US 50: AUGUSTA TO 9683B	7,000	11,000	10,000	11,000
US 50: BURLINGTON TO JUNCTION	3,000	9,000	8,000	7,000
US 50: BURLINGTON TO NEW CREEK	5,000	12,000	11,000	11,000
US 50: CAPON BRIDGE TO GORE	5,000	6,000	5,000	6,000
US 50: CAPON BRIDGE TO HANGING ROCK	5,000	7,000	6,000	7,000
US 50: CLAYSVILLE TO 105	5,000	9,000	7,000	8,000
US 50: CLAYSVILLE TO 107	3,000	4,000	4,000	4,000
US 50: GORE TO 504A	5,000	7,000	6,000	7,000
US 50: GORMANIA TO 7A	3,000	4,000	4,000	4,000
US 50: GORMANIA TO MOUNT STORM	2,000	4,000	4,000	4,000
US 50: HANGING ROCK TO 9686A	6,000	10,000	9,000	10,000
US 50: JUNCTION TO 9684B	6,000	10,000	9,000	8,000
US 50: MACOMBER TO 9642A	1,000	2,000	1,000	1,000
US 50: MACOMBER TO 9645	2,000	2,000	2,000	2,000
US 50: MOUNT STORM TO 107	2,000	3,000	3,000	3,000
US 50: NEW CREEK TO 105	5,000	12,000	11,000	12,000
US 50: PLEASANT DALE TO 9686A	7,000	10,000	9,000	10,000
US 50: RED HOUSE TO 7A	3,000	4,000	4,000	4,000
US 50: RED HOUSE TO 9642A	1,000	2,000	2,000	2,000
US 50: ROMNEY TO 9683A/9685B	12,000	22,000	21,000	21,000

**TABLE II-8
AVERAGE DAILY TRAFFIC VOLUMES**

NETWORK LINK	1993	2013	2013	2013
	Existing	No-Build	IRA ¹	PA in WV ² & Line A in VA ³
US 50: ROMNEY TO 9684B	12,000	19,000	18,000	18,000
US 50: WINCHESTER B TO 504A	11,000	17,000	15,000	24,000
US 50: 9683B TO 9685B/9683A	8,000	15,000	14,000	14,000
US 219: BACKBONE MOUNTAIN TO PARSONS B	2,000	3,000	10,000	
US 219: BACKBONE MOUNTAIN TO THOMAS	3,000	4,000	10,000	2,000
US 219: BACKBONE MOUNTAIN TO H3900A				2,000
US 219: ELKINS A TO H455				24,000
US 219: ELKINS A TO 9662A	10,000	17,000	12,000	
US 219: ELKINS B TO 9659A	18,000	31,000	31,000	33,000
US 219: MILLCREEK TO 9659A	7,000	10,000	10,000	11,000
US 219: MONTROSE TO H3055				2,000
US 219: MONTROSE TO 9654B	3,000	4,000	11,000	1,000
US 219: MONTROSE TO 9662A	3,000	6,000	13,000	
US 219: OAKLAND TO 7C	6,000	10,000	10,000	10,000
US 219: PARSONS A TO 9654A	4,000	6,000	13,000	3,000
US 219: PARSONS A TO 9654B	3,000	4,000	11,000	1,000
US 219: PARSONS B TO H3900A				1,000
US 219: PARSONS B TO 9654A	5,000	7,000	13,000	8,000
US 219: PIERCE TO THOMAS	4,000	5,000	5,000	6,000
US 219: PIERCE TO 9652A	2,000	2,000	2,000	3,000
US 219: RED HOUSE TO 6A	2,000	5,000	5,000	5,000
US 219: RED HOUSE TO 9652A	1,000	1,000	1,000	1,000
US 219: H455 TO 9662A				11,000
US 219: H3055 TO 9662A				1,000
US 219: 6A TO 7C	4,000	7,000	7,000	7,000
US 220: DURGAN TO PETERSBURG B	6,000	9,000	8,000	8,000
US 220: DURGAN TO 9703A	4,000	8,000	6,000	6,000
US 220: JUNCTION TO 9684C	2,000	3,000	3,000	4,000
US 220: MOOREFIELD TO OLD FIELDS	3,000	4,000		
US 220: MOOREFIELD TO H6225				3,000
US 220: MOOREFIELD TO R5255			3,000	
US 220: MOOREFIELD TO 9703A	8,000	11,000	11,000	11,000
US 220: NEW CREEK TO 106	10,000	24,000	24,000	24,000
US 220: OLD FIELDS TO H6225				5,000
US 220: OLD FIELDS TO R5255			12,000	
US 220: OLD FIELDS TO 9684C	2,000	3,000	3,000	4,000
US 220: PETERSBURG B TO 9696A	5,000	8,000	8,000	9,000
US 522: CROSS JUNCTION TO 502A/505A	8,000	12,000	12,000	13,000
US 522: WINCHESTER A TO 502A/505A	11,000	18,000	18,000	20,000

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE II-9
DAILY TRAVEL TIME AND DISTANCES**

SCENARIO	TRAVEL TIME		TRAVEL DISTANCES			
	WV	VA	WV		VA	
	Hours	Hours	Kilometers	Miles	Kilometers	Miles
1993 Existing	37,000	29,863	2,916,500	1,813,800	2,579,500	1,603,200
2013 No-Build	60,290	47,423	4,765,600	2,961,800	4,101,300	2,549,000
2013 IRA	71,393	46,968	5,886,700	3,534,300	4,232,800	2,630,700
2013 PA in WVA ²	47,422		6,054,100	3,752,650		
Line A in VA ³		53,293			4,625,300	2,874,650

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

²Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE II-10
PRELIMINARY CONSTRUCTION COST ESTIMATES**

ALTERNATIVES COMPARISON

ALTERNATIVES COMPARISON		TOTAL LENGTH		AVERAGE COST PER:		TOTAL COST*
		kilometers	miles	kilometer	mile	
No-Build Alternative		n/a	n/a	n/a	n/a	\$137,000,000**
Improved Roadway Alternative (IRA) ¹	West Virginia	184	114	\$2,110,931	\$3,395,604	\$387,778,000
	Virginia	23	14	\$1,239,779	\$2,001,357	\$28,019,000
Preferred Alternative ²		161	100	\$6,155,137	\$9,897,460	\$989,746,000
Line A ³	Virginia	22	14	\$5,571,955	\$8,947,664	\$122,583,000

OPTION AREA COMPARISON

WEST VIRGINIA ²		TOTAL LENGTH		AVERAGE COST PER:		TOTAL COST*
		kilometers	miles	kilometer	mile	
Interchange	Line I	2.4	1.5	\$6,579,167	\$10,526,667	\$15,790,000
	Line A	2.4	1.5	\$7,310,417	\$11,696,667	\$17,545,000
Shavers Fork	mod. Line S	9.5	5.9	\$5,473,684	\$8,813,559	\$52,000,000
	Line A	4.2	2.6	\$7,885,476	\$12,738,077	\$33,119,000
Patterson Creek	Line P	6.8	4.2	\$6,443,088	\$10,431,667	\$43,813,000
	Line A	6.5	4.0	\$6,847,692	\$11,127,500	\$44,510,000
Forman	Line F	5.1	3.2	\$5,471,765	\$8,720,625	\$27,906,000
	Line A	5.0	3.1	\$8,083,400	\$13,037,742	\$40,417,000
Line 5-D	Line 5-D	3.2	2.0	\$4,292,500	\$6,868,000	\$13,736,000
	Line A	3.5	2.2	\$6,696,571	\$10,653,636	\$23,438,000
Baker	Line B	5.3	3.3	\$6,679,623	\$10,727,879	\$35,402,000
	Line A	5.5	3.4	\$6,460,364	\$10,450,588	\$35,532,000
Hanging Rock	Line R	3.4	2.1	\$7,900,882	\$12,791,905	\$26,863,000
	Line A	3.7	2.3	\$9,012,973	\$14,499,130	\$33,348,000

VIRGINIA ³		TOTAL LENGTH		AVERAGE COST PER:		TOTAL COST*
		kilometers	miles	kilometer	mile	
Duck Run	Line D1	9.0	5.6	\$6,925,444	\$11,130,179	\$62,329,000
	Line D2	8.4	5.2	\$8,154,405	\$13,172,500	\$68,497,000
	Line A	8.7	5.4	\$8,135,057	\$13,106,481	\$70,775,000
Lebanon Church	Line L	7.3	4.5	\$4,611,370	\$7,480,667	\$33,663,000
	Line A	8.5	5.3	\$3,793,765	\$6,084,340	\$32,247,000

*Total Costs rounded to the nearest \$1000.

**Cost of No-Build includes planned improvements to existing roadways

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE II-11
RIGHT-OF-WAY ACQUISITION AND MITIGATION COST ESTIMATES**

CATEGORY	LINE ITEM	ALTERNATIVES				
		NO-BUILD	PREF. ALT. ²	LINE A ³	IRA ¹	
			WV		VA	WV
ROW ACQUISITION	Land	\$0	\$12,798,000	\$1,404,000	\$2,896,000	\$1,044,000
	Residences	\$0	\$5,200,000	\$1,045,500	\$6,000,000	\$1,846,500
	Businesses & Poultry Houses	\$0	\$1,100,000	\$0	\$1,175,000	\$30,000
	Utilities and Other Relocations	\$0	\$3,500,000	\$475,500	\$8,550,000	\$1,830,800
	Administrative and Indirect Costs	\$0	\$3,600,000	\$1,009,000	\$5,400,000	\$1,154,000
	TOTAL	\$0	\$26,198,000	\$3,934,000	\$24,021,000	\$5,905,300
MITIGATION	Wetland Replacement	\$0	\$1,800,000	\$160,000	\$1,200,000	\$160,000
	Wildlife Refuge Property Acquisition	\$0	\$1,800,000	\$0	\$0	\$0
	Habitat Restoration in Stripped ROW Areas	\$0	\$500,000	\$0	\$0	\$0
	Wardensville Wellhead Protection	\$0	\$1,675,000	\$0	\$0	\$0
	Groundwater Protection Systems	\$0	\$150,000	\$0	\$150,000	\$0
	Bicycle Paths	\$0	\$2,550,000	\$450,500	\$500,000	\$0
	Scenic Overlooks	\$0	\$2,500,000	\$1,500,000	\$0	\$0
	Welcome Centers	\$0	\$2,000,000	\$2,000,000	\$0	\$0
	Other Scenic Design Features	\$0	\$5,000,000	\$700,000	\$2,000,000	\$280,000
	Noise Walls	\$0	\$19,392,000	\$7,328,000	\$1,760,000	\$0
	Environmental Monitor @ Construction	\$0	\$525,000	\$75,000	\$0	\$0
	Open Bottom Box Culverts	\$0	\$440,000	\$0	\$30,000	\$0
	Stream Channel Enhancement	\$0	\$1,022,000	\$10,000	\$0	\$0
	Fisherman's Access	\$0	\$75,000	\$0	\$0	\$0
	Fencing Streams	\$0	\$300,000	\$0	\$0	\$0
TOTAL	\$0	\$39,729,000	\$12,223,500	\$5,640,000	\$440,000	

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

TABLE III-1
POPULATION STATISTICS FOR COUNTIES

COUNTY	1980 POPULATION	1990 POPULATION	PERCENT CHANGE
Barbour, WV	16,700	15,699	-6%
Hardy, WV	10,030	10,977	9%
Hampshire, WV	14,867	16,498	11%
Grant, WV	10,210	10,428	2%
Tucker, WV	8,675	7,728	-11%
Randolph, WV	28,300	27,803	-2%
Mineral, WV	27,234	26,697	-2%
Preston, WV	30,460	29,037	-5%
WV Study Area Total	146,476	144,867	-1%
State of West Virginia	1,949,644	1,793,477	-8%
Shenandoah, VA	27,559	31,636	15%
Frederick, VA	34,150	45,723	34%
VA Study Area Total	61,709	77,359	25%
Virginia	5,346,818	6,187,358	16%
Garrett, MD	26,490	28,138	6%

Sources: Center For Economic Research, WVU (1993), and US. Census Bureau 1990 Census

**TABLE III-2
EMPLOYMENT STATISTICS FOR COUNTIES**

COUNTY	1980 EMPLOYMENT	1990 EMPLOYMENT	PERCENT CHANGE
Barbour, WV	5,939	5,170	-13%
Hardy, WV	4,526	4,861	7%
Hampshire, WV	4,937	6,536	32%
Grant, WV	5,594	4,486	-20%
Tucker, WV	3,003	2,927	-3%
Randolph, WV	11,861	9,861	-17%
Mineral, WV	7,732	10,987	42%
Preston, WV	8,813	10,525	19%
WV Study Area Total	52,405	55,353	6%
West Virginia	716,000	671,085	-6%
Shenandoah, VA	12,575	15,622	24%
Frederick, VA	29,950	43,056	44%
VA Study Area Total	42,525	58,678	38%
Virginia	2,788,796	3,727,549	34%
Garrett, MD	10,104	11,748	16%

Sources: Center For Economic Research, WVU (1993), US. County Business Patterns, and Virginia Employment Commission

**TABLE III-3
EMPLOYMENT SECTOR TRENDS**

COUNTY	YEAR	EMPLOYMENT BY SECTOR (FULL AND PART TIME)									
		Agriculture	Mining	Construction	Manufacturing	Transportation	Wholesale	Retail	FIRE	Services	Public Admin.
Barbour, WV	1980	640	1732	242	251	133	112	604	169	1158	894
	1990	569	385	143	206	187	90	744	206	1807	774
		-11%	-78%	-41%	-18%	41%	-20%	23%	22%	56%	-13%
Hardy, WV	1980	846	29	229	1496	135	103	465	117	465	641
	1990	710	9	242	2165	164	113	566	189	652	579
		-16%	-69%	6%	45%	21%	10%	22%	62%	40%	-10%
Hampshire, WV	1980	1112	16	239	745	267	163	485	167	702	1041
	1990	907	26	360	523	294	132	704	225	1003	1456
		-18%	63%	51%	-30%	10%	-19%	45%	35%	43%	40%
Grant, WV	1980	573	1419	282	500	592	131	492	125	518	959
	1990	490	1039	998	728	423	151	655	208	855	969
		-14%	-27%	254%	46%	-29%	15%	33%	66%	65%	1%
Tucker, WV	1980	226	88	119	673	118	31	470	106	515	657
	1990	203	73	249	585	195	43	438	146	926	579
		-10%	-17%	109%	-13%	65%	39%	-7%	38%	80%	-12%
Randolph, WV	1980	581	765	646	1577	618	419	1829	476	2976	1974
	1990	580	384	794	1257	626	479	2143	577	3337	1982
		-0%	-50%	23%	-20%	1%	14%	17%	21%	12%	0%
Mineral, WV	1980	408	96	763	1945	411	186	1139	242	1173	1365
	1990	361	154	651	1801	615	261	1430	332	1610	1592
		-12%	60%	-15%	-7%	50%	40%	26%	37%	37%	17%
Preston, WV	1980	1066	1037	357	1140	721	233	1106	345	925	1883
	1990	849	848	462	818	916	256	1344	423	1659	1745
		-20%	-18%	29%	-28%	27%	10%	22%	23%	79%	-7%
West Virginia	1980	28,177	67,602	46,117	122,006	46,992	33,728	120,129	37,195	140,162	136,033
	1990	27,396	37,152	39,644	90,825	42,670	31,984	140,578	38,780	184,371	136,782
		-3%	-45%	-14%	-26%	-9%	-5%	17%	4%	32%	1%
Shenandoah, VA	1980	1571	0	703	4053	416	404	1805	565	1957	1367
	1990	1272	14	1188	5457	644	474	2335	859	3278	1564
		-19%	n/a	69%	35%	55%	17%	29%	52%	68%	14%
Frederick, VA & Winchester	1980	1648	164	1980	8156	1386	1522	4773	1560	5965	2796
	1990	1295	180	3512	9186	1620	2553	8786	2227	9699	3998
		-21%	10%	77%	13%	17%	68%	84%	43%	63%	43%
Virginia	1980	101,692	24,730	161,049	421,733	127,377	110,471	400,588	202,890	563,480	674,786
	1990	92,009	17,327	246,275	436,831	168,487	139,728	597,755	280,745	968,178	780,214
		-10%	-30%	53%	4%	32%	26%	49%	38%	72%	16%

Source: West Virginia University, Bureau of Economic Analysis, Virginia Employment Commission

**TABLE III-4
UNEMPLOYMENT AND INCOME STATISTICS FOR COUNTIES**

COUNTY	1990 UNEMPLOYMENT	1990 % BELOW POVERTY	1990 PER CAPITA INCOME
Barbour, WV	13%	29%	8,036
Hardy, WV	5%	15%	10,696
Hampshire, WV	8%	18%	9,996
Grant, WV	6%	15%	10,394
Tucker, WV	9%	17%	8,974
Randolph, WV	13%	22%	9,009
Mineral, WV	7%	15%	10,398
Preston, WV	10%	19%	9,158
WV Study Area Average	8%	19%	9,583
West Virginia	10%	20%	10,520
Shenandoah, VA	4%	11%	12,686
Frederick, VA	4%	7%	13,671
VA Study Area Average	4%	9%	13,179
Virginia	4%	10%	15,713
Garrett, MD	7%	15%	10,124

Sources: US Census Bureau 1990 Census

**TABLE III-5
EMPLOYMENT BY INDUSTRIAL PARK WITH
FULL BUILD-OUT SCENARIO**

WEST VIRGINIA

NAME	EXISTING EMPLOYEES	ADDITIONAL EMPLOYEES
Grant County Industrial Park	275	675
Hampshire County Industrial Park	100	312
Hardy County Industrial Park	714	42
Wardensville Industrial Park	12	194
Mineral County Industrial Park	600	253
Elkins-Randolph County Parks	65	338
Robert C. Byrd Industrial Park	0	599
(New) Grant County Industrial Park	0	1,435
Southern Garrett Industrial Park*	1,022	422
TOTAL	2,788	4,270

* Garrett County has been included in the West Virginia totals.

VIRGINIA

NAME	EXISTING EMPLOYEES	ADDITIONAL EMPLOYEES
Mount Jackson Industrial Park	437	1,072
Stonewall Industrial Park	1,600	2,954
IDC Site	0	338
Fort Collier Industrial Park	1,390	1,435
TOTAL	3,427	5,799

**TABLE III-6
TOTAL PREDICTED JOB GROWTH**

WEST VIRGINIA - PREFERRED ALTERNATIVE¹

County	Industrial	Commercial	Service-Oriented	County/State Totals
Garrett, MD*	422	0	297	719
Hardy	835	116	247	1,198
Hampshire	312	0	69	381
Grant	2,110	0	1,369	3,479
Tucker	0	301	158	459
Randolph	338	567	541	1,446
Mineral	253	0	165	418
WV Total	4,270	984	2,846	8,100

VIRGINIA - LINE A²

County	Industrial	Commercial	Service-Oriented	County/State Totals
Frederick	4,727	0	3,080	7,807
Shenandoah	1,072	273	571	1,916
VA Total	10,069	1,257	6,497	9,723

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

TABLE III-7
TOTAL PREDICTED JOB GROWTH: IRA¹

County	Commercial
Randolph	567
Tucker	301
Hardy	116
WV Total	984

County	Commercial
Shenandoah	273
VA Total	273

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

**TABLE III-8
TOTAL PREDICTED (2013) ANNUAL WAGE EARNINGS
DUE TO INDUCED DEVELOPMENT**

County	IRA ¹	Preferred Alternative ²
Randolph	\$10,363,626	\$23,194,782
Tucker	5,402,649	7,233,447
Grant	0	63,856,996
Hardy	2,406,420	21,802,995
Hampshire	0	6,952,255
Mineral	0	8,087,212
Garrett, MD*	0	14,344,523
WV Total	\$18,172,695	\$145,472,210

County	IRA ¹	Line A ³
Frederick	0	\$224,655,488
Shenandoah	7,241,871	44,591,887
VA Total	\$7,241,871	\$269,247,375

* Garrett County has been included in the West Virginia totals.

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-9
PREDICTED TAX BENEFITS**

IMPROVED ROADWAY ALTERNATIVE¹

County	Annual Land Tax Loss 1996-2013	Real Estate Tax Gain Residential 2001-2013	Real Estate Tax Gain Service/Retail 2001-2013	Net Annual Land Tax Gain/(Loss) 2001-2013	State Income Tax Gain 2001-2013	Total Tax Benefit 2001-2013
Randolph	\$500	N/A	\$800	\$300	\$357,900	\$358,200
Tucker	800	N/A	600	(200)	186,000	185,800
Grant	800	N/A	0	(800)	0	(800)
Hardy	1,400	N/A	200	(1,200)	84,700	83,500
Hampshire		N/A	0	0	0	0
Mineral		N/A	0	0	0	0
Garrett, MD*		N/A	0	0	0	0
WV Total	\$3,500		\$1,600	(\$1,900)	\$628,600	\$626,700
Frederick	4,000	N/A	0	(4,000)	0	(4,000)
Shenandoah	2,700	N/A	1,900	(800)	346,100	345,300
VA Total	\$6,700		\$1,900	(\$4,800)	\$346,100	\$341,300

WEST VIRGINIA - PREFERRED ALTERNATIVE²

County	Annual Land Tax Loss 1996-2013	Real Estate Tax Gain Residential 2001-2013	Real Estate Tax Gain Service/Retail 2001-2013	Net Annual Land Tax Gain/(Loss) 2001-2013	State Income Tax Gain 2001-2013	Total Tax Benefit 2001-2013
Randolph	\$1,000	\$10,000	\$1,200	\$10,200	\$801,000	\$811,200
Tucker	2,600	3,800	800	2,000	249,000	251,000
Grant	3,600	50,600	2,300	49,300	2,249,000	2,298,300
Hardy	3,700	10,200	500	7,000	767,000	774,000
Hampshire		2,900	100	3,000	244,500	247,500
Mineral		17,800	800	18,600	287,000	305,600
Garrett, MD*		30,000	700	30,700	717,500	748,200
WV Total	\$10,900	\$125,300	\$6,400	\$120,800	\$5,315,000	\$5,435,800

VIRGINIA - LINE A³

County	Annual Land Tax Loss 1996-2013	Real Estate Tax Gain Residential 2001-2013	Real Estate Tax Gain Service/Retail 2001-2013	Net Annual Land Tax Gain/(Loss) 2001-2013	State Income Tax Gain 2001-2013	Total Tax Benefit 2001-2013
Frederick	\$11,300	\$478,400	\$16,000	\$483,100	\$11,154,500	\$11,637,600
Shenandoah	6,300	102,700	3,600	100,000	2,131,000	2,231,000
VA Total	\$17,600	\$581,100	\$19,600	\$583,100	\$13,285,500	\$13,868,600

* Garrett County has been included in the West Virginia totals.

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-10A
DIRECT LANDUSE IMPACTS**

Land Use Type	West Virginia				Option Area Comparisons in WV												
	IRA ¹		PA ²		Interchange				Shavers Fork				Patterson Creek				
	Hectares	Acres	Hectares	Acres	Line F ²		Line A		Line S ²		Line A		Line P		Line A ²		
Urban / Built	22.0	54.3	6.3	15.6	0.1	0.3	0.8	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agriculture	56.2	139.0	215.2	531.7	3.8	9.4	8.4	20.7	0.0	0.1	0.0	0.1	16.4	40.4	14.7	36.4	
Rangeland	21.2	52.5	75.4	186.4	0.0	0.1	0.2	0.5	0.3	0.8	2.1	5.3	3.1	7.6	1.2	3.0	
Forest	360.9	891.8	1047.6	2588.7	16.1	39.8	11.4	28.1	50.1	123.9	39.6	97.9	49.0	121.0	42.5	104.9	
Water	0.2	0.6	1.4	3.4	0.1	0.3	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.0	
Wetlands	8.1	20.0	13.3	32.8	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.1	1.0	2.5	0.7	1.6	
Barren	4.7	11.7	24.3	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total	473.3	1169.9	1383.5	3418.6	20.1	50.0	21.0	51.8	50.4	124.8	41.8	103.5	69.5	171.6	59.1	145.9	

Land Use Type	Option Area Comparisons in WV															
	Forman				Line 5-D				Baker				Hanging Rock			
	Line F ²		Line A		Line 5-D ²		Line A		Line B ²		Line A		Line R		Line A ²	
Urban / Built	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.2	0.0	0.0	0.0	0.0
Agriculture	15.7	38.9	24.5	60.5	6.0	14.8	8.7	21.5	9.0	22.2	4.2	10.4	0.0	0.0	0.3	0.7
Rangeland	8.1	19.9	9.3	22.9	0.5	1.2	0.6	1.4	1.4	3.6	0.7	1.7	0.0	0.0	1.3	3.2
Forest	25.1	62.0	24.2	59.7	24.2	59.7	18.9	46.8	32.9	81.4	40.9	101.0	25.7	63.5	27.2	67.2
Water	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.0
Wetlands	1.5	3.6	1.3	3.2	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0
Barren	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	50.4	124.4	59.3	146.4	30.7	75.7	28.3	69.9	43.3	107.3	46.5	114.8	25.7	63.5	28.8	71.1

Land Use Type	Option Area Comparisons in VA ³													
	Virginia ³				Duck Run						Lebanon Church			
	IRA ¹		Line A		Line D1		Line D2		Line A		Line L		Line A	
Urban / Built	13.9	34.3	2.7	6.6	0.3	0.7	0.1	0.2	0.1	0.2	0.2	0.6	2.5	6.3
Agriculture	14.3	35.3	23.0	56.7	2.9	7.2	0.5	1.2	0.7	1.8	21.4	52.9	20.5	50.6
Rangeland	2.2	5.3	5.4	13.4	1.1	2.8	0.8	2.0	0.8	2.0	9.3	22.9	4.6	11.5
Forest	34.9	86.3	140.0	346.1	74.4	183.7	87.4	215.9	81.2	200.8	15.4	38.0	22.8	56.3
Water	0.0	0.0	0.1	0.2	0.1	0.2	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.0
Wetlands	0.5	1.2	0.2	0.6	0.1	0.1	0.1	0.3	0.1	0.3	0.3	0.8	0.1	0.3
Total	65.8	162.4	171.4	423.6	78.9	194.7	88.9	219.6	83.0	205.3	46.6	115.3	50.5	125.0

¹ The IRA was not selected as the Preferred Alternative as explained in text, Section II.
² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)
³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

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**TABLE III-10B
SUMMARY OF LAND COVER IMPACT**

WEST VIRGINIA - PREFERRED ALTERNATIVE ¹

Development Type	Land/Cover Type	Tygart Valley		Cheat		North Branch Potomac		South Branch Potomac		Cacapon	
		Hectares	Acres	Hectares	Acres	Hectares	Acres	Hectares	Acres	Hectares	Acres
Commercial	Forest	27	68	19	46	0	0	0	0	2	4
	Farmland	13	32	8	20	0	0	0	0	6	14
	Developed	0	0	0	0	0	0	0	0	0	0
Residential	Forest	750	1,853	477	1,179	211	521	1,674	4,137	713	1,761
	Farmland	277	685	360	889	86	213	942	2,327	263	651
Service	Forest	16	39	11	26	4	11	37	91	8	20
	Farmland	6	15	8	20	2	5	20	51	3	7
Total	Forest	793	1,960	506	1,251	215	533	1,711	4,228	722	1,784
	Farmland	296	732	376	929	88	218	962	2,378	272	673
	Developed	0	0	0	0	0	0	0	0	0	0

VIRGINIA - LINE A ²

Shenandoah		Back		Opequon	
Hectares	Acres	Hectares	Acres	Hectares	Acres
10	25	0	0	0	0
14	35	0	0	0	0
1	2	0	0	0	0
1,350	3,336	1,569	3,876	244	603
1,523	3,762	276	684	120	297
32	79	47	117	16	39
36	90	9	21	7	19
1,392	3,440	1,617	3,993	260	642
1,573	3,887	285	705	127	316
1	2	0	0	0	0

WEST VIRGINIA - IRA ³

Development Type	Land/Cover Type	Tygart Valley		Cheat		North Branch Potomac		South Branch Potomac		Cacapon	
		Hectares	Acres	Hectares	Acres	Hectares	Acres	Hectares	Acres	Hectares	Acres
Commercial	Forest	27	68	19	46	0	0	0	0	2	4
	Farmland	13	32	8	20	0	0	0	0	6	14
	Developed	0	0	0	0	0	0	0	0	0	0
Total	Forest	27	68	19	46	0	0	0	0	2	4
	Farmland	13	32	8	20	0	0	0	0	6	14
	Developed	0	0	0	0	0	0	0	0	0	0

VIRGINIA - IRA ²

Shenandoah		Back		Opequon	
Hectares	Acres	Hectares	Acres	Hectares	Acres
10	25	0	0	0	0
14	35	0	0	0	0
1	2	0	0	0	0
10	25	0	0	0	0
14	35	0	0	0	0
1	2	0	0	0	0

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

³ The IRA was not selected as the Preferred Alternative as explained in text, Section II.

**TABLE III-11
COMMUNITY COHESION IMPACT ASSESSMENT
FOR THE PREFERRED ALTERNATIVE IN WEST VIRGINIA
AND LINE A IN VIRGINIA**

RANDOLPH	IMPACTED
Crystal Springs	No
Coalton	No
Elkins	No
Gilman	No
Harding	No
Highland Park	No
Kerens	No
Leadsville	No
Montrose	No
Norton	No
Whyte	No
TUCKER	
Bretz	No
Benbush	No
Canaan Heights	No
Coketon	No
Davis	No
Douglas	No
Hambleton	No
Hendricks	No
Moore Station	No
Parsons	No
Pleasant Run	No
Porterwood	No
Thomas	No

GRANT	IMPACTED
Bismarck	No
Forman	Yes
Greenland	Yes
Lahmansville	No
Maysville	No
Mt. Storm	No
Oak Hill	No
Scherr	No
HARDY	
Arkansas	No
Baker	No
Bean Settlement	No
Cunningham	No
Fisher	No
Fort Run	No
Kessel	No
McCauley	No
Moorefield	No
Needmore	No
Old Fields	No
Wardensville	Yes
HAMPSHIRE	
Capon Springs	No
FREDERICK	
Marlboro	No
Star Tannery	No
SHENANDOAH	
Clary	Yes
Lebanon Church	No
Wheatfield	No

**TABLE III-12A
RELOCATIONS**

ALTERNATIVES COMPARISON

ALTERNATIVE	STATE	# Residential Relocations	# Business Relocations	# Poultry House Relocations	Total Relocations
No-Build Alternative	West Virginia & Virginia	0	0	0	0
Improved Roadway Alternative (IRA) ¹	West Virginia	61	9	1	71
	Virginia	15	2	0	17
Preferred Alternative ²	West Virginia	52	3	4	59
Line A ³	Virginia	13	0	0	13

WEST VIRGINIA OPTION AREA COMPARISON

OPTION AREA	LINE	COUNTY	# Residential Relocations	# Business Relocations	# Poultry House Relocations	Total Relocations
Interchange	Line I ²	Randolph	1	1	0	2
	Line A	Randolph	2	1	0	3
Shavers Fork	Line S ²	Tucker	0	0	0	0
	Line A	Tucker	1	0	0	1
Patterson Creek	Line P	Grant	3	0	4	7
	Line A ²	Grant	0	0	0	0
Forman	Line F ²	Grant	1	0	0	1
	Line A	Grant	2	0	0	2
Line 5-D	Line 5-D ²	Hardy	0	0	0	0
	Line A	Hardy	0	0	1	1
Baker	Line B ²	Hardy	4	1	0	5
	Line A	Hardy	2	0	0	2
Hanging Rock	Line R	Hardy	0	0	0	0
	Line A ²	Hardy	0	1	0	1

VIRGINIA³

OPTION AREAS	LINE	COUNTY	# Residential Relocations	# Business Relocations	# Poultry House Relocations	Total Relocations
Duck Run	Line D	Frederick	8	0	0	8
	Line D	Frederick	4	0	0	4
	Line A	Frederick	6	0	0	6
Lebanon Church	Line L	Shenandoah	4	0	0	4
	Line A	Shenandoah	3	0	0	3

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II

**TABLE III-12B
RELOCATION BY COUNTY WITH RELEVANT STATISTICS***

WVA - Preferred Alternative ¹

County	Relocations							Median Income	Owner Occupied Units	Renter Occupied Units	Percent Un-Occupied Units	Median Value of a Unit
	Total	Single Family	Multi-Family	Mobile Home**	Business	Community Facility	Out-buildings					
Randolph	16	5	0	0	1	0	10	18,278	74.5%	25.5%	17.4%	46,000
Tucker	41	14	0	1	0	0	27	17,949	80.4%	19.6%	22.6%	38,200
Grant	18	5	0	0	0	0	13	20,923	81.5%	18.5%	17.3%	49,900
Hardy	54	28	0	7	6	0	20	20,745	82.2%	17.8%	23.1%	49,300

Virginia - Line A ²

County	Relocations							Median Income	Owner Occupied Units	Renter Occupied Units	Percent Un-Occupied Units	Median Value of a Unit
	Total	Single Family	Multi-Family	Mobile Home**	Business	Community Facility	Out-buildings					
Shenandoah	16	7	0	1	0	0	9	26,527	71.5%	28.5%	17.9%	74,100
Frederick	8	6	0	1	0	0	2	32,806	79.1%	20.9%	7.8%	89,700

Improved Roadway Alternative ³

County	Relocations							Median Income	Owner Occupied Units	Renter Occupied Units	Percent Un-Occupied Units	Median Value of a Unit
	Total	Single Family	Multi-Family	Mobile Home**	Business	Cemetery	Out-buildings					
Randolph	10	4	0	0	1	0	5	18,278	74.5%	25.5%	17.4%	46,000
Tucker	50	31	0	0	2	0	17	17,949	80.4%	19.6%	22.6%	38,200
Grant	4	0	0	0	0	0	4	20,923	81.5%	18.5%	17.3%	49,900
Hardy	52	26	0	0	7	0	19	20,745	82.2%	17.8%	23.1%	49,300
Shenandoah	26	13	0	0	1	1	12	26,527	71.5%	28.5%	17.9%	74,100
Frederick	4	2	0	1	1	0	1	32,806	79.1%	20.9%	7.8%	89,700

*Statistics are from the 1990 Census and are for the entire county

**Not included in Relocation Totals or Residences

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

³ The IRA was not selected as the Preferred Alternative as explained in text, Section II.

**TABLE III-12C
RELOCATIONS BY COUNTY AND OPTION AREA**

West Virginia¹

Option Area	Line	County	Relocations						
			Total	Single Family	Multi-Family	Mobile Home**	Business	Community Facility	Out-buildings
Interchange	Line I ¹	Randolph	2	1	0	0	1	0	0
	Line A	Randolph	3	2	0	0	1	0	0
Shavers Fork	Line S ¹	Tucker	0	0	0	0	0	0	0
	Line A	Tucker	1	1	0	0	0	0	0
Patterson Creek	Line P	Grant	7	3	0	0	4	0	0
Forman	Line A ¹	Grant	0	0	0	0	0	0	0
	Line F ¹	Grant	1	1	0	0	0	0	0
5-D	Line A	Grant	3	2	0	0	0	1	0
	Line 5-D ¹	Hardy	0	0	0	0	0	0	0
Baker	Line A	Hardy	3	0	0	0	1	0	2
	Line B ¹	Hardy	5	4	0	0	1	0	0
Hanging Rock	Line A	Hardy	2	2	0	1	0	0	0
	Line R	Hardy	0	0	0	0	0	0	0
	Line A ¹	Hardy	1	0	0	0	1	0	0

Virginia²

Option Area	Line	County	Relocations						
			Total	Single Family	Multi-Family	Mobile Home**	Business	Community Facility	Out-buildings
Duck Run	Line D1	Frederick	8	8	0	0	0	0	0
	Line D2	Frederick	4	4	0	0	0	0	0
	Line A	Frederick	6	6	0	0	0	0	0
Lebanon Church	Line L	Shenandoah	4	4	0	0	0	0	0
	Line A	Shenandoah	3	3	0	0	0	0	0

*Statistics are from the 1990 Census and are for the entire county

**Not included in Total Relocations or Residences

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-13
FARMLAND CONVERSIONS**

FARMLAND TYPE	NO-BUILD		IRA ¹				PREF. ALT. ² in WV		LINE A ³ in VA	
	ha	ac	WV		VA		ha	ac	ha	ac
			ha	ac	ha	ac				
Locally Important	0.0	0.0	5.2	12.8	0.0	0.0	5.3	13.2	0.0	0.0
Prime	0.0	0.0	30.0	73.9	10.2	25.2	58.5	144.7	16.7	41.2
Statewide Important	0.0	0.0	66.0	163.0	6.4	16.0	113.3	279.9	10.3	25.5
Total	0.0	0.0	101.2	249.7	16.6	41.2	177.1	437.8	27.0	66.7

COMPARISON BY OPTION AREA: West Virginia²

FARMLAND TYPE	Interchange				Shavers Fork				Patterson Creek			
	Line F		Line A		Line S ²		Line A		Line P		Line A ²	
	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac
Locally Important	0.1	0.1	2.4	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prime	1.8	4.5	1.5	3.7	0.0	0.0	1.7	4.3	4.9	12.2	2.2	5.5
Statewide Important	0.6	1.4	5.2	12.9	5.1	12.5	6.4	15.8	0.6	1.5	0.5	1.2
Total	2.5	6.0	9.1	22.5	5.1	12.5	8.1	20.1	5.5	13.7	2.7	6.7

COMPARISON BY OPTION AREA: West Virginia²

FARMLAND TYPE	Forman				Line 5-D				Baker				Hanging Rock			
	Line F ²		Line A		Line 5-D ²		Line A		Line B ²		Line A		Line R		Line A ²	
	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac
Locally Important	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prime	2.8	6.8	6.4	15.9	0.6	1.5	0.7	1.7	4.7	11.7	2.2	5.5	0.2	0.6	0.2	0.6
Statewide Important	8.3	20.4	15.8	39.0	1.5	3.8	2.6	6.5	1.5	3.7	0.6	1.5	0.0	0.6	0.0	0.6
Total	11.1	27.2	22.2	54.9	2.1	5.3	3.3	8.2	6.2	15.4	2.8	7.0	0.2	1.2	0.2	1.2

COMPARISON BY OPTION AREA: Virginia³

FARMLAND TYPE	Duck Run						Lebanon Church			
	Line D1		Line D2		Line A		Line L		Line A	
	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac
Locally Important	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prime	0.1	0.2	0.3	0.8	0.1	0.2	7.6	18.7	11.9	29.3
Statewide Important	0.0	0.0	1.1	2.7	1.1	2.7	15.6	38.6	9.4	23.1
Total	0.1	0.2	1.4	3.5	1.2	2.9	23.2	57.3	21.3	52.4

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-14
FARMLAND CONVERSIONS BY COUNTY**

WEST VIRGINIA - IRA¹

FARMLAND CLASSIFICATION	Grant		Hardy		Randolph		Tucker		WV	
	hectare	acre	hectare	acre	hectare	acre	hectare	acre	hectare	acre
Locally Important	0.0	0.0	0.0	0.0	5.2	12.8	0.0	0.0	5.2	12.8
Prime	3.8	9.4	17.8	43.9	4.9	12.0	3.5	8.6	30.0	73.9
Statewide Important	24.6	60.7	15.2	37.6	4.0	9.9	22.2	54.8	66.0	163.0
TOTAL	28.4	70.1	33.0	81.4	14.1	34.7	25.7	63.4	101.2	249.7

VIRGINIA - IRA³

Frederick		Shenandoah		VA	
hectare	acre	hectare	acre	hectare	acre
0.0	0.0	0.0	0.0	0.0	0.0
1.1	2.7	9.1	22.5	10.2	25.2
0.1	0.4	6.3	15.6	6.4	16.0
1.2	3.1	15.4	38.1	16.6	41.2

WEST VIRGINIA - PREFERRED ALTERNATIVE²

FARMLAND CLASSIFICATION	Grant		Hardy		Randolph		Tucker		WV	
	hectare	acre	hectare	acre	hectare	acre	hectare	acre	hectare	acre
Locally Important	0.0	0.0	0.0	0.0	5.3	13.2	0.0	0.0	5.3	13.2
Prime	11.7	29.0	35.7	88.2	5.1	12.7	6.0	14.8	58.6	144.7
Statewide Important	11.1	27.5	44.2	109.2	9.9	24.5	48.1	118.7	113.3	279.9
TOTAL	22.9	56.5	79.9	197.4	20.4	50.4	54.1	133.5	177.2	437.7

VIRGINIA - LINE A³

Frederick		Shenandoah		VA	
hectare	acre	hectare	acre	hectare	acre
0.0	0.0	0.0	0.0	0.0	0.0
0.1	0.2	16.6	41.0	16.7	41.2
1.1	2.7	9.2	22.8	10.3	25.5
1.2	2.9	25.8	63.8	27.0	66.7

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-15
PUBLIC WATER SUPPLY IMPACTS**

COMMUNITY NAME	PUBLIC WATER SOURCE	LINE	LOCATION OF PROPOSED ALTERNATIVES	IMPACT TYPE
Wardensville	Spring	IRA ¹	Not located in wellhead protection area	None
		PA ²	Wellhead protection area encroachment	Possible Impact on the Aquifer*
Moorefield	South Branch of Potomac River	IRA ¹ & PA ²	+6 km (+3 mi.) South of spring and outside of watershed	None
Mt. Top	Spring	IRA ¹ & PA ²	+3.2 km (+2 mi.) Downstream of spring	None
Hambleton and Hendricks (Hamrick PSD)	Dry Fork River	IRA ¹ & PA ²	+2.5 km (+1.5 mi.) Downstream of intake	None
Thomas	Reservoir on unnamed creek 4.8 km (3 mi.) north of Thomas	IRA ¹ & PA ²	Alignments not in reservoir watershed	None
Davis	Blackwater River	IRA ¹ & PA ²	No crossing of Blackwater River	None
Douglas	Reservoir on tributary to Long Run	IRA ¹ & PA ²	+1.5 km (+1 mi.) north of reservoir	None
Parsons	Shavers Fork	IRA ¹	Parallel construction on same side of river as intake	Possible Construction Impacts
		Line A	Bridging +2 km (+1 mi.) upstream of intake. Some parallel construction opposite intake	Possible Construction Impacts
		PA ²	Parallel construction opposite intake	Possible Construction Impacts
Elkins	Tygart Valley River	IRA ¹ & PA ²	+3 km (+ 2 mi.) downstream	None

* Refer to Section III- G: *Groundwater Resources*

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

**TABLE III-16
NATIONAL AMBIENT AIR QUALITY STANDARDS**

POLLUTANT	TIME OF AVERAGE	PRIMARY STANDARD	SECONDARY STANDARD
PM ₁₀	Ann. Geo. Mean	75 ug/m ³	None
	24-Hour	260 ug/m ³	150 ug/m ³
SO ₂	Ann. Arith. Mean	80 ug/m ³	None
	24-Hour	365 ug/m ³	None
	3-Hour	none	1300 ug/m ³
NO ₂	Ann. Arith. Mean	100 ug/m ³	100 ug/m ³
CO	8-Hour	10 mg/m ³ 9 ppm	None
	1-Hour	40 mg/m ³ 35 ppm	None
O ₃	1-Hour	0.12 ppm	0.12 ppm
		235 ug/m ³	235 ug/m ³
Pb	Quarterly Arith. Mean	1.5 ppm	1.5 ppm

Source: United States Environmental Protection Agency

Note: All standards with averaging times of 24 hours or less are not to be exceeded more than once per year.

ug/m³ = micrograms per cubic meter of air mg/m³ = milligrams per cubic meter of air ppm = parts per million

Ann. Geo. Mean = Annual Geometric Mean Ann. Arith. Mean = Annual Arithmetic Mean

**TABLE III-17
1-HOUR PREDICTED HIGHEST CO CONCENTRATIONS
FOR YEARS 2001 & 2013**

WEST VIRGINIA

RECEPTOR	INTERIM YEAR 2001			DESIGN YEAR 2013		
	No-Build	IRA ¹	Pref. Alt. ²	No-Build	IRA ¹	Pref. Alt. ²
A	7.0 ppm	5.4 ppm	3.4 ppm	7.9 ppm	6.1 ppm	4.0 ppm
B	N/A	3.7 ppm	5.2 ppm	N/A	3.8 ppm	5.5 ppm
C	N/A	3.7 ppm	5.2 ppm	N/A	3.8 ppm	5.5 ppm

VIRGINIA³

RECEPTOR	INTERIM YEAR 2001			DESIGN YEAR 2013		
	No-Build	IRA	Line A	No-Build	IRA	Line A
D	3.6 ppm	5.1 ppm	2.8 ppm	3.0 ppm	4.8 ppm	2.3 ppm
E	3.6 ppm	5.1 ppm	2.8 ppm	3.0 ppm	4.8 ppm	2.3 ppm
F	N/A	N/A	4.1 ppm	N/A	N/A	4.4 ppm

Where:

NAAQS: 1-HOUR = 35 ppm

NAAQS: 8-HOUR = 9 ppm

N/A = Not Applicable

The predicted concentrations include a background CO level of 2.0 ppm.

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³Virginia did not select a Preferred Alternative as explained in the text, Section II.

TABLE III-18
NOISE ABATEMENT CRITERIA (NAC):
HOURLY A-WEIGHTED SOUND LEVEL- DECIBELS (DBA)

ACTIVITY CATEGORY	L_{eq} (h)	DESCRIPTION OF ACTIVITY CATEGORY
A	57 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 (exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	-	Undeveloped lands.
E	52 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

Source: *Federal-Aid Highway Program Manual Transmittal 348*, August 9, 1982; Vol. 7, Ch. 7; Sec 3, Attachment.

**TABLE III-19
MEASURED NOISE LEVELS: WEST VIRGINIA**

SITE #	LAND USE	DATE	MEASUREMENT PERIOD	L _{eq} (dBA)	DOMINANT NOISE SOURCE
8	Residential	10-18-93	11:35-11:43	42	Local Activities
9	School	10-18-93	17:41-17:49	57	WV 55
10	Residential	10-18-93	17:30-17:38	43	Local Activities
11	Recreational	10-18-93	13:10-13:18	57	WV 55
12	Residential	10-18-93	13:30-13:38	43	Local Activities
13	Health Care	10-18-93	17:07-17:15	57	WV 55
14	School	10-18-93	14:10-14:18	53	WV 55
15	Church	10-18-93	16:45-16:53	59	WV 55
16	Residential	10-18-93	14:40-14:48	43	Local Activities
17	Res/Agricul.	10-18-93	15:03-15:11	43	Local Activities
18	Residential	10-18-93	15:25-15:33	43	Local Activities
19	Church	10-18-93	15:50-15:58	62	WV 55
20	Res/Agricul.	10-19-93	16:15-16:23	43	Local Activities
21	Res/Agricul.	10-19-93	08:45-08:53	64	US 220/WV 28
22	Agricultural	10-19-93	09:30-09:38	42	Local Activities
23	Residential	10-19-93	11:00-11:08	42	Local Activities
24	Residential	10-19-93	11:30-11:38	42	Local Activities
25	Industrial	10-19-93	12:00-12:08	62	Local Activities
26	Church	10-19-93	13:20-13:28	46	Local Activities
27	Recreational	10-19-93	14:00-14:10	43	Local Activities
28	Residential	10-20-93	15:30-15:47	69	US 219
29	Residential	10-20-93	16:00-16:08	64	US 219
30	Church	10-20-93	16:23-16:31	54	US 219
31	Res/Agricul.	10-21-93	15:45-15:55	45	Local Activities
32	Residential	10-21-93	15:30-15:40	45	Local Activities
33	Church	10-21-93	16:15-16:25	53	Local Activities
34	Res/Com	10-21-93	16:48-16:58	71	US 219
35	Res/Agricul.	10-21-93	17:06-17:26	51	Local Activities
36	Res/Institut.	10-21-93	18:22-18:32	64	US 219
37	Residential	10-21-93	17:40-17:50	55	Local Activities
38	Res/Agricul.	10-21-93	17:50-18:00	61	US 219
39	Res/Agricul.	10-22-93	07:50-08:00	49	Local Activities
40	Commercial	10-22-93	08:10-08:20	68	WV 92
41	Industrial	10-22-93	08:30-08:40	69	WV 92
42	Church	10-22-93	08:52-09:02	50	Local Activities

**TABLE III-20
MEASURED NOISE LEVELS: VIRGINIA**

SITE #	LAND USE	DATE	MEASUREMENT PERIOD	Leq (dBA)	DOMINANT NOISE SOURCE
1	Church	10-18-93	08:35-08:44	56	VA 55
2	Residential	10-18-93	09:20-09:28	45	Local Activities
3	Residential	10-18-93	09:50-09:58	55	VA 55
4	Church	10-18-93	10:15-10:23	49	VA 55
5	Commercial	10-18-93	18:05-18:13	58	VA 55
6	Residential	10-18-93	10:50-10:58	45	Local Activities
7	Recreational	10-18-93	11:08-11:16	44	Local Activities

**TABLE III-21
MEASURED SITE CHARACTERISTICS: WEST VIRGINIA**

SITE #	NAME & GENERAL LOCATION	HOURLY VEHICLE VOLUMES						DISTANCE FROM TRAVEL LANE C/L	ESTIMATED SPEED
		NEAR LANE			FAR LANE				
		A	MT	HT	A	MT	HT		
8	Residential, on CR 5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
9	Wardensville School	173	0	0	158	0	0	15m (50 ft)	60km (35mph)
10	Residential, Trout Run Road, CR 23/12	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
11	Lost River Park	180	8	0	38	8	0	15m (50 ft)	75km (45mph)
12	Residential, CR 23/8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
13	E.A. Hawse Contiguous Health Care Center	105	8	8	75	15	8	30m (100 ft)	83km (50 mph)
14	East Hardy High School	105	0	8	173	0	23	90m (300 ft)	83km (50 mph)
15	Baker United Methodist Church	68	0	15	83	8	15	45m (150 ft)	92km (55 mph)
16	Residential, William Hawse House, CR 8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
17	Res/Agricultural, CR 23/4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
18	Residential, CR 23/3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
19	God's Way United Pentacost Church	128	8	0	75	15	23	15m (50 ft)	92km (55 mph)
20	Res/Agricultural, CR 15	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
21	Res/Agricultural, US 220/WV 28	98	8	8	30	23	0	14m (40 ft)	92km (55 mph)
22	Agricultural, CR 220/8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
23	Residential, CR 3/2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
24	Residential, CR 42/1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
25	Industrial, near Power Plant, WV 93	15	0	15	15	0	38	15m (50 ft)	100km (60mph)

Where:

- A = Automobile (including vans, pickup trucks and motorcycles)
- MT = Medium Truck (2-axle/6-tires)
- HT = Heavy Truck (3 or more axles)
- n/a = Not applicable (no traffic visible at the receptor site)
- C/L = Centerline

TABLE III-21 (CONT.)
MEASURED SITE CHARACTERISTICS: WEST VIRGINIA

SITE #	NAME & GENERAL LOCATION	HOURLY VEHICLE VOLUMES						DISTANCE FROM TRAVEL LANE C/L	ESTIMATED SPEED
		NEAR LANE			FAR LANE				
		A	MT	HT	A	MT	HT		
26	St. John's Lutheran Church, 3rd Street	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
27	Monongahela National Forest	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
28	Residential, US 219	64	0	26	143	11	23	14m (40 ft)	A-92km (55mph) T-50km (30mph)
29	Residential, US 219 near WVDOT building	270	8	8	113	15	15	15m (50 ft)	A-92km (55mph) T-58km (35mph)
30	Riverview Chapel, CR 39, near US 219	113	0	8	158	0	23	30m (100 ft)	83km (50mph)
31	Res/Agricultural, CR 3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
32	Residential, CR 3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
33	Hambleton United Methodist Church	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
34	Res/Commercial, US 219 and CR 3	126	0	12	60	6	24	15m (50 ft)	92km (55mph)
35	Res/Agricultural, CR 7 and CR 3/3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
36	Res/Cemetery, US 219	138	0	6	132	12	6	15m (50 ft)	92km (55mph)
37	Residential, CR 1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
38	Res/Agricultural, US 219	114	6	6	126	6	6	15m (50 ft)	66km (40mph)
39	Res/Agricultural, CR 14	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
40	Commercial, WV 93/CR 11	336	12	18	156	12	36	15m (50 ft)	75 km (45mph)
41	Industrial (Quarry), WV 93	366	78	24	138	0	18	14m (40 ft)	83km (50mph)
42	Leadsville Church	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Where:

- A = Automobile (including vans, pickup trucks and motorcycles)
- MT = Medium Truck (2-axle/6-tires)
- HT = Heavy Truck (3 or more axles)
- n/a = Not applicable (no traffic visible at the receptor site)
- C/L = Centerline

**TABLE III-22
MEASURED SITE CHARACTERISTICS: VIRGINIA**

SITE #	NAME & GENERAL LOCATION	HOURLY VEHICLE VOLUMES						DISTANCE FROM TRAVEL LANE C/L	ESTIMATED SPEED
		NEAR LANE			FAR LANE				
		A	MT	HT	A	MT	HT		
1	Shiloh United Methodist Church	75	15	0	113	15	0	30m (100 ft)	92km (55mph)
2	Residential, corner of VA 629 and VA 631	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3	Residential, corner of VA 55 and VA 623	113	15	0	75	15	0	15m (50 ft)	92km (55mph)
4	Laurel Hill Christian Church	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
5	Four Corners Restaurant	83	0	0	38	0	0	n/a	n/a
6	Residential, VA 608	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
7	George Washington National Forest	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Where:

- A = Automobile (including vans, pickup trucks and motorcycles)
- MT = Medium Truck (2-axle/6-tires)
- HT = Heavy Truck (3 or more axles)
- n/a = Not applicable (no traffic visible at the receptor site)
- C/L = Centerline

**TABLE III-23
PREDICTED FHWA NOISE ACTIVITY CATEGORY EXCEEDANCES**

WEST VIRGINIA

FHWA ACTIVITY CATEGORY	NAC APPROACH CRITERIA	NUMBER OF PREDICTED EXCEEDANCES			
		1993 WV Existing	2013 WV No-Build	2013 WV IRA ¹	2013 WV Pre. Alt. ²
		Category B	66 dBA	118	200

Option Area Comparisons in WV - 2013

FHWA ACTIVITY CATEGORY	NAC APPROACH CRITERIA	NUMBER OF PREDICTED EXCEEDANCES							
		Interchange		Shavers Fork		Patterson Creek		Forman	
		Line J ²	Line A	Line S ²	Line A	Line P	Line A ²	Line F ²	Line A
Category B	66 dBA	7	2	0	0	0	0	1	0

Option Area Comparisons in WV - 2013

FHWA ACTIVITY CATEGORY	NAC APPROACH CRITERIA	NUMBER OF PREDICTED EXCEEDANCES					
		Line 5-D		Baker		Hanging Rock	
		Line 5-D ²	Line A	Line B ²	Line A	Line R	Line A ²
Category B	66 dBA	0	1	2	2	0	2

VIRGINIA³

FHWA ACTIVITY CATEGORY	NAC APPROACH CRITERIA	NUMBER OF PREDICTED EXCEEDANCES								
		1993 VA Existing	2013 VA No-Build	2013 VA IRA	2013 VA LINE A	Option Area Comparisons in VA - 2013				
						Duck Run			Lebanon Church	
						Line D1	Line D2	Line A	Line L	Line A
Category B	66 dBA	5	18	52	8	1	0	1	6	1

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-24
PREDICTED YEAR 2013 SUBSTANTIAL INCREASE EXCEEDANCES**

WEST VIRGINIA

LEVEL OF PREDICTED INCREASE	WV IMPACT CRITERIA*	NUMBER OF PREDICTED INCREASES																
		No-Build	IRA ¹	PA ²	Option Area Comparisons in WV													
					Interchange		Shavers Fork		Patterson Creek		Forman		Line 5-D		Baker		Hanging Rock	
Line I ²	Line A	Line S ²	Line A	Line P	Line A ²	Line F ²	Line A	Line 5-D ²	Line A	Line B ²	Line A	Line R	Line A ²					
< 0-5dBA	None	1,879	1,362	1,315	59	91	35	32	5	4	8	9	23	22	36	33	9	3
6-10 dBA	Minimal	0	416	277	10	16	4	7	3	3	1	3	1	3	12	13	1	8
11-15 dBA	Moderate	0	74	164	0	0	0	0	3	6	3	1	2	1	3	5	4	5
>15 dBA	Substantial	0	27	85	0	0	0	0	2	0	1	0	0	0	2	2	2	0

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VIRGINIA³

LEVEL OF PREDICTED INCREASE	VA IMPACT CRITERIA*	NUMBER OF PREDICTED INCREASES							
		No-Build	IRA	Line A	Option Area Comparisons in VA				
					Duck Run			Lebanon Church	
Line D1	Line D2	Line A	Line L	Line A					
< 0-5dBA	---	334	198	244	11	13	15	44	116
6-9 dBA	---	0	131	41	12	13	11	31	5
= or >10 dBA	Substantial	0	5	49	15	12	12	54	8

* Note: West Virginia defines a substantial increase as an increase greater than 15 dBA.

Virginia defines substantial increase as an increase greater than or equal to 10 dBA.

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-25
PROPOSED PRELIMINARY SOUND BARRIER LOCATIONS: IRA¹**

STATE	STATIONS	LENGTH	COST
West Virginia	393+00LT to 407+00LT	426 m (1,400 ft)	\$448,000
	2285+00LT to 2295+00LT	305 m (1,000 ft)	\$320,000
	5167+00LT to 5183+00LT	488 m (1,600 ft)	\$512,000
	6610+00LT to 6625+00LT	457 m (1,500 ft)	\$480,000
<i>West Virginia Total</i>			\$1,760,000
Virginia	<i>none</i>	—	\$0
<i>Virginia Total</i>			\$0

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

TABLE III-26
PROPOSED PRELIMINARY SOUND BARRIER LOCATIONS: LINE A

STATE	STATIONS	LENGTH	COST
West Virginia	387+00LT to 410+00LT	701 m (2,300 ft)	\$736,000
	634+00LT to 645+00LT	335 m (1,100 ft)	\$352,000
	557+00RT to 570+00RT	396 m (1,300 ft)	\$416,000
	570+00LT to 585+00LT	457 m (1,500 ft)	\$480,000
	727+00LT to 750+00LT	701 m (2,300 ft)	\$736,000
	741+00RT to 761+00RT	610 m (2,000 ft)	\$640,000
	3210+00LT to 3267+00LT	1,737 m (5,700 ft)	\$1,824,000
	3380+00LT to 3343+00LT	1,067 m (3,500 ft)	\$1,120,000
	3331+00RT to 3354+00RT	701 m (2,300 ft)	\$736,000
	3571+00LT to 3600+00LT	884 m (2,900 ft)	\$928,000
	3635+00LT to 3655+00LT	610 m (2,000 ft)	\$640,000
	3686+00LT to 3700+00LT	426 m (1,400 ft)	\$448,000
	4093+00LT to 5014+00LT	640 m (2,100 ft)	\$672,000
	5667+00LT to 5704+00LT	823 m (2,700 ft)	\$864,000
	5983+00LT to 5991+00LT	244 m (800 ft)	\$256,000
	6026+00LT to 6035+00LT	274 m (900 ft)	\$288,000
	6275+00LT to 6300+00LT	762 m (2,500 ft)	\$800,000
	7165+00LT to 7175+00LT	30 m (100 ft)	\$32,000
	7216+00LT to 7232+00LT	488 m (1,600 ft)	\$512,000
	7515+00LT to 7530+00LT	457 m (1,500 ft)	\$480,000
7548+00RT to 7564+00RT	488 m (1,600 ft)	\$512,000	
7548+00LT to 7568+00LT	610 m (2,000 ft)	\$640,000	
<i>West Virginia Total</i>			\$19,392,000
Virginia	8025+00LT to 8055+00LT	914 m (3000 ft)	\$960,000
	8021+00RT to 8041+00RT	610 m (2000 ft)	\$640,000
	8061+00LT to 8095+00LT	1036 m (3400 ft)	\$1,088,000
	8065+00RT to 8073+00RT	244 m (800 ft)	\$256,000
	8155+00RT to 8190+00RT	1067 m (3500 ft)	\$1,120,000
	8055+00LT to 8282+00LT	823 m (2700 ft)	\$864,000
	8311+00LT to 8324+00LT	396 m (1300 ft)	\$416,000
	8450+00LT to 8457+00LT	213 m (700 ft)	\$224,000
	8459+00LT to 8464+00LT	152 m (500 ft)	\$160,000
	8462+00RT to 8472+00RT	305 m (1000 ft)	\$320,000
	A 610 linear meter (2,000 linear foot) area along the west side of I-81 and south of Line A (no station # in area next to the proposed interchange)	610 m (2000 ft)	\$640,000
<i>Virginia Total</i>			\$7,328,000

TABLE III-27A
PROPOSED PRELIMINARY SOUND BARRIER LOCATIONS:
OPTION AREA COMPARISONS

INTERCHANGE OPTION AREA

LINE I ¹			LINE A		
STATIONS	LENGTH	COST	STATIONS	LENGTH	COST
638+00LT to 648+00LT	305 m (1,000 ft)	\$320,000	387+00LT to 410+00LT	701 m (2,300 ft)	\$736,000
638+00RT to 648+00RT	305 m (1,000 ft)	\$320,000	634+00LT to 645+00LT	335 m (1,100 ft)	\$352,000
2966+00RT to 3005+00RT	1188 m (3,900 ft)	\$1,248,000	557+00RT to 570+00RT	396 m (1,300 ft)	\$416,000
2991+00LT to 3003+00LT	366 m (1,200 ft)	\$384,000	570+00LT to 585+00LT	457 m (1,500 ft)	\$480,000
3056+00LT to 3085+00LT	884 m (2,900 ft)	\$928,000	727+00LT to 750+00LT	701 m (2,300 ft)	\$736,000
3013+00LT to 3041+00LT	853 m (2,800 ft)	\$896,000	741+00RT to 761+00RT	610 m (2,000 ft)	\$640,000
Total Cost		\$4,096,000	Total Cost		\$3,360,000

PATTERSON CREEK OPTION AREA

LINE P			LINE A ¹		
STATIONS	LENGTH	COST	STATIONS	LENGTH	COST
5547+00RT to 5557+00RT	305 m (1,000 ft)	\$320,000	(none proposed)		
Total Cost		\$320,000	Total Cost		\$0

BAKER OPTION AREA

LINE B ¹			LINE A		
STATIONS	LENGTH	COST	STATIONS	LENGTH	COST
7040+00RT to 7058+00RT	549 m (1,800 ft)	\$576,000	(none proposed)		
Total Cost		\$576,000	Total Cost		\$0

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

TABLE III-27A (CONT.)
PROPOSED PRELIMINARY SOUND BARRIER LOCATIONS:
OPTION AREA COMPARISONS

HANGING ROCK OPTION AREA

LINE R			LINE A ¹		
STATIONS	LENGTH	COST	STATIONS	LENGTH	COST
(none proposed)			7165+00LT to 7175+00LT	305m (1,000 ft)	\$320,000
Total Cost		\$0	Total Cost		\$320,000

VIRGINIA²

DUCK RUN OPTION AREA (LINE D1)

LINE D1			LINE A		
STATIONS	LENGTH	COST	STATIONS	LENGTH	COST
8025+00LT to 8055+00LT	914 m (3000 ft)	\$960,000	8025+00LT to 8055+00LT	914 m (3000 ft)	\$960,000
8021+00RT to 8041+00RT	610 m (2000 ft)	\$640,000	8021+00RT to 8041+00RT	610 m (2000 ft)	\$640,000
Total Cost		\$1,600,000	Total Cost		\$1,600,000

DUCK RUN OPTION AREA (LINE D2)

LINE D2			LINE A		
STATIONS	LENGTH	COST	STATIONS	LENGTH	COST
8006+00LT to 8024+00LT	549 m (1,800 ft)	\$560,000	8025+00LT to 8055+00LT	914 m (3,000 ft)	\$960,000
—	—	—	8021+00RT to 8041+00RT	610 m (2,000 ft)	\$640,000
Total Cost		\$560,000	Total Cost		\$1,600,000

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II:

TABLE III-27A (CONT.)
PROPOSED PRELIMINARY SOUND BARRIER LOCATIONS:
OPTION AREA COMPARISONS

VIRGINIA**LEBANON CHURCH OPTION AREA ¹**

LINE L			LINE A		
STATIONS	LENGTH	COST	STATIONS	LENGTH	COST
8055+00LT to 8284+00LT	884 m (2900 ft)	\$928,000	8055+00LT to 8282+00LT	823 m (2700 ft)	\$864,000
8422+00RT to 8480+00RT	1768 m (5800 ft)	\$1,856,000	8311+00LT to 8324+00LT	396 m (1300 ft)	\$416,000
8420+00RT to 8436+00RT	488 m (1600 ft)	\$512,000	8450+00LT to 8457+00LT	213 m (700 ft)	\$224,000
8459+00RT to 8473+00RT	426 m (1400 ft)	\$448,000	8459+00LT to 8464+00LT	152 m (500 ft)	\$160,000
—	—	—	8462+00RT to 8472+00RT	305 m (1000 ft)	\$320,000
—	—	—	610 linear meter (2,000 linear foot) area west of I-81 and south of Line A (no station # in area next to proposed interchange)		\$640,000
Total Cost		\$3,744,000	Total Cost		\$3,264,000

¹ Virginia did not select a Preferred Alternative as explained in the text, Section II:

TABLE III-27B
SOUND BARRIER LOCATION STUDY AREAS:
PREFERRED ALTERNATIVE IN WEST VIRGINIA¹

BARRIER	STATIONS	BARRIER	STATIONS
1 (WV)	387+00LT to 410+00LT	15 (WV)	3331+00RT to 3354+00RT
2 (WV)	557+00RT to 570+00RT	16 (WV)	3571+00LT to 3600+00LT
3 (WV)	570+00LT to 585+00LT	17 (WV)	3635+00LT to 3655+00LT
4 (WV)	634+00LT to 645+00LT	18 (WV)	3686+00LT to 3700+00LT
5 (WV)	638+00LT to 648+00LT	19 (WV)	4093+00LT to 5014+00LT
6 (WV)	638+00RT to 648+00RT	20 (WV)	5667+00LT to 5704+00LT
7 (WV)	2966+00RT to 3005+00RT	21 (WV)	5983+00LT to 5991+00LT
8 (WV)	2991+00LT to 3003+00LT	22 (WV)	6026+00LT to 6035+00LT
9 (WV)	3013+00LT to 3041+00LT	23 (WV)	6275+00LT to 6300+00LT
10 (WV)	727+00LT to 750+00LT	24 (WV)	7165+00LT to 7175+00LT
11 (WV)	741+00RT to 761+00RT	25 (WV)	7216+00LT to 7232+00LT
12 (WV)	3056+00LT to 3085+00LT	26 (WV)	7515+00LT to 7530+00LT
13 (WV)	3210+00LT to 3267+00LT	27 (WV)	7548+00RT to 7564+00RT
14 (WV)	3380+00LT to 3343+00LT	28 (WV)	7548+00LT to 7568+00LT

LINE A IN VIRGINIA²

BARRIER	STATIONS	BARRIER	STATIONS
29 (VA)	8025+00LT to 8055+00LT	34 (VA)	8055+00LT to 8282+00LT
30 (VA)	8021+00RT to 8041+00RT	35 (VA)	8311+00LT to 8324+00LT
31 (VA)	8061+00LT to 8095+00LT	36 (VA)	8450+00LT to 8457+00LT
32 (VA)	8065+00RT to 8073+00RT	37 (VA)	8459+00LT to 8464+00LT
33 (VA)	8155+00RT to 8190+00RT	38 (VA)	8462+00RT to 8472+00RT
		39 (VA)	A 610 linear meter (2,000 linear foot) area along the west side of I-81 and south of Line A (no station # in area next to the proposed interchange)

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II

**TABLE III-27C
FINAL NOISE BARRIER ANALYSIS**

Barrier Number	Refined Station Numbers <small>(Station Number Equations Are Not Shown)</small>	Length	Height	Area	Barrier Cost (Wood)	Barrier Cost (Concrete)	Affected Number of Receptors	Receptors with Minimum 3dBA decrease	Avg. Cost Per Receptor (Wood)	Avg. Cost Per Receptor (Concrete)
1	384+00LT - 413+85LT	2885	6	17308	\$294,236	\$432,700	7	0	----	----
		2885	8	23077	\$392,309	\$576,925	7	1	\$392,309	\$576,925
		2885	10	28846	\$490,382	\$721,150	7	1	\$490,382	\$721,150
		2885	12	34616	\$588,472	\$865,400	7	1	\$588,472	\$865,400
		2885	14	40385	\$686,545	\$1,009,625	7	2	\$343,273	\$504,813
		2885	16	46154	\$784,618	\$1,153,850	7	2	\$392,309	\$576,925
		2885	18	51924	\$882,708	\$1,298,100	7	4	\$220,677	\$324,525
3	570+71LT - 585+00LT	1429	9	12863	\$218,671	\$321,575	8	0	---	---
		1429	11	15722	\$267,274	\$393,050	8	0	---	---
		1429	13	18580	\$315,860	\$464,500	8	1	\$315,860	\$464,500
		1429	15	21438	\$364,446	\$535,950	8	1	\$364,446	\$535,950
		1429	17	24297	\$413,049	\$607,425	8	1	\$413,049	\$607,425
		1429	19	27155	\$461,635	\$678,875	8	2	\$230,818	\$339,438
		1429	21	30014	\$510,238	\$750,350	8	2	\$255,119	\$375,175
10	724+40LT - 751+58LT	1968	6	11807	\$200,719	\$295,175	16	5	\$40,144	\$59,035
	Wall Sections:	1968	8	15742	\$267,614	\$393,550	16	5	\$53,523	\$78,710
	724+40LT - 730+00LT	1968	10	19678	\$334,526	\$491,950	16	5	\$66,905	\$98,390
	732+00LT - 735+50LT	1968	12	23613	\$401,421	\$590,325	16	5	\$80,284	\$118,065
	741+00LT - 751+58LT	1968	14	27549	\$468,333	\$688,725	16	5	\$93,667	\$137,745
	Remainder is cut area	1968	16	31484	\$535,228	\$787,100	16	5	\$107,046	\$157,420
		1968	18	35420	\$602,140	\$885,500	16	5	\$120,428	\$177,100

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**TABLE III-27C (CONT.)
FINAL NOISE BARRIER ANALYSIS**

Barrier Number	Refined Station Numbers (Station Number Equations Are Not Shown)	Length	Height	Area	Barrier Cost (Wood)	Barrier Cost (Concrete)	Affected Number of Receptors	Receptors with minimum 3dBA decrease	Avg. Cost Per Receptor (Wood)	Avg. Cost Per Receptor (Concrete)
11	741+38RT - 752+00RT	1063	6	6375	\$108,375	\$159,375	4	0	---	---
		1063	8	8500	\$144,500	\$212,500	4	0	---	---
		1063	10	10625	\$180,625	\$265,625	4	0	---	---
		1062	12	12749	\$216,733	\$318,725	4	1	\$216,733	\$318,725
		1062	14	14874	\$252,858	\$371,850	4	2	\$126,429	\$185,925
		1062	16	16999	\$288,983	\$424,975	4	2	\$144,492	\$212,488
		1062	18	19124	\$325,108	\$478,100	4	2	\$162,554	\$239,050
13	3203+00LT - 3267+00 LT Wall Sections: 3207+00LT - 3208+00LT 3211+00LT - 3231+00LT 3234+00LT - 3245+00LT 3263+00LT - 3264+50LT Remainder is cut area	2637	6	15821	\$268,957	\$395,525	22	18	\$14,942	\$21,974
		2637	8	21095	\$358,615	\$527,375	22	19	\$18,874	\$27,757
		2637	10	26369	\$448,273	\$659,225	22	19	\$23,593	\$34,696
		2637	12	31643	\$537,931	\$791,075	22	19	\$28,312	\$41,636
		2637	14	36917	\$627,589	\$922,925	22	19	\$33,031	\$48,575
		2637	16	42191	\$717,247	\$1,054,775	22	19	\$37,750	\$55,514
		2637	18	47464	\$806,888	\$1,186,600	22	19	\$42,468	\$62,453
16	3555+00RT - 3596+00RT Wall Section: 3566+00RT - 3582+50RT Cut Sections: 3555+00RT - 3566+00RT 3582+50RT - 3596+00RT	1625	6	9748	\$165,716	\$243,700	4	0	---	---
		1625	8	12998	\$220,966	\$324,950	4	1	\$220,966	\$324,950
		1625	10	16248	\$276,216	\$406,200	4	1	\$276,216	\$406,200
		1625	12	19498	\$331,466	\$487,450	4	1	\$331,466	\$487,450
		1625	14	22747	\$386,699	\$568,675	4	1	\$386,699	\$568,675
		1625	16	25997	\$441,949	\$649,925	4	3	\$147,316	\$216,641
		1625	18	29247	\$497,199	\$731,175	4	4	\$124,299	\$182,793

**TABLE III-27C (CONT.)
FINAL NOISE BARRIER ANALYSIS**

Barrier Number	Refined Station Numbers (Station Number Equations Are Not Shown)	Length	Height	Area	Barrier Cost (Wood)	Barrier Cost (Concrete)	Affected Number of Receptors	Receptors with minimum 3dBA decrease	Avg. Cost Per Receptor (Wood)	Avg. Cost Per Receptor (Concrete)
19	4998+00RT - 5013+23RT	1523	6	9136	\$155,312	\$228,400	26	0	---	---
		1523	8	12181	\$207,077	\$304,525	26	0	---	---
		1523	10	15226	\$258,842	\$380,650	26	0	---	---
		1523	12	18271	\$310,607	\$456,775	26	1	\$310,607	\$456,775
		1523	14	21316	\$362,372	\$532,900	26	2	\$181,186	\$266,450
		1523	16	24361	\$414,137	\$609,025	26	3	\$138,046	\$203,008
		1523	18	27407	\$465,919	\$685,175	26	4	\$116,480	\$171,294
23	6298+00LT - 6321+92LT	2392	9	21531	\$366,027	\$538,275	8	1	\$366,027	\$538,275
		2392	11	26315	\$447,355	\$657,875	8	3	\$149,118	\$219,292
		2392	13	31100	\$528,700	\$777,500	8	3	\$176,233	\$259,167
		2392	15	35885	\$610,045	\$897,125	8	5	\$122,009	\$179,425
		2392	17	40669	\$691,373	\$1,016,725	8	5	\$138,275	\$203,345
		2392	19	45454	\$772,718	\$1,136,350	8	7	\$110,388	\$162,336
26	7516+83LT - 7529+00LT	1217	6	7302	\$124,134	\$182,550	5	0	---	---
		1217	8	9736	\$165,512	\$243,400	5	1	\$165,512	\$243,400
		1217	10	12170	\$206,890	\$304,250	5	1	\$206,890	\$304,250
		1217	12	14604	\$248,268	\$365,100	5	1	\$248,268	\$365,100
		1217	14	17037	\$289,629	\$425,925	5	1	\$289,629	\$425,925
		1217	16	19471	\$331,007	\$486,775	5	1	\$331,007	\$486,775
		1217	18	21905	\$372,385	\$547,625	5	1	\$372,385	\$547,625

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**TABLE III-28
RECREATION RESOURCES
WITHIN 30 MINUTE DRIVE OF PROJECT AREA**

RECREATION RESOURCE	Public/ Private	RECREATION ACTIVITY														
		Camping	Hunting/Fishing	Rock Climbing	Hiking/Biking	Horseback Riding	Spelunking	Swimming	Boating	Downhill Skiing	X-Country Skiing	Picnic	Baseball/Softball	Court Sports	Other	Interpretive/Educational
Allegheny Trail - WV	Public/Private				✓										✓	
Alpena Gap - WV	Public		✓									✓				
American Discovery Trail (proposed) - WV	Public/Private				✓										✓	
Big Bend - WV	Public	✓										✓				
Big Blue Trail - WV/VA	Public/Private				✓						✓					
Black Fork - WV	Public								✓							
Blackwater Falls SP - WV	Public	✓			✓				✓			✓				
Canaan Valley Resort SP - WV	Public	✓		✓	✓						✓	✓		✓	✓	
Canaan Valley NWR - WV	Public		✓													✓
Cedar Creek - VA	Public			✓										✓	✓	✓
Dolly Sods Wilderness - WV	Public		✓	✓	✓											✓
Duck Run - VA	Public		✓													
Ellick Run - WV	Public		✓													
Edwards Run PHFA - WV	Public		✓													
Fairfax Stone SP - WV	Public											✓				✓
Fermow Exp. Forest - WV	Public															✓
Geo. Washington NF - WV/VA	Public	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	
Greenland Gap Nature Preserve - WV	Public		✓		✓											✓
Hawk PHFA - WV	Public		✓													
Hawthorne Valley GC - WV	Private														✓	
J. Allen Hawkins Park - WV	Public											✓	✓	✓		
Kimsey Run Dam & Lake (proposed) - WV	Public		✓													
Leading Creek - WV	Public		✓													
Lost River - WV	Public		✓									✓				
Lost River SP - WV	Public	✓			✓	✓		✓				✓	✓	✓		✓
Mill Race Park - WV	Public											✓	✓	✓	✓	
Monongahela NF - WV	Public	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓				
Moorefield City Park - WV	Public							✓				✓	✓	✓		
Nathaniel Mountain PHFA - WV	Public		✓													

Where:

NF = National Forest

NWR = National Wildlife Refuge

SP = State Park

PHFA = Public Hunting and Fishing Area

GC = Golf Course

**TABLE III-28 (CONT.)
RECREATION RESOURCES
WITHIN 30 MINUTE DRIVE OF PROJECT AREA**

RECREATION RESOURCE	Public/ Private	RECREATION ACTIVITY														
		Camping	Hunting/Fishing	Rock Climbing	Hiking/Biking	Horseback Riding	Spelunking	Swimming	Boating	Downhill Skiing	X-Country Skiing	Picnic	Baseball/Softball	Court Sports	Other	Interpretive/Educational
N. Fork Blackwater River - WV	Public		✓					✓								
N. Fork Patterson Creek - WV	Public		✓													
Otter Creek Wildemess Area - WV	Public															
Laural Fork - North	Public															
Laural Fork - South	Public															
Pleasant Creek - WV	Public		✓													
River City Park - WV	Public											✓	✓	✓		
Roaring Run - WV	Public		✓													
Shavers Fork - WV	Public		✓					✓								
Shingle Tree Run Trail - WV	Public				✓											
Short Mountain PHFA - WV	Public	✓	✓													
Trout Pond Rec. Area - WV	Public	✓	✓					✓	✓							
Trout Run - WV	Public		✓													
Valley View GC - WV	Public											✓		✓	✓	
VA Route 600 - VA	Public														✓	
Waites Run - WV	Public		✓													
Warden Lake - WV	Public		✓													
Wardensville PHFA - WV	Public		✓													
Wheatlands Lake - VA	Public		✓													
Wolf Gap PHFA - WV	Public		✓													

Where:

NF = National Forest

NWR = National Wildlife Refuge

SP = State Park

PHFA = Public Hunting and Fishing Area

GC = Golf Course

**TABLE III-29
RECREATION RESOURCE IMPACTS**

RECREATION RESOURCE AND AREA OF IMPACT		NO- BUILD	IRA ¹		PA ²	Line A ³
			WV	VA	WV	VA
LOCAL PARKS - no property acquisition - no constructive use	J. Allen Hawkins Park	None	None		None	
	Mill Race Park	None	Minor		None	
	River City Park	None	None		None	
	Moorefield City Park	None	Minor		None	
ALLEGHENY TRAIL -see discussion Section IV	WV 32, Davis	None	Minor		Minor	
	CR 27, Coketon	None	None		Minor	
	W. Maryland Railroad, Coketon	None	None		Minor	
	FSR 18/717	None	None		Minor	
	CR 27, Thomas	None	Minor		None	
	WV 32, Thomas	None	Minor		None	
	FSR 18/ US 219	None	Major		None	
PROPOSED AMERICAN DISCOVERY TRAIL -see discussion Section IV	CR 41, Parsons to Porterwood*	None	None		Minor	
	CR 219/7, Parsons	None	Minor		Minor	
	WV 72, Hambleton	None	None		Minor	
	W. Maryland Railroad, Coketon	None	Minor		Minor	
	US 219, Moore to Porterwood	None	Minor		None	
	US 219, Parsons	None	Minor		None	
	Thomas	None	Minor		None	
	CR 1 & 42, Greenland Gap	None	None		Minor	
	CR 42/3, Greenland Gap	None	Minor		None	
CR 3 & 3/3, Greenland Gap	None	Major		None		
BIG BLUE TRAIL see discussion Section IV	WV/VA State Line	None		Major		Major
SHINGLE TREE RUN TRAIL	Shingle Tree Run	None	Minor		None	
RIVERS & STREAMS	Black Fork	None	Minor		Minor	
	Cedar Creek	None		Minor		Minor
	Duck Run	None		Minor		Minor
	Elklick Run	None	Minor		Minor	
	Leading Creek	None	Minor		Minor	
	Lost River	None	Minor		Minor	
	North Fork of Blackwater Creek	None	Minor		Minor	
	North Fork of Patterson Creek	None	Minor		Minor	
	Pleasant Run	None	Minor		Minor	
	Roaring Run	None	Minor		Minor	
	Shavers Fork	None	Minor		Minor	
	South Branch of Potomac River	None	Minor		Minor	
	Trout Run	None	Minor		Minor	
OTHER	Monongahela NF	None	Minor		Minor	
	George Washington NF	None	Minor	Minor	Minor	Minor
	Greenland Gap Nature Preserve	None	Minor		Minor	
	VA 600	None		Minor		Minor
	VA 55	None		Minor		Minor
TOTALS:	# Resources with Impact = None	41	8	0	13	0
	# Resources with Impact = Minor	0	26	5	21	5
	# Resources with Impact = Major	0	2	1	0	1

* See Section IV discussion

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-30
OPTION AREA COMPARISON OF RECREATION RESOURCES**

WEST VIRGINIA ¹

RECREATION RESOURCE	Interchange		Shavers Fork		Patterson Creek		Forman		Line 5-D		Baker		Hanging Rock	
	Line I ¹	Line A	Line S ¹	Line A	Line P	Line A ¹	Line F ¹	Line A	Line 5-D ¹	Line A	Line B ¹	Line A	Line R	Line A ¹
American Discovery Trail: CR 41, Parsons to Porterwood			✓	✓										
Big Blue Trail														
Duck Run														
George Washington NF														
Leading Creek	✓	✓												
Lost River											✓	✓	✓	✓
Shavers Fork			✓	✓										
Monongahela NF			✓	✓										
<i>Total</i>	<i>1</i>	<i>1</i>	<i>3</i>	<i>3</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>

VIRGINIA ²

RECREATION RESOURCE	Duck Run			Lebanon Church	
	Line D1	Line D2	Line A	Line L	Line A
American Discovery Trail: CR 41, Parsons to Porterwood					
Big Blue Trail	✓	✓	✓		
Duck Run	✓	✓	✓		
George Washington NF	✓	✓	✓		
Leading Creek					
Lost River					
Shavers Fork					
Monongahela NF					
<i>Total</i>	<i>3</i>	<i>3</i>	<i>3</i>	<i>0</i>	<i>0</i>

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-31
SELECTED RESOURCES**

RESOURCE	RESOURCE TYPE	RESOURCE IMPORTANCE	EXISTING VISUAL QUALITY
Kerens Historic District	Cultural Resource	NRHP - Eligible: Architecture and Industry	Common
Monongahela National Forest (MNF)	Recreation Resource	National Forest: Recreation and Scenic Resources	<u>Common</u>
River City Park	Recreation Resource	Community Park	Minimal
Tucker County Courthouse & Jail	Cultural Resource	NRHP - Listed: Architecture	Common
Mill Race Park	Recreation Resource	Community Park	Common
Allegheny Trail	Recreation Resource	Trail	Common
American Discovery Trail (ADT)	Recreation Resource	Trail	Common
Cottrill Opera House	Cultural Resource	NRHP - Listed: Theater and Local History	Common
Coketon Coke Works Historic District	Cultural Resource	NRHP - Eligible: Industry	Common
Greenland Gap	Unique Physical Feature	National Natural Landmark: Unique Geologic Feature	Distinctive
Fort Pleasant	Cultural Resource	NRHP - Listed: Architecture, Military, Setting	Distinctive
Buena Vista Farms	Cultural Resource	NRHP - Listed: Architecture, Association, Setting	Distinctive
Willow Wall	Cultural Resource	NRHP - Listed: Architecture, Art, Setting	Distinctive
The Meadows	Cultural Resource	NRHP - Listed: Architecture, Agriculture, and Association, Setting	Distinctive
Moorefield City Park	Recreation Resource	Community Park	Common
P. W. Inskeep House	Cultural Resource	NRHP - Listed: Architecture, Agriculture, Setting	Common
Hawse House	Cultural Resource	NRHP - Eligible: Architecture	Common
John Bott House	Cultural Resource	NRHP - Eligible: Architecture	Common
Hanging Rock	Unique Physical Feature	Unique Geologic/Man-Made Local Feature	Distinctive
Baughman House	Cultural Resource	NRHP - Eligible: Architecture	Common
Cacapon/Lost River @ sinks	Unique Physical Feature	Unique Geologic/Hydrologic Feature	Minimal
Francis Godlove House	Cultural Resource	NRHP - Eligible: Architecture	Common
Nicholas Switzer House	Cultural Resource	NRHP - Eligible: Architecture	Common
Valentine Switzer House	Cultural Resource	NRHP - Eligible: History, Association, and Architecture	Common
J. Allen Hawkins Community Park	Recreation Resource	Community Park	Common
Big Blue Trail	Recreation Resource	Trail	Common
VA 600	Scenic Resource	Potential Virginia Scenic Byway	Minimal
George Washington National Forest (GWNF)	Recreation Resource	National Forest: Recreation and Scenic Resources	Common
Boehm/Coffelt House	Cultural Resource	NRHP - Eligible: Architecture	Distinctive
Vesper Hall and Tenant House	Cultural Resource	NRHP - Eligible: Architecture	Common
VA 55	Scenic Resource	Potential Virginia Scenic Byway	Distinctive

Where:

NRHP - Listed = Site listed in the National Register of Historic Places.

NRHP - Eligible = Site eligible for listing in the National Register of Historic Places.

**TABLE III-32
VIEWS OF AND FROM THE PROPOSED PROJECT**

WEST VIRGINIA

RESOURCES	LINE	VIEWER'S PERSPECTIVE	DISTANCE FROM SITE TO ALIGNMENT	PRIMARY VIEWERS OF ROAD FROM SITE						VIEW FROM ROAD OF SITE		
				Residential	Recreational	Community	Educational	Commercial	Industrial	Tourist Traffic	Local Traffic	Through Traffic
Kerens Historic District	IRA ¹	AF	76m (250')	✓		✓				✓	✓	✓
	PA ²	AF	76m (250')	✓		✓				✓	✓	✓
Monongahela National Forest	IRA ¹	Varies	Varies	✓	✓	✓	✓	✓	✓	✓	✓	✓
	PA ²	Varies	Varies	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Line S	Varies	Varies	✓	✓	✓	✓	✓	✓	✓	✓	✓
River City Park	IRA ¹	GF	23m (75')		✓	✓				✓	✓	✓
	PA ²	AB	580m (1900')		✓	✓				✓	✓	✓
Tucker County Courthouse & Jail	IRA ¹	GF	15m (50')			✓	✓	✓		✓	✓	✓
	PA ²	AB	1311m (4300')			✓						
Mill Race Park	IRA ¹	GF	30m (100')		✓	✓				✓	✓	✓
	PA ²	Not Visible	Not Visible									
Allegheny Trail	IRA ¹	Varies	Varies		✓							
	PA ²	Varies	Varies		✓							
American Discovery Trail	IRA ¹	Varies	Varies		✓							
	PA ²	Varies	Varies		✓							
Cottrill Opera House	IRA ¹	AB	549m (1800')			✓						
	PA ²	Not Visible	Not Visible									
Coketon Coke Works Historic District	IRA ¹	AF	61m (200')		✓	✓	✓			✓	✓	✓
	PA ²	AF	0m (0')		✓	✓	✓			✓	✓	✓
Greenland Gap	IRA ¹	Not Visible	Not Visible									
	PA ²	Not Visible	Not Visible									
Fort Pleasant	IRA ¹	GM	335m (1100')	✓						✓	✓	✓
	PA ²	Not Visible	Not Visible									
Buena Vista Farms	IRA ¹	BF	91m (300')	✓						✓	✓	✓
	PA ²	Not Visible	Not Visible									
Willow Wall	IRA ¹	GF	6m (20')	✓						✓	✓	✓
	PA ²	GB	960m (3200')	✓							✓	

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

Visual Perspective:

Foreground (F) = 0m to 183m (0' to 600')

Midground (M) = 183.1m to 366m (601' to 1200')

Background (B) = 366.1m & up (1201' & up)

VERTICAL GRADE	VISUAL PERSPECTIVE		
	Foreground	Midground	Background
At-Grade Road (G)	GF	GM	GB
Above-Grade Road (A)	AF	AM	AB
Below-Grade Road (B)	BF	BM	BB

**TABLE III-32 (CONT.)
VIEWS OF AND FROM THE PROPOSED PROJECT**

WEST VIRGINIA

RESOURCES	LINE	VIEWER'S PERSPECTIVE	DISTANCE FROM SITE TO ALIGNMENT	PRIMARY VIEWERS OF ROAD FROM SITE						VIEW FROM ROAD OF SITE		
				Residential	Recreational	Community	Educational	Commercial	Industrial	Tourist Traffic	Local Traffic	Through Traffic
The Meadows	IRA ¹	AB	549m (1800')	✓						✓	✓	✓
	PA ²	Not Visible	Not Visible									
Moorefield City Park	IRA ¹	AF	37m (120')		✓	✓				✓	✓	✓
	PA ²	Not Visible	Not Visible									
P. W. Inskeep House	IRA ¹	GF	6m (20')	✓						✓	✓	✓
	PA ²	Not Visible	Not Visible									
Hawse House	IRA ¹	Not Visible	Not Visible									
	PA ²	AF	64m (210')		✓					✓	✓	✓
John Bott House	IRA ¹	GF	6m (20')	✓						✓	✓	✓
	PA ²	AF	160m (525')	✓						✓	✓	✓
	Line B	AF	160m (525')	✓						✓	✓	✓
Hanging Rock	IRA ¹	GF	0m (0')		✓	✓				✓	✓	✓
	PA ²	AF	168m (550')		✓	✓				✓	✓	✓
	Line R	AF	61m (200')		✓	✓				✓	✓	✓
Baughman House	IRA ¹	AF	3m (10')	✓						✓	✓	✓
	PA ²	AF	91m (300')	✓						✓	✓	✓
	Line R	AF	76m (250')	✓						✓	✓	✓
Cacapon/Lost River @ river sinks	IRA ¹	AF	0m (0')		✓					✓	✓	✓
	PA ²	AF	0m (0')		✓					✓	✓	✓
Francis Godlove House	IRA ¹	GM	259m (850')	✓						✓	✓	✓
	PA ²	AM	213m (700')	✓						✓	✓	✓
Nicholas Switzer House	IRA ¹	Not Visible	Not Visible									
	PA ²	Not Visible	Not Visible									
Valentine Switzer House	IRA ¹	Not Visible	Not Visible									
	PA ²	AB	373m (1225')	✓								
J. Allen Hawkins Park	IRA ¹	Not Visible	Not Visible									
	PA ²	AF	30m (100')		✓	✓				✓	✓	✓

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

Visual Perspective:

Foreground (F) = 0m to 183m (0' to 600')

Midground (M) = 183.1m to 366m (601' to 1200')

Background (B) = 366.1m & up (1201' & up)

VERTICAL GRADE	VISUAL PERSPECTIVE		
	Foreground	Midground	Background
At-Grade Road (G)	GF	GM	GB
Above-Grade Road (A)	AF	AM	AB
Below-Grade Road (B)	BF	BM	BB

**TABLE III-32 (CONT.)
VIEWS OF AND FROM THE PROPOSED PROJECT**

VIRGINIA¹

RESOURCES	LINE	VIEWER'S PERSPECTIVE	DISTANCE FROM SITE TO ALIGNMENT	PRIMARY VIEWERS OF ROAD FROM SITE						VIEW FROM ROAD OF SITE		
				Residential	Recreational	Community	Educational	Commercial	Industrial	Tourist Traffic	Local Traffic	Through Traffic
Big Blue Trail	IRA	GF	0m (0')		✓					✓	✓	✓
	Line A	AF	0m (0')		✓					✓	✓	✓
	Line D1	AF	0m (0')		✓					✓	✓	✓
	Line D2	AF	0m (0')		✓					✓	✓	✓
VA 600	IRA	GF	0m (0')		✓	✓		✓		✓	✓	✓
	Line A	AF	0m (0')	✓	✓	✓		✓		✓	✓	✓
	Line D1	AF	0m (0')	✓	✓	✓		✓		✓	✓	✓
	Line D2	AF	0m (0')	✓	✓	✓		✓		✓	✓	✓
George Washington National Forest	IRA	Varies	Varies	✓	✓	✓	✓	✓		✓	✓	✓
	Line A	Varies	Varies	✓	✓	✓	✓	✓		✓	✓	✓
	Line D1	Varies	Varies	✓	✓	✓	✓	✓		✓	✓	✓
	Line D2	Varies	Varies	✓	✓	✓	✓	✓		✓	✓	✓
Boehm/Coffelt House	IRA	AF	30m (100')			✓				✓	✓	✓
	Line A	AM	229m (750')			✓				✓	✓	✓
	Line L	Not Visible	Not Visible									
Vesper Hall & Tenant House	IRA	Not Visible	Not Visible									
	Line A	Not Visible	Not Visible									
	Line L	Not Visible	Not Visible									
VA 55	IRA	Varies	Varies	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Line A	Varies	Varies	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Line L	Varies	Varies	✓	✓	✓	✓	✓	✓	✓	✓	✓

¹ Virginia did not select a Preferred Alternative as explained in the text, Section II.

Visual Perspective:

Foreground (F) = 0m to 183m (0' to 600')

Midground (M) = 183.1m to 366m (601' to 1200')

Background (B) = 366.1m & up (1201' & up)

VERTICAL GRADE	VISUAL PERSPECTIVE		
	Foreground	Midground	Background
At-Grade Road (G)	GF	GM	GB
Above-Grade Road (A)	AF	AM	AB
Below-Grade Road (B)	BF	BM	BB

**TABLE III-33
VISUAL IMPACT BY ALTERNATIVE**

WEST VIRGINIA

RESOURCE	EXISTING VISUAL QUALITY	OPTION AREAS									
		NO-BUILD	IRA ¹	PA ²	Line F	Line S	Line P	Line F	Line 5-D ³	Line B ³	Line R
Kerens Historic District	Common	NI	H	H							
Monongahela N.F.	Common	NI	MIN	MOD		MOD					
River City Park	Minimal	NI	MIN	MIN							
Courthouse & Jail	Common	NI	MIN	MIN							
Mill Race Park	Common	NI	MIN	NI							
Allegheny Trail	Common	NI	MOD	MOD							
A.D.T.	Common	NI	MOD	MOD							
Cottrill Opera House	Common	NI	MOD	NI							
Coketon H.D.	Common	NI	MIN	MOD							
Greenland Gap	Distinctive	NI	NI	NI							
Fort Pleasant	Distinctive	NI	MIN	NI							
Buena Vista Farms	Distinctive	NI	MOD	NI							
Willow Wall	Distinctive	NI	MOD	MIN							
The Meadows	Distinctive	NI	MOD	NI							
Moorefield City Park	Common	NI	H	NI							
P. W. Inskeep House	Common	NI	H	NI							
Hawse House	Common	NI	NI	H							
John Bott House	Common	NI	MOD	MOD					MOD		
Hanging Rock	Distinctive	NI	MOD	H							H
Baughman House	Common	NI	H	MOD							MIN
Cacapon/Lost River	Minimal	NI	MIN	MIN							
F. Godlove House	Common	NI	MIN	MIN							
N. Switzer House	Common	NI	NI	NI							
V. Switzer House	Common	NI	NI	MIN							
J. Allen Hawkins Park	Common	NI	NI	MIN							
TOTAL NO INVOLVEMENT		25	5	9							
TOTAL MINIMAL CHANGE		0	8	6	0	0	0	0	0	0	1
TOTAL MODERATE CHANGE		0	8	7	0	1	0	0	0	1	0
TOTAL HIGH CHANGE		0	4	3	0	0	0	0	0	0	1

VIRGINIA³

RESOURCE	EXISTING VISUAL QUALITY	OPTION AREAS					
		NO-BUILD	IRA	LINE A	Line D1	Line D2	Line L
Big Blue Trail	Common	NI	NI	MOD	MOD	MOD	
VA 600	Minimal	NI	MOD	MOD	MOD	MOD	
G. Washington N.F.	Common	NI	MOD	MOD	MOD	MOD	
Boehm/Coffelt House	Distinctive	NI	MOD	MOD			NI
Vesper Hall	Common	NI	NI	NI			NI
VA 55	Distinctive	NI	MOD	MOD			MOD
TOTAL NO INVOLVEMENT		0	2	1	0	0	2
TOTAL MINIMAL CHANGE		6	0	0	0	0	0
TOTAL MODERATE CHANGE		0	4	4	3	3	1
TOTAL HIGH CHANGE		0	0	0	0	0	0

High Impacts (H), Moderate Impacts (MOD), Minimal Impacts (MIN), or No Involvement (Blank)

¹The IRA was not selected as the Preferred Alternative as explained in text, Section III.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section III.

**TABLE III-34
VISUAL IMPACT DETERMINATIONS**

VISUAL RESOURCES	ALT.	IMPACT	BASIS FOR IMPACT DETERMINATION
Kerens Historic District	IRA ¹	<u>HIGH</u>	Visibility and proximity of IRA on new alignment would be inconsistent with the existing visual qualities of this Historic District. In addition, the IRA on new alignment across the floodplain would be in strong contrast with the existing landscape of the District.
	PA ²	<u>HIGH</u>	Visibility and proximity of the Preferred Alternative (WV) would be inconsistent with the existing visual qualities of this Historic District, but could be mitigated.
Monongahela National Forest	IRA ¹	<u>MIN</u>	The MNF is a multiple use area with existing roadways within the Forest limits. Improvements to the existing road would not <u>substantially alter views of and from</u> the visually sensitive resources within the MNF.
	Line A	<u>MOD</u>	The MNF is a multiple use area with existing roadways within the Forest limits. Dominating visual intrusions such as topography, vegetation, and distance would reduce the visual intrusion of the Preferred Alternative (WV) on visually sensitive resources within the MNF. Therefore, the Preferred Alternative (WV) would <u>result in a moderate change to</u> the visual resources within the MNF.
	PA ²	<u>MOD</u>	The MNF is a multiple use area with existing roadways within the Forest limits. Dominating visual intrusions such as topography, vegetation, and distance would reduce the visual intrusion of Line S on visually sensitive resources within the MNF. Therefore, Line S would <u>result in a moderate change to</u> the visual resources within the MNF.
River City Park	IRA ¹	<u>MIN</u>	The IRA would remain on existing US 219 as it passes the park. The IRA would not change the existing visual environment associated with the park.
	PA ²	<u>MIN</u>	Topography, vegetation, and distance would reduce the visual intrusion of The Preferred Alternative (WV) into the viewshed of the park. Given that the park is in a relatively developed setting, the addition of Preferred Alternative (WV) into the background viewshed would <u>only have a minimal change to</u> the visual integrity of the park.
Tucker County Courthouse & Jail	IRA ¹	<u>MIN</u>	The IRA would remain on existing US 219/72 as it passes the courthouse and jail. The IRA would not change the existing visual environment associated with the courthouse and associated jail.
	PA ²	<u>MIN</u>	Topography, vegetation, and distance would reduce the visual intrusion of the Preferred Alternative (WV) into the viewshed of the courthouse. Because the courthouse and jail are in a relatively developed setting, the addition of the Preferred Alternative (WV) into the background viewshed would <u>result in a minimal change to</u> the site's visual integrity.
Mill Race Park	IRA ¹	<u>MIN</u>	The IRA would remain on existing US 219/72 as it passes the park. The IRA would not change the existing visual environment associated with the park.
	PA ²	<u>NI</u>	The Preferred Alternative (WV) would not be visible from the park.
Allegheny Trail	IRA ¹	<u>MOD</u>	The Allegheny Trail would have several involvements with the IRA as the trail passes through the area. The IRA would <u>have only a moderate impact on</u> the visual experience associated with the trail, given that the trail already passes through small towns and <u>provides</u> a variety of visual experiences. Visual experiences associated with the IRA would not be inconsistent with experiences along the rest of the trail within the area.
	PA ²	<u>MOD</u>	The Allegheny Trail would have several involvements with the Preferred Alternative (WV) as the trail passes through the area. The Preferred Alternative (WV) would <u>result in a moderate change to</u> the visual experience associated with the trail, given that the trail already passes through small towns and <u>provides</u> a variety of visual experiences. Visual experiences associated with the Preferred Alternative (WV) would not be inconsistent with experiences along the rest of the trail within the area.

Where:

NI = No Involvement MIN = Minimal Change or Impact MOD = Moderate Change or Impact HIGH = High Degree Change or Impact

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

²Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

TABLE III-34 (CONT.)
VISUAL IMPACT DETERMINATIONS

VISUAL RESOURCES	ALT.	IMPACT	BASIS FOR IMPACT DETERMINATION
American Discovery Trail	IRA ¹	<u>MOD</u>	The American Discovery Trail would have several involvements with the IRA as the trail passes through the area. The IRA would <u>result in a moderate change to</u> the visual experience associated with the trail, given that the trail already passes through small towns and <u>provides</u> a variety of visual experiences. Visual experiences associated with the IRA would not be inconsistent with experiences along the rest of the trail.
	PA ²	<u>MOD</u>	The American Discovery Trail would have several involvements with <u>The Preferred Alternative (WV)</u> as the trail passes through the area. <u>The Preferred Alternative (WV)</u> would <u>result in a moderate change to</u> the visual experience associated with the trail, given that the trail already passes through small towns and <u>provides</u> a variety of visual experiences. Visual experiences associated with <u>The Preferred Alternative (WV)</u> would not be inconsistent with experiences along the rest of the trail.
Cottrill Opera House	IRA ¹	<u>MOD</u>	The IRA would cross the background view from the opera house. Given the existing development surrounding the opera house and the distance removed from the IRA, the proposed line would <u>only have a moderate impact to the surrounding viewshed.</u>
	PA ²	<u>NI</u>	<u>The Preferred Alternative (WV)</u> would not be visible from the Cottrill Opera House.
Coketon Coke Works Historic District	IRA ¹	<u>MIN</u>	The viewshed of this Historic District is of limited importance with regard to the value of the site. While the IRA would be in close proximity to the District, its associated intrusion into the viewshed of the District would be considered <u>minimal</u> .
	PA ²	<u>MOD</u>	The viewshed of this Historic District is of limited importance with regard to the value of the site. In addition, the original visual condition associated with the District has been considerably altered due to the Douglas Highwall Reclamation Project in the vicinity of the <u>Preferred Alternative (WV)</u> crossing. While <u>The Preferred Alternative (WV)</u> would bridge the middle of the District, its associated intrusion into the viewshed of the District would <u>only</u> be considered <u>moderate</u> .
Greenland Gap	IRA ¹	<u>NI</u>	The IRA would not be visible within Greenland Gap.
	PA ²	<u>NI</u>	<u>The Preferred Alternative (WV)</u> would not be visible within Greenland Gap.
Fort Pleasant	IRA ¹	<u>MIN</u>	Topography, distance, and existing visual intrusions (houses that block the view of the IRA) would reduce the visual impact of the IRA. In addition, there would be a weak visual contrast between the proposed facility and the existing landscape for the portions of the IRA that would be visible.
	PA ²	<u>IN</u>	<u>The Preferred Alternative (WV)</u> would not be visible from Fort Pleasant.
Buena Vista Farms	IRA ¹	<u>MOD</u>	Topography, distance, and existing visual intrusions would reduce the visual impact of the IRA. In addition, there would be a weak visual contrast between proposed facility and the existing landscape for the portions of the IRA that would be visible. The IRA would <u>result in a moderate change to</u> the visual quality of Buena Vista Farms.
	PA ²	<u>IN</u>	<u>The Preferred Alternative (WV)</u> would not be visible from Buena Vista Farms.
Willow Wall	IRA ¹	<u>MOD</u>	The IRA would be located along existing WV 28 as it passes Willow Wall. Modifications to the existing roadway under the IRA would be <u>minor</u> . Therefore, the IRA would <u>result in a moderate change to</u> the existing visual quality of Willow Wall.
	PA ²	<u>MIN</u>	Topography, vegetation, and distance would reduce the visual impact of <u>The Preferred Alternative (WV)</u> within the viewshed of Willow Wall. Therefore, <u>The Preferred Alternative (WV)</u> would <u>result in a moderate change to</u> the visual quality of Willow Wall.

Where:

NI = No Involvement MIN = Minimal Change or Impact MOD = Moderate Change or Impact HIGH = High Degree Change or Impact

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

**TABLE III-34 (CONT.)
VISUAL IMPACT DETERMINATIONS**

VISUAL RESOURCES	ALT.	IMPACT	BASIS FOR IMPACT DETERMINATION
The Meadows	IRA ¹	<u>MOD</u>	The IRA would be located along existing WV 28 as it passes The Meadows. Modifications to the existing roadway under the IRA would be <u>minor</u> . Therefore, the IRA would <u>result in a high change to the visual quality of Willow Wall</u> .
	PA ²	<u>NI</u>	<u>The Preferred Alternative (WV) would not be visible from The Meadows.</u>
Moorefield City Park	IRA ¹	<u>HIGH</u>	The IRA would be on new alignment and in close proximity to the park. The park is currently bounded on three sides by development associated with Moorefield. The remaining side offers the only undisturbed view of the mountain and valley setting. The ballfield bleachers are situated such that the ballfield is in the foreground and the undisturbed mountain and valley view is in the mid and background. The IRA would pass directly in front of and in close proximity to the ballfield. The close proximity of the IRA, its obstruction of the primary view from the park, and the intrusion of vehicular traffic into the foreground of the primary view would result in a <u>negative and high degree of visual impact</u> .
	PA ²	<u>NI</u>	<u>The Preferred Alternative (WV) would not be visible from Moorefield City Park.</u>
P. W. Inskeep House	IRA ¹	<u>HIGH</u>	The close proximity of the IRA to the P.W. Inskeep house would substantially alter the existing visual quality of the house. The proximity of the IRA would be in strong contrast with the existing landscape. Therefore, the IRA would <u>result in a high degree of change to the visual environment surrounding the P.W. Inskeep House</u> .
	PA ²	<u>NI</u>	<u>The Preferred Alternative (WV) would not be visible from the P.W. Inskeep House.</u>
Hawse House	IRA ¹	<u>NI</u>	The IRA would not be visible from the Hawse House.
	PA ²	<u>HIGH</u>	The visibility of <u>The Preferred Alternative (WV) within the viewshed of the Hawse House would be inconsistent with the site. Therefore, The Preferred Alternative (WV) would result in a high degree of change to the visual environment surrounding the Hawse House.</u>
John Bott House	IRA ¹	<u>MOD</u>	The John Bott House is located along the southern side of WV 55. The IRA would end its relocation of WV 55 in front of the Bott House. Proposed changes to WV 55 under the IRA would not be inconsistent with the existing viewshed associated with the Bott House. Therefore, the IRA would have <u>only a moderate impact on this site</u> .
	PA ²	<u>MOD</u>	Because the Bott house is already situated along WV 55, the introduction of an additional road in this area would not be inconsistent with the existing viewshed. Topography and vegetation would reduce the visibility of <u>The Preferred Alternative (WV) in the vicinity of the Bott House. Therefore, The Preferred Alternative (WV) would have only a moderate impact on this site.</u>
	Line B	<u>MOD</u>	Because the Bott house is already situated along WV 55, the introduction of an additional road in this area would not be inconsistent with the existing viewshed. Topography and vegetation would reduce the visibility of Line B in the vicinity of the Bott House. Therefore, Line B would have <u>only a moderate impact on this site</u> .
Hanging Rock	IRA ¹	<u>MOD</u>	The IRA would avoid the unique "hanging" feature. However, it is possible the blasting and construction activities in the vicinity of Hanging Rock could disturb the feature. Therefore, the IRA <u>could result in a high change to the visual quality of Hanging Rock</u> .
	PA ²	<u>HIGH</u>	The bridge associated with <u>The Preferred Alternative (WV) would pass directly behind the currently undisturbed view of Hanging Rock. The inconsistency of The Preferred Alternative (WV) within the Hanging Rock viewshed results in a high degree of change to the viewshed.</u>
	Line R	<u>HIGH</u>	The bridge associated with Line R would pass directly in front of the currently undisturbed view of Hanging Rock. The visibility and close proximity of Line R to Hanging Rock, and the inconsistency of Line R within the Hanging Rock viewshed, <u>results in a high degree of change to the viewshed.</u>

Where:

NI = No Involvement MIN = Minimal Change or Impact MOD = Moderate Change or Impact HIGH = High Degree Change or Impact

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

TABLE III-34 (CONT.)
VISUAL IMPACT DETERMINATIONS

VISUAL RESOURCES	ALT.	IMPACT	BASIS FOR IMPACT DETERMINATION
Baughman House	IRA ¹	<u>HIGH</u>	The close proximity of the IRA to the Baughman House would substantially alter the existing visual integrity of the house. The visibility and proximity of the IRA would be in strong contrast to the existing visual environment, given the IRA earthwork required within the viewshed of the Baughman House.
	PA ²	<u>MOD</u>	The Preferred Alternative (WV) crosses approximately 30 meters (100 feet) above WV 55 and the Lost River on a bridge approximately 100 meters (300 feet) east of the Baughman House. The presence of the bridge will change the view from the Baughman House toward the soft ice-cream store and its large gravel parking area.
	Line R	<u>MIN</u>	Line R would pass behind the principal viewshed of the Baughman House. Therefore, it would result in a moderate change to the visual quality of the site.
Cacapon/Lost River @ River Sinks	IRA ¹	<u>MIN</u>	Given the minimal existing visual quality of the sinks area, it can be inferred that the viewshed of this resource is limited in importance. The introduction of the IRA on new alignment through this area would not substantially interfere with the site's existing visual quality. The IRA would result in a minimal change to the existing visual quality of this site.
	PA ²	<u>MIN</u>	Given the minimal existing visual quality of the sinks area, it can be inferred that the viewshed of this resource is limited in importance. Therefore, the introduction of The Preferred Alternative (WV) through this area would result in a minimal change to the site's existing visual quality.
Francis Godlove House	IRA ¹	<u>MIN</u>	Intervening topography, vegetation, and distance would reduce the visual intrusion of the IRA into the viewshed of the Francis Godlove House. In addition, the IRA would remain on existing WV 55 through the Wardensville area.
	PA ²	<u>MIN</u>	Intervening topography, vegetation, and distance would reduce the visual intrusion of The Preferred Alternative (WV) into the viewshed of the Francis Godlove House.
Nicholas Switzer House	IRA ¹	<u>NI</u>	The IRA would not be visible from the Nicholas Switzer House.
	PA ²	<u>NI</u>	The Preferred Alternative (WV) would not be visible from the Nicholas Switzer House.
Valentine Switzer House	IRA ¹	<u>NI</u>	The IRA would not be visible from the Valentine Switzer House.
	PA ²	<u>MIN</u>	Intervening topography, vegetation, and distance would reduce the visual intrusion of The Preferred Alternative (WV) into the viewshed of the Valentine Switzer House.
J. Allen Hawkins Community Park	IRA ¹	<u>NI</u>	The IRA would not be visible from the Hawkins Community Park.
	PA ²	<u>MIN</u>	Intervening topography, vegetation, and distance from the park's formal activities reduce the visual intrusion of The Preferred Alternative (WV) into the park's existing viewshed.

Where:

NI = No Involvement MIN = Minimal Change or Impact MOD = Moderate Change or Impact HIGH = High Degree Change or Impact

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

²Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

TABLE III-34 (CONT.)
VISUAL IMPACT DETERMINATIONS
VIRGINIA³

VISUAL RESOURCES	ALT.	IMPACT	BASIS FOR IMPACT DETERMINATION
Big Blue Trail	IRA	<u>MOD</u>	The Big Blue Trail currently crosses VA 55 at-grade. Changes made to VA 55 under the IRA would not substantially alter the existing visual quality of the trail. Therefore, the IRA would <u>result in a moderate change to</u> the visual quality of this site.
	Line A	<u>MOD</u>	Line A would require the relocation of the Big Blue Trail. The introduction of an additional roadway facility would not be inconsistent given that the trail currently crosses VA 55 at-grade. The relocated trail would likely provide additional scenic vistas not currently available along the existing trail. Line A would <u>result in a moderate change to</u> the visual quality of the trail.
	Line D1	<u>MOD</u>	Line D1 would require the relocation of the Big Blue Trail. The introduction of an additional roadway facility would not be inconsistent given that the trail currently crosses VA 55 at-grade. The relocated trail would likely provide additional scenic vistas not currently available along the existing trail. Line D1 would <u>result in a moderate change to</u> the visual quality of the trail.
	Line D2	<u>MOD</u>	Line D2 would require the relocation of the Big Blue Trail. The introduction of an additional roadway facility would not be inconsistent given that the trail currently crosses VA 55 at-grade. The relocated trail would likely provide additional scenic vistas not currently available along the existing trail. Line D2 would <u>result in a moderate change to</u> the visual quality of the trail.
VA 600	IRA	<u>MOD</u>	Changes made to VA 55, including the reconstruction of the existing VA 600 intersection, would not adversely impact the visual qualities of this site. The IRA would <u>only result in a high change to the scenic qualities of</u> VA 600.
	Line A	<u>MOD</u>	In the vicinity of Line A, VA 600 is considered to have a minimal level of visual quality. Given the existing visual conditions, it can be inferred that this area is of limited visual importance. Therefore, the introduction of Line A in this area would <u>result in a moderate change to the scenic qualities of this site</u> .
	Line D1	<u>MOD</u>	In the vicinity of Line D1, VA 600 is considered to have a minimal level of visual quality. Given the existing visual conditions, it can be inferred that this area is of limited visual importance. Therefore, the introduction of Line D1 in this area would <u>result in a moderate change to the scenic qualities of this site</u> .
	Line D2	<u>MOD</u>	In the vicinity of the Line D2 location, VA 600 is considered to have a minimal level of visual quality. Given the existing visual conditions, it can be inferred that this area is of limited visual importance. Therefore, the introduction of Line D2 in this area would <u>result in a moderate change to the scenic qualities of this site</u> .
George Washington National Forest (GWNF)	IRA	<u>MOD</u>	The GWNF is a multiple use area with existing roadways within the Forest limits. Improvements to the existing road would <u>result in a moderate change to</u> visually sensitive resources within the GWNF.
	Line A	<u>MOD</u>	The GWNF is a multiple use area with existing roadways within the Forest limits. Dominating visual intrusions such as topography, vegetation, and distance would reduce the visual intrusion of Line A on visually sensitive resources within the GWNF. Therefore, Line A would <u>result in a moderate change to</u> the visual resources within the GWNF.
	Line D1	<u>MOD</u>	The GWNF is a multiple use area with existing roadways within the Forest limits. Dominating visual intrusions such as topography, vegetation, and distance would reduce the visual intrusion of Line D1 on visually sensitive resources within the GWNF. Therefore, Line D1 would <u>result in a moderate change to</u> the visual resources within the GWNF.
	Line D2	<u>MOD</u>	The GWNF is a multiple use area and there are existing roadways within the Forest limits. Dominating visual intrusions such as topography, vegetation, and distance would reduce the visual intrusion of Line D2 on visually sensitive resources within the GWNF. Therefore, Line D2 would <u>result in a moderate change to</u> the visual resources within the GWNF.

Where:

NI = No Involvement MIN = Minimal Change or Impact MOD = Moderate Change or Impact HIGH = High Degree Change or Impact

³ Virginia did not select a Preferred Alternative as explained in the text, Section II

TABLE III-34 (CONT.)
VISUAL IMPACT DETERMINATIONS
VIRGINIA³

VISUAL RESOURCES	ALT.	IMPACT	BASIS FOR IMPACT DETERMINATION
Boehm/Coffelt House	IRA	<u>MOD</u>	The Boehm/Coffelt House is located along the southern side of VA 55. The IRA would slightly shift to the north of VA 55, away from the Boehm/Coffelt House. Proposed changes to VA 55 under the IRA would not be inconsistent with the existing viewshed associated with the Boehm/Coffelt House.
	Line A (VA)	<u>MOD</u>	Intervening distance, topography, and vegetation would substantially reduce the visual intrusion associated with Line A (VA). Therefore, Line A (VA) would <u>only result in a moderate change</u> to the visual quality of the Boehm/Coffelt House.
	Line L (VA)	<u>NI</u>	Line L (VA) would not be visible from the Boehm/Coffelt House.
Vesper Hall & Tenant House	IRA	<u>NI</u>	The IRA would not be visible from Vesper Hall and Tenant House.
	Line A (VA)	<u>NI</u>	Line A (VA) would not be visible from Vesper Hall and Tenant House.
	Line L (VA)	<u>NI</u>	Line L (VA) would not be visible from Vesper Hall and Tenant House.
VA 55	IRA	<u>MOD</u>	Minor improvements to VA 55 under the IRA would not alter the existing scenic qualities associated with the area's surrounding viewshed. The IRA would <u>result in a moderate change to</u> the scenic nature of VA 55.
	Line A (VA)	<u>MOD</u>	Approximately half of Line A would be visible from VA 55 within Shenandoah County. Intervening topography, vegetation, distance, and structures would reduce the degree of visual intrusion along the remaining visible half. While Line A would be a visual intrusion into the existing viewshed associated with VA 55, this intrusion would be lessened by the above factors. Therefore, Line A would <u>result in a moderate change to the scenic qualities associated with the VA 55 viewshed.</u>
	Line L (VA)	<u>MOD</u>	Much of Line L would not be visible from VA 55. Therefore, Line L would <u>result in a moderate change to the scenic qualities associated with the VA 55 viewshed.</u>

Where:

NI = No Involvement MIN = Minimal Change or Impact MOD = Moderate Change or Impact HIGH = High Degree Change or Impact

³ Virginia did not select a Preferred Alternative as explained in the text, Section II

**TABLE III-35
POSSIBLE MITIGATION MEASURES FOR SPECIFIC SITES**

VISUAL RESOURCE	ALT.	POSSIBLE MITIGATION MEASURES
Kerens Historic District	IRA ¹	Plantings may be partially effective in screening the IRA's visual intrusion. <u>Provide dense plantings for screening.</u>
	PA ²	Landscape the cut and fill slopes to blend in with the existing scenery.
Moorefield City Park	IRA ¹	Provide dense plantings to screen the at-grade view of the road and traffic.
P. W. Inskip House	IRA ¹	The visual impact could be reduced by shifting the IRA away from the house, closer to the existing roadway and providing plantings to screen the view.
Hawse House	PA ²	Provide dense plantings to screen the view of the road and traffic. Landscape the cut and fill slopes to blend in with existing scenery. Gently round the cut and fill slopes to blend in with surrounding topography.
Baughman House	IRA ¹	Landscape the cut and fill slopes.
	PA ²	Landscaping <u>and dense plantings.</u>

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

**TABLE III-36
SUMMARY OF CULTURAL RESOURCES**

NATIONAL REGISTER OF HISTORIC PLACES SITE STATUS											
CULTURAL RESOURCE TYPE	# Sites in West Virginia					# Sites in Virginia					TOTALS
	Listed	Eligible	Considered Eligible	Not Eligible	Eligibility Undetermined	Listed	Eligible	Potentially Eligible	Not Eligible	Eligibility Undetermined	
Prehistoric Archaeological Sites	0	0	71	0	0	0	0	2	0	0	73
Historic Archaeological Sites	0	8	49	1	0	0	0	16	0	0	74
Multi-Component Sites	0	0	5	0	0	0	0	0	0	0	5
Single Historic Buildings	7	11	266	276	0	0	2	76	39	6	683
Single Historic Structures	0	0	8	0	0	0	0	1	0	0	9
Historic Districts	1	1	11	0	0	0	0	1	0	0	14
Historic Cemeteries	0	1	13	12	0	0	0	0	7	0	33
Historic Battlefields	0	2	0	0	0	0	0	0	0	0	2
Totals	8	23	423	289	0	0	2	96	46	6	893

**TABLE III-37
SUMMARY OF EFFECT AND ADVERSE EFFECT FOR CONSIDERED ELIGIBLE PROPERTIES***

ALTERNATIVES COMPARISON				
	Preferred Alternative ²	Line A ³	IRA ¹	
	WV	VA	WV	VA
No Effect	331	66	297	41
Effect	122	26	161	52
Adverse Effect (Buildings, Structures, Historic Districts / Archaeological Sites)	12 / 10	0 / 1	11 / 21	5 / 5

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	OPTION AREA COMPARISONS IN WEST VIRGINIA														OPTION AREA COMPARISONS IN VIRGINIA ³				
	INTERCHANGE		SHAVERS FORK		PATTERSON CREEK		FORMAN		LINE 5-D		BAKER		HANGING ROCK		DUCK RUN			LEBANON CHURCH	
	Line I ²	Line A	Line S ²	Line A	Line P	Line A ²	Line F ²	Line A	Line 5-D ²	Line A	Line B ²	Line A	Line R	Line A ²	Line D1	Line D2	Line A	Line L	Line A
No Effect	0	0	10	7	2	1	0	1	2	0	4	3	2	2	1	1	1	58	52
Effect	3	3	1	4	2	3	4	3	1	3	6	7	3	3	2	2	2	19	25
Adverse Effect	0	0	0	1	1	1	0	1	0	0	1	0	0	0	1	1	1	1	1

* as derived from the ASDEIS Cultural Resources Technical Report (Tables 6.2, 6.3, and 6.4); See definition of "Considered Eligible" in Section III (L) of the FEIS.

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

²Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-38
PREDICTED SECONDARY IMPACTS TO CULTURAL RESOURCES**

SITES PROXIMAL TO PREDICTED COMMERCIAL DEVELOPMENT	
RESOURCE NO.	RESOURCE TYPE & ELIGIBILITY
01-01	Prehistoric Site (PE)
01-03	National Gable Front & Wing Residence (PE)
02-04	National I-House (PE)
80-01	Queen Anne Residence (CE);
80-02	Pre-Railroad Tidewater Residence (CE);
142-01	Craftsman Side Gabled Residence (CE)
191-01	National Gable Front & Wing Residence (CE)
IBK-01	Historic Domestic Site (CE)

SITES IDENTIFIED BY WEST VIRGINIA DIVISION OF CULTURE AND HISTORY			
PREFERRED ALTERNATIVE ²		IMPROVED ROADWAY ALTERNATIVE ¹	
RESOURCE NO.	RESOURCE TYPE & ELIGIBILITY	RESOURCE NO.	RESOURCE TYPE & ELIGIBILITY
35-03	Historic Domestic Site (CE)	29-01	Open Air Lithic Scatter (CE)
40-02	Historic Domestic Site (CE)	38-13	Prehistoric Civil War (CE)
42-02	Historic Domestic Site (CE)	44-01	Prehistoric Open Site (CE)
43-01	Quarry/Reduction Site (CE)	44-02	Historic Domestic Site (CE)
44-01	Base Camp (CE)	48-01	Prehistoric Open Site (CE)
44-02	Historic Domestic Site (CE)	163-01	Porterwood Mill (CE)
44-03	Historic Domestic Site (CE)	188-01	Prehistoric Open Site (CE)
44-04	Open Air/Lithic Surface (CE)	188-02	Prehistoric Open Site (CE)
58-03	Base Camp/Hunting Station (CE)	188-03	Prehistoric Open Site (CE)
108-03	Base Camp (CE)	189-01	Prehistoric Open Site (CE)
108-04	Base Camp (CE)	189-02	Prehistoric/Revolutionary War (CE)
109-01	Camp (CE)	IBK-04	Prehistoric/French and Indian War (CE)
117-01	Historic Domestic Site (CE)	IBK-08	Historic Farm Site (CE)
157-05	Prehistoric Site (CE)	IGG-02	Surveyor's Camp Site (CE)
164-02	Prehistoric Site (CE)	IMO-65	Prehistoric Open Site (CE)
164-03	Prehistoric Site (CE)	IMO-66	Prehistoric Open Site (CE)
182-02	Historic Domestic Site (CE)	IMO-72	Prehistoric Open Site (CE)
182-03	Historic Domestic Site (CE)	IWD-60	Historic Commercial Site (CE)
182-05	Camp (CE)	IWD-62	Prehistoric Open Site (CE)
182-06	Camp (CE)	IWD-64	Prehistoric Open Site (CE)
189-01	Transient Camp (CE)	IWD-67	Prehistoric Open Site (CE)
IBK-08	Historic Farmstead Remains (CE)	IWD-68	Prehistoric Open Site (CE)
IBK-11	Prehistoric Base Camp (CE)	IWD-69	Prehistoric Open Site (CE)

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

TABLE III-39
YEAR 2013 AVERAGE DAILY TRAFFIC VOLUMES
FOR ROADWAYS PROJECTED TO EXPERIENCE
AN INCREASE OF OVER 3,000 VEHICLES

WEST VIRGINIA

ROUTE	NUMBER OF LANES	ALTERNATIVES		
		NO-BUILD	IMPROVED ROADWAY ¹	PREFERRED ALTERNATIVE ²
Grant County 3/3	2	2,000	9,000	2,000
WV 32	2	7,000	13,000	5,000
WV 55 @ Baker	2	3,000	9,000	1,000
WV 55 @ State Line	2	3,000	10,000	1,000
WV 93	2	3,000	9,000	4,000
US 17	4	47,000	47,000	52,000
US 50	4	17,000	15,000	24,000
US 219 Parsons	2	4,000	10,000	2,000
US 219 Montrose	2	4,000	11,000	1,000

VIRGINIA

ROUTE	NUMBER OF LANES	ALTERNATIVES ³		
		NO-BUILD	IMPROVED ROADWAY	LINE A
I-81	4	51,000	52,000	55,000
VA 37	4	21,000	20,000	25,000

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

²Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line 5-D)

³Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-40
TOTAL AREA AND PROPORTIONS OF PREHISTORIC SETTLEMENT PATTERN
PROBABILITY ZONES**

Prob. Zone	D5 Corridor			Preferred Alternative ²			Line A ³			IRA ¹					
	Hectares	Acres	%	WV			VA			WV			VA		
				Hectares	Acres	%	Hectares	Acres	%	Hectares	Acres	%	Hectares	Acres	%
High	1,393	3,448	13%	153.7	379.8	11%	11.7	28.9	7%	82.0	202.6	12%	6.2	15.4	9%
Medium	2,695	6,671	25%	196.8	486.3	14%	46.3	114.5	26%	102.9	254.3	15%	28.1	69.4	41%
Low	6,793	16,814	62%	1071.1	2646.7	75%	119.1	294.2	67%	518.3	1280.7	73%	33.6	83.0	50%
Total	10,881	26,933	100%	1421.6	3512.8	100%	177.1	437.6	100%	703.2	1737.6	100%	67.9	167.8	100%

% = Percent of the total area within each probability zone

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

TABLE III-40 (CONTINUED)
TOTAL AREA AND PROPORTIONS OF PREHISTORIC SETTLEMENT PATTERN
PROBABILITY ZONES BY ALTERNATIVE AND OPTION AREA

WEST VIRGINIA

Prob. Zone	Interchange						Shavers Fork						Patterson Creek					
	Line I ¹			Line A			Line S			Line A ¹			Line P			Line A ¹		
	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%
High	0.6	1.5	3%	2.1	5.1	9%	5.5	13.5	11%	9.1	22.4	21%	14.3	35.4	21%	9.2	22.8	15%
Medium	12.1	29.8	59%	15.4	38.0	67%	3.4	8.4	7%	2.6	6.5	6%	17.1	42.2	24%	14.3	35.4	24%
Low	7.7	19.1	38%	5.3	13.2	24%	41.8	103.3	82%	31.2	77.0	73%	38.2	94.3	55%	36.7	90.8	61%
Total	20.4	50.4	100%	22.8	56.3	100%	50.7	125.2	100%	42.9	105.9	100%	69.6	171.9	100%	60.2	149.0	100%

WEST VIRGINIA

Prob. Zone	Forman						Line 5-D						Baker					
	Line F ¹			Line A			Line 5-D ¹			Line A			Line B ¹			Line A		
	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%
High	12.7	31.4	27%	30.6	75.6	53%	3.6	8.9	12%	0.0	0.0	0%	13.2	32.6	26%	12.2	30.2	26%
Medium	10.7	26.4	22%	6.8	16.9	12%	2.2	5.3	7%	4.5	11.2	16%	2.7	6.6	5%	2.4	6.0	5%
Low	24.2	59.8	51%	20.0	49.4	35%	24.9	61.5	81%	23.9	59.0	84%	34.2	84.6	69%	31.5	77.8	69%
Total	47.6	117.6	100%	57.4	141.9	100%	30.7	75.8	100%	28.4	70.2	100%	50.1	123.8	100%	46.1	114.0	100%

WEST VIRGINIA

VIRGINIA

Prob. Zone	Hanging Rock						Duck Run						Lebanon Church								
	Line R			Line A ¹			Line D1			Line D2			Line A			Line L			Line A		
	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%	Hectare	Acre	%
High	1.1	2.7	4%	1.3	3.1	4%	0.0	0.0	0%	0.0	0.0	0%	0.0	0.0	0%	5.9	14.5	12%	10.3	25.5	19%
Medium	0.4	1.1	2%	1.7	4.1	6%	5.4	13.4	7%	3.6	9.0	4%	6.0	14.9	7%	29.9	73.8	60%	33.0	81.5	60%
Low	25.2	62.2	94%	26.9	66.4	90%	75.2	185.8	93%	85.5	211.2	96%	77.7	192.1	93%	14.1	34.8	28%	11.8	29.1	21%
Total	26.7	66.0	100%	29.9	73.6	100%	80.6	199.2	100%	89.1	220.2	100%	83.7	207.0	100%	49.9	123.1	100%	55.1	136.1	100%

% = Percent of the total area within each probability zone

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-41
SUMMARY OF FLOOD ZONE ENCROACHMENTS BY WATERSHED**

IMPROVED ROADWAY ALTERNATIVE¹

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WATERSHED	STREAM NAME	STATION	AFFECTED FLOOD AREA			ENCROACHMENT TYPE			ENCROACHMENT AREA		HYDRAULIC STUDY	INCOMPATIBLE DEVELOPMENT
			FHZ	100-Yr	Way	Long.	Trans.	Comp.	Hectare	Acre		
Tygart Valley River	Leading Creek at Claylick Run	444+00 to 451+00		✓				✓	3.4	8.3	✓	None
	Leading Creek	547+00		✓				✓	0.2	0.6		None
	Leading Creek at Stalnaker Run	620+00	✓					✓	0.4	0.9		None
	Leading Creek	696+00	✓					✓	0.5	1.3	✓	None
	Leading Creek	710+00	✓					✓	0.4	1.0	✓	None
	Wilmoth Run	777+00	✓					✓	0.2	0.6		None
	Cherry Fork	1594+00	✓					✓	1.5	3.6		None
	Pond Lick Run	1714+00	✓					✓	0.2	0.5		None
Cheat River	Haddix Run	1895+00 to 2055+00		✓		✓			2.1	5.2		None
	Pendleton Creek	4283+00 to 4287+00	✓					✓	0.2	0.5		None
N. Br. Potomac River	Patterson Creek	5893+00	✓					✓	0.4	1.1		None
S. Br. Potomac River	Anderson Run	6371+00	✓					✓	0.6	1.4		None
	South Branch Potomac River	76480+00 to 5291+00	✓	✓				✓	7.7	19.1		None
	Fort Run	5396+00	✓					✓	0.4	1.1		None
Cacapon River	Baker Run	6025+00	✓					✓	0.5	1.2		None
	Lost River	6230+00 to 6310+00	✓			✓			3.1	7.6		None
	Lost River	6498+00	✓					✓	0.3	0.7		None
	Trout Run	6659+00	✓					✓	0.4	1.0		None
Shenandoah River	Turkey Run	453+00	✓					✓	0.6	1.4		None
	Mulberry Run	625+00	✓					✓	0.1	0.2		None
	Duck Run	102+00 to 198+00	✓					✓	2.0	4.9		None
	Cedar Creek	290+00	✓					✓	1.0	2.5		None

Where: FHZ=Flood Hazard Zone; 100-Yr = 100-Year Floodplain; Way = Floodway; Long.=Longitudinal; Trans.=Transverse; Comp. = Complex

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

**TABLE III-41 (CONT.)
SUMMARY OF FLOOD ZONE ENCROACHMENTS BY WATERSHED**

WATERSHED	STREAM NAME	LINE	STATION	AFFECTED FLOOD AREA			ENCROACHMENT TYPE			ENCROACHMENT AREA		HYDRAULIC STUDY	INCOMPATIBLE DEVELOPMENT
				FHZ	100-Yr	Way	Long.	Trans.	Comp.	Hectare	Acre		
Tygart Valley River	Leading Creek at Claylick Run	A	449+00		✓				✓	2.0	5.0	✓	None
	Leading Creek at Claylick Run	PA ¹	449+00		✓				✓	3.4	8.3	✓	None
	Leading Creek at Percy Run	PA ¹	569+00		✓				✓	0.7	1.8	✓	None
	Leading Creek	PA ¹	615+00 to 625+00		✓		✓			1.4	3.5	✓	None
	Leading Creek at Horse Run	PA ¹	637+00 to 647+00	✓					✓	1.3	3.3	✓	None
	Lazy Run	PA ¹	746+00	✓				✓		0.9	2.2		None
Cheat River	Slabcamp Run	PA ¹	3224+00	✓					✓	0.3	0.8		None
	Shavers Fork	Line A	3340+00		✓				✓	0.3	0.8	✓	None
	Shavers Fork	Line A	3460+00 & 3470+00				✓		✓	3.4	8.5	✓	None
	Black Fork	PA ¹	3620+00		✓				✓	0.2	0.6	✓	None
	Pendelton Creek	PA ¹	4150+00	✓					✓	0.8	2.1		None
N. Br. Potomac River	Patterson Creek	A	5802+00	✓					✓	1.1	2.6		None
	Patterson Creek	PA ¹	5784+00	✓					✓	1.3	3.3		None
S. Br. Potomac River	South Branch Potomac River	PA ¹	6264+00 to 6277+00	✓					✓	3.0	7.3	✓	None
Cacapon River	Lost River	A	7087+00	✓					✓	0.4	0.9		None
	Lost River	PA ¹	7071+00	✓					✓	0.2	0.5		None
	Trout Run	PA ¹	7499+00	✓					✓	1.5	3.6		None
Shenandoah River	Duck Run	A ²	7939+00 & 8028+00	✓					✓	0.8	2.0		None
	Duck Run	D1 ²	7923, 7939, 8028+00	✓					✓	0.8	2.1		None
	Cedar Creek	A ²	9110+00	✓					✓	1.1	2.7		None
	Mulberry Run	A ²	8408+00	✓					✓	0.5	1.2		None

Where: FHZ=Flood Hazard Zone; 100-Yr = 100-Year Floodplain; Way = Floodway; Long.=Longitudinal; Trans.=Transverse; Comp. = Complex

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II:

**TABLE III-42
COMPARISON OF FLOOD IMPACTS**

AREA OF IMPACT	NO-BUILD	IRA ¹				PA ²		LINE A ³	
		WV		VA		WV		VA	
		ha	ac	ha	ac	ha	ac	ha	ac
Flood Hazard Zone	0.0	11.7	28.8	3.3	8.1	6.0	14.8	2.4	5.9
100-Year Floodplain	0.0	8.1	20.1	0.0	0.0	9.0	22.2	0.0	0.0
Floodway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Flood Zone	0.0	19.8	48.9	3.3	8.1	15.0	37.0	2.4	5.9

COMPARISON OF OPTION AREAS: West Virginia

AREA OF IMPACT	Interchange				Shavers Fork				Patterson Creek				Forman			
	Line F ²		Line A		Line S ²		Line A		Line P		Line A ¹		Line F ²		Line A	
	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac
Flood Hazard Zone	3.4	8.3	2.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	3.3	1.1	2.6
100-Year Floodplain	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Floodway	0.0	0.0	0.0	0.0	0.0	0.0	3.4	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Flood Zone	3.4	8.3	2.0	5.0	0.0	0.0	3.7	9.3	0.0	0.0	0.0	0.0	1.3	3.3	1.1	2.6

COMPARISON OF OPTION AREAS: West Virginia

AREA OF IMPACT	Line 5-D				Baker				Hanging Rock			
	Line 5-D ²		Line A		Line B ²		Line A		Line R		Line A ²	
	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac
Flood Hazard Zone	0.0	0.0	0.0	0.0	0.2	0.5	0.4	0.9	0.0	0.0	0.0	0.0
100-Year Floodplain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Floodway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Flood Zone	0.0	0.0	0.0	0.0	0.2	0.5	0.4	0.9	0.0	0.0	0.0	0.0

VIRGINIA³

AREA OF IMPACT	Duck Run						Lebanon Church			
	Line D1		Line D2		Line A		Line L		Line A	
	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac
Flood Hazard Zone	0.8	2.1	0.0	0.0	0.8	2.0	0.0	0.0	0.5	1.2
100-Year Floodplain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Floodway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Flood Zone	0.8	2.1	0.0	0.0	0.8	2.0	0.0	0.0	0.5	1.2

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-43
COVER TYPE USE BY EVALUATION SPECIES**

U.S. FISH & WILDLIFE SERVICE LAND USE/LAND COVER TYPE	EVALUATION SPECIES																			
	American Woodcock	Barred Owl	Black-capped Chickadee	Brown Thrasher	Downy Woodpecker	Eastern Cottontail	Eastern Meadowlark	Eastern Wild Turkey	Gray Squirrel	Hairy Woodpecker	Mink	Muskrat	Pileated Woodpecker	Pine Warbler	Red-winged Blackbird	Ruffed Grouse	Veery	White-tailed Deer	Yellow Warbler	
Cropland								✓											✓	
Orchards				✓		✓													✓	
Pasture/Hayland				✓		✓	✓	✓											✓	
Forbland				✓		✓	✓	✓											✓	
Deciduous Forest	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓		✓			✓	
Evergreen Forest	✓	✓	✓	✓	✓	✓		✓					✓	✓		✓			✓	
Grassland				✓		✓	✓	✓											✓	
Deciduous Shrubland				✓		✓		✓								✓			✓	✓
Palustrine Emergent Wetland												✓			✓				✓	
Palustrine Forested Wetland	✓	✓	✓		✓			✓	✓	✓	✓		✓				✓		✓	
Palustrine Scrub/Shrub Wetland											✓	✓					✓		✓	✓

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**TABLE III-44
IMPACT SUMMARY OF BASELINE AND PREDICTED FUTURE HABITAT UNITS**

COMPARISON OF ALTERNATIVES

HABITAT UNITS (HUs)	IRA ¹		PA ²	LINE A ³
	WV	VA	WV	
Baseline HUs	3,980	267	8,128	1,023
Predicted Future HUs	945	103	1,723	196
NET LOSS of HUs	3,035	164	6,405	827

WEST VIRGINIA - OPTION AREA COMPARISON

HABITAT UNITS (HUs)	Interchange		Shavers Fork		Patterson Creek		Forman	
	Line F ²	Line A	Line S ²	Line A	Line P	Line A ²	Line F ²	Line A
Baseline HUs	120	102	341	277	385	339	238	258
Predicted Future HUS	29	31	62	64	93	80	67	84
NET LOSS of HUs	91	71	279	213	292	259	171	174

HABITAT UNITS (HUs)	Line 5-D		Baker		Hanging Rock	
	Line 5-D ²	Line A	Line B ²	Line A	Line R	Line A ²
Baseline HUs	185	152	257	178	177	190
Predicted Future HUS	93	81	59	29	37	41
NET LOSS of HUs	92	71	198	149	140	149

VIRGINIA - LINE A³

HABITAT UNITS (HUs)	Duck Run			Lebanon Church	
	Line D1	Line D2	Line A	Line L	Line A
Baseline HUs	518	599	560	185	220
Predicted Future HUS	104	118	111	52	55
NET LOSS of HUs	414	481	449	133	165

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-45
IMPACT SUMMARY OF BASELINE AND PREDICTED FUTURE HABITAT UNITS (HUs)
BY WATERSHED**

<i>WEST VIRGINIA</i>											<i>VIRGINIA</i> ³	
HABITAT UNITS	TYGART VALLEY		CHEAT RIVER		N. BRANCH POTOMAC		S. BRANCH POTOMAC		CACAPON RIVER		SHENANDOAH RIVER	
	IRA ¹	PA ²	IRA ¹	PA ²	IRA ¹	PA ²	IRA ¹	PA ²	IRA ¹	PA ²	IRA	LINE A
Baseline HUs	474	<u>985</u>	838	2,367	1,145	<u>1,542</u>	710	1,029	748	<u>2,030</u>	267	1,006
Predicted Future HUs	111	<u>198</u>	203	509	277	<u>344</u>	177	242	179	<u>428</u>	103	196
NET LOSS of HUs	363	<u>787</u>	635	1,858	868	<u>1,198</u>	533	788	569	<u>1,602</u>	164	809

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-46
LAND COVER AND HABITAT UNITS LOST DUE TO PREDICTED DEVELOPMENT**

IMPROVED ROADWAY ALTERNATIVE¹

Watershed	Land Cover Type*	Total Watershed			Total Habitat Loss			% Total Watershed HUs Lost
		Hectares	Acres	HUs*	Hectares	Acres	HUs*	
Tygart Valley River	Forest	29,545	72,977	35,454	28	68	33	0.1
	Farmland	8,643	21,348	2,593	13	32	4	0.1
Cheat River	Forest	148,118	365,852	177,742	19	46	22	0.0
	Farmland	21,670	53,525	6,501	8	20	2	0.0
North Branch Potomac River	Forest	94,878	234,349	113,854	0	0	0	0.0
	Farmland	20,155	49,783	6,047	0	0	0	0.0
South Branch Potomac River	Forest	97,140	239,936	116,568	0	0	0	0.0
	Farmland	34,502	85,219	10,350	0	0	0	0.0
Cacapon River	Forest	98,364	242,960	118,037	2	4	2	0.0
	Farmland	20,393	50,370	6,118	6	14	2	0.0
Shenandoah River	Forest	45,945	113,484	55,134	10	25	12	0.0
	Farmland	35,022	86,504	10,507	14	35	4	0.1
Back Creek	Forest	22,515	55,611	27,017	0	0	0	0.0
	Farmland	10,775	26,614	3,232	0	0	0	0.0
Opequon Creek	Forest	2,097	5,180	2,517	0	0	0	0.0
	Farmland	9,164	22,635	2,749	0	0	0	0.0

* 1.2 HUs/ Hectare of forest and 0.3 HUs/Hectare of Farmland (Pasture)

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

**TABLE III-46 (CONT.)
LAND COVER AND HABITAT UNITS LOST DUE TO PREDICTED DEVELOPMENT**

WEST VIRGINIA - PREFERRED ALTERNATIVE¹

Watershed	Land Cover Type*	Total Watershed			Total Habitat Loss			% Total Watershed HUs Lost
		Hectares	Acres	HUs*	Hectares	Acres	HUs*	
Tygart Valley River	Forest	29,545	72,977	35,454	794	1,960	952	2.7
	Farmland	8,643	21,348	2,593	296	732	89	3.4
Cheat River	Forest	148,118	365,852	177,742	506	1,251	608	0.3
	Farmland	21,670	53,525	6,501	376	929	113	1.7
North Branch Potomac River	Forest	94,878	234,349	113,854	216	533	259	0.2
	Farmland	20,155	49,783	6,047	88	218	26	0.4
South Branch Potomac River	Forest	97,140	239,936	116,568	1,712	4,228	2,054	1.8
	Farmland	34,502	85,219	10,350	963	2,378	289	2.8
Cacapon River	Forest	98,364	242,960	118,037	722	1,784	867	0.7
	Farmland	20,393	50,370	6,118	272	673	82	1.3

VIRGINIA - LINE A²

Watershed	Land Cover Type*	Total Watershed			Total Habitat Loss			% Total Watershed HUs Lost
		Hectares	Acres	HUs*	Hectares	Acres	HUs*	
Shenandoah River	Forest	45,945	113,484	55,134	1,393	3,440	1,671	3.0
	Farmland	35,022	86,504	10,507	1,574	3,887	472	4.5
Back Creek	Forest	22,515	55,611	27,017	1,617	3,993	1,940	7.2
	Farmland	10,775	26,614	3,232	285	705	86	2.6
Opequon Creek	Forest	2,097	5,180	2,517	260	642	312	12.4
	Farmland	9,164	22,635	2,749	128	316	38	1.4

* 1.2 HUs/ Hectare of forest and 0.3 HUs/Hectare of Farmland (Pasture)

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-47
CUMULATIVE HABITAT UNITS LOST DUE TO DIRECT HIGHWAY
AND PREDICTED SECONDARY DEVELOPMENT IMPACTS**

WEST VIRGINIA-IRA¹

HABITAT UNITS LOST	Tygart Valley	Cheat	North Branch Potomac	South Branch Potomac	Cacapon
Direct Impacts	363	635	868	533	569
Secondary Impacts	37	24	0	0	4
CUMULATIVE IMPACTS	400	659	868	533	573

VIRGINIA-IRA³

Shenandoah	Back	Opequon
164	0	0
16	0	0
180	0	0

WEST VIRGINIA - PREFERRED ALTERNATIVE²

HABITAT UNITS LOST	Tygart Valley	Cheat	North Branch Potomac	South Branch Potomac	Cacapon
Direct Impacts	<u>787</u>	1,858	<u>1,198</u>	788	<u>1,602</u>
Secondary Impacts	1,041	721	285	2,343	949
CUMULATIVE IMPACTS	<u>1,828</u>	2,579	<u>1,483</u>	3,131	<u>2,551</u>

VIRGINIA - LINE A³

Shenandoah	Back	Opequon
809	0	0
2,143	2,026	350
2,952	2,026	350

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-48
 CUMULATIVE WETLAND AND WILDLIFE IMPACT ASSESSMENT MATRIX
 FOR FORESEEABLE FUTURE FEDERAL ACTIONS
 WITHIN 30-MINUTE CONTOUR**

	WILDLIFE HABITAT IMPACTS	WETLAND IMPACTS	BIODIVERSITY IMPACTS	MITIGATION/ MANAGEMENT PLANS
FLOODWALL - MOOREFIELD, WV	Over 90% of impacts to cropland or urban land (21 ac)	1.9 acres forested wetlands	No involvement of threatened or endangered species.	Wetland and upland revegetation plan
STONY RUN WATER SUPPLY DAM - HARDY COUNTY, WV	Approx. loss of 70 acres forested habitat	None, no wetlands identified in feasibility study	No involvement of threatened or endangered species. Creation of open water habitat.	None proposed.
CANAAN VALLEY NATIONAL WILDLIFE REFUGE	Preservation of 28,000 acres	Preservation of largest wetland complex in West Virginia and the central and southern Appalachians.	Preservation of diverse plant and animal populations, including 1 threatened and 1 endangered species	Comprehensive management plan developed
GEORGE WASHINGTON NATIONAL FOREST	Multiple use management of over 100,000 forested acres	None proposed	Management plan to conserve specific elements of biodiversity and restore others where needed.	Comprehensive land and resource management plan
MONONGAHELA NATIONAL FOREST	Multiple use management of over 500,000 forested acres	None proposed	Plan to promote populations of management indicator species, including threatened and endangered species.	Comprehensive land and resource management plan

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**TABLE III-49
MINIMUM BREEDING AREA REQUIREMENTS AND BREEDING BIRD SURVEY DATA
FOR PROPOSED PROJECT AREA FOREST INTERIOR NEOTROPICAL MIGRANTS¹**

SPECIES		MINIMUM BREEDING AREA		POPULATION ² TRENDS 1982-91	
		Hectares	Acres	WV	VA
Wood thrush	<i>Hylocichla mustelina</i>	1	2.5	-0.3	-2.7
Red-eyed vireo	<i>Vireo olivaceus</i>	2.5	6	0.7	3.9
Ovenbird	<i>Seiurus aurocapillus</i>	6	15	7.1	-0.9
Veery	<i>Catharus fuscescens</i>	20	49	6.6	No Data
Brown-headed cowbird	<i>Molothrus ater</i>			-4.1	0.2

¹Robbins et al. 1989.

²Average percent annual change

**TABLE III-50A
FOREST PATCHES CREATED
COMPARED TO MINIMUM BREEDING AREA REQUIREMENTS
OF NEOTROPICAL MIGRANT INDICATOR SPECIES**

MINIMUM BREEDING AREA REQUIREMENTS MET (# OF SPECIES)	PATCH SIZE		PREFERRED ALTERNATIVE IN WVA ² & LINE A IN VA ³			IRA ¹		
	Hectares	Acres	# of Patches Created	CHANGE IN AREA		# of Patches Created	CHANGE IN AREA	
				Hectares	Acres		Hectares	Acres
0	0-1	0-2.5	110	30	74	91	19	47
1	1 - 2.5	2.5-6	27	43	106	13	5	12
2	2.5-6	6.0-15	16	60	148	10	48	120
3	6-20	15-49	26	304	751	6	63	156
4	20-150	49-370	27	1,100	2,718	13	484	1,195

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLES III-50B
FOREST COVER**

Block	Pre-Construction			Post-Construction		
	Total Area	Forest Cover	% Forest	Total Area	Forest Cover	% Forest
	km ²	km ²		km ²	km ²	
0	241.6	123.5	51%	241.4	123.4	51%
1	250.0	176.1	70%	249.0	175.1	70%
2	184.3	156.7	85%	95.8	80.4	84%
3	194.4	170.9	88%	193.5	170.2	88%
4	239.0	204.1	85%	237.7	203.2	85%
5	199.9	169.4	85%	199.0	168.6	85%
6	245.9	156.7	64%	244.6	156.2	64%
7	181.1	126.7	70%	180.3	126.1	70%
8	280.3	209.3	75%	279.5	208.5	75%
9	203.8	155.5	76%	203.1	155.1	76%
10	105.0	92.7	88%	104.7	92.4	88%
11	196.8	164.3	84%	196.3	164.0	84%
12	211.8	190.1	90%	211.0	189.5	90%
13	203.6	179.4	88%	202.3	178.2	88%
14	207.1	199.8	96%	206.1	198.9	97%
15	205.8	176.9	86%	204.7	176.0	86%
16	195.0	147.2	76%	194.1	146.5	75%
17	94.1	87.8	93%	94.1	87.8	93%

Note: Individual block size varied, but averaged 10 km by 20 km

**TABLE III-51
EDGE EFFECTS ON CREATED FOREST PATCHES
COMPARED TO MINIMUM AREAL BREEDING REQUIREMENTS
OF NEOTROPICAL MIGRANT INDICATOR SPECIES**

Minimum Areal Breeding Requirements (# of Species)	Patch Size (HA)	# of Patches Created	
		Pref. Alt. in WVA & Line A in VA ²	IRA ¹
0	0-1	61	38
1	1 - 2.5	14	4
2	2.5-6	10	0
3	6-20	11	1
4	20-150	14	11

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D) and Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-52
POTENTIAL INVOLVEMENT OF FEDERAL AND STATE
ENDANGERED, THREATENED, AND CANDIDATE SPECIES**

SPECIES	STATUS	WEST VIRGINIA WATERSHEDS																VIRGINIA ³				
		TYGART VALLEY RIVER			CHEAT RIVER			N. BRANCH POTOMAC RIVER				S. BRANCH POTOMAC		CACAPON RIVER				SHENANDOAH RIVER				
		IRA ¹	Line A	Line P ²	IRA ¹	Line A	Line S ²	IRA ¹	Line A	Line F ²	Line P	IRA ¹	Line A	IRA ¹	Line A	Line R	Line B ²	IRA	Line A	Line D1	Line D2	Line L
<i>Cheat Mountain Salamander (Plethodon nettingi)</i>	Federal Threatened	0	0	0	A	A	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Running Buffola Clover (Trifolium stoloniferum)</i>	Federal Endangered	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Rock Vole (Microtus chrotorrhinus carolinensis)</i>	Fed/Wv C2/S3	0	0	0	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>New England Cottontail (Sylvilagus transitionalis)</i>	Fed/WV C2/S3	0	0	0	0	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Loggerhead Shrike (Lanius ludovicianus)</i>	Fed/WV/VAC2/S1/Threat.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	B	C	C	0	0	C
<i>Wood Turtle (Clemmys insculpta)</i>	VA Threatened	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	D	D	D	D	0

INVOLVEMENT CODES: A = Potential habitat surveyed May/June, 1994—No Cheat Mountain salamanders found within construction limits of proposed project
 B = Documented occurrence by West Virginia Natural Heritage Program
 C = Potential habitat exists, no documented records within project alternatives
 D = VDGIF Documented occurrence along Duck Run, none observed during intensive stream and wetland work in this area
 0 = No involvement

STATUS CODES: C2 = Category 2 species, under study for listing as Threatened or Endangered
 S1 = Critically imperiled in the state; 5 or fewer occurrences
 S2 = Imperiled in the state; 6 to 20 occurrences
 S3 = Rare or uncommon in the state; 20 to 100 occurrences

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

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**TABLE III-53
WETLAND IMPACTS BY WATERSHED**

WEST VIRGINIA ¹

Watershed	Line	Forested			Scrub/Shrub			Emergent			Open Water			Total		
		#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres
Tygart Valley River	PA ¹	0	0.00	0.00	2	0.03	0.07	14	1.81	4.48	1	0.11	0.26	17	1.95	4.81
	IRA ²	1	0.11	0.26	2	0.15	0.36	13	0.75	1.85	1	0.02	0.06	17	1.02	2.53
Cheat River	PA ¹	3	0.12	0.30	18	0.95	2.34	60	6.24	15.41	10	0.46	1.14	91	7.77	19.19
	IRA ²	3	1.02	2.51	5	0.42	1.05	16	3.11	7.68	3	0.33	0.82	27	4.88	12.06
North Branch Potomac River	PA ¹	2	0.06	0.14	0	0.00	0.00	19	3.21	7.94	5	0.21	0.52	26	3.48	8.60
	IRA ²	1	0.10	0.24	0	0.00	0.00	9	1.58	3.91	0	0.00	0.00	10	1.68	4.15
South Branch Potomac River	PA ¹	0	0.00	0.00	1	0.16	0.39	7	0.62	1.52	2	0.03	0.07	10	0.80	1.98
	IRA ²	0	0.00	0.00	0	0.00	0.00	6	0.56	1.39	2	0.00	0.00	8	0.56	1.39
Cacapon River	PA ¹	1	0.10	0.24	2	0.06	0.14	11	0.66	1.63	5	0.26	0.65	19	1.08	2.66
	IRA ²	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00	1	0.08	0.19	1	0.08	0.19
West Virginia	PA ¹	6	0.28	0.68	23	1.19	2.94	111	12.54	30.98	23	1.07	2.64	163	15.07	37.24
TOTAL	IRA ²	5	1.22	3.01	7	0.57	1.41	44	6.00	14.83	7	0.43	1.07	63	8.22	20.32

VIRGINIA ³

Watershed	Line	Forested			Scrub/Shrub			Emergent			Open Water			Total		
		#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres
Shenandoah River	Line A	1	0.11	0.28	0	0.00	0.00	4	0.12	0.30	2	0.10	0.24	7	0.33	0.82
	IRA	5	0.07	0.17	6	0.25	0.61	6	0.15	0.36	0	0.00	0.00	17	0.46	1.14

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

²The IRA was not selected as the Preferred Alternative as explained in text, Section II.

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-54
CHARACTERISTICS OF IMPACTED WETLANDS BY WATERSHED**

WEST VIRGINIA

VIRGINIA³

NUMBER OF WETLANDS WITH CHARACTERISTIC	Tygart Valley River		Cheat River		North Branch Potomac		South Branch Potomac		Cacapon River		West Virginia Total		Shenandoah River	
	PA ²	IRA ¹	PA ²	IRA ¹	PA ²	IRA ¹	PA ²	IRA ¹	PA ²	IRA ¹	PA ²	IRA ¹	Line A	IRA
Adjacent Land Cover														
Agricultural	12	9	9	3	<u>21</u>	7	9	7	<u>15</u>	1	<u>66</u>	27	3	5
Disturbed	1	1	65	15	1	2	0	1	0	0	67	19	0	6
Undisturbed	4	7	17	9	<u>4</u>	1	1	0	<u>4</u>	0	<u>30</u>	17	4	6
Landscape Position														
Isolated	1	0	24	4	1	2	0	3	<u>1</u>	0	27	9	0	1
Headwater	13	15	61	12	<u>25</u>	8	10	5	<u>15</u>	1	<u>124</u>	41	6	14
Other	3	2	6	11	0	0	0	0	<u>3</u>	0	<u>12</u>	13	1	2
Welland Size														
Less Than 0.4 ha	13	14	31	15	<u>22</u>	4	8	4	<u>14</u>	1	<u>88</u>	38	7	15
Greater Than 0.4 ha	4	3	60	12	<u>4</u>	6	2	4	<u>5</u>	0	<u>75</u>	25	0	2
Functional Change														
No Change	<u>5</u>	4	24	11	<u>5</u>	3	3	5	<u>7</u>	0	<u>44</u>	23	1	8
Slight Decrease	<u>1</u>	4	19	8	<u>5</u>	3	2	1	1	0	<u>28</u>	16	2	3
Decrease	7	5	22	6	<u>8</u>	2	3	2	<u>4</u>	0	<u>44</u>	15	2	5
Lost	4	4	26	2	8	2	2	0	<u>7</u>	1	<u>47</u>	9	2	1

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-55
OPTION AREA WETLAND IMPACTS BY WATERSHED**

WEST VIRGINIA ¹

Watershed	Option Area	Line	Forested			Scrub/Shrub			Emergent			Open Water			Total		
			#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres
Tygart Valley River	Interchange	Line I ¹							4	0.05	0.13				4	0.05	0.13
		Line A							4	0.11	0.27				4	0.11	0.27
Cheat River	Shavers Fork	Line S ¹							1	0.02	0.04				1	0.02	0.04
		Line A							1	0.03	0.08				1	0.03	0.08
North Branch Potomac River	Patterson Creek	Line P							4	0.99	2.45	2	0.04	0.11	6	1.03	2.56
		Line A ¹							2	0.65	1.60	1	0.01	0.02	3	0.66	1.62
	Forman	Line F ¹	1	0.02	0.06				8	1.42	3.52	2	0.02	0.04	11	1.46	3.62
		Line A	1	0.02	0.06				5	1.28	3.17	2	0.06	0.14	8	1.36	3.37
Cacapon River	Line 5-D	Line 5-D ¹										1	0.08	0.20	1	0.08	0.20
		Line A							1	0.07	0.18	1	0.08	0.20	2	0.15	0.38
	Baker	Line B ¹							2	0.12	0.30	2	0.08	0.21	4	0.20	0.51
		Line A										1	0.03	0.07	1	0.03	0.07
	Hanging Rock	Line R															
		Line A ¹															

VIRGINIA ²

Watershed	Option Area	Line	Forested			Scrub/Shrub			Emergent			Open Water			Total		
			#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres	#	Hectares	Acres
Shenandoah River	Duck Run	Line D1				1	0.05	0.12				2	0.10	0.24	3	0.15	0.36
		Line D2	1	0.11	0.28										1	0.11	0.28
		Line A	1	0.11	0.28							2	0.10	0.24	3	0.21	0.52
	Lebanon Church	Line L							3	0.33	0.81	2	0.02	0.06	5	0.35	0.87
		Line A							3	0.11	0.27				3	0.11	0.27

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-56
CHARACTERISTICS OF WETLAND IMPACTED BY OPTION AREA**

WEST VIRGINIA

VIRGINIA²

NUMBER OF WETLANDS WITH CHARACTERISTIC	Tygart Valley River		Cheat River		North Branch Potomac				Cacapon River						Shenandoah River				
	Interchange		Shavers Fork		Patterson Creek		Forman		Line 5-D		Hanging Rock		Baker		Lebanon Church		Duck Run		
	Line I ¹	Line A	Line S ¹	Line A	Line P	Line A ¹	Line F ¹	Line A	Line 5-D ¹	Line A	Line R	Line A ¹	Line B ¹	Line A	Line L	Line A	Line D1	Line D2	Line A
Adjacent Land Cover																			
Agricultural	4	4	1	1	6	3	10	5	0	0	0	0	2	0	5	3	3	0	2
Disturbed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Undisturbed	0	0	0	0	0	0	1	3	1	2	0	0	2	1	0	0	0	1	1
Landscape Position																			
Isolated	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Headwater	2	2	1	1	5	3	11	8	0	0	0	0	3	1	5	3	3	1	3
Other	2	2	0	0	1	0	0	0	1	2	0	0	0	0	0	0	0	0	0
Wetland Size																			
Less Than 0.4 ha	2	2	1	1	3	1	8	2	1	2	0	0	3	1	5	3	2	1	3
Greater Than 0.4 ha	2	2	0	0	3	2	3	6	0	0	0	0	1	0	0	0	1	0	0
Functional Change																			
No Change	3	2	0	0	1	0	3	0	0	0	0	0	2	0	0	0	1	0	0
Slight Decrease	0	1	0	0	3	2	0	2	0	0	0	0	0	0	1	2	0	0	0
Decrease	0	0	1	1	0	0	3	1	0	0	0	0	1	0	3	0	1	0	1
Lost	1	1	0	0	2	1	5	5	1	2	0	0	1	1	1	1	1	1	2

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-57
WETLAND IMPACTS BY WATERSHED**

WEST VIRGINIA

Watershed	Line	#	Hectares	Acres	% of Predicted Watershed Wetland Area
Tygart Valley River	PA ²	17	1.95	4.81	1.29
	IRA ¹	17	1.02	2.53	0.66
Cheat River	PA ²	91	7.77	19.19	0.09
	IRA ¹	27	4.88	12.06	0.05
North Branch Potomac River	PA ²	26	3.48	8.60	0.18
Potomac River	IRA ¹	10	1.68	4.15	0.09
South Branch Potomac River	PA ²	10	0.80	1.98	0.24
Potomac River	IRA ¹	8	0.56	1.39	0.17
Cacapon River	PA ²	19	1.08	2.66	0.03
	IRA ¹	1	0.08	0.19	0.02
West Virginia Total	PA ²	163	15.08	37.24	0.12
	IRA ¹	63	8.23	20.32	0.07

VIRGINIA³

Watershed	Line	#	Hectares	Acres	% of Predicted Watershed Wetland Area
Shenandoah River	Line A	7	0.33	0.82	0.13
	IRA	17	0.46	1.14	0.18

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-58
 CUMULATIVE WETLAND AND WILDLIFE IMPACT ASSESSMENT MATRIX
 FOR FORESEEABLE FUTURE FEDERAL ACTIONS
 WITHIN 30-MINUTE CONTOUR**

	WETLAND IMPACTS	WILDLIFE HABITAT IMPACTS	BIODIVERSITY IMPACTS	MITIGATION/ MANAGEMENT PLANS
FLOODWALL - MOOREFIELD, WV	1.9 acres forested wetlands	Over 90% of impacts to cropland or urban land (21 ac)	No involvement of threatened or endangered species.	Wetland and upland revegetation plan
STONY RUN WATER SUPPLY DAM - HARDY COUNTY, WV	None, no wetlands identified in feasibility study	Approx. loss of 70 acres forested habitat	No involvement of threatened or endangered species. Creation of open water habitat.	None proposed.
CANAAN VALLEY NATIONAL WILDLIFE REFUGE	Preservation of largest wetland complex in West Virginia and the central and southern Appalachians.	Preservation of 28,000 acres	Preservation of diverse plant and animal populations, including 1 threatened and 1 endangered species	Comprehensive management plan developed
GEORGE WASHINGTON NATIONAL FOREST	None proposed	Multiple use management of over 100,000 forested acres	Management plan to conserve specific elements of biodiversity and restore others where needed.	Comprehensive land and resource management plan
MONONGAHELA NATIONAL FOREST	None proposed	Multiple use management of over 500,000 forested acres	Plan to promote populations of management indicator species, including threatened and endangered species.	Comprehensive land and resource management plan

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TABLE III-59
ALTERNATIVES ANALYSIS: SUMMARY OF WETLAND IMPACTS BY SECTION

SECTION	LINE DESIGNATIONS ON PREVIOUS PLANS*	WETLAND IMPACT	
		hectares	acres
3	3-A.1, 3-C, 3-A.1	0.5	1.2
	Line A	0.5	1.3
4	4-A.1	0.1	0.2
	4-A.1, 4-D, 4-A.1	0.2	0.4
	5-E, 4-A.1, 4-E, 5-A.1	0.2	0.6
	Line A	0.1	0.2
5	5-A.1, 5-D, 5-A.1	0.4	0.9
	5-A.1, 5-E	0.4	1.1
	Line A	0.4	1.1
6	6-A.1, 6-C.1, 6-A.1	0.0	0.0
	Line A	0.0	0.0
7	7-A.1, 7-B, 7-A, 7-A.1	1.2	3.0
	7-A.1, 7-A, 7-A.1	2.4	6.0
	7-A.1	0.6	1.5
	Line A	0.7	1.7
8	8-A.1	1.9	4.8
	8-B, 8-A, 8-A.1, 8-D, 8-C	2.3	5.6
	8-A.1, 8-C	2.1	5.1
	Line A	2.1	5.1
9	9-A.1	0.2	0.4
	9-A.1, 9-B	0.2	0.4
	Line A	0.0	0.1
10	10-A.1, 10-A, 10-A.1	3.6	8.8
	Line A	1.3	3.2
11	11-A.1, 11-A, 11-A.1	4.0	9.9
	11-A.1	3.2	8.0
	11-A.1, 11-C, 11-B.1, 11-B, 11-B.1	3.4	8.5
	Line A	1.7	4.2
12	12-A.1, 12-A, 12-A.1, 12-A, 12-A.1	10.2	25.2
	12-A.1	10.8	26.8
	12-A.1, 12-B	5.5	13.5
	Line A	4.8	11.8
13	13-E, 13-A.1, 13-D, 13-A.1	0.6	1.5
	13-A.1, 13-A, 13-C	4.2	10.4
	13-A.1, 13-A, 13-B	3.2	8.0
	13-A.1	2.1	5.2
	Line A	0.7	1.6
14	14-A.1, 14-D, 14-A.1	0.6	1.4
	14-A.1, 14-B, 14-A.1	0.6	1.4
	Line A	0.6	1.4
15	15-A.1	0.2	0.6
	15-A.1, 15-C.1, 15-A.1	0.0	0.1
	Line A	0.0	0.1
16	16-A.1	2.8	6.8
	16-A.1, 16-B, 16-F	2.0	5.0
	Line A	2.0	5.0
TOTALS	Sum of Maximums - Old Lines	32.2	79.6
	Sum of Minimums - Old Lines	19.2	47.3
	Line A	14.9	36.8

* Previous plans include agency field review plans and those available after public meetings.

TABLE III-60
DECISION MATRIX FOR WETLAND REPLACEMENT SITE LOCATION

Criteria		Rating Scale	Monongahela River Basin			Potomac River Basin			
			Crystal Springs Site	Craven Run Site	Leading Creek Site	Williams Hollow Site	South Branch West Bank Site	South Branch East Bank Site	Walnut Bottom Run Site
Appropriate Topography		5=Flat/Uncomplicated Topo. -to- 0=Steep/Complex Topography	5	4	5	5	5	5	5
One Site Replacement Possible		5=yes -or- 0=No	0	5	5	0	5	5	5
Hydrologic Support	Ground Water	5=Adequate -to- 0=Inadequate	3	4	5	3	2	3	5
	Flooding	5=Adequate -to- 0=Inadequate	2	5	5	3	5	3	3
	Runoff	5=Adequate -to- 0=Inadequate	3	4	4	3	5	4	5
Suitable Soil Characteristics		5=Poorly Drained -to- 0=Well Drained	2	2	4	3	2	3	5
Historical Wetland Area		5=Prior Converted (PC) -or- 3=High Probability of PC -or- 0=Not PC	0	0	5	5	3	5	0
Water Quality		5=Poor (preferred) -to- 0=Excellent	3	4	3	4	3	3	4
Wildlife Value of Site		5=Low wildlife value (preferred) -to- 0=High wildlife value	5	5	5	5	5	5	5
Wildlife Value of Adjacent Land		5=High wildlife value (preferred) -to- 0=Low wildlife value	1	1	1	1	2	1	2
Wooded Buffer Present or Possible		5=Present 3=Possible 0=Not attainable	3	4	3	3	5	3	3
Construction Intrusion on Adjacent Habitat		5=Low (preferred) -to- 0=High	2	5	5	5	5	5	5
Depth to Groundwater		5=Shallow -to- 0=Deep	2	2	4	4	2	3	5
Construction Access		5=Very Accessible -to- 0=Unaccessible	5	4	5	5	5	4	4
Constructibility		5=High -to- 0=Low	3	4	5	4	3	4	5
Distance to Right of Way		5=Adjacent to ROW -or- 3=Not adjacent but less than 1 mile -or- 0=Greater than 1 mile	0	0	3	4	5	5	5
Impact to Property Owners		5=Small Percentage -to- 0=Large Percentage	0	2	2	4	4	3	5
Number of Property Owners Affected		5=One -or- 3=Two 0=More than Two	5	0	5	5	5	5	3
TOTAL			44	55	74	66	71	69	74

**TABLE III-61
WETLAND REPLACEMENT RATIOS AND AREA**

WETLAND CLASSIFICATION	REPLACEMENT RATIO	IMPACT AREA		REPLACEMENT AREA	
		Hectares	Acres	Hectares	Acres
Forested	3:1	0.4	1	1.2	3
Scrub/Shrub	3:1	1.2	3	3.6	9
Emergent	1:1	12.5	31	12.5	31
Open Water	1:1	0.8	2	0.8	2
TOTAL		15.0	37	18.2	45

**TABLE III-62
HABITAT ASSESSMENT PARAMETERS**

PARAMETER LEVEL	PARAMETER CHARACTERISTICS	HABITAT ASSESSMENT RANKING*			
		Excellent	Good	Fair	Poor
PRIMARY	Bottom Substrate	16-20	11-15	6-10	0-5
	Embeddedness	16-20	11-15	6-10	0-5
	Streamflow	16-20	11-15	6-10	0-5
SECONDARY	Channel Alteration	12-15	8-11	4-7	0-3
	Bottom Scour and Deposition	12-15	8-11	4-7	0-3
	Pool:Riffle or Run:Riffle Ratio	12-15	8-11	4-7	0-3
TERTIARY	Bank Stability	9-10	6-8	3-5	0-2
	Bank Vegetation Stability	9-10	6-8	3-5	0-2
	Streamside Cover	9-10	6-8	3-5	0-2

Source: EPA, *Rapid Bioassessment Protocols for Use in Streams and Rivers - Benthic Macroinvertebrates and Fish*.

*Note: Parameter levels are numerically weighted whereby Primary parameters are weighted greater than Secondary and Tertiary parameters. The Categorical values (i.e. Excellent, Good, Fair, and Poor) reflect these weighted rankings.

**TABLE III-63
DESCRIPTION OF BIOTIC INTEGRITY RANKINGS**

BIOTIC INTEGRITY SCORE*	BIOTIC INTEGRITY RANK (CATEGORY)	ATTRIBUTES
>0.79	Non-impaired (A)	Comparable to the best situation to be expected for a particular stream order. Large number of families and individuals. Many intolerant species present. Optimum community structure.
0.5-0.79	Moderately Impaired (B)	Fewer families due to loss of most intolerant forms.
0.21-0.49	Impaired (C)	Fewer families and individuals due to loss of most intolerant forms.
<0.21	Severely Impaired (D)	Few families present. Only tolerant organisms present. If high density of organisms, then dominated by one or two families.

* Biotic Integrity Score is based on percent comparison with reference site, where a score of 1 indicates a station with similar BI as the reference site.

**TABLE III-64
SUMMARY TABLE: BASIC WATER QUALITY**

Regional Project Watershed	Local Project Watershed	Site ID	Stream Name	Stream Order	Temperature (C)	Dissolved Oxygen (mg/l)	pH	Habitat Assessment Score	Family Biotic Index (FBI)	# Individuals	# of Families (taxa)	Biotic Integrity Score	Biotic Integrity Rank
Tygart Valley River	Leading Creek	MC3508	Haddix Run	1	7.0	10.0	7.5	83	5.75	28	9	0.40	C
Tygart Valley River	Leading Creek	MT1509	Wilmoth Run	1	20.5	8.7	7.8	75	4.39	18	7	0.67	B
Tygart Valley River	Leading Creek	MT1510	trib. Wilmoth Creek	1	17.5	4.2	7.3	65	5.50	4	2	0.07	D
Tygart Valley River	Leading Creek	MT1511	Wilmoth Run	2	19.3	4.3	7.3	53	7.91	23	4	0.20	D
Tygart Valley River	Leading Creek	MT1512	Leading Creek	3	21.8	5.4	7.0	67	5.40	45	6	0.40	C
Tygart Valley River	Leading Creek	MT1601	Davis Lick	2	23.6	7.6	7.5	64	6.91	33	6	0.27	C
Tygart Valley River	Leading Creek	MT1602	Horse Run	2	22.6	4.3	7.1	44	9.00	0	1	0.00	D
Tygart Valley River	Leading Creek	MT1603	Pearcy Run	2	21.5	6.4	6.9	76	6.52	21	6	0.27	C
Tygart Valley River	Leading Creek	MT1604	trib. Leading Creek	1	18.0	9.2	6.6	81	5.38	8	5	0.53	B
Tygart Valley River	Leading Creek	MT1605	Claylick Run	2	20.2	4.7	7.1	59	5.70	10	8	0.33	C
Tygart Valley River	Leading Creek	MT1606	trib. Claylick Run	1	19.4	8.7	6.3	59	3.00	2	2	0.13	D
Tygart Valley River	Leading Creek	MT1607	trib. Leading Creek	2	20.2	9.3	7.5	58	4.00	1	1	0.13	D
Tygart Valley River	Leading Creek	MT1608	Leading Creek	3	19.0	8.0	7.0	104	3.33	86	12	0.67	B
Tygart Valley River	Leading Creek	MT1609	Leading Creek	3				101	4.21	39	7	0.60	B
Tygart Valley River	Leading Creek	MT1610	trib. Leading Creek	3	19.0	7.8	7.0	108	3.98	127	13	0.73	B
Tygart Valley River	Leading Creek	MT1611	trib. Leading Creek	1				52	9.00	0	1	0.00	D
Tygart Valley River	Leading Creek	MT3500	trib. Leading Creek	1	5.0	9.0	6.0	28	6.64	33	7	0.47	C
Tygart Valley River	Leading Creek	MT3501	trib. Cherry Fork	1	4.5	0.0	6.5	36	6.82	11	6	0.33	C
Tygart Valley River	Leading Creek	MT3502	Cherry Fork	3	5.0	9.3	6.0	77	5.39	96	17	0.73	B
Tygart Valley River	Leading Creek	MT3503	Pond Lick Run	2	4.0	9.7	6.5	76	6.67	87	11	0.47	C
Tygart Valley River	Leading Creek	MT3509	trib. Leading Creek	2	5.0	11.0	6.5	43	7.84	68	5	0.20	D
Tygart Valley River	Leading Creek	MT3600	trib. Wilmoth Creek	1	6.0	9.0	6.0	38	7.20	75	9	0.27	C
Tygart Valley River	Leading Creek	MT3601	Leading Creek	3	4.5	10.4	6.0	95	3.66	117	12	0.87	A
Tygart Valley River	Leading Creek	MT3602	Leading Creek	3	6.0	9.7		91	7.09	125	9	0.47	C
Tygart Valley River	Leading Creek	MT3603	trib. Leading Creek	1	6.0	9.8	6.0	76	7.80	106	10	0.20	D
Tygart Valley River	Leading Creek	MT3604	Stalnaker Run	3	6.0	9.5	7.5	97	4.97	39	12	0.67	B

**TABLE III-64
SUMMARY TABLE: BASIC WATER QUALITY**

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Regional Project Watershed	Local Project Watershed	Site ID	Stream Name	Stream Order	Temperature (C)	Dissolved Oxygen (mg/l)	pH	Habitat Assessment Score	Family Biotic Index (FBI)	# Individuals	# of Families (taxa)	Biotic Integrity Score	Biotic Integrity Rank
Tygart Valley River	Leading Creek	MT3605	trib. Leading Creek	2	7.0	9.2	6.5	105	7.86	37	4	0.13	D
Cheat River	Black Fork	MC1100	Four Mile Run	1	15.0	6.4	7.5	62	3.09	11	6	0.53	B
Cheat River	Black Fork	MC1101	trib. Four Mile Run	1	17.0	6.0	7.0	76	8.00	6	1	0.13	D
Cheat River	Black Fork	MC1102	trib. Beaver Creek	1	19.0	6.0	6.0	53	8.00	105	1	0.00	D
Cheat River	Black Fork	MC1103	trib. Beaver Creek	1	17.0	7.0	5.0	63	1.52	42	3	0.60	B
Cheat River	Black Fork	MC1104	trib. Beaver Creek	1	18.0	6.4	5.0	106	2.36	14	6	0.47	C
Cheat River	Black Fork	MC1105	trib. Beaver Creek	1	17.0		5.0	101	1.90	87	8	0.87	A
Cheat River	Black Fork	MC1106	trib. Beaver Creek	1	12.0	6.0	4.5	75	6.46	65	6	0.47	C
Cheat River	Black Fork	MC1107	trib. Beaver Creek	1	15.0	6.8	4.5	57	1.90	84	5	0.60	B
Cheat River	Black Fork	MC1108	trib. Beaver Creek	1	15.0	7.4	5.0	89	2.83	94	8	0.73	B
Cheat River	Black Fork	MC1109	trib. Beaver Creek	1	13.0	6.8	4.5	88	2.48	122	9	0.80	A
Cheat River	Black Fork	MC1110	trib. Beaver Creek	1	19.0	6.7	6.0	83	6.50	2	2	0.20	D
Cheat River	Black Fork	MC1111	trib. Beaver Creek	1	16.0	6.0	5.5	57	4.20	5	5	0.40	C
Cheat River	Black Fork	MC1112	trib. Beaver Creek	1	22.0	4.2	6.0	49	5.20	5	3	0.27	C
Cheat River	Black Fork	MC1200	trib. Beaver Creek	1	12.0	8.2	5.0	90	2.08	119	11	0.93	A
Cheat River	Black Fork	MC1201	trib. Beaver Creek	1	13.0	8.6	6.0	84	1.85	88	8	0.67	B
Cheat River	Black Fork	MC1202	trib. Beaver Creek	1	11.0	4.8	3.0	49	4.00	1	1	0.13	D
Cheat River	Black Fork	MC1203	trib. Beaver Creek	1	17.0	5.2	3.0	49	10.00	0	1	0.00	D
Cheat River	Black Fork	MC1204	trib. Beaver Creek	1	25.0	5.4	3.0	52	10.00	0	1	0.00	D
Cheat River	Black Fork	MC1205	trib. Beaver Creek	1	11.0	6.2	4.5	43	3.29	104	7	0.67	B
Cheat River	Black Fork	MC1206	trib. Beaver Creek	1	16.0	6.8	5.0	41	0.16	97	4	0.60	B
Cheat River	Black Fork	MC1207	trib. Beaver Creek	2	13.0	6.8	5.0	55	3.00	12	5	0.53	B
Cheat River	Black Fork	MC1208	Beaver Creek	3	18.0	6.6	4.5	68	6.67	104	3	0.27	C
Cheat River	Black Fork	MC1209	trib. Beaver Creek	1	14.0	3.2	6.0	60	8.00	0	1	0.00	D
Cheat River	Black Fork	MC1210	trib. Beaver Creek	1	13.0	4.4	6.5	62	7.49	53	5	0.20	D
Cheat River	Black Fork	MC1211	trib. Pendleton Creek	1	22.0	6.0	7.0	38	7.28	39	6	0.33	C

**TABLE III-64
SUMMARY TABLE: BASIC WATER QUALITY**

Regional Project Watershed	Local Project Watershed	Site ID	Stream Name	Stream Order	Temperature (C)	Dissolved Oxygen (mg/l)	pH	Habitat Assessment Score	Family Biotic Index (FBI)	# Individuals	# of Families (taxa)	Biotic Integrity Score	Biotic Integrity Rank
Cheat River	Black Fork	MC1212	Pendleton Creek	2	29.0	7.2	6.5	86	6.00	107	7	0.20	D
Cheat River	Black Fork	MC1213	trib. Pendleton Creek	1	26.0	6.4	7.0	32	6.28	47	7	0.27	C
Cheat River	Black Fork	MC1214	trib. Beaver Creek	1	22.0	5.2	3.0	80	5.05	118	4	0.20	D
Cheat River	Black Fork	MC1215	trib. Beaver Creek	1	21.0	5.2	5.5	57	4.78	41	3	0.53	B
Cheat River	Black Fork	MC1216	trib. Beaver Creek	2	23.0	7.0	5.0	42	4.33	12	5	0.40	C
Cheat River	Black Fork	MC1301	trib. Beaver Creek	1	13.0	10.9	5.1	74	2.50	8	5	0.47	C
Cheat River	Black Fork	MC1302	N.F. Blackwater River	3	14.4	10.6	6.9	87	10.00	0	1	0.00	D
Cheat River	Black Fork	MC1303	trib. N.F. Blackwater River	1	9.1	10.3	2.8	64	10.00	0	1	0.00	D
Cheat River	Black Fork	MC1304	N.F. Blackwater River	3	13.5	10.6	4.0	65	8.00	4	1	0.13	D
Cheat River	Black Fork	MC1305	Long Run	2	13.9	9.3	2.9	65	8.00	1	1	0.13	D
Cheat River	Black Fork	MC1306	Long Run	2	15.2	11.3	3.2	72	9.00	0	1	0.00	D
Cheat River	Black Fork	MC1307	Long Run	2	19.3	9.6	6.2	74	6.18	17	6	0.40	C
Cheat River	Black Fork	MC1308	Long Run	2	18.3	9.6	6.1	79	5.50	44	10	0.53	B
Cheat River	Black Fork	MC1309	Middle Run	2	10.0	7.6	6.0	57	5.92	39	13	0.60	B
Cheat River	Black Fork	MC1310	Tub Run	1	12.4	7.7	4.1	105	5.09	34	8	0.47	C
Cheat River	Black Fork	MC1311	Big Run	2	15.0	9.9	4.5	85	4.16	19	9	0.33	C
Cheat River	Black Fork	MC1312	trib. Big Run	1	12.8	6.3	4.5	91	3.67	21	11	0.73	B
Cheat River	Black Fork	MC1313	trib. Roaring Run	1	13.2	7.8	7.5	79	3.30	33	8	0.53	B
Cheat River	Black Fork	MC1314	trib. Roaring Run	1	13.6	8.0	7.7	99	3.04	26	10	0.67	B
Cheat River	Black Fork	MC1315	trib. Roaring Run	1	13.6	6.7	6.0	87	3.40	5	3	0.33	C
Cheat River	Black Fork	MC1316	trib. Roaring Run	1	13.4	9.4	7.2	111	3.28	40	9	0.73	B
Cheat River	Black Fork	MC1317	trib. Roaring Run	1	14.5	6.0	7.0	51	3.76	33	5	0.60	B
Cheat River	Black Fork	MC1318	trib. Black Fork	2	25.0	6.2	7.5	82	4.09	56	13	0.73	B
Cheat River	Black Fork	MC1319	Black Fork River	3	19.0	6.8	7.0	123	4.32	62	8	0.60	B
Cheat River	Black Fork	MC1320	Roaring Run	2	14.0	8.0	7.5	89	6.00	49	11	0.47	C
Cheat River	Black Fork	MC3301	N.F. Blackwater River	3	4.0	10.0	6.8	90	7.84	146	5	0.07	D

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**TABLE III-64
SUMMARY TABLE: BASIC WATER QUALITY**

Regional Project Watershed	Local Project Watershed	Site ID	Stream Name	Stream Order	Temperature (C)	Dissolved Oxygen (mg/l)	pH	Habitat Assessment Score	Family Biotic Index (FBI)	# Individuals	# of Families (taxa)	Biotic Integrity Score	Biotic Integrity Rank
Cheat River	Black Fork	MC3302	Slip Hill Mill Run	1	3.0	10.0	6.5	56	6.29	7	5	0.47	C
Cheat River	Black Fork	MC3303	trib. Slip Hill Mill Run	1	5.0	14.0	5.0	66	2.33	3	2	0.27	C
Cheat River	Black Fork	MC3304	trib. Slip Hill Mill Run	1	10.0	12.0	4.0	66	2.17	6	3	0.33	C
Cheat River	Black Fork	MC3305	Roaring Run	1	4.0	12.0	7.0	111	2.50	24	9	0.67	B
Cheat River	Black Fork	MC3306	Roaring Run	2	3.0	12.0	7.5	117	5.32	97	10	0.53	B
Cheat River	Black Fork	MC3307	trib. Roaring Run	1	4.0	21.0	5.5	103	2.63	81	12	0.87	A
Cheat River	Black Fork	MC3308	Roaring Run	2	5.0	12.0	7.0	124	3.58	121	17	0.93	A
Cheat River	Black Fork	MC3309	Snyders Run	2	4.5	12.0	5.0	70	2.90	96	9	0.67	B
Cheat River	Black Fork	MC3310	trib. Snyder Run	1	4.0	8.0	6.0	68	8.00	0	1	0.00	D
Cheat River	Black Fork	MC3311	trib. Long Run	1	6.5	8.0	4.0	51	8.00	0	1	0.00	D
Cheat River	Black Fork	MC3312	Long Run	1	4.0	11.4	6.5	87	3.96	42	5	0.53	B
Cheat River	Black Fork	MC3400	Black Fork River	3	4.0	15.0	6.0	117	4.22	9	4	0.33	C
Cheat River	Shavers Fork	MC1400	Shavers Fork	3	31.5	8.0	7.0	120	4.39	71	10	0.67	B
Cheat River	Shavers Fork	MC1401	Shavers Fork	3	31.5	8.0	7.0	120	4.63	54	11	0.67	B
Cheat River	Shavers Fork	MC1402	trib. Shavers Fork	1	19.0	4.1	6.0	37	7.99	103	4	0.07	D
Cheat River	Shavers Fork	MC1501	Shavers Fork	3	23.8	7.5	7.9	104	4.00	84	15	1.07	A
Cheat River	Shavers Fork	MC1502	Pleasant Run	2	23.0	9.5	8.5	89	3.73	55	9	0.67	B
Cheat River	Shavers Fork	MC1503	Pleasant Run	2	18.3	11.1	7.0	104	2.92	39	10	0.87	A
Cheat River	Shavers Fork	MC1504	Slab Camp Run	2	19.3	10.5	7.3	75	4.89	18	5	0.27	C
Cheat River	Shavers Fork	MC1505	Pleasant Run	2	19.0	8.6	7.0	84	2.50	8	5	0.33	C
Cheat River	Shavers Fork	MC1506	trib. Pleasant Run	1	17.4		6.7	85	4.00	25	9	0.67	B
Cheat River	Shavers Fork	MC1507	trib. Pleasant Run	1	17.1	8.0	6.4	79	3.65	37	8	0.60	B
Cheat River	Shavers Fork	MC1508	Pleasant Run	2	12.3	9.6	6.7	79	4.03	29	7	0.53	B
Cheat River	Shavers Fork	MC3401	Shavers Fork	3	6.0	14.0	6.0	119	2.78	37	8	0.60	B
Cheat River	Shavers Fork	MC3402	Sugarcamp Run	1	5.0	14.0	6.0	105	2.30	94	6	0.60	B
Cheat River	Shavers Fork	MC3403	Haddix Run	3	6.0	12.8	6.5	108	3.39	28	9	0.60	B

**TABLE III-64
SUMMARY TABLE: BASIC WATER QUALITY**

Regional Project Watershed	Local Project Watershed	Site ID	Stream Name	Stream Order	Temperature (C)	Dissolved Oxygen (mg/l)	pH	Habitat Assessment Score	Family Biotic Index (FBI)	# Individuals	# of Families (taxa)	Biotic Integrity Score	Biotic Integrity Rank
Cheat River	Shavers Fork	MC3404	Shingle Tree Run	1	4.5	17.0	6.0	95	1.26	38	8	0.53	B
Cheat River	Shavers Fork	MC3405	Goodwin Run	1	5.0	18.0	6.0	103	5.32	22	6	0.40	C
Cheat River	Shavers Fork	MC3406	Hawk Run	1	6.0	12.0	6.0	90	4.64	100	16	0.73	B
Cheat River	Shavers Fork	MC3505	trib. Haddix Run	1	6.0	9.4	6.5	81	3.65	83	7	0.60	B
Cheat River	Shavers Fork	MC3506	trib. Haddix Run	1	6.0	9.8	6.0	79	1.31	36	4	0.60	B
Cheat River	Shavers Fork	MC3507	trib. Haddix Run	1	6.0	10.0	6.0	90	3.83	98	16	1.00	A
Cheat River	Shavers Fork	MT3504	trib. Leading Creek	1	6.5	9.2	6.5	96	2.91	32	10	0.67	B
North Branch Potomac River	Patterson Creek	PNB1007	trib. Elklick Run	1	19.0	10.0	7.5	101	5.89	38	10	0.73	B
North Branch Potomac River	Patterson Creek	PNB1008	trib. Elklick Run	1	19.0	10.0	7.5	112	7.88	33	2	0.00	D
North Branch Potomac River	Patterson Creek	PNB2800	Patterson Creek	3	5.5	13.0	8.0	116	5.00	99	17	0.80	A
North Branch Potomac River	Patterson Creek	PNB2801	N.F. Patterson Creek	2	6.5	11.0	8.0	110	3.76	126	8	0.47	C
North Branch Potomac River	Patterson Creek	PNB2802	trib. N.F. Patterson Creek	2	3.0	9.8	8.0	80	5.30	120	13	0.73	B
North Branch Potomac River	Patterson Creek	PNB2900	N.F. Patterson Creek	3	3.5	12.4	8.0	126	6.39	139	14	0.67	B
North Branch Potomac River	Patterson Creek	PNB2901	N.F. Patterson Creek	3	3.5	12.0	8.0	121	3.73	132	13	0.93	A
North Branch Potomac River	Patterson Creek	PNB2902	N.F. Patterson Creek	3	5.0	11.0	8.0	99	3.76	137	11	0.80	A
North Branch Potomac River	Patterson Creek	PNB2903	trib. N.F. Patterson Creek	2	3.0	9.0	7.0	89	4.31	106	21	0.80	A
North Branch Potomac River	Patterson Creek	PNB2904	trib. N.F. Patterson Creek	1	5.0	10.6	7.5	61	7.83	12	3	0.20	D
North Branch Potomac River	Patterson Creek	PNB2905	trib. N.F. Patterson Creek	1	5.0	10.7	7.5	74	3.30	122	11	0.87	A
North Branch Potomac River	Patterson Creek	PNB800	trib. Patterson Creek	1	27.0	6.5	8.0	34	7.90	10	2	0.00	D
North Branch Potomac River	Patterson Creek	PNB801	trib. Patterson Creek	2	19.0	8.0	8.0	87	7.66	89	4	0.13	D
North Branch Potomac River	Patterson Creek	PNB802	trib. Thorn Run	2	19.0	6.5	6.0	74	5.20	5	2	0.07	D
North Branch Potomac River	Patterson Creek	PNB803	trib. Thorn Run	1	15.5	7.6	6.0	86	3.00	1	1	0.13	D
North Branch Potomac River	Patterson Creek	PNB804	trib. Thorn Run	2	10.0	6.2	7.0	71	6.58	43	6	0.27	C
North Branch Potomac River	Patterson Creek	PNB805	trib. Patterson Creek	1	17.5	7.8	7.0	67	8.00	4	1	0.00	D
North Branch Potomac River	Patterson Creek	PNB806	trib. S.F. Patterson Creek	1	18.0	7.2	7.0	62	6.57	7	4	0.40	C
North Branch Potomac River	Patterson Creek	PNB807	Patterson Creek	3	22.0	1.8	6.5	48	6.47	97	11	0.47	C

**TABLE III-64
SUMMARY TABLE: BASIC WATER QUALITY**

Regional Project Watershed	Local Project Watershed	Site ID	Stream Name	Stream Order	Temperature (C)	Dissolved Oxygen (mg/l)	pH	Habitat Assessment Score	Family Biotic Index (FBI)	# Individuals	# of Families (taxa)	Biotic Integrity Score	Biotic Integrity Rank
North Branch Potomac River	Patterson Creek	PNB808	trib. N.F. Patterson Creek	1	0.5	12.8	7.0	51	6.50	2	2	0.20	D
North Branch Potomac River	Patterson Creek	PNB809	trib. Patterson Creek	1	8.5	9.2	8.0	64	4.92	26	12	0.87	A
North Branch Potomac River	Patterson Creek	PNB900	M.F. Patterson Creek	3	18.0	8.2	8.0	96	5.07	85	9	0.67	B
North Branch Potomac River	Patterson Creek	PNB901	trib. M.F. Patterson Creek	1	18.0	7.8	7.0	46	2.61	33	7	0.67	B
North Branch Potomac River	Patterson Creek	PNB902	N.F. Patterson Creek	3	14.0		8.0	109	4.36	86	11	0.80	A
North Branch Potomac River	Patterson Creek	PNB903	trib. Elklick Run	1	14.0	9.0	8.0	96	3.82	107	7	0.60	B
North Branch Potomac River	Patterson Creek	PNB904	trib. Elklick Run	2	16.0	8.6	8.0	78	3.98	41	4	0.47	C
North Branch Potomac River	Patterson Creek	PNB905	trib. Elklick Run	2	19.0	8.0	8.0	79	4.50	90	13	1.00	A
North Branch Potomac River	Patterson Creek	PNB906	Elklick Run	2	17.0	7.2	7.0	90	3.87	23	10	0.73	B
North Branch Potomac River	Patterson Creek	PNB907	M.F. Patterson Creek	3		8.2	8.0	93	5.30	110	15	0.73	B
North Branch Potomac River	Patterson Creek	PNB908	trib. N.F. Patterson Creek	1	8.5	11.2	8.0	77	4.07	84	13	0.87	A
North Branch Potomac River	Patterson Creek	PNB909	trib. N.F. Patterson Creek	2	7.0	10.4	6.5	93	5.13	135	15	0.87	A
North Branch Potomac River	Stony River	PNB1000	Little Creek	2	25.0	4.5	3.0	51	9.00	0	1	0.00	D
North Branch Potomac River	Stony River	PNB1001	Abrams Creek	2	20.0	5.2	4.0	50	9.00	0	1	0.00	D
North Branch Potomac River	Stony River	PNB1002	trib. Abrams Creek	1	14.0	7.6	7.0	53	7.34	95	9	0.20	D
North Branch Potomac River	Stony River	PNB1003	trib. Abrams Creek	1	14.0	7.0	5.5	68	2.45	98	12	0.87	A
North Branch Potomac River	Stony River	PNB1004	trib. Abrams Creek	1	14.0	9.0	4.5	80	2.20	98	9	0.87	A
North Branch Potomac River	Stony River	PNB1005	trib. Stony River	1	15.0	7.6	6.5	97	2.72	32	11	0.87	A
North Branch Potomac River	Stony River	PNB1006	Stony River	2	26.0	7.0	5.0	123	4.42	19	3	0.33	C
North Branch Potomac River	Stony River	PNB1009	trib. Little Creek	1	21.0	6.5	4.0	78	8.00	0	1	0.00	D
South Branch Potomac River	Anderson Run	PSB2700	Anderson Run	2	7.0	12.0	8.0	62	6.86	139	10	0.47	C
South Branch Potomac River	Anderson Run	PSB702	Walnut Bottom	3	16.2	11.2	7.5	95	3.98	86	10	0.67	B
South Branch Potomac River	Anderson Run	PSB703	Walnut Bottom	3	17.9	11.0	8.3	81	6.14	97	10	0.40	C
South Branch Potomac River	Anderson Run	PSB704	trib. Walnut Bottom	2	19.7	10.8	7.0	67	4.42	36	6	0.47	C
South Branch Potomac River	Anderson Run	PSB705	trib. Walnut Bottom	2	18.0	10.3	6.3	78	3.75	48	15	0.80	A
South Branch Potomac River	Anderson Run	PSB706	trib. Walnut Bottom	2	14.5	12.4	6.6	116	7.15	131	9	0.47	C

**TABLE III-64
SUMMARY TABLE: BASIC WATER QUALITY**

Regional Project Watershed	Local Project Watershed	Site ID	Stream Name	Stream Order	Temperature (C)	Dissolved Oxygen (mg/l)	pH	Habitat Assessment Score	Family Biotic Index (FBI)	# Individuals	# of Families (taxa)	Biotic Integrity Score	Biotic Integrity Rank
South Branch Potomac River	Anderson Run	PSB707	Toombs Hollow Run	2	12.3	11.5	8.0	89	5.49	59	10	0.60	B
South Branch Potomac River	Anderson Run	PSB708	Walnut Bottom	2	28.0	7.2	8.0	67	4.93	81	14	0.80	A
South Branch Potomac River	Anderson Run	PSB709	trib. Walnut Bottom	2	21.0	7.2	7.5	66	2.49	61	8	0.67	B
South Branch Potomac River	Clifford Hollow	PSB601	trib. Clifford Hollow	1	13.5	8.7	7.0	66	6.09	23	10	0.60	B
South Branch Potomac River	Clifford Hollow	PSB602	trib. Clifford Hollow	1	13.3	8.6	7.0	86	2.70	66	15	1.00	A
South Branch Potomac River	Main Channel	PSB2600	Fort Run	2	5.0	12.0	7.0	104	3.43	108	5	0.60	B
South Branch Potomac River	Main Channel	PSB2601	Dumpling Run	2	-1.0	10.0	7.0	88	8.00	0	1	0.00	D
South Branch Potomac River	Main Channel	PSB2602	Fort Run	2	-1.0	10.0	7.0	52	8.00	0	1	0.00	D
South Branch Potomac River	Main Channel	PSB2603	Dumpling Run	2	0.0	10.0	6.0	48	8.00	0	1	0.00	D
South Branch Potomac River	Main Channel	PSB2604	trib. Dumpling Run	1	0.0	10.0	6.0	32	8.00	0	1	0.00	D
South Branch Potomac River	Main Channel	PSB2605	Dumpling Run	2	0.5	10.0	6.5	60	8.00	0	1	0.00	D
South Branch Potomac River	Main Channel	PSB603	Clifford Hollow	2	13.3	10.1	7.0	112	5.40	60	12	0.67	B
South Branch Potomac River	Main Channel	PSB604	trib. Fort Run	1	17.3	3.9	6.5	68	5.40	5	3	0.27	C
South Branch Potomac River	Main Channel	PSB605	trib. S.B. Potomac River	1	23.4	4.9	6.2	55	6.14	7	3	0.13	D
South Branch Potomac River	Main Channel	PSB606	S.B. Potomac River	3	24.3	13.5	7.4	101	5.11	107	19	0.73	B
South Branch Potomac River	Main Channel	PSB701	trib. S.B. Potomac River	1	18.6	4.3	7.1	53	6.51	72	9	0.53	B
Cacapon River	Baker Run	PC2500	Baker Run	3	6.0	9.8	7.5	103	4.00	133	12	0.80	A
Cacapon River	Baker Run	PC2501	trib. Long Lick Run	1	2.5	11.0	6.5	58	4.29	117	13	0.80	A
Cacapon River	Baker Run	PC2502	trib. Long Lick Run	1	2.5	11.0	7.5	88	2.81	54	11	0.80	A
Cacapon River	Baker Run	PC412	Baker Run	3	17.3	9.6	7.5	97	2.93	138	13	1.00	A
Cacapon River	Baker Run	PC501	trib. Baker Run	1	13.3		6.5	67	4.38	21	9	0.73	B
Cacapon River	Baker Run	PC502	Baker Run	3	16.5	8.8	7.5	89	3.85	109	12	0.93	A
Cacapon River	Baker Run	PC503	Baker Run	3	17.3	8.5	7.5	89	3.15	109	12	0.93	A
Cacapon River	Baker Run	PC504	Long Lick Run	2	17.8	8.5	7.7	80	2.74	50	13	0.80	A
Cacapon River	Baker Run	PC505	trib. Long Lick Run	1	14.3	9.0	6.0	56	1.83	12	6	0.53	B
Cacapon River	Baker Run	PC506	trib. Long Lick Run	2	16.0	8.3	6.5	66	4.29	7	3	0.20	D

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**TABLE III-64
SUMMARY TABLE: BASIC WATER QUALITY**

Regional Project Watershed	Local Project Watershed	Site ID	Stream Name	Stream Order	Temperature (C)	Dissolved Oxygen (mg/l)	pH	Habitat Assessment Score	Family Biotic Index (FBI)	# Individuals	# of Families (taxa)	Biotic Integrity Score	Biotic Integrity Rank
Cacapon River	Baker Run	PC507	Long Lick Run	2	14.5	9.1	7.5	72	4.33	45	13	0.80	A
Cacapon River	Baker Run	PC508	Long Lick Run	2	13.3	9.5	8.0	76	2.71	38	11	0.67	B
Cacapon River	Baker Run	PC517	trib. Baker Run	2	6.0	11.1	6.0	109	2.59	102	15	1.00	A
Cacapon River	Central Cacapon River	PC2400	trib. Lost River	2	10.0	9.0	7.5	105	1.58	111	8	0.53	B
Cacapon River	Central Cacapon River	PC2401	trib. Lost River	2	9.0		7.0	55	2.37	35	6	0.47	C
Cacapon River	Central Cacapon River	PC314	trib. Trout Run	1	14.5	7.6	7.2	57	3.53	103	11	0.80	A
Cacapon River	Central Cacapon River	PC315	Trout Run	3	12.8	10.5	7.6	99	5.76	25	3	0.33	C
Cacapon River	Central Cacapon River	PC401	Lost River	3	20.3	8.2	7.6	97	6.17	133	10	0.47	C
Cacapon River	Central Cacapon River	PC402	Sauerkraut Run	2	16.0	9.2	7.8	101	3.06	105	15	1.07	A
Cacapon River	Central Cacapon River	PC403	trib. Lost River	1	12.0	5.2	6.1	76	8.00	2	1	0.00	D
Cacapon River	Central Cacapon River	PC404	trib. Lost River	1	12.0	5.4	6.6	81	6.20	10	4	0.33	C
Cacapon River	Central Cacapon River	PC405	trib. Lost River	1	11.8	8.2	6.8	55	4.29	42	9	0.87	A
Cacapon River	Central Cacapon River	PC406	trib. Lost River	2	11.8	5.2	7.1	93	2.00	6	3	0.27	C
Cacapon River	Central Cacapon River	PC407	trib. Lost River	1	11.8	7.0	6.8	84	5.08	37	7	0.53	B
Cacapon River	Central Cacapon River	PC408	Lost River	3	15.8	9.2	7.7	100	6.15	99	12	0.73	B
Cacapon River	Central Cacapon River	PC409	trib. Lost River	1	13.5	8.4	7.4	55	4.04	48	10	0.73	B
Cacapon River	Central Cacapon River	PC410	trib. Lost River	1	14.5	8.8	7.5	64	3.56	9	6	0.47	C
Cacapon River	Central Cacapon River	PC411	Lost River	3	17.0	9.8	7.7	101	4.09	101	12	0.80	A
Cacapon River	Central Cacapon River	PC413	Lost River	3	25.0	7.6	7.5	120	3.19	108	12	0.80	A
Cacapon River	Skaggs Run	PC2503	trib. Skaggs Run	1				56	5.82	33	10	0.53	B
Cacapon River	Skaggs Run	PC2504	trib. Skaggs Run	1	3.0	10.2	8.0	87	2.73	30	8	0.67	B
Cacapon River	Skaggs Run	PC509	Skaggs Run	1	11.0	10.1	6.5	53	4.18	28	7	0.53	B
Cacapon River	Skaggs Run	PC510	trib. Skaggs Run	1	10.8	10.5	6.0	76	3.00	3	3	0.33	C
Cacapon River	Skaggs Run	PC511	trib. Skaggs Run	1	11.0	11.1	7.0	105	4.43	30	10	0.53	B
Cacapon River	Skaggs Run	PC512	trib. Skaggs Run	1	11.8	10.2	6.0	83	3.38	29	7	0.53	B
Cacapon River	Skaggs Run	PC513	Skaggs Run	2	12.5	9.5	7.5	86	3.35	97	10	0.60	B

**TABLE III-64
SUMMARY TABLE: BASIC WATER QUALITY**

Regional Project Watershed	Local Project Watershed	Site ID	Stream Name	Stream Order	Temperature (C)	Dissolved Oxygen (mg/l)	pH	Habitat Assessment Score	Family Biotic Index (FBI)	# Individuals	# of Families (taxa)	Biotic Integrity Score	Biotic Integrity Rank
Cacapon River	Skaggs Run	PC514	trib. Skaggs Run	1	12.0	9.6	6.0	64	5.87	30	8	0.33	C
Cacapon River	Skaggs Run	PC515	trib. Skaggs Run	1	12.8	9.4	7.0	75	2.84	25	16	0.93	A
Cacapon River	Skaggs Run	PC516	trib. Skaggs Run	1	11.5	8.2	6.0	59	4.64	25	6	0.40	C
Cacapon River	Slate Rock Run	PC2300	trib. Slate Rock Run	1	4.0	12.0	7.0	86	3.13	45	14	0.80	A
Cacapon River	Slate Rock Run	PC2301	trib. Slate Rock Run	1	4.0	12.0	7.0	85	5.36	11	4	0.27	C
Cacapon River	Slate Rock Run	PC2302	Slate Rock Run	2	5.0	12.0	7.0	89	5.18	17	6	0.47	C
Cacapon River	Slate Rock Run	PC300	trib. Sine Run	1	12.0	10.0		83	6.33	121	9	0.40	C
Cacapon River	Slate Rock Run	PC301	trib. Sine Run	1	12.0	9.1		80	3.83	60	8	0.60	B
Cacapon River	Slate Rock Run	PC302	trib. Sine Run	1	12.5	8.9	6.5	85	3.33	84	15	0.93	A
Cacapon River	Slate Rock Run	PC303	trib. Sine Run	1	14.5	9.2	7.0	79	2.55	71	14	1.00	A
Cacapon River	Slate Rock Run	PC304	trib. Slate Rock Run	1	14.0	9.0	7.0	103	3.63	71	12	1.07	A
Cacapon River	Slate Rock Run	PC305	Slate Rock Run	2	15.0	8.8	7.0	115	2.46	83	16	1.00	A
Cacapon River	Waites Run	PC2303	Waites Run	3	7.0	11.0	7.5	112	3.56	119	16	1.00	A
Cacapon River	Waites Run	PC306	Waites Run	2	11.1	10.0	7.3	121	4.61	118	16	0.93	A
Cacapon River	Waites Run	PC307	trib. Waites Run	1	15.0	6.8	6.8	57	5.19	58	10	0.60	B
Cacapon River	Waites Run	PC308	Waites Run	2	14.7	9.5	7.2	106	3.74	109	14	1.00	A
Cacapon River	Waites Run	PC309	trib. Waites Run	1	13.3	7.4	6.8	74	4.25	92	10	0.67	B
Cacapon River	Waites Run	PC310	trib. Slate Rock Run	1	17.3	7.0	6.8	47	7.47	135	11	0.27	C
Cacapon River	Waites Run	PC311	trib. Waites Run	1	12.7	10.0	7.2	83	3.31	35	12	1.00	A
Cacapon River	Waites Run	PC312	trib. Waites Run	1	13.0	9.6	6.5	52	5.11	57	7	0.47	C
Cacapon River	Waites Run	PC313	trib. Waites Run	2	13.1	8.8	6.8	90	4.65	54	11	0.93	A
Shenandoah River	Cedar Creek	PS100	Town Run	2	19.0	7.8	8.0	88	5.57	37	12	0.53	B
Shenandoah River	Cedar Creek	PS101	Town Run	1	21.0	5.4	7.0	51	7.91	43	2	0.13	D
Shenandoah River	Cedar Creek	PS102	trib. Mulberry Run	2	20.0	7.2	8.0	86	5.06	78	9	0.53	B
Shenandoah River	Cedar Creek	PS103	trib. Mulberry Run	2	21.0	7.8	8.0	101	4.59	92	9	0.53	B
Shenandoah River	Cedar Creek	PS104	trib. Cedar Creek	1	21.0	2.8	8.0	101	7.56	9	2	0.20	D

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**TABLE III-64
SUMMARY TABLE: BASIC WATER QUALITY**

Regional Project Watershed	Local Project Watershed	Site ID	Stream Name	Stream Order	Temperature (C)	Dissolved Oxygen (mg/l)	pH	Habitat Assessment Score	Family Biotic Index (FBI)	# Individuals	# of Families (taxa)	Biotic Integrity Score	Biotic integrity Rank
Shenandoah River	Cedar Creek	PS105	trib. Mulberry Run	1	24.0	3.0	7.5	45	7.72	83	6	0.47	C
Shenandoah River	Cedar Creek	PS106	Mulberry Run	2	21.0	7.0	8.0	83	5.54	39	13	0.60	B
Shenandoah River	Cedar Creek	PS107	trib. Mulberry Run	1	24.0	7.2	8.0	69	6.11	9	5	0.33	C
Shenandoah River	Cedar Creek	PS108	trib. Mulberry Run	1	23.0	6.0	8.0	101	5.36	64	8	0.47	C
Shenandoah River	Cedar Creek	PS109	Cedar Creek	3	22.0	7.2	8.0	110	3.62	102	12	0.93	A
Shenandoah River	Cedar Creek	PS110	Cedar Creek	3	22.0	7.2	7.5	114	3.33	104	9	0.87	A
Shenandoah River	Cedar Creek	PS111	trib. Mulberry Run	1	23.0	8.0	8.0	66	7.55	20	3	0.27	C
Shenandoah River	Cedar Creek	PS112	Mulberry Run	2	24.0	7.8	8.0	97	5.02	89	14	0.60	B
Shenandoah River	Cedar Creek	PS113	Turkey Run	2	6.5	9.8	7.5	88	4.68	110	12	0.53	B
Shenandoah River	Cedar Creek	PS200	Duck Run	2	21.0	7.0	7.5	95	3.68	19	6	0.47	C
Shenandoah River	Cedar Creek	PS201	Duck Run	2	20.0	7.8	7.0	112	3.14	58	11	0.60	B
Shenandoah River	Cedar Creek	PS202	Duck Run	2	20.0	7.8	7.0	112	2.58	66	13	0.60	B
Shenandoah River	Cedar Creek	PS203	trib. Duck Run	1	21.0		7.0	48	3.30	20	6	0.60	B
Shenandoah River	Cedar Creek	PS204	trib. Duck Run	2	29.0	5.9	6.0	48	3.41	22	10	0.87	A
Shenandoah River	Cedar Creek	PS205	trib. Duck Run	2	24.0	5.9	6.5	45	2.19	16	6	0.53	B
Shenandoah River	Cedar Creek	PS206	trib. Duck Run	1	21.0	6.8	7.0	47	3.11	19	9	0.60	B
Shenandoah River	Cedar Creek	PS207	trib. Paddy Run	1	21.0	7.8	7.0	61	4.81	36	13	0.60	B

**TABLE III-65
COMPARISON OF DIRECT STREAM IMPACTS BY ALTERNATIVE**

WEST VIRGINIA

AREA OF IMPACT	Tygart Valley River				Cheat River				North Branch Potomac				South Branch Potomac				Cacapon River			
	IRA ¹		PA ²		IRA ¹		PA ²		IRA ¹		PA ²		IRA ¹		PA ²		IRA ¹		PA ²	
	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet
Number of Box Culverts	2		2		3		10		2		4		0		1		2		8	
Length of Box Culverts	130	425	228	740	122	400	1,047	3,435	94	310	503	1,650	0	0	198	650	52	170	1,399	4,590
Number of Pipes	10		3		30		19		5		6		1		0		22		13	
Length of Pipes	469	1,540	354	1,160	1,350	4,430	1,859	6,100	460	1,510	783	2,570	70	230	0	0	1,606	5,270	1,542	5,060
Total Number of Enclosures	12		5		33		29		7		10		1		1		24		21	
Total Length of Enclosures	599	1,965	579	1,900	1,472	4,830	2,906	9,535	555	1,820	1,286	4,220	70	230	198	650	1,658	5,440	2,941	9,650
Number of Relocations	1		2		3		4		1		8		1		1		1		3	
Length of Relocations	122	400	366	1,200	389	1,275	884	2,900	38	125	1,393	4,570	35	115	335	1,100	305	1,000	411	1,350

VIRGINIA³

AREA OF IMPACT	Shenandoah			
	IRA		Line A	
	Meters	Feet	Meters	Feet
Number of Box Culverts	0		3	
Length of Box Culverts	0	0	326	1,070
Number of Pipes	6		3	
Length of Pipes	271	890	268	880
Total Number of Enclosures	6		6	
Total Length of Enclosures	271	890	594	1,950
Number of Relocations	1		1	
Length of Relocations	38	125	30	100

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-66
SUMMARY OF IMPACTS BY WATERSHED**

IMPROVED ROADWAY ALTERNATIVE¹

AREA OF IMPACT	Tygart Valley River		Cheat River		North Branch of Potomac		South Branch of Potomac		Cacapon River	
	Metric	English	Metric	English	Metric	English	Metric	English	Metric	English
Total Perennial Streams in Watershed (kilometers/miles)	93	58	293	183	163	102	101	63	154	96
Length of Enclosures (meters/feet)	599	1,965	1,478	4,850	555	1,820	70	230	1,608	5,275
Length of Relocations (meters/feet)	122	400	389	1,275	38	125	35	115	305	1,000
Enclosures and Relocations as a Percentage of Total Streams		0.8%		0.6%		0.4%		0.1%		1.2%

VIRGINIA³

Shenandoah River	
Metric	English
205	128
271	890
38	125
	0.2%

WEST VIRGINIA - PREFERRED ALTERNATIVE²

AREA OF IMPACT	Tygart Valley River		Cheat River		North Branch of Potomac		South Branch of Potomac		Cacapon River	
	Metric	English	Metric	English	Metric	English	Metric	English	Metric	English
Total Perennial Streams in Watershed (kilometers/miles)	93	58	293	183	163	102	101	63	154	96
Length of Enclosures (meters/feet)	579	1,900	2,937	9,635	1,286	4,220	198	650	2,941	9,650
Length of Relocations (meters/feet)	366	1,200	884	2,900	1,393	4,570	335	1,100	411	1,350
Enclosures and Relocations as a Percentage of Total Per. Streams		1.0%		1.3%		1.6%		0.5%		2.2%

VIRGINIA - LINE A

Shenandoah River	
Metric	English
205	128
594	1,950
30	100
	0.3%

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

²Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-67
BRIDGES: IRA**

Watershed	Stream Name	Station	Structure Length (meters / feet)		Comments
Tygart Valley River	Claylick Run	445+00	213	700	
Tygart Valley River	Leading Creek	547+00	53	175	WVHQ
Tygart Valley River	Stalnaker Run	620+00	23	75	
Tygart Valley River	Leading Creek	697+00	91	300	WVHQ
Tygart Valley River	Leading Creek	710+00	61	200	WVHQ
Tygart Valley River	Cherry Fork	1594+00	91	300	
Cheat River	Sugarcamp Run	2212+00	61	200	
Cheat River	Shavers Fork	2242+00	213	700	WVHQ
Cheat River	Black Fork	2270+00	274	900	
Cheat River	Roaring Run	2298+00	61	200	Native Trout, WVHQ
Cheat River	Roaring Run	2327+00	91	300	Native Trout, WVHQ
Cheat River	Snyder Run	4170+00	183	600	
Cheat River	NF Blackwater	4231+00	427	1,400	
Cheat River	Beaver Creek	4468+00	30	100	WVHQ
Cheat River	Trib. to Beaver Creek	4582+00	24	80	
Cheat River	Trib. to Beaver Creek	4593+00	24	80	
Cheat River	Trib. to Beaver Creek	4841+00	46	150	
North Branch of Potomac	Trib. to NF Patterson Creek	5527+00	61	200	
North Branch of Potomac	NF Patterson Creek	5640+00	183	600	Stocked Trout, WVHQ
North Branch of Potomac	NF Patterson Creek	5893+00	61	200	Stocked Trout, WVHQ
North Branch of Potomac	Patterson Creek	5937+00	116	380	WVHQ
South Branch of Potomac	Anderson Run	6371+00	61	200	
South Branch of Potomac	SB Potomac River	6450+00	107	350	NRI, WVHQ
South Branch of Potomac	Fort Run	5196+00	61	200	
South Branch of Potomac	Dumpling Run	5245+00	61	200	
South Branch of Potomac	Dumpling Run	5308+00	61	200	
South Branch of Potomac	Fort Run	5396+00	70	230	
South Branch of Potomac	Clifford Hollow	5584+00	152	500	
Cacapon River	Baker Run	6025+00	34	110	
Cacapon River	Baker Run	6139+00	37	120	
Cacapon River	Lost River	6498+00	116	380	Stocked Trout, WVHQ, NRI
Cacapon River	Trout Run	6659+00	30	100	Stocked Trout, Native Trout, WVHQ
Cacapon River	Waites Run	6745+00	61	200	Stocked Trout, NRI
Cacapon River	Slate Rock Run	6790+00	24	80	
Shenandoah River	Duck Run	198+00	24	80	Native Trout, OSRW
Shenandoah River	Cedar Creek	290+00	55	180	Stocked Trout, NRI
Shenandoah River	Turkey Run	463+00	30	100	
Shenandoah River	Trib. to Mulberry Run	597+00	30	100	
Shenandoah River	Mulberry Run	625+00	52	170	Relocation

* Bridges substituted for box culverts in response to agency field reviews

AMD=Acid Mine Drainage; NRI = Nationwide Rivers Inventory; WVHQ = WVa. High Quality Stream; OSRW = Va. Outstanding State Resource Waters

**TABLE III-68
BRIDGES ACROSS STREAMS**

WEST VIRGINIA - PREFERRED ALTERNATIVE¹

Regional Project Watershed	Stream Name	Structure Length		Comments
		meters	feet	
Tygart Valley River	Clay Lick Run	213	700	
Tygart Valley River	Pearcy Run	137	450	
Tygart Valley River	Leading Creek	137	450	WV HQ
Tygart Valley River	Trib. to Wilmoth Creek	122	400	
Cheat River	Slabcamp Run	114	375	
Cheat River	Pleasant Run	61	200	Native Trout
Cheat River	Shavers Fork	518	1,700	NRI, WVHQ
Cheat River	Shavers Fork	137	450	NRI, WVHQ
Cheat River	Shavers Fork	195	640	NRI, WVHQ
Cheat River	Black Fork	366	1,200	
Cheat River	Roaring Run	38	125	Native Trout
Cheat River	Big Run*	113	370	
Cheat River	NF Blackwater River	320	1,050	AMD
Cheat River	Trib. to Pendleton Creek	46	150	
Cheat River	Beaver Creek	38	125	AMD, WVHQ
Cheat River	Trib. to Beaver Creek	107	350	Includes MC1103
North Branch of Potomac	Stoney River	262	860	AMD
North Branch of Potomac	Elklick Run	198	650	Native Trout, WVHQ
North Branch of Potomac	Trib. to Elklick Run*	198	650	
North Branch of Potomac	NF Patterson Creek	137	450	Stocked Trout, WVHQ
North Branch of Potomac	MF Patterson Creek*	366	1,200	
North Branch of Potomac	Trib. to MF Patterson Creek	131	430	
South Branch of Potomac	Walnut Bottom Run	91	300	
South Branch of Potomac	SB Potomac River and tribs	732	2,400	NRI, WVHQ
South Branch of Potomac	Clifford Hollow*	366	1,200	
Cacapon River	Long Lick Run	122	400	
Cacapon River	Baker Run	171	560	
Cacapon River	Baker Run	43	140	
Cacapon River	Lost River	128	420	Stocked Trout, WVHQ, NRI
Cacapon River	Lost River	265	870	Stocked Trout, WVHQ, NRI
Cacapon River	Sauerkraut Run	152	500	
Cacapon River	Lost River	168	550	Stocked Trout, WVHQ, NRI
Cacapon River	Trout Run	91	300	Native Trout, Stocked Trout, WVHQ
Cacapon River	Waites Run	76	250	Stocked Trout, WVHQ
	Total Bridge Length	6,360	20,865	

VIRGINIA - LINE A²

Regional Project Watershed	Stream Name	Structure Length		Comments
		meters	feet	
Shenandoah River	Duck Run	137	450	Native Trout, OSRW
Shenandoah River	Duck Run	82	270	Native Trout, OSRW
Shenandoah River	Cedar Creek	137	450	NRI, Stocked Trout
Shenandoah River	Turkey Run	183	600	
Shenandoah River	Trib. to Mulberry Run	46	150	
	Total Bridge Length	585	1,920	

* Bridges substituted for box culverts after field reviews

AMD = Acid Mine Drainage; NRI = Nationwide Rivers Inventory; WVHQ = WVa. High Quality Stream; OSRW = WVa. Outstanding State Resource W

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

² Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-69
OPTION AREA COMPARISON: WEST VIRGINIA**

OPTION AREA COMPARISONS IN WEST VIRGINIA																												
AREA OF IMPACT	Interchange				Shavers Fork				Patterson Creek				Forman				Line 5-D				Baker				Hanging Rock			
	Line I ¹		Line A		Line S ¹		Line A		Line P		Line A ¹		Line F ¹		Line A		Line 5-D ¹		Line A		Line B ¹		Line A		Line R		Line A ¹	
	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet
Number of Box Culverts	0		0		0		0		2		1		1		1		1		1		0		0		0		0	
Length of Box Culverts	0	0	0	0	0	0	0	0	351	1,150	137	450	152	500	152	500	210	690	107	350	198	650	0	0	0	0	0	0
Number of Open Bottom Culverts	0		0		0		0		0		0		0		0		0		0		0		0		0		0	
Length of Open Bottom Culverts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Pipes	2		2		0		0		5		2		2		2		0		2		0		1		0		0	
Length of Pipes	335	1,100	351	1,150	0	0	0	0	632	2,075	183	600	381	1,250	360	1,180	0	0	180	590	0	0	94	310	0	0	0	0
Total Number of Enclosures	2		2		0		0		7		3		3		3		1		3		1		1		0		0	
Total Length of Enclosures	335	1,100	351	1,150	0	0	0	0	983	3,225	320	1,050	533	1,750	512	1,680	210	690	287	940	198	650	94	310	0	0	0	0
Number of Relocations	2		2		1		1		1		1		2		2		0		0		0		0		0		0	
Length of Relocations	305	1,000	305	1,000	183	600	183	600	116	380	116	380	625	2,050	351	1,150	0	0	0	0	0	0	0	0	0	0	0	0
Length of Perennial Streams	741	2,431	807	2,646	77	254	94	307	1,392	4,568	472	1,549	1,292	4,239	1,304	4,277	594	1,950	274	900	191	627	94	310	0	0	0	0
Length of Intermittent Streams	269	884	265	869	1,755	5,757	1,650	5,414	696	2,284	869	2,850	1,539	5,050	1,686	5,531	171	560	73	240	346	1,135	639	2,095	457	1,489	467	1,532

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

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**TABLE III-70
OPTION AREA COMPARISON: VIRGINIA**

AREA OF IMPACT	OPTION AREA COMPARISONS IN VIRGINIA ¹									
	Duck Run						Lebanon Church			
	Line D1		Line D2		Line A		Line L		Line A	
	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet
Number of Box Culverts		1		1		2		0		0
Length of Box Culverts		0		0		1		0		0
Number of Open Bottom Culverts		1		0		1		0		0
Length of Open Bottom Culverts		0		0		0		0		0
Number of Pipes		0		0		0		0		2
Length of Pipes	0	0	0	0	0	0	0	0	158	520
Total Number of Enclosures		0		1		1		0		0
Total Length of Enclosures	0	0	137	450	137	450	0	0	0	0
Number of Relocations		0		0		0		1		2
Length of Relocations	0	0	0	0	0	0	107	350	189	620
Length of Perennial Streams		0		0		0		0		1
Length of Intermittent Streams		3		0		2		1		2

¹ Virginia did not select a Preferred Alternative as explained in the text, Section II.

**TABLE III-71
POLLUTANTS IN HIGHWAY RUNOFF**

POLLUTANT	PRIMARY SOURCES*
Particulates	Pavement wear, vehicles, atmosphere, maintenance
Nitrogen, Phosphorus	Atmosphere, roadside fertilizer application
Lead	Leaded gasoline (auto exhaust), tire wear (lead oxide filler material), lubricating oil and grease, bearing wear
Zinc	Tire wear (filler material), motor oil (stabilizing additive), grease
Iron	Auto body rust, steel highway structures (guardrails, etc.), moving engine parts
Copper	Metal plating, bearing and bushing wear, moving engine parts, brake lining wear, fungicides and insecticides applied by maintenance operations
Cadmium	Tire wear (filler material), insecticide application
Chromium	Metal plating, moving engine parts, brake lining wear
Nickel	Diesel fuel and gasoline (exhaust), lubricating oil, metal plating, bushing wear, brake lining wear, asphalt paving
Manganese	Moving engine parts
Bromide	Exhaust
Cyanide	Anticake compound (ferric ferrocyanide, Prussian Blue or sodium ferrocyanide, Yellow Prussiate of Soda) used to keep deicing salt granular
Sodium, Calcium	Deicing salts, grease
Chloride	Deicing salts
Sulphate	Roadway blends, fuel, deicing salts
Petroleum	Spills, leaks or blow-by of motor lubricants, antifreeze and hydraulic fluids, asphalt surface leachate
Polychlorinated Biphenyls	Spraying of highway right-of-ways, background atmospheric deposition, PCB catalyst in synthetic tires
Pesticides, Pathogenic bacteria	Soil, litter, bird droppings and trucks hauling livestock and stockyard waste
Rubber	Tire wear
Asbestos	Clutch and brake lining wear

* Source: Kobriger, 1984

TABLE III-72
SUMMARY OF IMPACTS TO RIPARIAN BUFFER ZONES: IRA

Regional Project Watershed	Local Project Watershed	Perennial Streams	Stream Order	Length of Parallel Construction Within 23 m (75') of Stream*		Number of Riparian Buffers Impacted
				Meters	Feet	
Tygart Valley River	Leading Creek	trib. Leading Creek	1	27	89	1
		Wilmoth Run	2	142	466	3
		Leading Creek	3	196	643	6
Cheat River	Shavers Fork	Haddix Run	1	472	1,548	2
		trib. Shavers Fork	1	113	372	1
		Haddix Run	2	1,252	4,106	8
		Haddix Run	3	1,049	3,441	8
	Black Fork	Roaring Run	1	203	666	1
		trib. Beaver Creek	1	309	1,015	2
		trib. Slip Hill Mill Run	1	216	710	1
		Roaring Run	2	422	1,386	4
		Beaver Creek	3	36	119	1
S. Branch Potomac	Main Channel	Dumpling Run	2	404	1,324	1
		Fort Run	2	362	1,187	1
Cacapon River	Skaggs Run	trib. Skaggs Run	1	174	572	2
	Baker Run	trib. Long Lick Run	1	155	507	1
		trib. Baker Run	1	197	646	1
		Baker Run	3	650	2,131	4
	Central Cacapon	Lost River	3	772	2,533	4
	Slate Rock Run	trib. Sine Run	1	230	756	1
trib. Slate Rock Run		1	1,280	4,201	2	
Shenandoah River	Cedar Creek	Duck Run	2	801	2,627	4
TOTAL				9,463	31,045	59

* Based on Proposed Limits of Construction

**TABLE III-73
SUMMARY OF IMPACTS TO RIPARIAN BUFFER ZONES:
PREFERRED ALTERNATIVE¹**

Regional Project Watershed	Local Project Watershed	Perennial Streams	Stream Order	Length of Parallel Construction Within 23 m (75') of Stream*		Number of Riparian Buffers Impacted
				Meters	Feet	
Tygart Valley River	Leading Creek	Pearcy Run	2	46	153	1
		Leading Creek	3	123	411	4
Cheat River	Black Fork	trib. Beaver Creek	1	29	95	1
		Pendleton Creek	2	172	573	1
	Shavers Fork	trib. Shavers Fork	1	123	411	1
		Pleasant Run	2	15	51	1
		Pleasant Run	3	59	195	1
		Shavers Fork	3	48	160	1
N. Branch Potomac	Patterson Creek	trib. Patterson Creek	1	84	279	1
		trib. N.B. Patterson Creek	1	227	756	2
		M.F. Patterson Creek	3	146	485	1
S. Branch Potomac	Anderson Run	Toombs Hollow	2	515	1,715	2
Cacapon River	Skaggs Run	Skaggs Run	2	152	508	2
TOTALS				1,739	5,792	19

* Based on Proposed Limits of Construction

¹ Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

**TABLE III-74
MEASURES TAKEN TO AVOID STREAM RELOCATIONS**

Regional Project Watershed	Stream Avoided	Measure Taken	Station	Impact Avoided meters / feet		Comments
Tygart River	Leading Creek	Retaining Wall	573	122	400	WVHQ
Tygart River	Leading Creek	Increased Slopes	620	152	500	WVHQ
Cheat River	Trib. to Roaring Run	Increased Slopes	3725	335	1,100	
North Branch of Potomac	Trib. to Elklick Run	Shifted construction limits	5230	335	1,100	
North Branch of Potomac	MF of Patterson Creek	Retaining Wall	5565	320	1,050	
North Branch of Potomac	Thorn Run	Increased Slopes	5650	305	1,000	
North Branch of Potomac	Toombs Hollow	Retaining Wall	5950	137	450	
North Branch of Potomac	Williams Hollow	Increased Slopes	6340	366	1,200	
Cacapon River	Trib. to Long Lick	Increased Slopes	6830	85	280	
Cacapon River	Baker Run	Changed vertical grade	6950	427	1,400	
		TOTAL		2,585	8,480	

AMD= Acid Mine Drainage

NRI = Nationwide Rivers Inventory; WVHQ = WVa. High Quality Stream; OSRW = Va. Outstanding State Resource Waters

TABLE III-75
ADDITIONAL AVOIDANCE AND MINIMIZATION MEASURES
DEVELOPED FOLLOWING FIELD REVIEWS

Regional Project Watershed	Stream	Measure Taken	Station	Stream Impact Reduction		Comments
				meters	feet	
Cheat River	Trib. to Roaring Run	Steepen slopes to reduce length of pipe	3731	76	250	
Cheat River	Big Run	Replace box culvert with 350 ft. bridge	3925	274	900	
Cheat River	Middle Run	Change in grade reduces culvert length	4055	8	25	
North Branch of Potomac	Abrams Creek	Increase slope to reduce length of culvert	5029	15	50	AMD
North Branch of Potomac	Trib. to Ellick Run	Replace box culvert with 650 ft. bridge	5293	137	450	
North Branch of Potomac	MF of Patterson Creek	Replace box culvert with a 1,200 ft. bridge	5534	427	1,400	
North Branch of Potomac	Trib. to Patterson Creek	Shifted line and reduced length of box culvert	5850	76	250	
South Branch of Potomac	Clifford Hollow	Replace box culvert with a 1,200 ft. bridge	6515	308	1,010	
		TOTAL		1,321	4,335	

AMD= Acid Mine Drainage

NRI = Nationwide Rivers Inventory; WWHQ = WVa. High Quality Stream; OSRW = Va. Outstanding State Resource Waters

**TABLE III-76
STREAMS PROPOSED FOR OPEN BOX CULVERTS AND BURIED INVERTS BASED
ON TOTAL HABITAT ASSESSMENT SCORE AND BI**

Alternative	Regional Project Watershed	Local Project Watershed	Stream Name	Streams ID	Drainage Structure	Length		BI Rank	Habitat Assessment Score
						meters	feet		
IRA ¹	Tygart Valley River	Leading Creek	Trib. Haddix Run	MC3504	Pipe	30	100	B	96
IRA ¹	Cheat River	Black Fork	Trib. Beaver Creek	MC1105	Box Culvert	61	200	A	101
IRA ¹	Cheat River	Black Fork	Trib. Roaring Run	MC3307	Pipe	61	200	A	103
IRA ¹	Cheat River	Black Fork	Roaring Run	MC3305	Pipe	244	800	B	111
IRA ¹	Cheat River	Shavers Fork	Shingle Tree Run	MC3404	Pipe	37	120	B	95
IRA ¹	South Branch Potomac River	Main Channel	Fort Run	PSB2600	Pipe	70	230	B	104
IRA ¹	Cacapon River	Central Cacapon River	Sauerkraut Run	PC402	Box Culvert	24	80	A	101
IRA ¹	Cacapon River	Central Cacapon River	Trib. Lost River	PC2400	Pipe	49	160	B	105
IRA	Shenandoah River	Cedar Creek	Duck Run	PS201	Pipe	24	80	B	112
IRA	Shenandoah River	Cedar Creek	Duck Run	PS202	Pipe	40	130	B	112
						640	2,100		
PA ²	Cheat River	Black Fork	Trib. Beaver Creek	MC1105	Box Culvert	55	180	A	101
PA ²	Cheat River	Black Fork	Trib. Big Run	MC1312	Box Culvert	61	200	B	91
PA ²	Cheat River	Black Fork	Trib. Roaring Run	MC1314	Box Culvert	274	900	B	99
PA ²	Cheat River	Black Fork	Trib. Roaring Run	MC1316	Pipe	271	890	B	111
PA ²	North Branch Potomac River	Stony River	Trib. Stony River	PNB1005	Pipe	91	300	A	97
PA ²	Cacapon River	Slate Rock Run	Trib. Slate Rock Run	PC304	Pipe	168	550	A	103
PA ²	Cacapon River	Skaggs Run	Trib. Skaggs Run	PC511	Box Culvert	186	610	B	105
PA ²	Cacapon River	Baker Run	Trib. Baker Run	PC517	Box Culvert	198	650	A	109
PA ²	Cacapon River	Slate Rock Run	Slate Rock Run	PC305	Box Culvert	131	430	A	115
						1,436	4,710		
Line P	North Branch Potomac River	Patterson Creek	Trib. M.F. Patterson Creek	PNB909	Pipe	168	550	A	93
Line P	North Branch Potomac River	Patterson Creek	M.F. Patterson Creek	PNB907	Box Culvert	213	700	B	93

Biotic Integrity Rank - A = Non- Impaired
Biotic Integrity Rank - B = Moderately Impaired

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

Habitat Assessment Score

Good Habitat = 90-120
Excellent Habitat = 121+

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TABLE III-77
EFFECTIVENESS OF STORMWATER MITIGATION MEASURES

POLLUTANT	WET DETENTION BASIN	GRASS SWALES AND BUFFER STRIPS
Suspended Sediment	80-90%	50-60%
Phosphorus	50-60%	10-15%
Nitrogen	30-40%	5-10%
Lead	70-80%	45-55%
Zinc	40-50%	25-30%
Copper	40-50%	30-35%

Source: Virginia Stormwater Management Regulations (1993)

TABLE III-78
RCRA SITE LOCATIONS AND IMPACTS

LINE	IMPACT	LOCATION	SITE NAME	SITE TYPE & CLASS	EPA I.D. NUMBER
IRA	None	Station 2334 <ul style="list-style-type: none"> ◆ The site is approximately 11 m (35') northeast of existing US 219 in Parsons, WV. ◆ The site would be approximately 6 m (20') northeast of the IRA construction limits along US 219. 	WVDOT - Maintenance Facility/Garage	RCRA - Class 3	WVD982673600
IRA	None	Station 5067 <ul style="list-style-type: none"> ◆ The site fronts WV 93 and is bounded to the east by Mount Storm Lake in Mount Storm, WV. ◆ The site is approximately 1,207 m (3,960') south of the IRA construction limits along WV 93. 	Vepco Mount Storm Station	RCRA - Class 2	WVD080548191
IRA	None	Station 5362 <ul style="list-style-type: none"> ◆ The site is approximately 6 m (20') south of existing WV 55, east of Moorefield, WV. ◆ The site would be approximately 3 m (10') south of the IRA construction limits along WV 55. 	WVDOT - Maintenance Facility/Garage	RCRA - Class 3	WVD988679154
IRA	None	Station 4855 <ul style="list-style-type: none"> ◆ The site is approximately 1060 m(3,480 ft) north of the IRA construction limits along WV 93 	Laural Run Mining Company	RCRA - Class 3	WVD988766465

TABLE III-79
UNDERGROUND STORAGE TANK LOCATIONS

LINE	SITE NAME	IMPACT	LOCATION
IRA	Kerr's Food Mart	No	Station 6732 <ul style="list-style-type: none"> ◆ The site is approximately 12m (40') southeast of existing WV 55, approximately 838m (2750') northeast of the town of Wardensville, WV. ◆ The site would be approximately the same distance 40' (12m) from the IRA construction limits along WV 55.
IRA	Citgo/Seven-Eleven	No	Station 6687 <ul style="list-style-type: none"> ◆ The site is approximately 31m (100') south of existing WV 55 in Wardensville, WV. ◆ The site would be approximately the same distance 91m (31') from the IRA construction limits along WV 55.
IRA	Chevron	No	Station 6685 <ul style="list-style-type: none"> ◆ The site is approximately 12m (40') south of existing WV 55 in Wardensville, WV. ◆ The site would be approximately the same distance (12m) 40' from the IRA construction limits along WV 55
IRA	Best, Inc.	Yes	Station 5697 <ul style="list-style-type: none"> ◆ The site is approximately 15.2m (50') south of existing WV 55 in Hardy County, WV. ◆ The site would be located within the southern side of the IRA construction limits along WV 55.
IRA	Jims Allstar Foods 76 Deli/Grocery	No	Station 2305 <ul style="list-style-type: none"> ◆ The site is approximately 7.6 m (25') north of existing US 219 in Parsons, WV.
IRA	Sheetz	No	Station 2262 <ul style="list-style-type: none"> ◆ The site is located approximately 12.1 m (40') south of existing US 219 in Parsons, WV.
IRA	Longs Auto Center (Exxon)	No	Station 2256 <ul style="list-style-type: none"> ◆ The site is located approximately 7.6 m (25') south of existing US 219 in Parsons, WV.
IRA	West End Grocery	No	Station 678 <ul style="list-style-type: none"> ◆ The site is approximately 18.3m (60') northwest of existing VA 55 in Clary, VA. ◆ The site would be approximately 12.2m (40') northwest of the IRA construction limits along VA 55.
IRA	Graden Supermarket	No	Station 472 <ul style="list-style-type: none"> ◆ The site is approximately 40m (130') northeast of existing VA 55 in Wheatfield, VA. ◆ The site would be approximately 33.5m (110') northeast of the IRA construction limits along WV 55.

**TABLE III-80
TOTAL ENERGY CONSUMPTION**

WEST VIRGINIA

ENERGY TYPE	CONSUMPTION (Million)	No-Build	IRA ¹	PA ²	OPTION AREA COMPARISON											
					Interchange		Shavers Fork		Patterson Creek		Forman		Baker		Hanging Rock	
					Line P	Line A	Line S ²	Line A	Line P	Line A ²	Line F ²	Line A	Line B ²	Line A	Line R	Line A ²
Construction	Annual liters	n/a	18,613	<u>45,425</u>	0.758	0.842	0.707	1.590	2.103	2.136	1.339	1.940	1.699	1.244	1.290	1.601
	Annual gallons	n/a	4,918	<u>12,001</u>	0.200	0.222	0.187	0.420	0.556	0.564	0.354	0.513	0.449	0.329	0.341	0.423
Maintenance	Annual liters	0.186	0.199	0.231	0.044	0.044	0.029	0.029	0.044	0.044	0.029	0.029	0.029	0.044	0.015	0.015
	Annual gallons	0.049	0.053	0.060	0.012	0.012	0.008	0.008	0.012	0.012	0.008	0.008	0.008	0.012	0.004	0.004
Operational	Annual liters	44,472	55,720	<u>60,263</u>	1,054	1,084	409	409	450	450	402	321	530	596	200	200
	Annual gallons	11,750	14,721	<u>15,921</u>	279	286	108	108	119	119	106	85	140	157	53	53
TOTAL	Annual liters	44,472	55,739	<u>60,308</u>	1,055	1,085	409	410	452	452	403	323	531	597	202	202
	Annual gallons	11,750	14,726	<u>15,934</u>	279	287	108	108	119	119	107	85	140	158	53	53

VIRGINIA³

ENERGY TYPE	CONSUMPTION (millions)	No-Build	IRA	Line A	OPTION AREA COMPARISON: VIRGINIA				
					Duck Run			Lebanon Church	
					Line D1	Line D2	Line A	Line L	Line A
Construction	Annual liters	n/a	1,249	5,884	3,952	3,288	3,397	1,616	1,548
	Annual gallons	n/a	0.330	1,555	1.044	0.869	0.898	0.427	0.409
Maintenance	Annual liters	0.056	0.056	0.071	0.058	0.058	0.058	0.073	0.073
	Annual gallons	0.015	0.015	0.018	0.015	0.015	0.015	0.019	0.019
Operational	Annual liters	51,469	52,919	55,940	905	905	905	1,445	1,509
	Annual gallons	31.102	31.978	33.804	0.547	0.547	0.547	0.873	0.912
TOTAL	Annual liters	51,469	52,920	55,946	909	909	909	1,446	1,511
	Annual gallons	31.117	32.323	35.377	1.606	1.431	1.460	1.319	1.340

¹The IRA was not selected as the Preferred Alternative as explained in text, Section II.

² Preferred Alternative - (Line A, Line I, mod. Line S, Line F, Line B, Line 5-D)

³ Virginia did not select a Preferred Alternative as explained in the text, Section II.

TABLE VII-1
COORDINATION MEETINGS THROUGHOUT THE ALIGNMENT
SELECTION PROCESS

DATE	MEETING ATTENDEES	MEETING PURPOSE	ISSUES DISCUSSED
7/6/93	WVDNR, WVDEP, FWS, Baker	Initial agency coordination for alignment selection process	<ul style="list-style-type: none"> ◆ <i>Corridor Selection Decision Document</i> status ◆ Development of alternatives ◆ Technical methodologies.
7/8/93	EPA, Baker	Initial agency coordination for alignment selection process	<ul style="list-style-type: none"> ◆ <i>Corridor Selection Decision Document</i> status ◆ Development of alternatives ◆ Secondary and cumulative impact assessments ◆ Technical methodologies.
7/9/93	WVDNR, Baker	Initial agency coordination for alignment selection process	<ul style="list-style-type: none"> ◆ <i>Corridor Selection Decision Document</i> status ◆ Development of alternatives ◆ Technical methodologies.
7/12/93	ACOE, Baker	Initial agency coordination for alignment selection process	<ul style="list-style-type: none"> ◆ <i>Corridor Selection Decision Document</i> status ◆ Development of alternatives ◆ Technical methodologies.
7/16/93	VDHR, Baker	Initial agency coordination for alignment selection process	<ul style="list-style-type: none"> ◆ Section 106 process
7/19/93 & 7/20/93	VDEQ-Waste, Air, Water Div., VDHR, VMRC, VDCR, VDOT, ACOE - Norfolk District, FWS, EPA, CHA, Baker	VDOT's monthly Interagency Coordination Meeting Corridor H was one of many items on VDOT's monthly meeting agenda	<ul style="list-style-type: none"> ◆ Meeting served as initial Virginia agency coordination for alignment selection process ◆ Development of alternatives ◆ Technical methodologies.
8/24/93	FWS, Baker	On-site field methodologies	<ul style="list-style-type: none"> ◆ Wetland & water quality field techniques
8/25/93	MNF, Baker	Initial agency coordination for alignment selection process	<ul style="list-style-type: none"> ◆ <i>Corridor Selection Decision Document</i> status ◆ Development of alternatives ◆ Technical methodologies
9/7/93	VAC, VDOT, Baker	VAC kick-off meeting	<ul style="list-style-type: none"> ◆ Brainstorm community goals ◆ Brainstorm how Corridor H could help meet these goals
10/12/93	VAC, VDOT, Baker	VAC meeting	<ul style="list-style-type: none"> ◆ Project status overall and in Virginia ◆ Discussion of alternatives in Section 2
10/26/93	Grant County Development Authority, Baker	Coordination on secondary development methodology and data collection	<ul style="list-style-type: none"> ◆ Secondary development process, projections, utility availability and access issues ◆ Comparison of IRA impacts
10/26/93	Region VIII Planning & Development Council, Baker	Coordination on secondary development methodology and data collection	<ul style="list-style-type: none"> ◆ Secondary development process, projections, utility availability and access issues ◆ Comparison of IRA impacts
10/28/93	VAC, VDOT, Baker	VAC meeting	<ul style="list-style-type: none"> ◆ Project status overall and in Virginia ◆ Commonwealth Transportation Board's resolution on Corridor H ◆ Discussion of alternatives in Section 1 ◆ Discussion of whether or not Corridor H alternatives could help meet community goals
12/10/93	ACOE - Pittsburgh District, Baker	Initiation of Section 404 Permit Applications	<ul style="list-style-type: none"> ◆ Joint Public Notice ◆ Manner in which to handle project location due to magnitude of project

TABLE VII-1 (CONT.)

COORDINATION MEETINGS THROUGHOUT THE ALIGNMENT SELECTION PROCESS

DATE & LOCATION	MEETING ATTENDEES	MEETING PURPOSE	ISSUES DISCUSSED
1/13/94	VAC, VDOT, WVDOT, Baker	VAC meeting	<ul style="list-style-type: none"> Completed discussion on whether Corridor H could help meet community goals
2/16/94 & 2/17/94	Wardensville, Capon Springs & Farms, OUL, Baker	Hydrogeology issues related to Lost River, Capon Springs, and Wardensville	<ul style="list-style-type: none"> Discuss method to evaluate and assess potential impacts
3/9/94	EPA, FWS, NRCS, FHWA, GWNF, MNF, ACHP, WVDEP, WVDNR, WVDCH, WVDHHS, WVDOT, Baker	Agency concurrence on alternatives carried forward	<ul style="list-style-type: none"> Review of all alignments to date Presentation of alignments considered but eliminated Discussion of alignments to be carried forward
3/11/94	ACOE, Baker	Agency concurrence on alternatives carried forward	<ul style="list-style-type: none"> Review of all alignments to date Presentation of alignments considered but eliminated Discussion of alignments to be carried forward
3/15/94	ACHP, WVDCH, WVDOT, Baker	Integration of Section 106 process in Corridor H tiered process	<ul style="list-style-type: none"> Specific discussions focused on inclusion of archaeological resources in the <i>Alignment Selection SDEIS</i> Discuss methods to field test Baker's predictive settlement pattern model
3/16/94	Capon Springs & Farms, WVDCH, FHWA, WVDOT, Baker	Potential impacts to Capon Springs & Farms, Inc.	<ul style="list-style-type: none"> Capon Springs concerns over proposed project
3/29/94	EPA, Baker	Agency concurrence on alternatives carried forward	<ul style="list-style-type: none"> Review of all alignments to date Presentation of alignments considered but eliminated Discussion of alignments to be carried forward
4/13/94	WVDCH, WVDOT, Baker	Proposed aboriginal settlement pattern model and testing	<ul style="list-style-type: none"> Discuss acceptable and appropriate field testing methodologies for cultural resource analyses Identify appropriate testing locations and methodologies
4/19/94	VDEQ, VDGIF, VDHR, VDCR, VDOT, WVDOT, Baker	Agency concurrence on alternatives carried forward	<ul style="list-style-type: none"> Review of all alignments in Virginia Presentation of alignments considered but eliminated in Virginia Discussion of alignments to be carried forward in Virginia
4/28/94	EPA, FWS, ACOE, NRCS, WVDNR, WVDEP, WVDOT, Baker	Wetland mitigation	<ul style="list-style-type: none"> Wetland mitigation replacement ratios and conceptual plan
5/5/94	ACOE - Pittsburgh District, Baker	Section 404 Permit Application	<ul style="list-style-type: none"> Agreed on application format and contents
5/5/94	WVDCH, WVDOT, Baker	Proposed aboriginal settlement pattern model and testing	<ul style="list-style-type: none"> Discuss proposed statistical methodology for testing of settlement pattern WVDCH accepted methodology proposed by WVDOT and Baker
5/6/94	FWS, EPA, WVDNR, WVDEP	Wetland mitigation	<ul style="list-style-type: none"> Interagency teleconference to concur on mitigation ratios and location of sites

TABLE VII-1 (CONT.)
COORDINATION MEETINGS THROUGHOUT THE ALIGNMENT SELECTION PROCESS

DATE & LOCATION	MEETING ATTENDEES	MEETING PURPOSE	ISSUES DISCUSSED
5/12/94	Lord Fairfax Planning District, VDOT, Baker	Coordination on secondary development methodology and data collection	<ul style="list-style-type: none"> ◆ Secondary development process ◆ Regional plans for Frederick and Shenandoah Counties ◆ Comparison of IRA impacts
5/13/94	Tucker County Planning Department, Baker	Coordination on secondary development methodology and data collection	<ul style="list-style-type: none"> ◆ Secondary development results ◆ Land use availability in Tucker County ◆ Canaan Valley Refuge ◆ Utility expansions and access issues ◆ Comparison of IRA impacts
5/13/94	Hardy County Planning Department, Baker	Coordination on secondary development methodology and data collection	<ul style="list-style-type: none"> ◆ Secondary development model preliminary results ◆ Poultry industry and new projects ◆ IRA economic impacts
6/21/94	VAC, VDOT, Baker	VAC meeting	<ul style="list-style-type: none"> ◆ Discuss scenic design features as applied to Corridor H
6/28/94	ACHP, WVDCH, FHWA, WVDOT, Baker, public	Section 106 meeting	<ul style="list-style-type: none"> ◆ Public meeting on Section 106 (Historic Preservation) issues regarding Corridor H
7/15/94	VDHR, VDOT, Baker	Proposed aboriginal settlement pattern model and testing	<ul style="list-style-type: none"> ◆ Discuss proposed statistical methodology for testing of settlement pattern in Virginia
7/27/94	VAC, VDOT, WVDOT, Baker	VAC meeting	<ul style="list-style-type: none"> ◆ Present preliminary data to be contained in <i>Alignment Selection SDEIS</i>
8/2/94	Garrett County Planning Department, Baker (telephonic)	Coordination on secondary development methodology and data collection	<ul style="list-style-type: none"> ◆ Status of comprehensive plans ◆ Results of development model
9/15/94	VAC, VDOT, Baker	VAC meeting	<ul style="list-style-type: none"> ◆ Preparation of Statement of Consensus
9/27/94	VAC, VDOT, Baker	VAC meeting	<ul style="list-style-type: none"> ◆ Preparation of Statement of Consensus
10/20/94	ACOE, EPA, FWS, MNF, WVDEP, WVDNR, WVDCH, FHWA, WVDOT, VDOT, Baker	Alignment Selection SDEIS Technical Presentation	<ul style="list-style-type: none"> ◆ Review of study results ◆ Release of SDEIS ◆ Public Hearing schedule
10/22/94	COE	404 Permit Coordination	
12/13/94	WVDOH, WVDNR, FWS, ACOE, Baker	Field view of alternative wetland replacement site for Leading Creek	<ul style="list-style-type: none"> ◆ Resource Agencies concurred on alternate site.
1/10/95	WVDOH, WVSHPO, Capon Springs and Farms, Baker, FHWA	Discussion of potential traffic volumes within Capon Springs and Farms	<ul style="list-style-type: none"> ◆ Land development is an existing problem independent of Corr. H. ◆ Traffic concerns raised by resort are local in nature.

TABLE VII-1 (CONT.)
COORDINATION MEETINGS THROUGHOUT THE ALIGNMENT SELECTION PROCESS

DATE & LOCATION	MEETING ATTENDEES	MEETING PURPOSE	ISSUES DISCUSSED
3/28/95	WVDOH, APCWS, WVSHPO, Capon Springs, CHA, Baker, FHWA, ACHP, VAC	Section 106 Programmatic Agreement	♦ Dissussed the process and context of the Corridor H Draft Section 106 Programmatic Agreement.
3/13/95	Baker, FWS, FHWA, WVDOH	Mitigation Document	♦ Dissussed the components of the mitigation document.
3/17/95	EPA, FHWA, Baker, WVDOH	Comment dissussion	♦ Dissussed EPA comments.
5/9/95 and 5/10/95	FHWA, EPA, FWS, ACOE, WVDNR, MNF, GWNF, WVDEP, WVDOH, Baker	Environmental Mitigation Document	♦ Dissussed issues that need to be addressed in the Corridor H Environmental Mitigation Document and adoption of a mitigation process to be detailed in the Mitigation Document.
5/22/95	FHWA, EPA, FWS, WVDNR, WVDEP, WVDOH, Baker	Dissussion of Agency comments and responses	♦ Dissussed WVDOH's responses to agency comments on the ASDEIS
5/25/95	FWS, WVDNR, Baker	Dissussed HEP analysis	♦ Revisted HEP analysis for the ASDEIS. ♦ Dissussed mitigation for Mitigation Document.
5/26/95	FHWA, WVDOH, Baker	FEIS coordination meeting	♦ Dissussed format of FEIS and review procedures.

Where:

ACHP = Advisory Council on Historic Preservation	VDHR = VA Department of Historic Resources
ACOE = US Army Corps of Engineers	VDOT = VA Department of Transportation
EPA = US Environmental Protection Agency	VMRC = VA Marine Resources Commission
FHWA = Federal Highway Administration	WVDCH = WV Division of Culture and History
FWS = US Fish and Wildlife Service	WVDEP = WV Division of Environmental Protection
GWNF = USDA - George Washington National Forest	WVDHHS= WV Department of Health and Human Services
MNF = USDA - Monongahela National Forest	WVDNR = WV Division of Natural Resources
NRCS = Soil Conservation Service	WVDOT = WV Department of Transportation
VAC = Virginia Advisory Committee	CHA = Corridor H Alternatives
VDCR = VA Department of Conservation and Recreation	OUL = Ozark Underground Laboratories
VDEQ = VA Department of Environmental Quality	Baker = Michael Baker Jr., Inc.
VDGIF = VA Department of Game and Inland Fisheries	

**TABLE VII-2
FIELD REVIEW DATES AND ATTENDEES**

SECTION	FIELD REVIEW DATE	RESOURCE AGENCIES AND GROUPS REPRESENTED															
		WV DOT	VDOT	FHWA	BAKER	USFS - Monongahela NF	USFS - George Washington NF	US FWS	US EPA - Region 3	US SCS	US ACOE - Pittsburgh District	US ACOE - Norfolk District	WV DNR	VA DEQ	VA DCR	GAI Engineering	Virginia Power
1 & IRA	Oct. 27, 1993	✓	✓		✓		✓	✓				✓	✓	✓			✓
2 & IRA	Oct. 27, 1993	✓	✓		✓		✓	✓				✓	✓	✓			✓
3	Sept. 1 & 2, 1993	✓			✓		✓	✓				✓					
4	Sept. 1 & 2, 1993	✓			✓		✓	✓				✓					
5	Sept. 1 & 2, 1993	✓			✓		✓	✓				✓					
6	Sept. 8 & 9, 1993	✓			✓			✓		✓		✓					
7	Sept. 8 & 9, 1993	✓			✓			✓		✓		✓					
8	Sept. 8 & 9, 1993	✓			✓			✓		✓		✓					
9	Sept. 8 & 9, 1993	✓			✓			✓		✓		✓					
10	Sept. 22 & 23, 1993	✓			✓	✓		✓			✓	✓			✓	✓	
11	Sept. 22 & 23, 1993	✓			✓	✓		✓			✓	✓			✓	✓	
12	Sept. 22 & 23, 1993	✓			✓	✓		✓			✓	✓			✓	✓	
13	Oct. 6 & 7, 1993	✓			✓	✓		✓	✓			✓					
14	Oct. 6 & 7, 1993	✓			✓	✓		✓	✓			✓					
15	Oct. 20 & 21, 1993	✓			✓	✓		✓				✓					
16	Oct. 20 & 21, 1993	✓			✓	✓		✓				✓					
IRA in WV	Jan. 24, 25, & 26, 1994	✓		✓	✓	✓	✓	✓		✓							

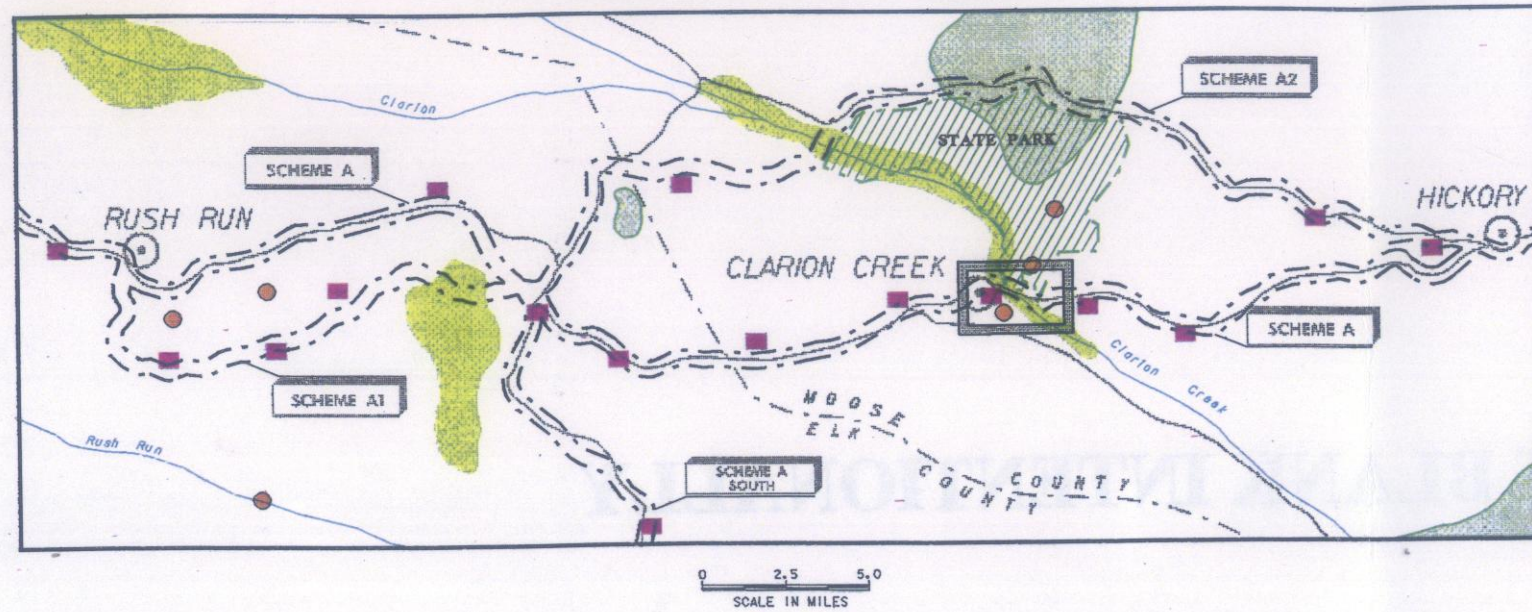
TABLE VII-3
AGENCY CONCURRENCE ON ALTERNATIVES CARRIED FORWARD

AGENCIES TO WHOM LETTERS REQUESTING CONCURRENCE WERE SENT	CONCURRENCE LETTER RECEIVED
Advisory Council on Historic Preservation	nir
NOAA National Marine Fisheries Service	June 20, 1994
US Army Corps of Engineers - Norfolk District	August 10, 1994
US Army Corps of Engineers - Pittsburgh District	April 18, 1994
US Environmental Protection Agency	May 4, 1994
US Fish and Wildlife Service	October 12, 1994
USDA George Washington National Forest	nir
USDA Monongahela National Forest	May 18, 1994
USDA Natural Resources Conservation Service	April 26, 1994
WV Department of Health and Human Services	May 13, 1994
WV Division of Culture and History	nir
WV Division of Environmental Protection	nir
WV Division of Natural Resources	April 27, 1994

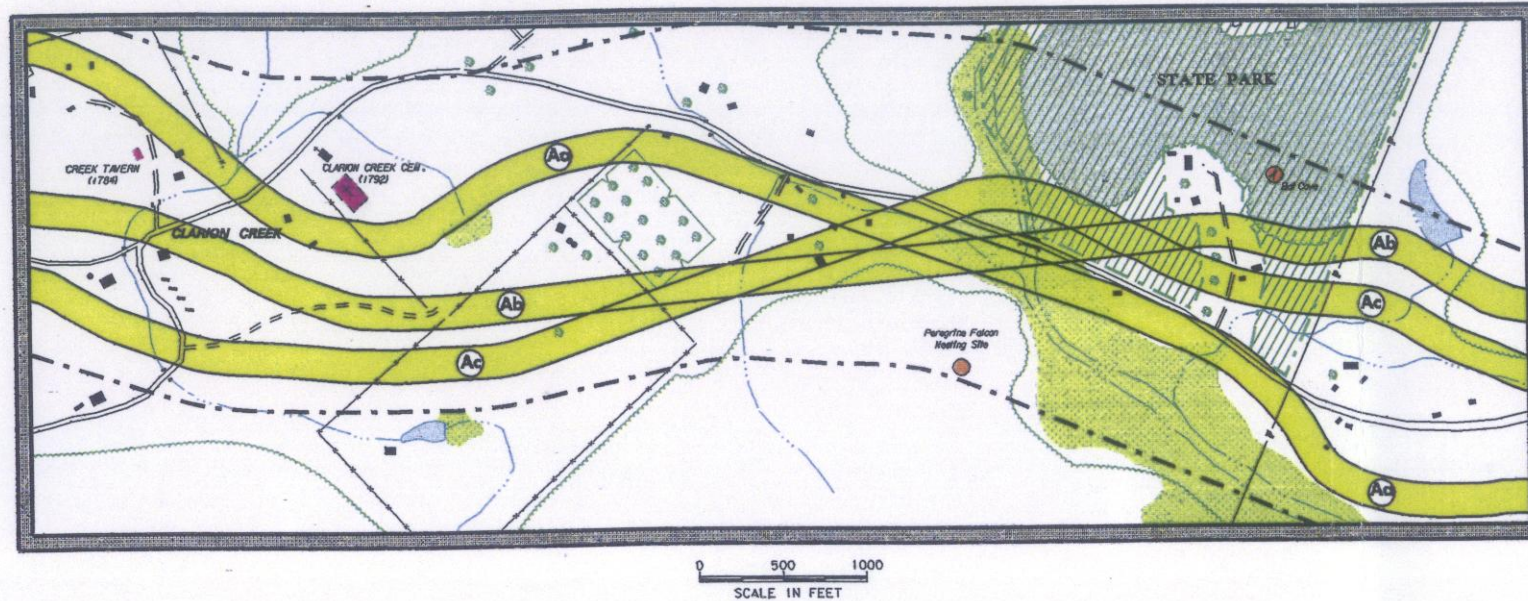
Where: nir = No letter received

EXHIBITS

CORRIDOR SELECTION (STEP 1)



ALIGNMENT SELECTION (STEP 2)



LEGEND

-
-
-
-
-
-
-
-
-
-
-
-

APPROACH

- A. 2000' Wide Corridors
- B. Resource Inventory within each Corridor
- C. Broad Corridor Comparisons of Resources
- D. Preferred Corridor Selection

- A. 200'- 350' Wide Alignments
- B. Site Specific Resource Analyses (HEP, WET 2.0, STAMINA, etc.)
- C. Alignment Impact Comparisons
- D. Preferred Alignment Selection

DOCUMENTS

SDEIS 1

Corridor Selection Decision Document

SDEIS 2

FEIS
Record of Decision (ROD)

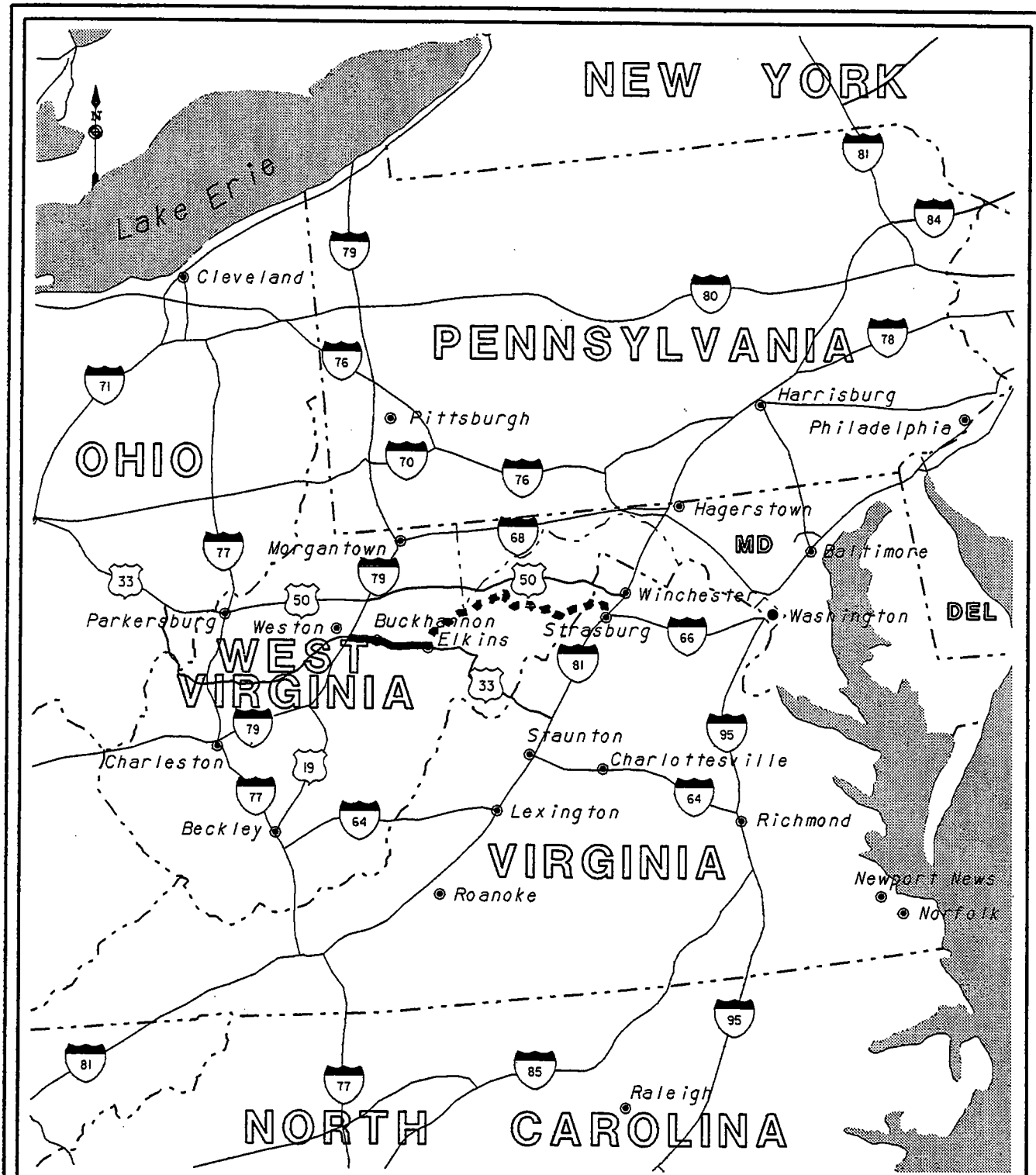
APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

**Exhibit S-1
CORRIDOR H
STUDY PROCESS**





SCALE: AS SHOWN



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LEGEND

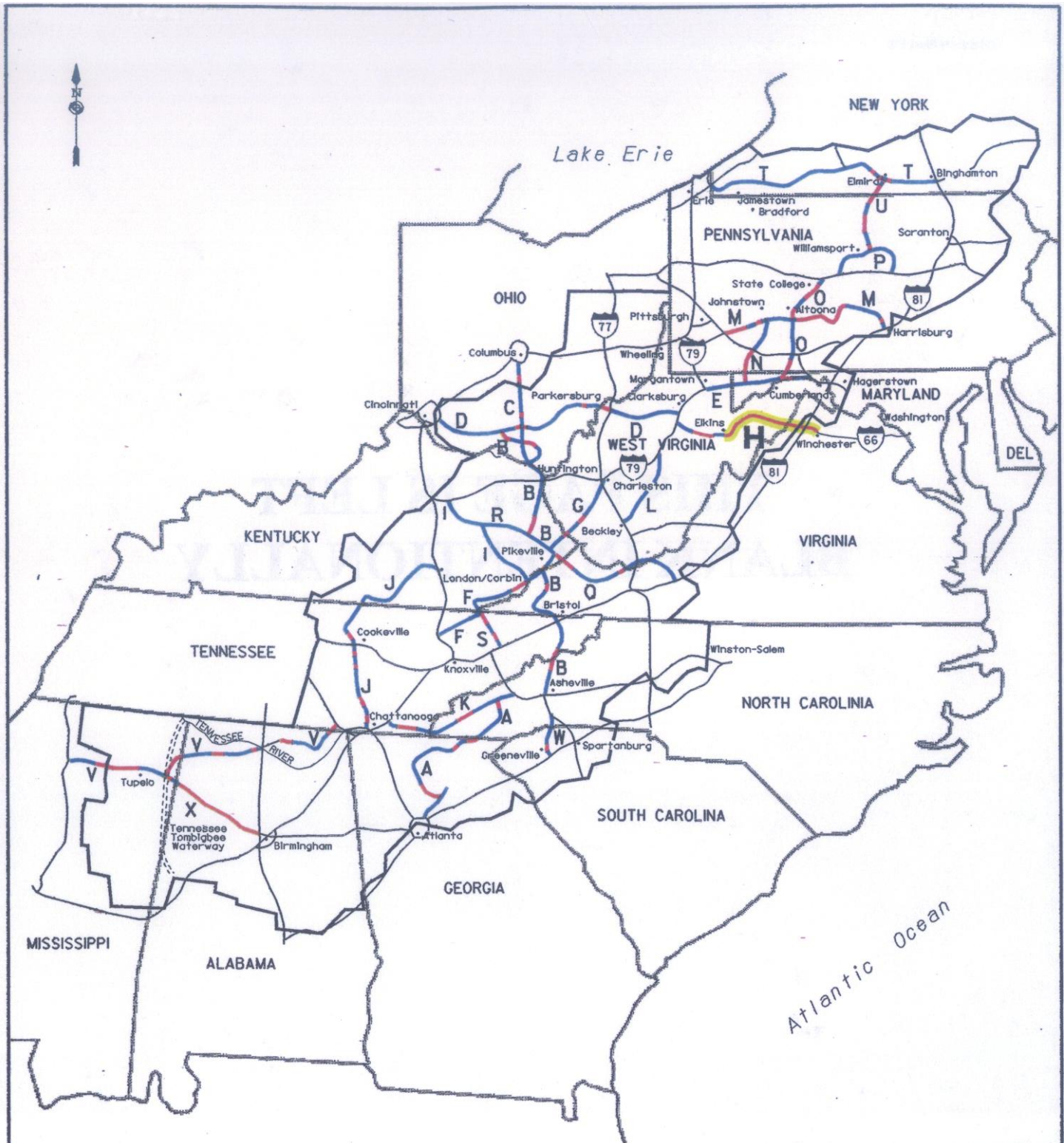
-  - **INTERSTATE HIGHWAY**
-  - **U.S. ROUTE**
-  - **COMPLETED CORRIDOR H**
-  - **PROPOSED CORRIDOR H**

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

**Exhibit S-2
REGIONAL PROJECT
LOCATION**



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S = Corridor Designation

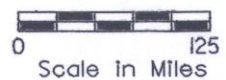
— Adequate or Complete - Sept. 30, 1989

— To Be Completed

— Corridor H

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit I-1
APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM STATUS



SOURCE: Appalachian Regional Commission, September 30, 1992

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Appalachian Corridor H

Elkins to Interstate 81

Corridor Selection SDEIS
(CSDEIS)

Oct 90 - Oct 92

Corridor Selection SDEIS
Public Involvement

Dec 92 - Jan 93

Corridor Selection Decision
(CSDEIS Decision Document)

July 93

Alignment Selection SDEIS
(ASDEIS)

Aug 93 - Oct 94

Alignment Selection SDEIS
Public Involvement

Dec 94

Alignment Selection
Decision

Feb 95

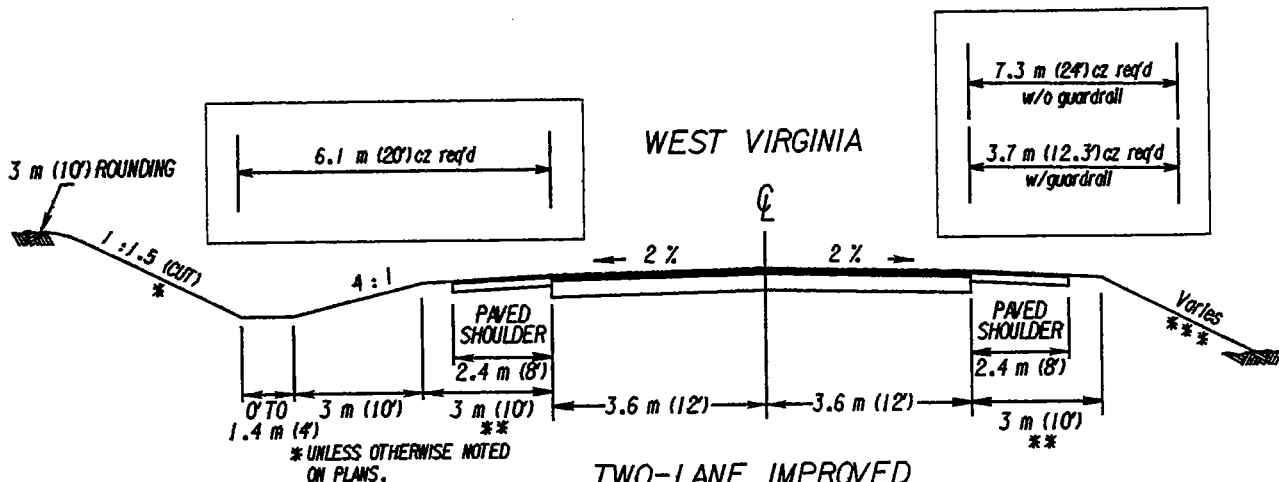
Final
Environmental Impact
Statement
(FEIS)

May 96

Record of Decision

Construction Start

Exhibit I-2
Project Development Process



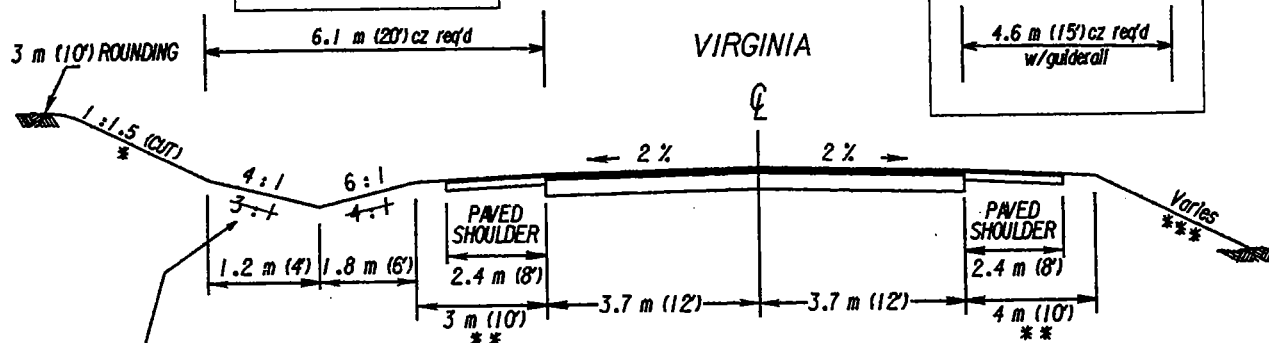
WEST VIRGINIA

TWO-LANE IMPROVED ROADWAY ALTERNATIVE

DESIGN SPEED = 80 KMPH (50 MPH)

*** 4' MINIMUM SHOULDER WIDTH IN WIDENING AREAS; UNPAVED

*** FILL SLOPES NOT TO EXCEED 4:1 WITHIN CLEAR ZONE (CZ).



VIRGINIA

TWO-LANE IMPROVED ROADWAY ALTERNATIVE

DESIGN SPEED = 80 KMPH (50 MPH)

SLOPE LIMITS FOR CLEAR ZONE IN VIRGINIA WERE REVISED.

* UNLESS OTHERWISE NOTED ON PLANS.

** WHEN ADJACENT TO TRUCK CLIMBING LANES, SHOULDER WIDTHS ARE 2.4 m (8').

*** FILL SLOPES NOT TO EXCEED 4:1 WITHIN CLEAR ZONE (CZ).

NOTE:
AS INDICATED BY BOXES CLEAR ZONE REQUIREMENTS WERE ADDED.

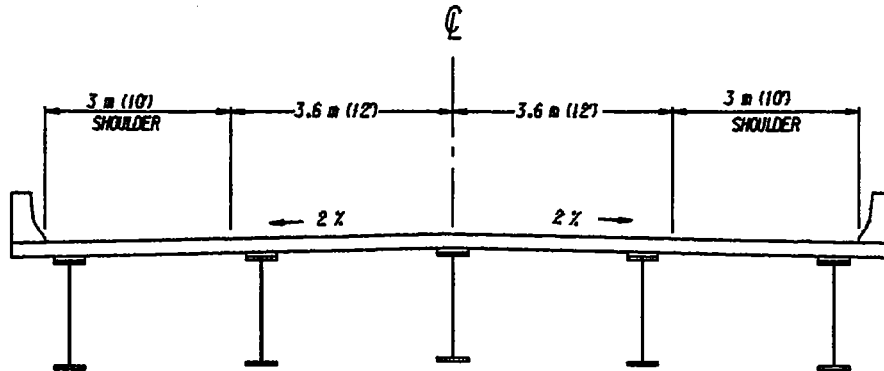
APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit II-1
ROADWAY TYPICAL
SECTIONS: IRA

NOT TO SCALE

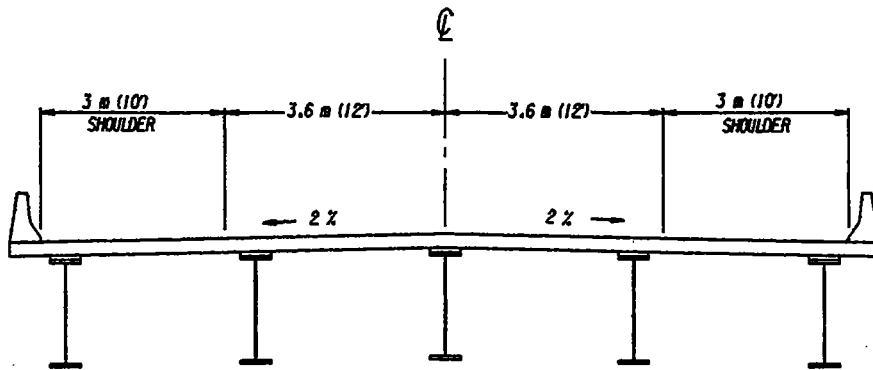


WEST VIRGINIA



TWO-LANE IMPROVED
ROADWAY ALTERNATIVE
DESIGN SPEED = 80 KMPH (50 MPH)

VIRGINIA



TWO-LANE IMPROVED
ROADWAY ALTERNATIVE
DESIGN SPEED = 80 KMPH (50 MPH)

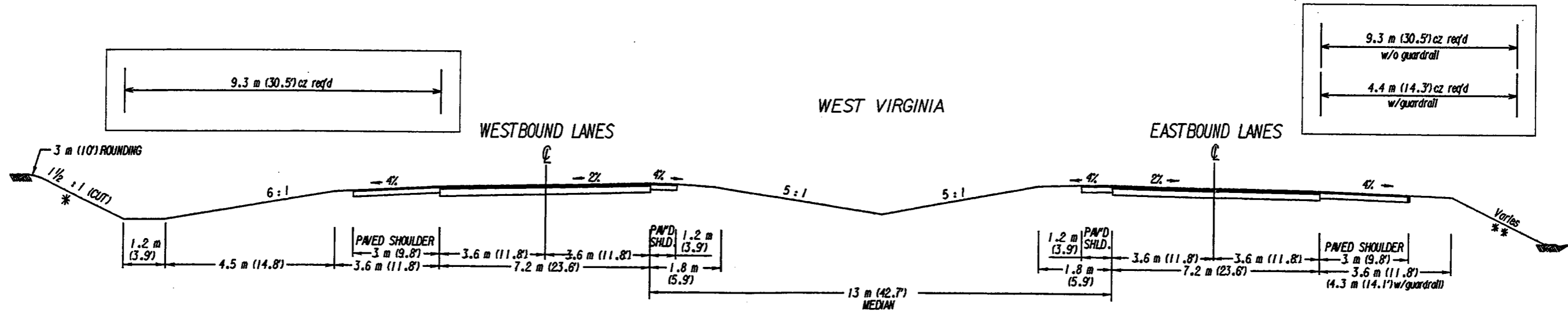
APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit II-2
BRIDGE TYPICAL
SECTIONS: IRA

NOT TO SCALE



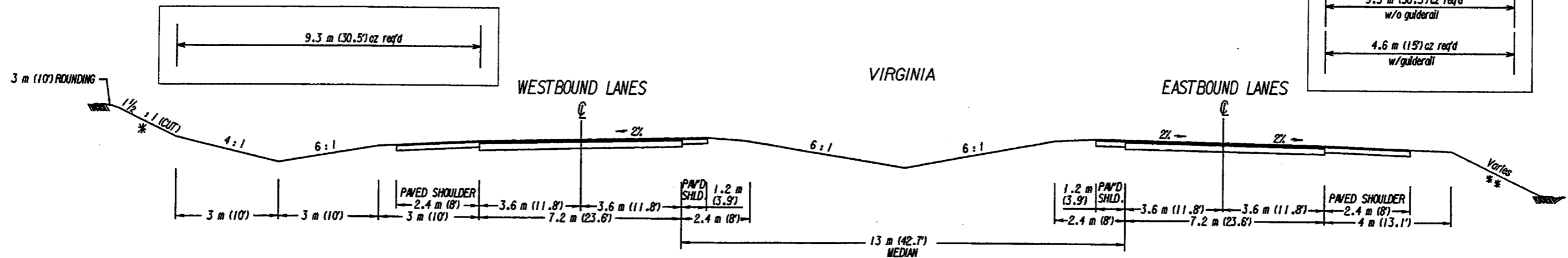
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* UNLESS OTHERWISE NOTED ON PLANS.

** FILL SLOPES NOT TO EXCEED 4:1 WITHIN CLEAR ZONE (CZ).

FOUR-LANE BUILD ALTERNATIVE WITH GRADED MEDIAN
DESIGN SPEED = 100 KMPH (60 MPH)



* UNLESS OTHERWISE NOTED ON PLANS.

** FILL SLOPES NOT TO EXCEED 4:1 WITHIN CLEAR ZONE (CZ).

FOUR-LANE BUILD ALTERNATIVE WITH GRADED MEDIAN
DESIGN SPEED = 100 KMPH (60 MPH)

NOTE:
AS INDICATED BY BOXES CLEAR ZONE REQUIREMENTS WERE ADDED.

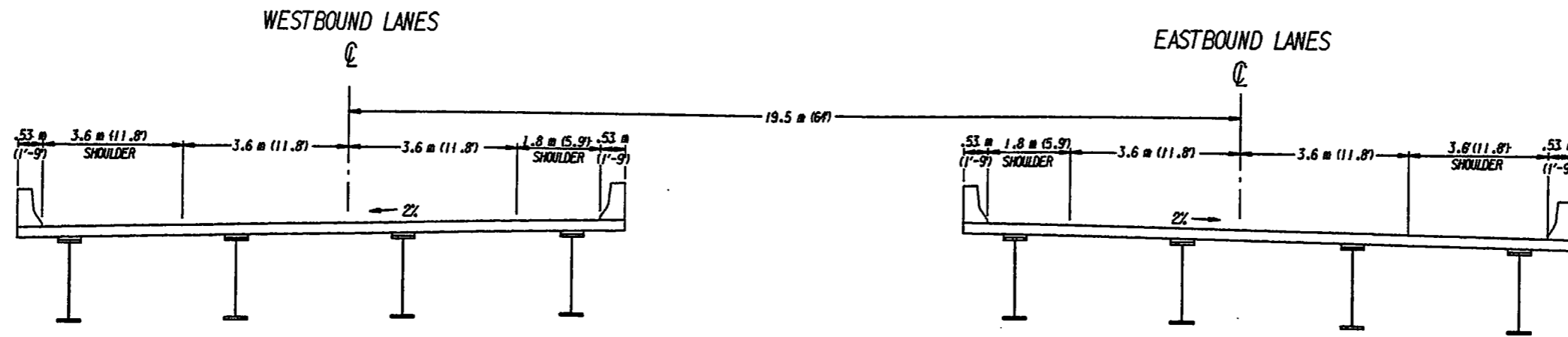
APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit II-3
ROADWAY TYPICAL
SECTIONS:
BUILD ALTERNATIVE

NOT TO SCALE

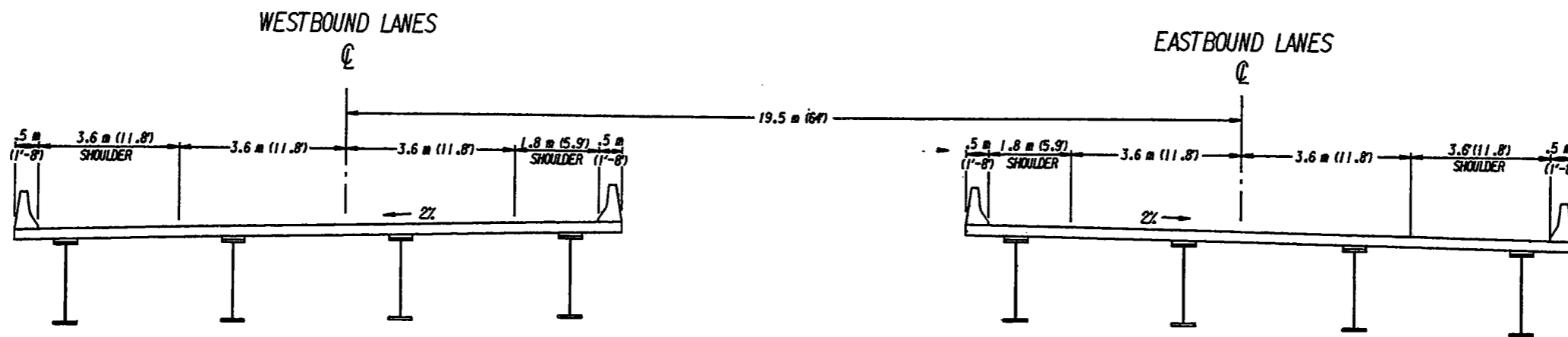


WEST VIRGINIA



WESTBOUND LANES
EASTBOUND LANES
19.5 m (64')
FOUR-LANE DIVIDED
DESIGN SPEED = 100 KMPH (60 MPH)

VIRGINIA



WESTBOUND LANES
EASTBOUND LANES
19.5 m (64')
FOUR-LANE DIVIDED
DESIGN SPEED = 100 KMPH (60 MPH)

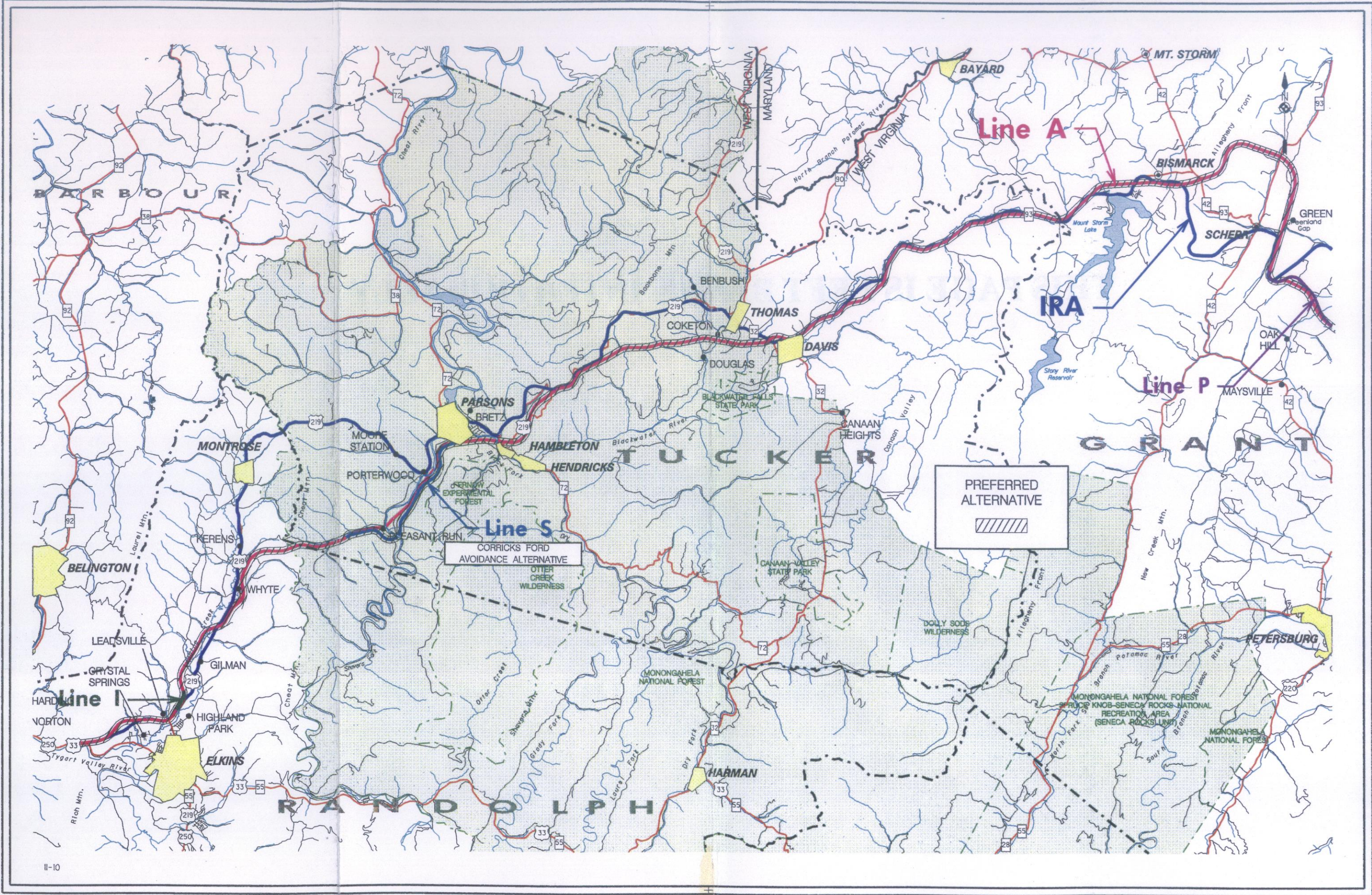
APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

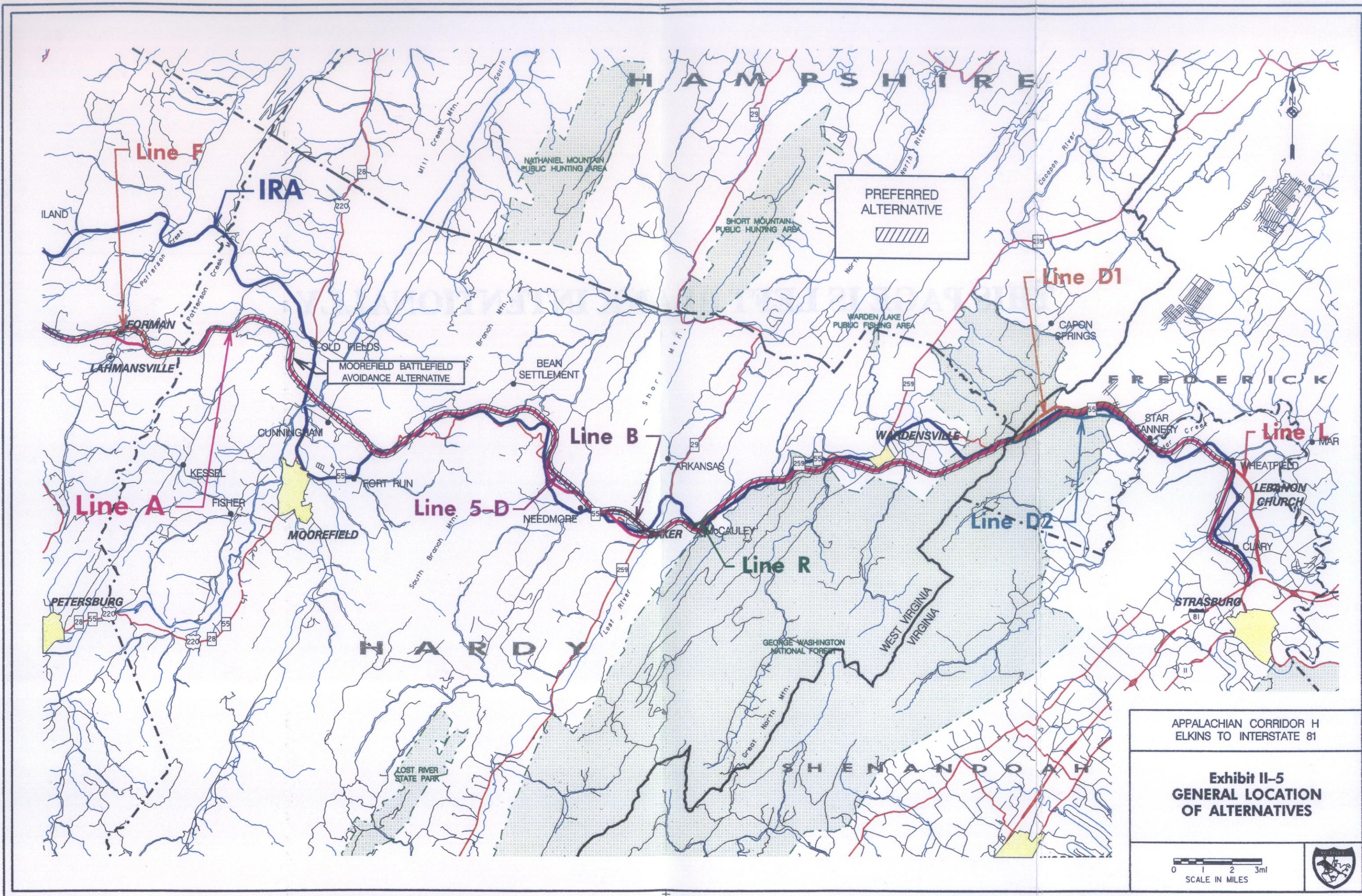
Exhibit II-4
BRIDGE TYPICAL
SECTIONS:
BUILD ALTERNATIVE

NOT TO SCALE

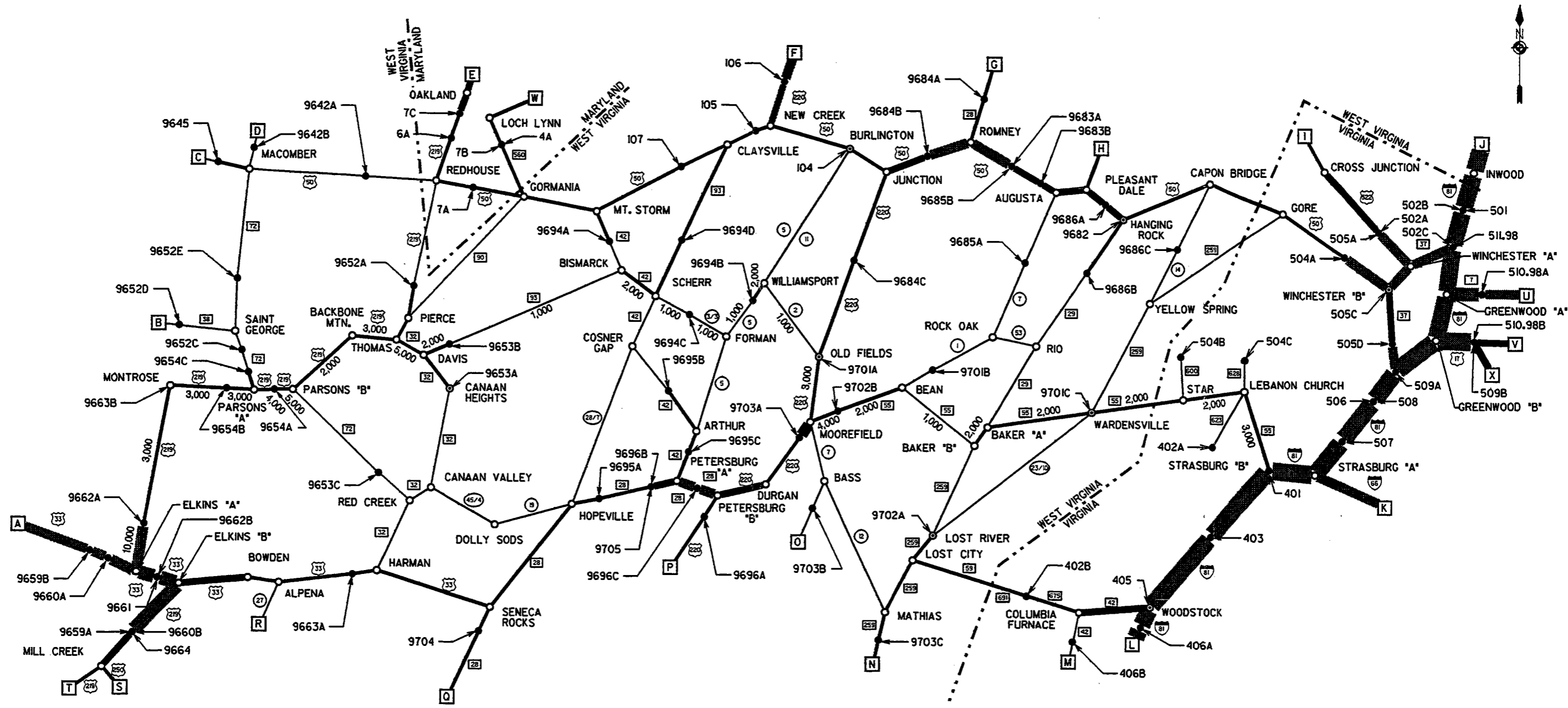


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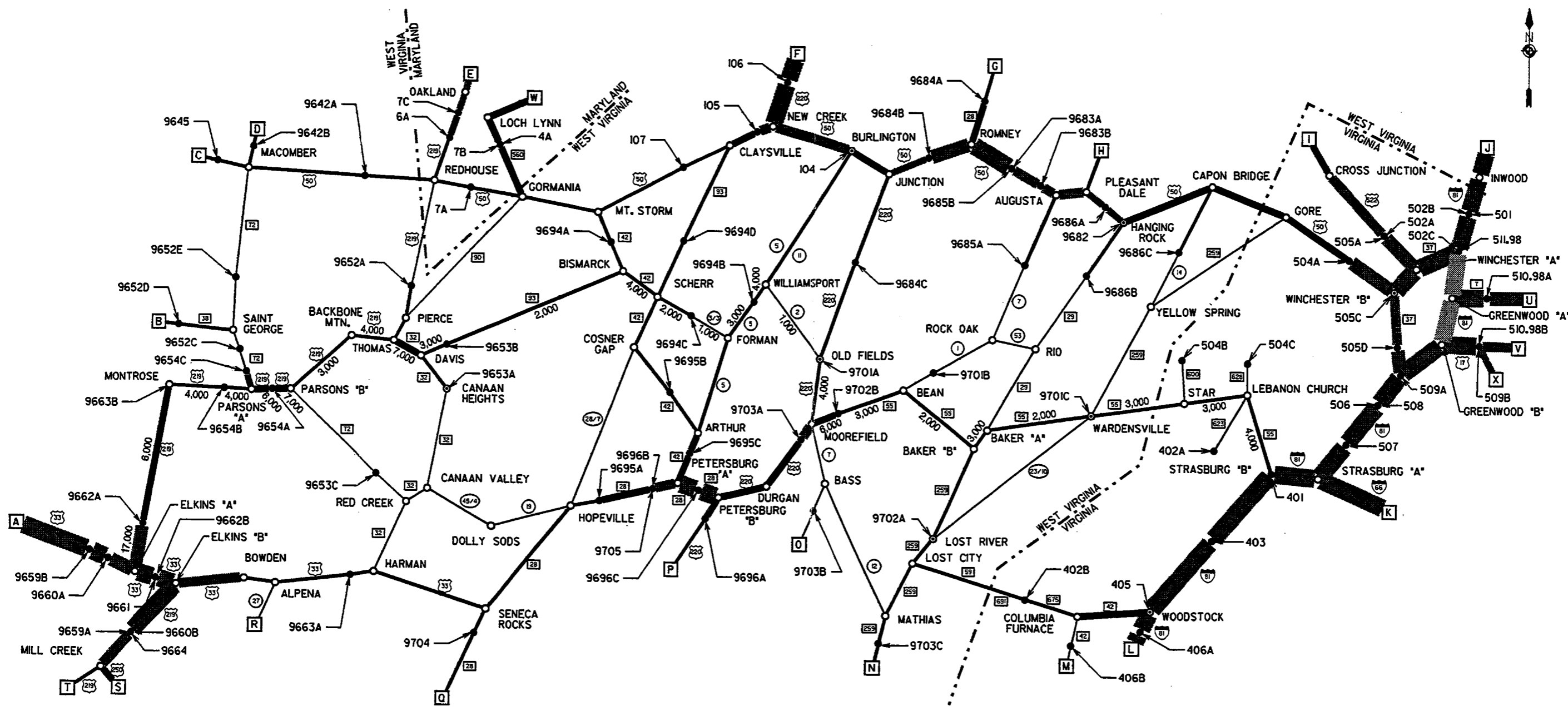
<ul style="list-style-type: none"> ■ OF LANES REQUIRED ▬ 6 LANES ▬ 4 LANES ▬ 2 LANES Ⓢ INTERSTATE ROUTE Ⓤ UNITED STATES ROUTE Ⓢ STATE ROUTE Ⓣ COUNTY ROUTE, PUBLIC ROUTE, OR DELTA ROUTE. ● CENTROID LOCATION 	<p>LEGEND</p> <ul style="list-style-type: none"> ○ NODE LOCATION ⊙ NODE & CENTROID LOCATION Ⓝ GATEWAY IDENTIFICATION Ⓜ BUILD ALTERNATIVE <p>AVERAGE DAILY TRAFFIC</p> <p>1 2-5 6-10 11-15 16-20 21+</p> <p>VEHICLES/DAY (1000'S)</p>
--	--

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit II-6
1993 EXISTING
TRAFFIC MODEL

NOT TO SCALE






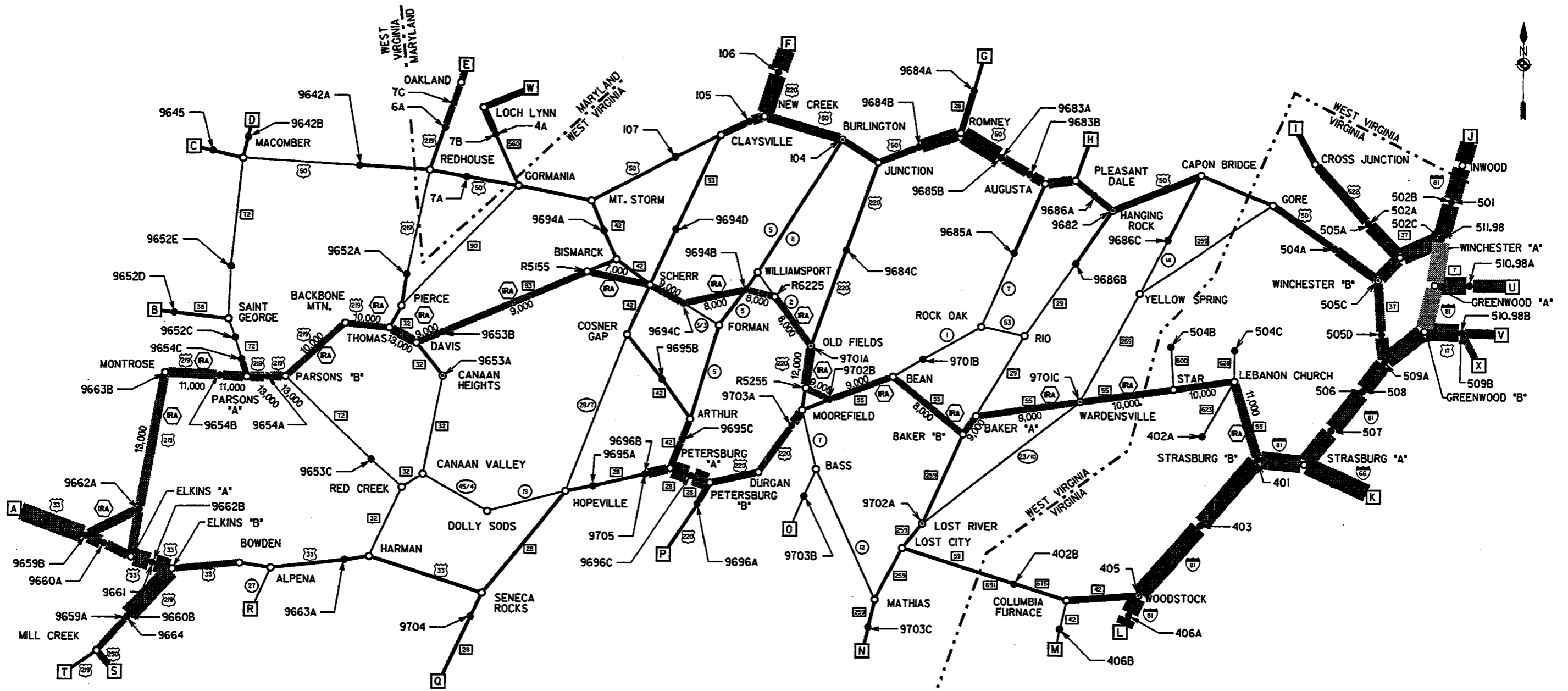
<ul style="list-style-type: none"> ■ OF LANES REQUIRED ▬ 6 LANES ▬ 4 LANES ▬ 2 LANES Ⓜ INTERSTATE ROUTE Ⓢ UNITED STATES ROUTE Ⓢ STATE ROUTE Ⓢ COUNTY ROUTE, PUBLIC ROUTE, OR DELTA ROUTE. ● CENTROID LOCATION 	<p>LEGEND</p> <ul style="list-style-type: none"> ○ NODE LOCATION ⊙ NODE & CENTROID LOCATION Ⓝ GATEWAY IDENTIFICATION Ⓜ BUILD ALTERNATIVE <p>AVERAGE DAILY TRAFFIC</p> <p>1 2-5 6-10 11-15 16-20 21+</p> <p>VEHICLES/DAY (1000'S)</p>
--	---

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit II-7
2013 NO-BUILD ALTERNATIVE
TRAFFIC MODEL

NOT TO SCALE






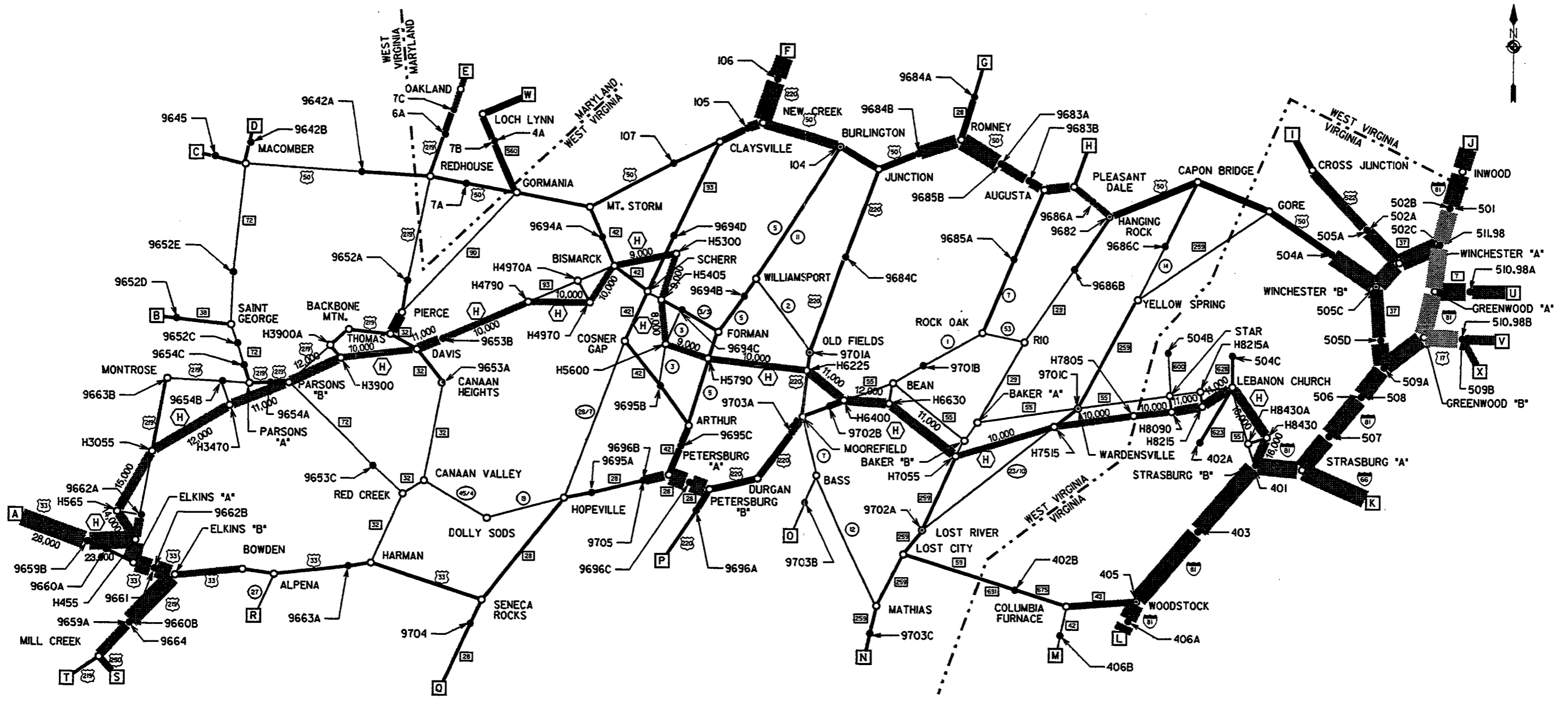
LEGEND	
• OF LANES REQUIRED	○ NODE LOCATION
▬ 6 LANES	⊙ NODE & CENTROID LOCATION
▬ 4 LANES	[N] GATEWAY IDENTIFICATION
▬ 2 LANES	[H] BUILD ALTERNATIVE
[I] INTERSTATE ROUTE	
[U] UNITED STATES ROUTE	
[S] STATE ROUTE	
[C] COUNTY ROUTE, PUBLIC ROUTE, OR DELTA ROUTE.	
● CENTROID LOCATION	
AVERAGE DAILY TRAFFIC	
1 2-5 6-10 11-15 16-20 21+	
VEHICLES/DAY (1000'S)	

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit II-8
2013 IRA TRAFFIC MODEL

NOT TO SCALE






* OF LANES REQUIRED		LEGEND	
	6 LANES		NODE LOCATION
	4 LANES		NODE & CENTROID LOCATION
	2 LANES		GATEWAY IDENTIFICATION
	INTERSTATE ROUTE		BUILD ALTERNATIVE
	UNITED STATES ROUTE		
	STATE ROUTE		
	COUNTY ROUTE, PUBLIC ROUTE, OR DELTA ROUTE.		
	CENTROID LOCATION		
		AVERAGE DAILY TRAFFIC 	
		VEHICLES/DAY (1000'S)	

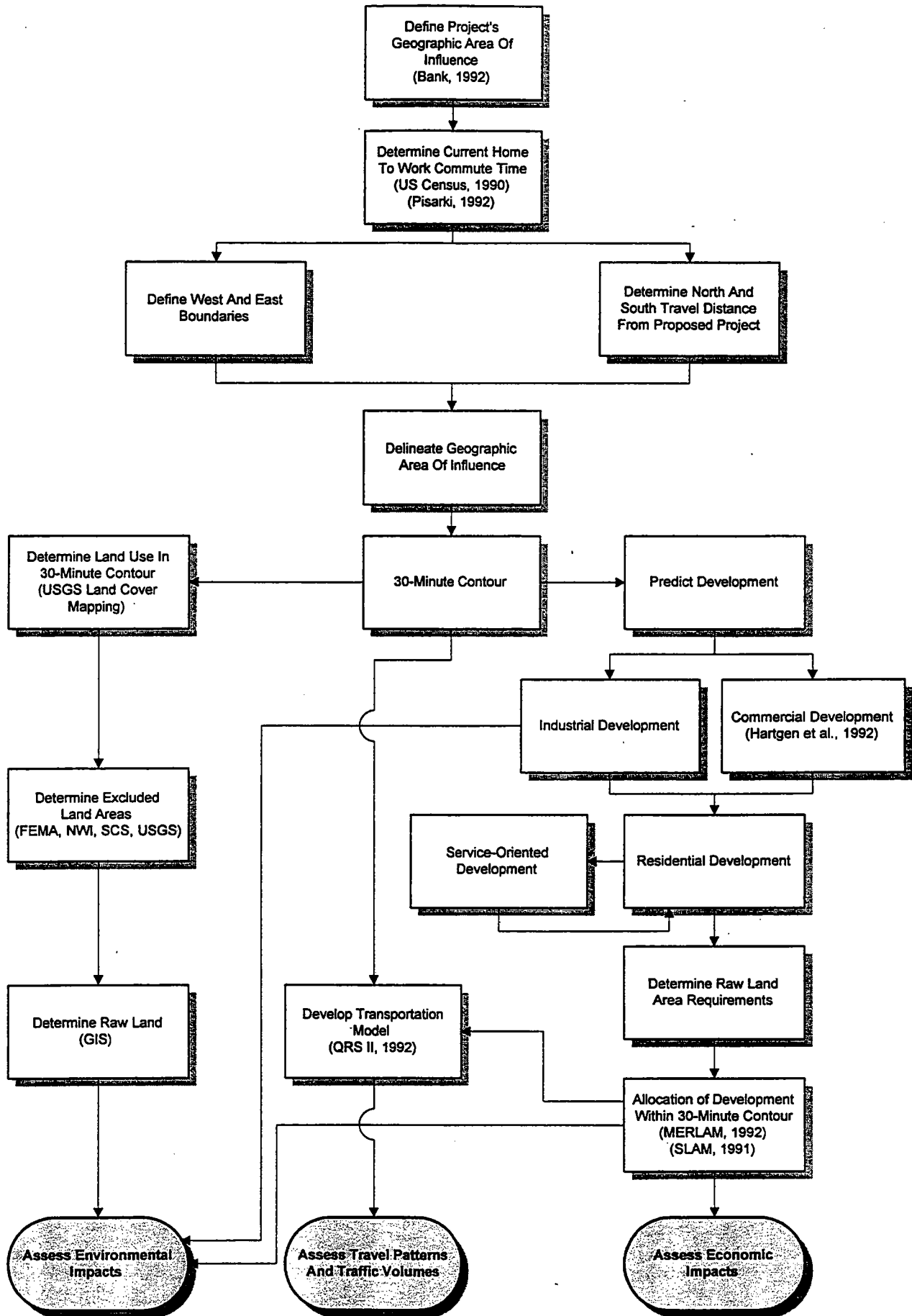
APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit II-9
2013 BUILD ALTERNATIVE
TRAFFIC MODEL

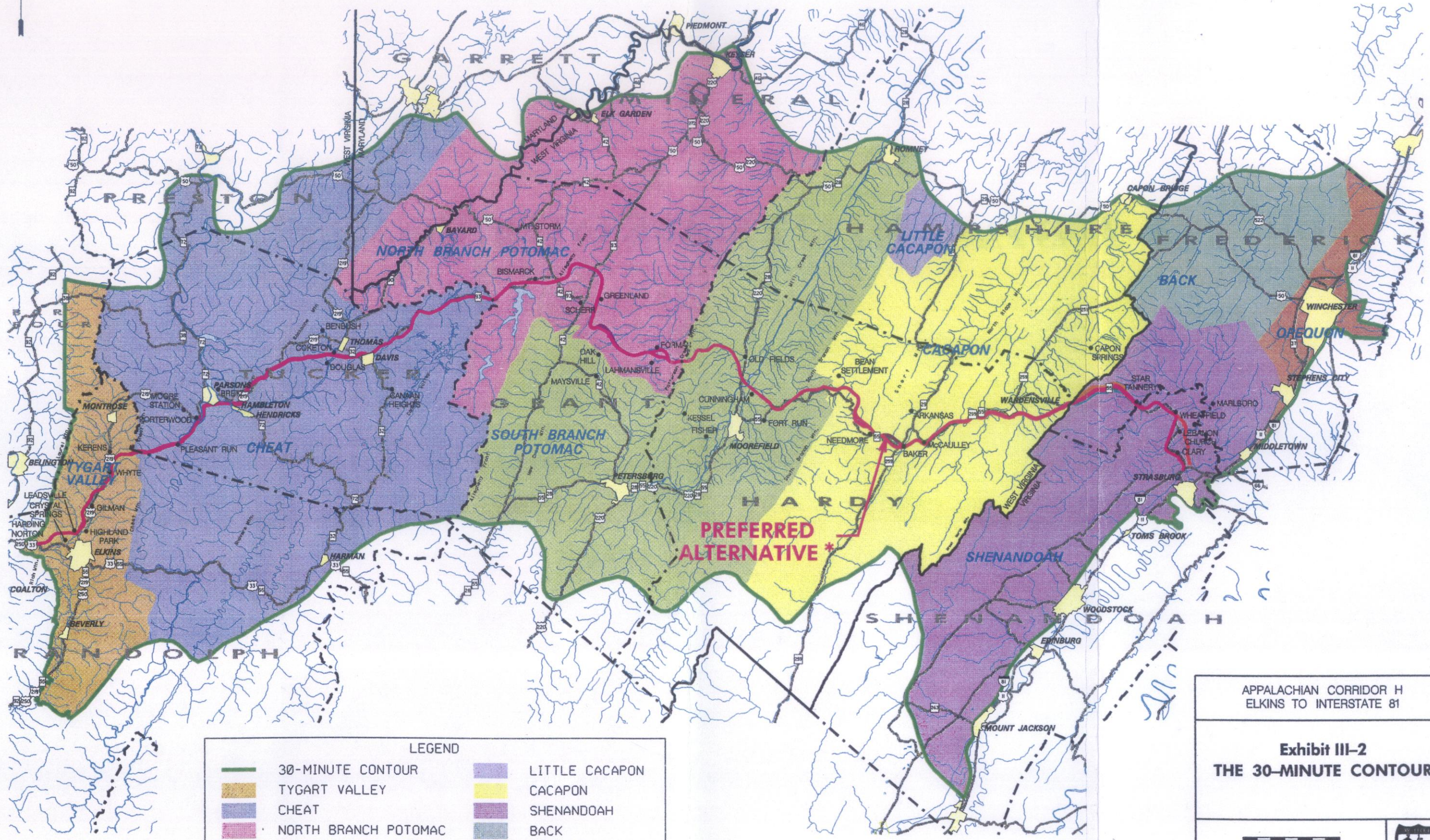
NOT TO SCALE













**EXHIBIT III-1
THE CORRIDOR H DEVELOPMENT MODEL - BUILD ALTERNATIVE**



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LEGEND

	30-MINUTE CONTOUR		LITTLE CACAPON
	TYGART VALLEY		CACAPON
	CHEAT		SHENANDOAH
	NORTH BRANCH POTOMAC		BACK
	SOUTH BRANCH POTOMAC		OPEQUON

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

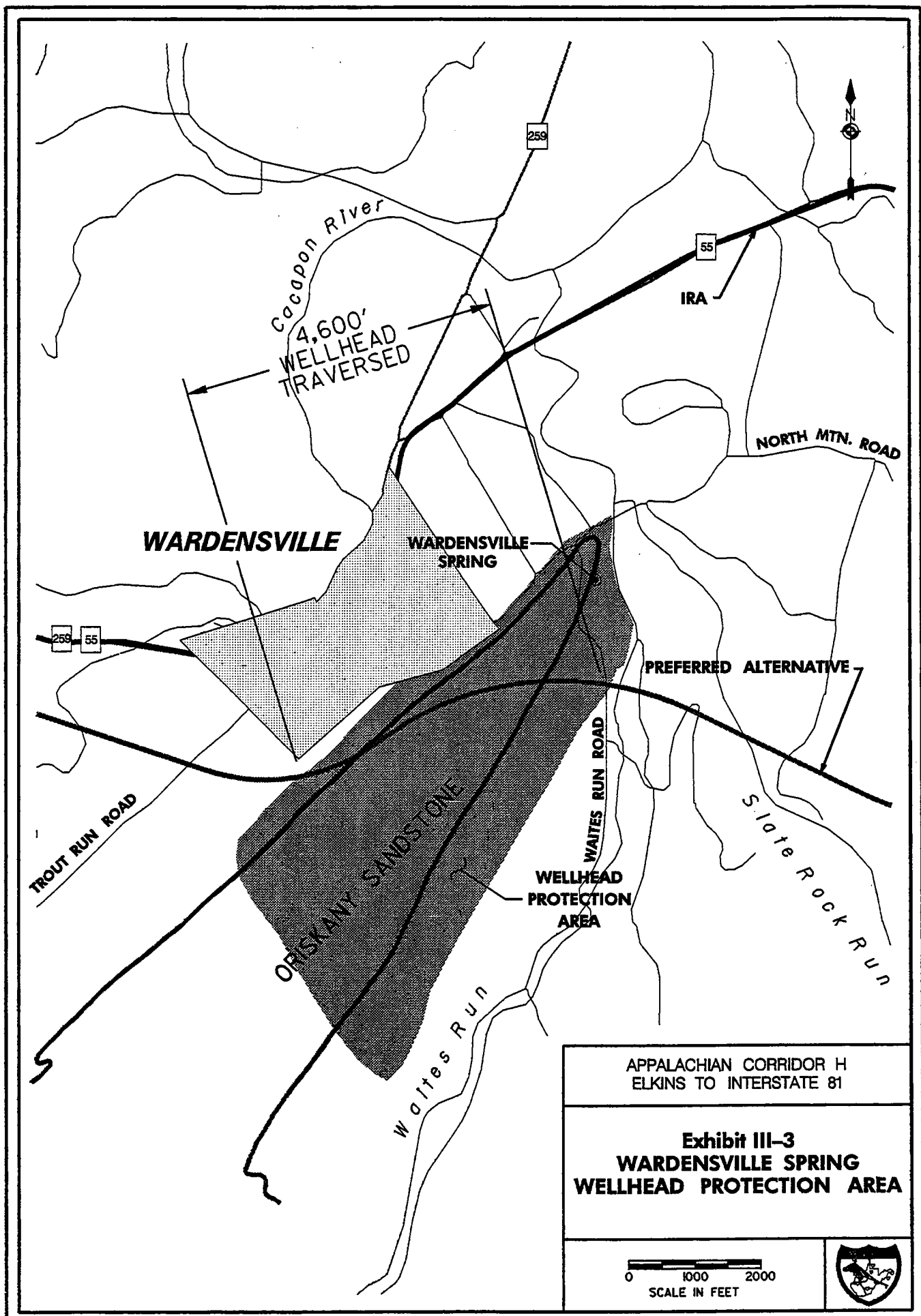
Exhibit III-2
THE 30-MINUTE CONTOUR

0 1 2 3 4 5 6 7
SCALE IN MILES



* PREFERRED ALTERNATIVE (LINE A, LINE I, LINE F, LINE 5-D)

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APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit III-3
WARDENSVILLE SPRING
WELLHEAD PROTECTION AREA

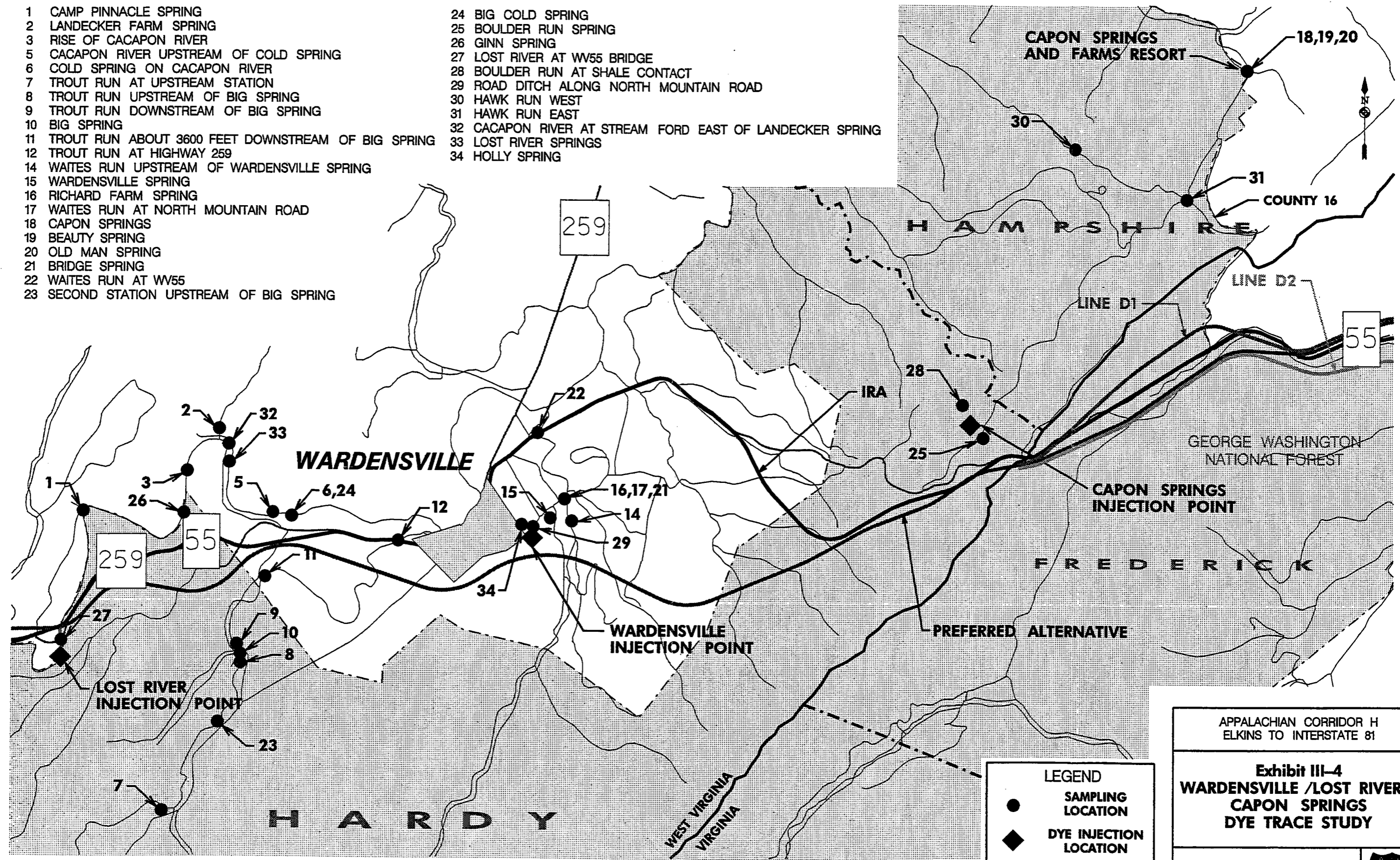
0 1000 2000
SCALE IN FEET



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WARDENSVILLE /LOST RIVER /CAPON SPRINGS MONITORING STATIONS

- | | |
|---|--|
| 1 CAMP PINNACLE SPRING | 24 BIG COLD SPRING |
| 2 LANDECKER FARM SPRING | 25 BOULDER RUN SPRING |
| 3 RISE OF CACAPON RIVER | 26 GINN SPRING |
| 5 CACAPON RIVER UPSTREAM OF COLD SPRING | 27 LOST RIVER AT WV55 BRIDGE |
| 6 COLD SPRING ON CACAPON RIVER | 28 BOULDER RUN AT SHALE CONTACT |
| 7 TROUT RUN AT UPSTREAM STATION | 29 ROAD DITCH ALONG NORTH MOUNTAIN ROAD |
| 8 TROUT RUN UPSTREAM OF BIG SPRING | 30 HAWK RUN WEST |
| 9 TROUT RUN DOWNSTREAM OF BIG SPRING | 31 HAWK RUN EAST |
| 10 BIG SPRING | 32 CACAPON RIVER AT STREAM FORD EAST OF LANDECKER SPRING |
| 11 TROUT RUN ABOUT 3600 FEET DOWNSTREAM OF BIG SPRING | 33 LOST RIVER SPRINGS |
| 12 TROUT RUN AT HIGHWAY 259 | 34 HOLLY SPRING |
| 14 WAITES RUN UPSTREAM OF WARDENSVILLE SPRING | |
| 15 WARDENSVILLE SPRING | |
| 16 RICHARD FARM SPRING | |
| 17 WAITES RUN AT NORTH MOUNTAIN ROAD | |
| 18 CAPON SPRINGS | |
| 19 BEAUTY SPRING | |
| 20 OLD MAN SPRING | |
| 21 BRIDGE SPRING | |
| 22 WAITES RUN AT WV55 | |
| 23 SECOND STATION UPSTREAM OF BIG SPRING | |



LEGEND

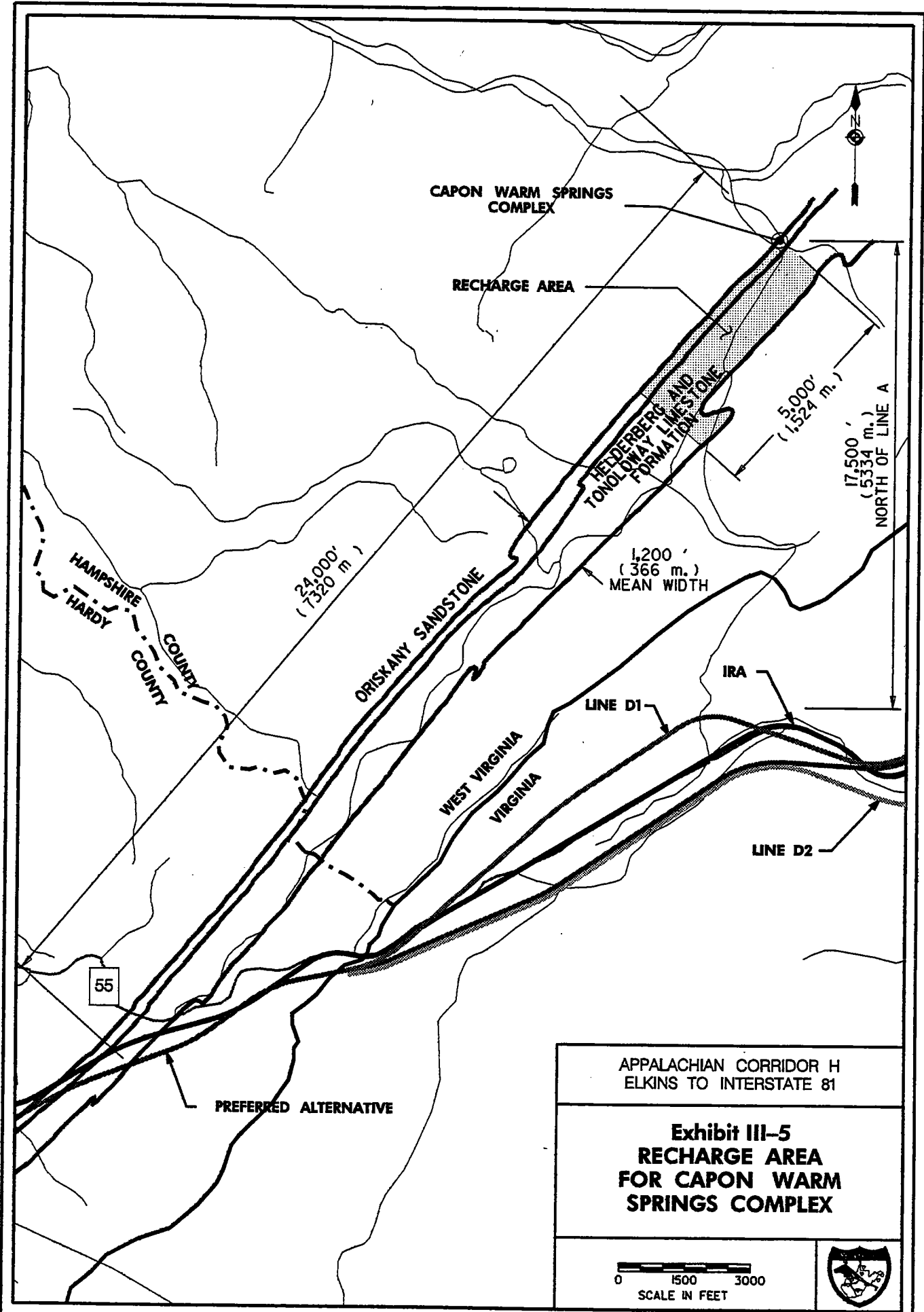
- SAMPLING LOCATION
- ◆ DYE INJECTION LOCATION

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit III-4
WARDENSVILLE /LOST RIVER /
CAPON SPRINGS
DYE TRACE STUDY



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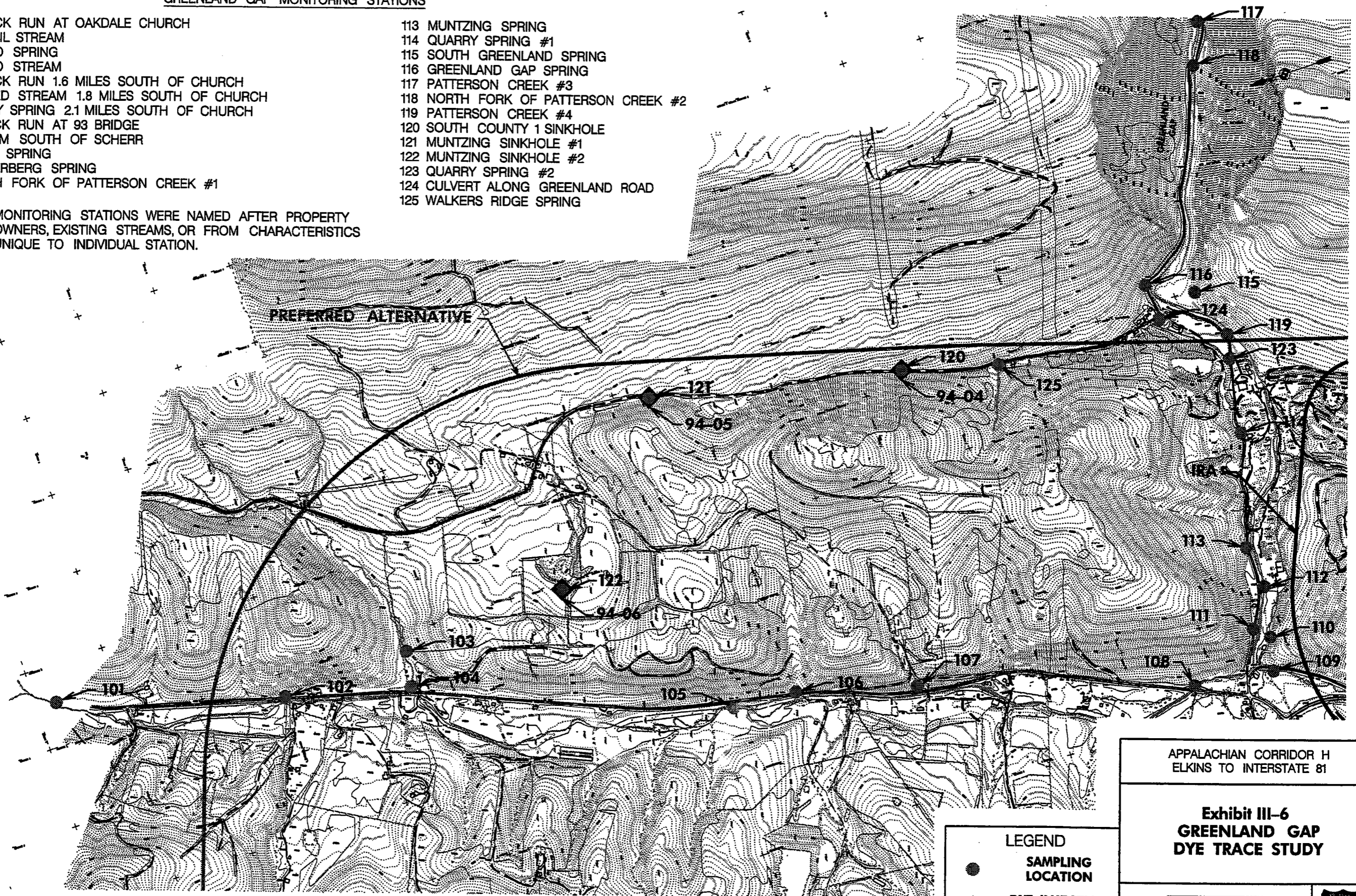
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GREENLAND GAP MONITORING STATIONS

- 101 ELKCLICK RUN AT OAKDALE CHURCH
- 102 CATTAIL STREAM
- 103 WINGO SPRING
- 104 WINGO STREAM
- 105 ELKCLICK RUN 1.6 MILES SOUTH OF CHURCH
- 106 POSTED STREAM 1.8 MILES SOUTH OF CHURCH
- 107 ROCKY SPRING 2.1 MILES SOUTH OF CHURCH
- 108 ELKCLICK RUN AT 93 BRIDGE
- 109 STREAM SOUTH OF SCHERR
- 110 CABIN SPRING
- 111 HELDERBERG SPRING
- 112 NORTH FORK OF PATTERSON CREEK #1

- 113 MUNTZING SPRING
- 114 QUARRY SPRING #1
- 115 SOUTH GREENLAND SPRING
- 116 GREENLAND GAP SPRING
- 117 PATTERSON CREEK #3
- 118 NORTH FORK OF PATTERSON CREEK #2
- 119 PATTERSON CREEK #4
- 120 SOUTH COUNTY 1 SINKHOLE
- 121 MUNTZING SINKHOLE #1
- 122 MUNTZING SINKHOLE #2
- 123 QUARRY SPRING #2
- 124 CULVERT ALONG GREENLAND ROAD
- 125 WALKERS RIDGE SPRING

NOTE: MONITORING STATIONS WERE NAMED AFTER PROPERTY OWNERS, EXISTING STREAMS, OR FROM CHARACTERISTICS UNIQUE TO INDIVIDUAL STATION.



APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

**Exhibit III-6
GREENLAND GAP
DYE TRACE STUDY**

LEGEND

- SAMPLING LOCATION
- ◆ DYE INJECTION LOCATION

0 600 1200
SCALE IN FEET



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Ecoregion

Central Appalachian
B
Monongahela River

Ridge & Valley
A
Potomac River

Regional Project Watershed

Regional Project Watershed

Tygart Valley River
MT

Cheat River
MC

North Branch Potomac River
PNB

South Branch Potomac River
PSB

Cacapon River
PC

Shenandoah River
PS

Local Project Watershed

Local Project Watershed

Local Project Watershed

Local Project Watershed

Local Project Watershed

Local Project Watershed

Leading Creek

Shavers Fork

Stony River

Anderson Run

Skaggs Run

Cedar Creek

Black Fork River

Patterson Creek

Main Channel

Clifford Hollow

Baker Run

Central Cacapon River

Wailes Run

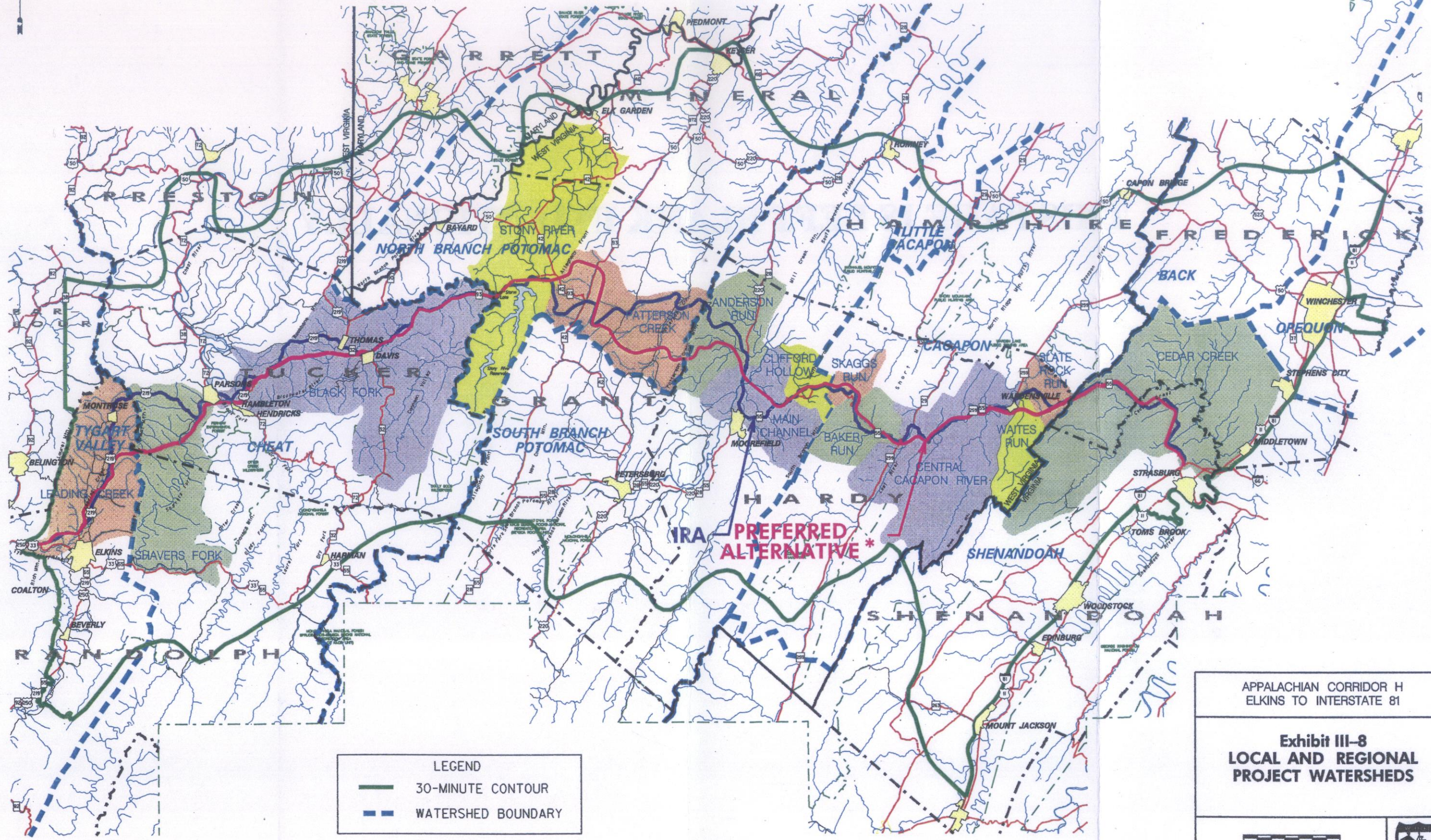
Slate Rock Run

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit III-7
ECOREGIONS
AND
WATERSHEDS



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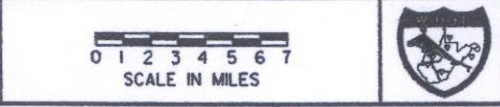


LEGEND

- 30-MINUTE CONTOUR
- - - WATERSHED BOUNDARY

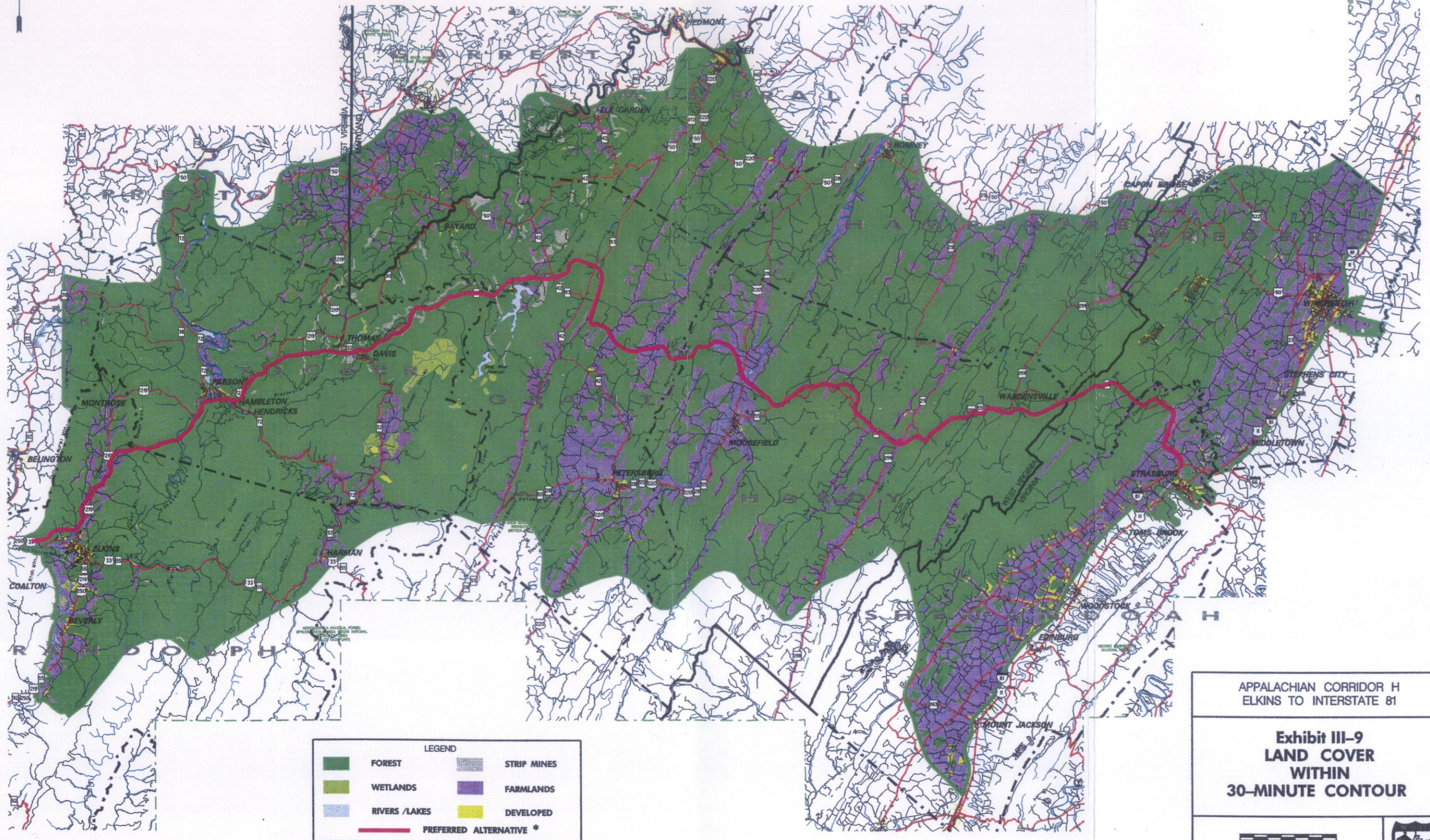
APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

**Exhibit III-8
LOCAL AND REGIONAL
PROJECT WATERSHEDS**



* PREFERRED ALTERNATIVE (LINE A, LINE I, LINE F, LINE 5-D)

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LEGEND

	FOREST		STRIP MINES
	WETLANDS		FARMLANDS
	RIVERS /LAKES		DEVELOPED
	PREFERRED ALTERNATIVE *		

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

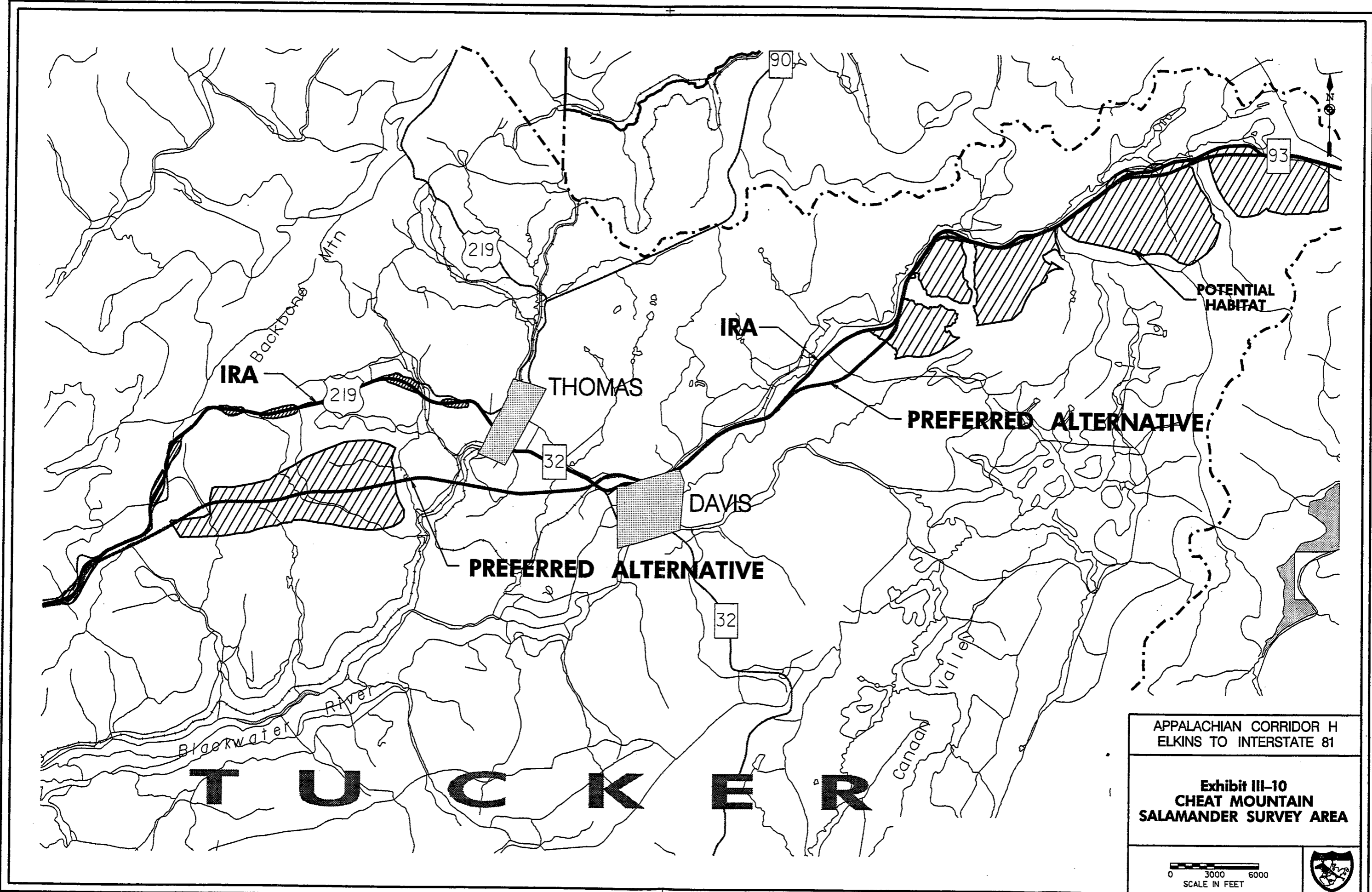
**Exhibit III-9
LAND COVER
WITHIN
30-MINUTE CONTOUR**

0 1 2 3 4 5 6 7
SCALE IN MILES



* PREFERRED ALTERNATIVE (LINE A, LINE I, LINE F, LINE 5-D)


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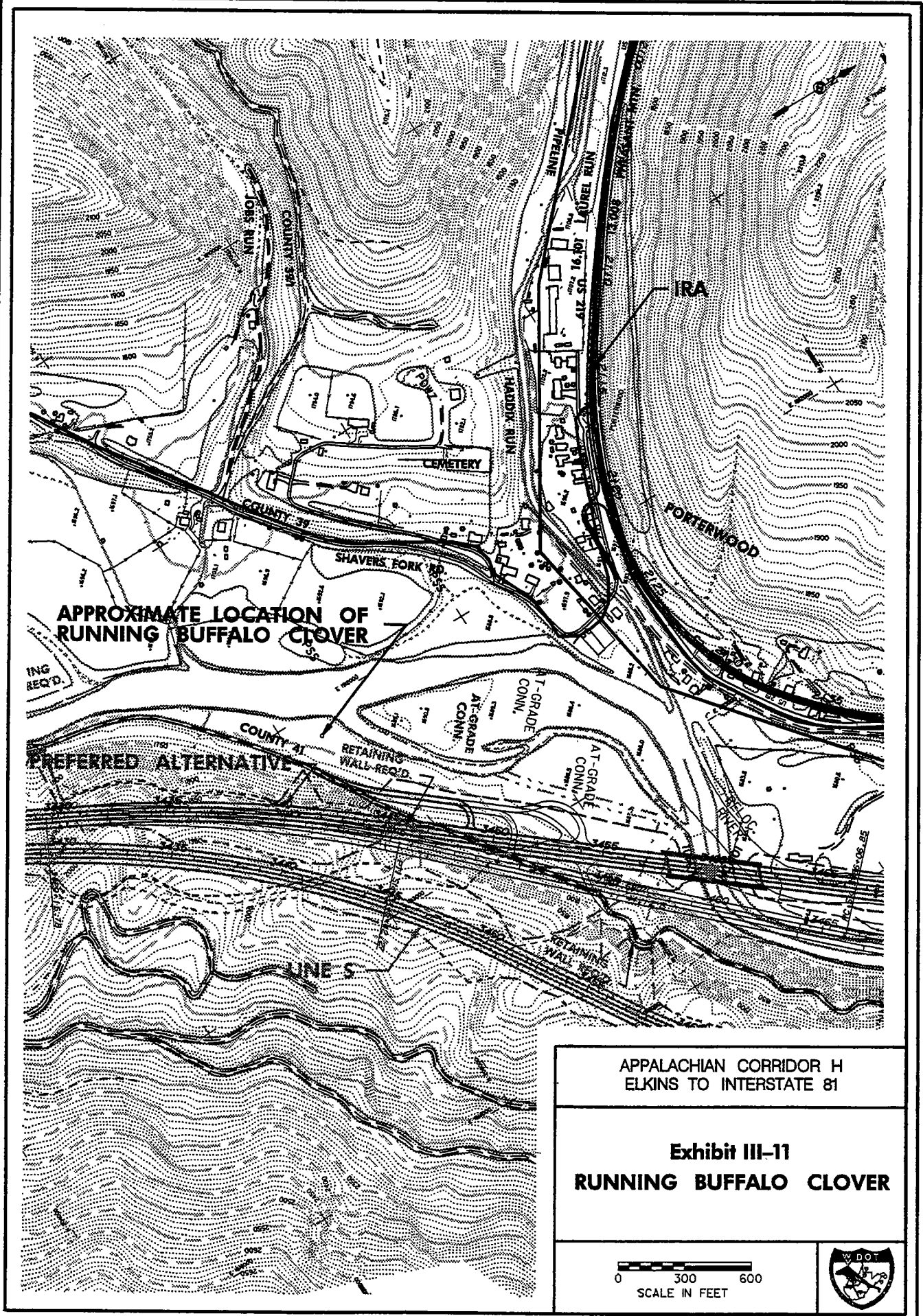
APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

Exhibit III-10
CHEAT MOUNTAIN
SALAMANDER SURVEY AREA

0 3000 6000
SCALE IN FEET



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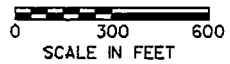


**APPROXIMATE LOCATION OF
RUNNING BUFFALO CLOVER**

PREFERRED ALTERNATIVE

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

**Exhibit III-11
RUNNING BUFFALO CLOVER**



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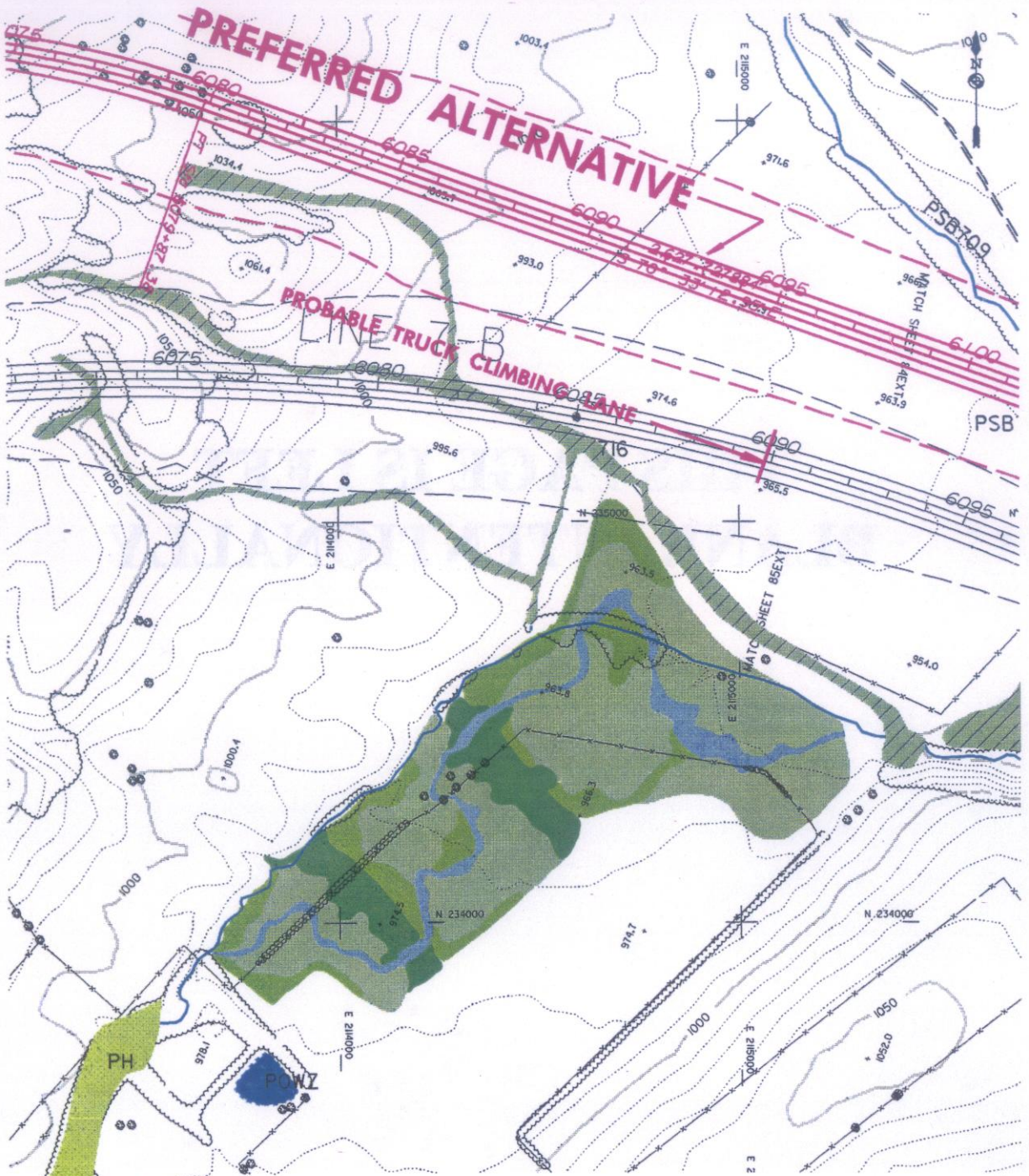
WETLANDS		STREAMS	
	PFO		PERENNIAL
	PSS		INTERMITTENT
	PEM		AS MAPPED
	PHOTO INTERP.		
	POWZ		
	PUB		

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

**Exhibit III-12
LEADING CREEK SITE
CONCEPTUAL PLAN**



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LEGEND

WETLANDS		STREAMS	
	PFO		PERENNIAL
	PSS		INTERMITTENT
	PEM		AS MAPPED
	PHOTO INTERP.		EXISTING WETLAND
	POWZ		
	PUB		

APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

**Exhibit III-13
WALNUT BOTTOM RUN SITE
CONCEPTUAL PLAN**



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EXHIBIT VII-1: ACOE - PITTSBURGH DISTRICT CONCURRENCE ON ALTERNATIVES

8/15/95



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 109
Charleston, West Virginia 25305-0430 • 304/558-3595

Gaston Caperton
Governor

Charles L. Miller, P.E.
Secretary

Fred VanKirk, P.E.
Commissioner
State Highway Engineer

April 8, 1994

Mr. Robert Neill
Page Two
April 8, 1994

A list of meeting attendees is also attached. Thank you once again for your participation in this process.

Very truly yours,

Fred VanKirk
Commissioner
State Highway Engineer

Mr. Robert Neill
US Army Corps of Engineers
Pittsburgh District
1000 Liberty Avenue
Pittsburgh, Pennsylvania 25222-4186

Dear Mr. Neill:

FV:Ecb

Attachment

Appalachian Corridor H
Elkins to I-81
Concurrence Document
Alternatives to be carried forward

Agency: Corps of Engineers
Authorized Signature: Robert D. Neill
Date: 18 April 1994

This is a follow-up to the March 9, 1994 meeting at the Civic Center in Charleston to discuss concurrence on the alternatives carried forward for the alignment phase of Corridor H. Your input has been and will continue to be important to the development of this project. As discussed at the close of the meeting, I have attached the results of the discussions in the form of a revised table, which lists the lines that will be carried forward in the Alignment Selection Supplemental Draft Environmental Impact Statement (SDEIS).

Please note the following revisions to the preliminary recommendations that came as a result of the meeting. In Section 5, line 5-A.1 will be carried forward and line 5-D will be eliminated. Two lines that were originally recommended to be carried forward, will not be eliminated as a result of your input, these are Lines 7-A.1 and 16-A.1. Note that in all cases, any line shown as eliminated will be described in detail in the Draft, shown on the plans (most likely in black), and the reasons for elimination from further consideration will be given.

The agency and signature line below can be used to state your concurrence in the alternatives carried forward and we would appreciate return receipt of this letter by May 13, 1994.

E-47

EXHIBIT VII-3: WVDNR CONCURRENCE ON ALTERNATIVES



STATE OF WEST VIRGINIA
DEPARTMENT OF COMMERCE, LABOR AND ENVIRONMENTAL RESOURCES
DIVISION OF NATURAL RESOURCES

State Capitol Complex
Building 3, Room 612
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305-0664
TDD 558-1439 TDD 1-800-354-6084
Telephone (304) 558-2771 Fax (304) 558-3142

RECEIVED
MAY 11 1994
WV DIVISION OF HIGHWAYS
CHARLES B. FELTON, JR.
Director

April 27, 1994

Mr. Fred VanKirk
Commissioner, State Highway Engineer
WV Division of Highways
1900 Kanawha Blvd., East
Building 5, Room 109
Charleston, WV 25305-0430

Dear Mr. VanKirk:

Pursuant to your amended April 8, 1994 letter and attachments describing Appalachian Corridor H Elkins to I-81 and requesting concurrence on alternatives to be carried forward, I wish to provide the following recommendations.

We believe the West Virginia Division of Highways has provided adequate coordination and acceptable documentation of viable project alternatives concerning the Corridor H Elkins to I-81 project. The WV Division of Natural Resources concurs that the Division of Highways move forward with the development and documentation of the Alignment Selection Supplemental Draft Environmental Impact Statement.

We look forward to continued coordination on this project. If I can be of further assistance, please do not hesitate to contact me or Mr. Roger Anderson of my staff.

Sincerely,

Charles B. Felton, Jr.
Director

RECEIVED

WV 0 9 94

CBF/raf

8/15/95

E-49

EXHIBIT VII-5: WVDHHR CONCURRENCE ON ALTERNATIVES



Gaston Caperton
Governor

May 13, 1994

Mr. Fred VanKirk, Commissioner
West Virginia Department of Transportation
Capitol Complex Building 5, Room 109
Charleston WV 25305

Appalachian Corridor
Concurrence Document

Dear Mr. VanKirk:

Thank you for the opportunity to review the concurrence document regarding Appalachian Corridor H. We continue to have concerns about line 3-A.1. This line would bisect Anderson Ridge above the Town of Wardensville's spring; thereby placing their drinking water supply at risk. Two representatives of our Wellhead Protection Program, Mr. Viola and Mr. Baker, communicated this concern at your meeting on March 9, 1994. We note that the concurrence document did not acknowledge the threat to the water supply as regards line 3-A.1.

We will need to review the WV Division of Transportation's draft environmental impact statement for Corridor H in order to comment on its assessment of the risk to the Wardensville spring. We will reserve comment until DOT's consulting hydrogeologists, Mr. Aley and Mr. Bednar, have reported their findings regarding the spring.

For the above reasons it would be premature to apply my signature to the Corridor H concurrence document at this time.

Sincerely,

Donald A. Kuntz, P.E.
Director
Environmental Engineering Division



DAK:GTV:nsf
cc: John Bowman, Mayor of Wardensville
Hardy County Health Department
OEHS Kearneysville District Office
Gary T. Viola

MAY 19 1994
DIVISION OF HIGHWAY
CORRESPONDENCE



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 109
Charleston, West Virginia 25305-0430 • 304/558-3505

Gaston Caperton
Governor

June 8, 1994

Charles L. Miller, P.E.
Secretary

Fred VanKirk, P.E.
Commissioner
State Highway Engineer

Mr. Donald A. Kuntz, P.E.
Director
Environmental Engineering Division
WV Department of Health and
Human Resources
815 Quarrier Street, Suite 418
Charleston, West Virginia 25301

Dear Mr. Kuntz:

Thank you for your May 13, 1994 response to our letter requesting concurrence on the alternatives carried forward. We understand your agency's concerns regarding potential impacts to the Wardensville Water Supply. As you noted, we are continuing our studies of the spring, and Mr. Baker took part in the dye injection efforts conducted on May 19, 1994. The results will be fully addressed in the Alignment Selection SDEIS at which time we will receive comments from your agency.

The concurrence document lists "Requires bisecting Anderson Ridge" as a disadvantage for Line 3-A.1 because it was well understood and discussed that this alignment could involve the spring as a result of its location on the ridge. Also, Line 3-C list "Closer to Wardensville Spring" as a disadvantage. We have been actively investigating the Wardensville Spring since April 1993 when our consultant first met with Holly Alkire of the Wardensville Water Department. Be assured that the Division of Highways and our consultant have been and will continue to appropriately investigate this matter. I hope this will answer your concerns. Should you have any questions please contact this office.

Very truly yours,

ORIGINAL SIGNED BY
FRED VAN KIRK
Fred VanKirk
Commissioner
State Highway Engineer

FV:Eh

cc: Ms. Patty Gessing, Michael Baker, Jr., Inc.

EXHIBIT VII-7: NOAA - NMFS CONCURRENCE ON ALTERNATIVES

RECEIVED
JUN 27 1994
ENVIRONMENTAL DIVISION



1097687.000
496
UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Habitat and Protected Resources Division
904 South Morris Street
Oxford, Maryland 21654

20 June 1994

Mr. Karl T. Robb
Environmental Engineer
Department of Transportation
1601 East Broad Street
Richmond, Virginia 23219

RE: Appalachian Corridor H

Dear Mr. Robb:

Based on review of relevant information, we have determined that the project will not affect resources within the purview of the National Marine Fisheries Service. Therefore, we have no comments to offer on the proposal and further involvement in the ongoing NEPA process is not necessary.

Should the corridor change, or should the proposal be otherwise modified, we will re-evaluate our position.

Please call John Strepke at (410) 224-5771 if you have any questions.

Sincerely,

Timothy E. Cooney
Timothy E. Cooney
Assistant Coordinator

cc: COE
EPA-Philadelphia
FWS-White Marsh

8/15/93

E-53

EXHIBIT VII-9: FWS CONCURRENCE ON ALTERNATIVES



United States Department of the Interior

FISH AND WILDLIFE SERVICE

West Virginia Field Office
Post Office Box 1278
Elkins, West Virginia 26241

October 12, 1994

Mr. Fred VanKirk, Commissioner
West Virginia Department of Transportation
Division of Highways
State Capitol Complex, Building Five
Charleston, West Virginia 25305

Dear Mr. VanKirk:

Reference is made to your April 8, 1994 letter regarding the selection of alternatives to be carried forward for the alignment phase of Corridor H, Elkins, West Virginia to Strasburg, Virginia. The Service participated in the Fall 1993 - Winter 1994 field reviews for the 4-lane alternatives and the Improved Roadway Alternative (IRA) and offers the following comments. These comments do not constitute the review of the Secretary of the Interior as provided for by: Section 2(b) of the Fish and Wildlife Coordination Act (P.L. 83-824); the National Environmental Policy Act of 1969 (42 U.S.C. 4231 et seq.); the Clean Water Act of 1977, as amended (P.L. 95-217); the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.); or other pertinent legislation. In addition, the Service participated in the March 8, 1994 discussions of the alternatives to be carried forward in the Alignment Selection Supplemental Draft Environmental Impact Statement (AS-SDEIS).

Field reviews and related meetings have shown that the West Virginia Department of Transportation went to considerable effort to avoid sensitive natural resources to the extent practicable. The majority of 4-lane alternatives proposed to be carried forward reflect the least damaging alternatives available. The IRA provides further potential to avoid sensitive natural resource areas and the No-Build avoids impacts altogether. The Service, therefore, will not object to the WV DOT carrying the selected 4-lane and IRA alignments forward in the AS-SDEIS. Final comments and approval on the selected alternative will depend on the WV DOT's ability to successfully mitigate environmental impacts.

We appreciate the opportunity to review and provide comments.
Please direct questions to Mr. John Schmidt of my staff at (304) 636-6586.

Sincerely,

Christopher M. Clower
Supervisor

cc:
WVDNR - Ross
WVDEP - Scott
USEPA - Forren
PAFO - Kulp
Readers file
Project file
ES:WVFO:JESchmidt:10/14/94
File Name:WVPAICORHALTS.CON

EXHIBIT VII-11: WVDEP CONCURRENCE ON WETLAND MITIGATION



DEPARTMENT OF COMMERCE, LABOR & ENVIRONMENTAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION

General Delivery
MacArthur, WV 25873-9999

Gaston Caperton
Governor
John M. Ranson
Cabinet Secretary

David C. Callaghan
Director
Ann A. Spaner
Deputy Director

MEMORANDUM

May 18, 1994

TO: Randy Epperty - Division of Highways
Patty Geising - Michael Baker, Inc. FAX: 566-2385
412/269-2048

FROM: Barbara Taylor *BT*

RE: Wetland Mitigation for Corridor H; Elkins to the Virginia Line

Following discussion of the attached conditions with staff from the Office of Water Resources (OWR), no additional concerns were raised regarding wetland mitigation. OWR agrees with the wetland mitigation conditions which were developed in coordination with the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, and the Division of Natural Resources.

However, the attached conditions do not represent issuance of State 401 Certification by OWR, nor do they represent the final form of conditions which may be contained in the State Certification. State Certification conditions will likely include specific information regarding components of the monitoring plan and mitigation agreements as well as necessary timelines for reporting.

Should you have any questions, please feel free to call me at 304/256-8850. I also take this opportunity to notify you of my new office address. The office has not changed locations, but we now have mail delivery. The new address is as follows:

West Virginia Division of Environmental Protection
Office of Water Resources
2008 Robert C. Byrd Drive
Beckley, West Virginia 25801-8320

PERMIT CONDITIONS FOR APPALACHIAN CORRIDOR H ELKINS TO WVVA LINE

According to information provided by Michael Baker, Inc., wetland impacts in West Virginia resulting from this project will total 37 acres. Thirty one acres are palustrine emergent, one acre is forested, three acres are shrub/scrub and two acres are open water.

1. Mitigation for these wetland impacts will be provided at the following ratio:

Palustrine Emergent 1:1;
Palustrine Forested and Shrub/Scrub 3:1;
Open Water 1:1.

These ratios would result in the creation/restoration of 45 acres of wetlands. The use of these replacement ratios is contingent upon the concurrent construction of these wetlands with the first highway contract.

If, for any reason, this concurrent wetland creation does not occur, or if the created wetlands are not functioning at the time wetland impacts occur, the replacement ratios will be as follows:

Open Water 1:1;
Palustrine Emergent 2:1;
Palustrine Forested and Shrub/Scrub 3:1.

These ratios would result in the creation of 78 acres of wetlands.

2. Wetland impacts will be mitigated at two (2) separate locations, one each within the Monongahela and Potomac river drainages. Attempts will be made to split the required acreage equally. A concentrated effort will be made to place the Monongahela River portion of the mitigation within the Beaver Creek watershed near Davis, West Virginia.

3. All constructed wetlands will require the implementation of a five year monitoring plan to determine the success of the mitigation. The plan will be developed by the Division of Highways and approved by the resource agencies. The plan will include, but not be limited to, the monitoring of wetland water quality, vegetation, functions, values and potential mitigation failure.

4. These conditions involve mitigation for wetland impacts only; unmitigated impacts (i.e., streams) will be included in another mitigation plan/agreement which will be a condition of state certification and federal agency approval. In evaluating stream impact mitigation, consideration should be given to efforts which have minimized stream impacts and also to the application of Best Management Practices by the consultant during highway design and construction.

EXHIBIT VII-13: VAC STATEMENT OF CONSENSUS

**CORRIDOR H VIRGINIA CITIZENS
ADVISORY COMMITTEE'S STATEMENT OF CONSENSUS**

WHEREAS, it is the consensus of the Virginia Citizens Advisory Committee (VCAC) that citizens of Virginia, and in particular the citizens of Frederick and Shenandoah Counties, are overwhelmingly opposed to the construction of Corridor H, and,

WHEREAS, it is the clear consensus of the VCAC that the expenditure of federal and Virginia tax dollars would be wasteful if spent on Corridor H, and would be better used on other projects, and,

WHEREAS, it has not been demonstrated the Commonwealth of Virginia, the Staunton Highway District, and in particular the citizens of Frederick and Shenandoah Counties, would realize any economic benefits from the construction of Corridor H. Furthermore, it has not been demonstrated that Corridor H would generate any long term, sustainable business, employment, local tax revenue, or other such benefits, to the Commonwealth of Virginia, the Staunton Highway District, and in particular the citizens of Frederick and Shenandoah Counties, and,

WHEREAS, the information presented does not give sufficient direct and indirect cost projections relating to the project's construction, maintenance, and right of way acquisition, and,

WHEREAS, it is the consensus of the VCAC that West Virginia review or study every prudent and feasible intermodal alternatives as mandated by the Intermodal Surface Transportation Efficiency Act (ISTEA), e.g., rail linkages for port access, and,

Response to VAC:

Statement of Consensus

1. Information regarding industrial and commercial development, job growth and tax benefits are included in Section III-A, Economic Environment, of this SDEIS.
2. Complete cost estimates, appropriate for this type of study are included in Section II and Appendix A of this SDEIS.
3. Other modes of travel were evaluated in the 1992 *Corridor Selection SDEIS*.

EXHIBIT VII-13: VAC STATEMENT OF CONSENSUS

01595
Statement of Consensus
Corridor H Virginia Citizens Advisory Committee
September 27, 1994

6
funding for other road projects in the area.

- The alternatives are devoid of data or projections regarding partial condemnations of private property that would be required (e.g., rights of way), which would cause partial displacements of Virginia citizens, and the related costs of such condemnations/-displacements which could more than double projected costs.
- The alternatives provided do not constitute a "study that comprehensively evaluates alternative improvements to existing highways . . . without requiring construction of a new highway . . ." Rather, they essentially constitute "build" alternatives that were drawn up before the Board's Resolution.
- The alternatives provided fail to address "the broad community goals to develop the region as a tourist and visitor attraction that highlights the unique historical and cultural attractions of the region." In this regard, no information has been provided to the VCAC regarding any projected local employment or tax-generating opportunities that would accompany either of the build alternatives presented. Moreover, the alternatives fail to address the issue of the adverse impact either would have (directly or indirectly) on several National Landmark and National Register of Historic Places properties located on both sides of existing Interstate 81 (along Cedar Creek) between

Response to VAC:

Statement of Consensus

6. The right-of-way acquisition costs provided herein have been prepared by the VDOT in accordance with VDOT procedures.
7. The design criteria of the Build and the Improved Roadway Alternatives was the subject of the first coordination meeting held in Richmond on July 27, 1993, over two months following the Board resolution. Subsequent submissions of preliminary alignments, including the Improved Roadway Alternative were submitted to VDOT between September 13, 1993 and October 20, 1993.
8. The design and location of the alternatives does not preclude this type of local initiative. A presentation made to the VAC on June 21, 1994 included a suggestion of interpretive trails that would connect various historic battlefields and other cultural interest points. Also suggested was a visitor's center that would highlight historic sites in the region and promote this type of tourism.

An assessment of effects to all sites potentially eligible, eligible or listed on the National Register of Historic Places located within the project limits is included in this study. This study also addresses secondary impacts to historic sites.

EXHIBIT VII-13: VAC STATEMENT OF CONSENSUS

6/15/95

Statement of Consensus
Corridor H Virginia Citizens Advisory Committee
September 27, 1994

- **Wisely Invest Tax Dollars**
- **Prevent Community Displacements**
- **Provide Infrastructure**
- **Develop Pro-active Long Range Plans**
- **Manage Growth**
- **Promote Stability**
- **Broaden Economic Base**
- **Community Self-Determination**
- **Define Relevant Information**

• **Consistent with these Community Goals, and in light of the fact that the build alternatives presented to date are too limited and thus insufficient, the VCAC recommends that a separate study be conducted to evaluate improvements to existing Route 55, as follows:**

- **Designate Route 55 as a National/Virginia Scenic Byway/Parkway.**
- **Determine whether ISTEA funding is available.**
- **Draft an improved Route 55 roadway alignment alternative with local bypass features in order to minimize citizen/-business displacements and deviations from existing route 55, to enhance safety, and to avoid adverse impacts on historic sites and other cultural resources.**
- **Project detailed costs for construction, maintenance, and**

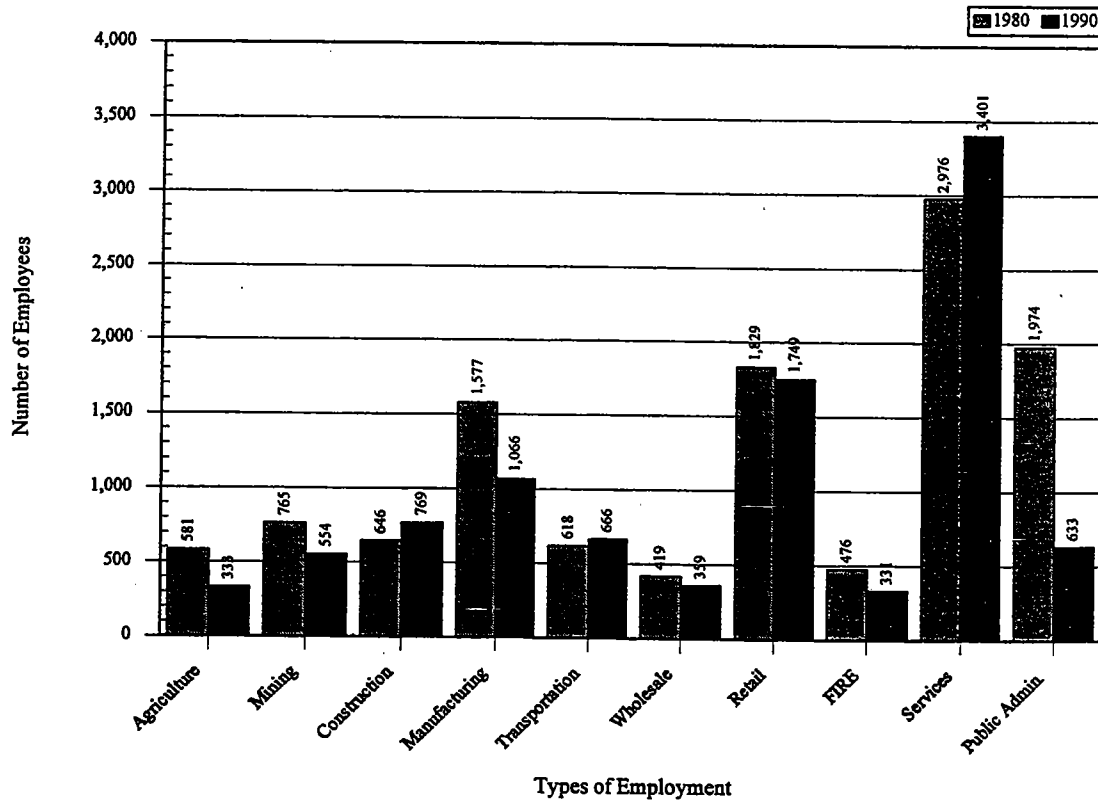
E-63

FIGURES

**FIGURE III-1
RANDOLPH COUNTY STATISTICS**

JURISDICTION	1980 POPULATION	1990 POPULATION	PERCENT CHANGE	1980 EMPLOYMENT	1990 EMPLOYMENT	PERCENT CHANGE
Randolph County	28,734	27,803	-3%	11,861	9,861	-17%
Elkins	8,536	7,420	-13%	3,607	2,774	-23%
Montrose	129	140	9%	39	44	13%

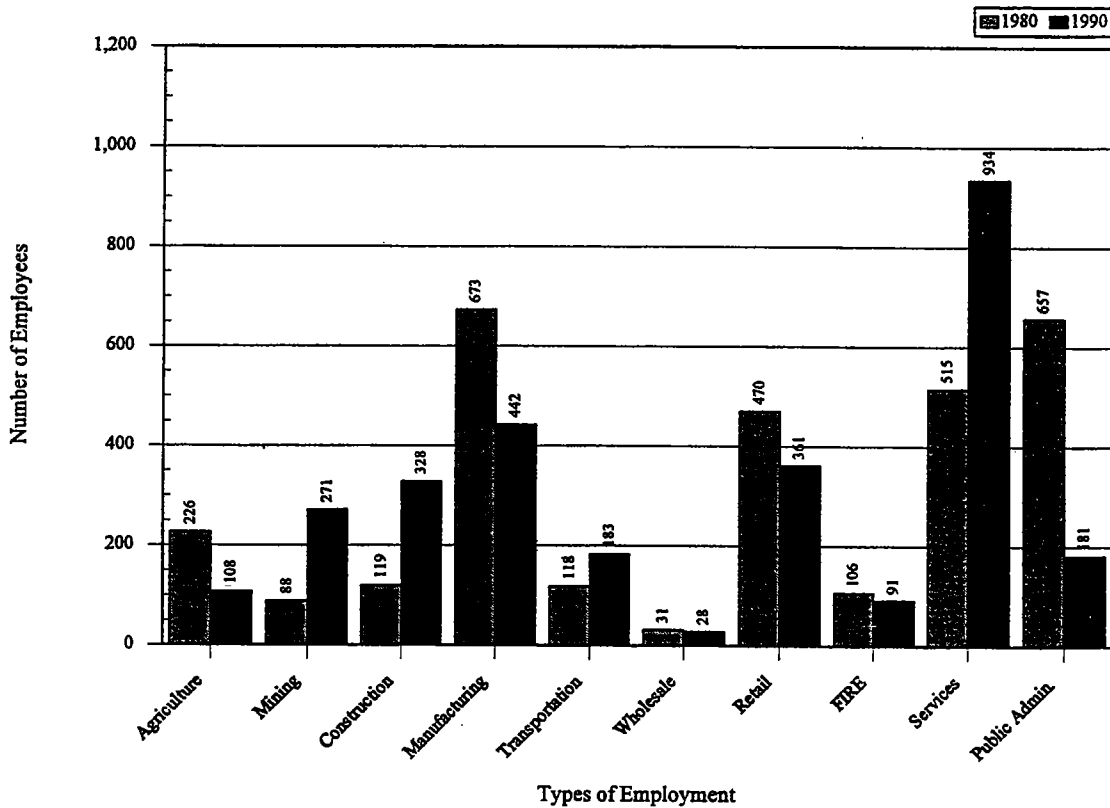
JURISDICTION	1990 UNEMPLOYMENT	1990 % BELOW POVERTY	1990 PER CAPITA INCOME
Randolph County	13%	22%	\$7,343
Elkins	12%	21%	\$9,669
Montrose	24%	31%	\$6,846



**FIGURE III-2
TUCKER COUNTY STATISTICS**

JURISDICTION	1980 POPULATION	1990 POPULATION	PERCENT CHANGE	1980 EMPLOYMENT	1990 EMPLOYMENT	PERCENT CHANGE
Tucker County	8,675	7,728	-11%	3,003	2,927	-3%
Davis	979	796	-19%	328	269	-18%
Hambleton	403	268	-33%	122	75	-39%
Hendricks	390	313	-20%	133	104	-22%
Parsons	1,937	1,440	-26%	764	589	-23%
Thomas	747	576	-23%	282	223	-21%

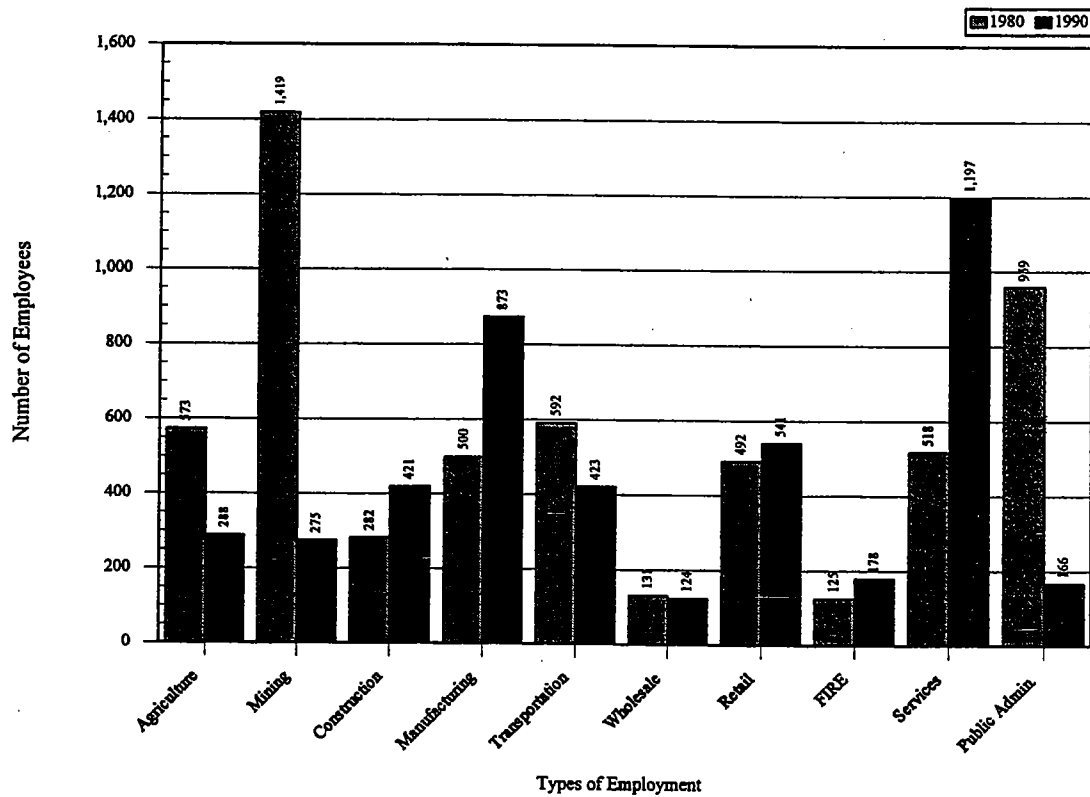
JURISDICTION	1990 UNEMPLOYMENT	1990 % BELOW POVERTY	1990 PER CAPITA INCOME
Tucker County	8.7%	17%	\$8,978
Davis	12%	20%	\$9,113
Hambleton	14%	20%	\$6,059
Hendricks	11%	30%	\$7,353
Parsons	8%	55%	\$9,063
Thomas	6%	8%	\$10,524



**FIGURE III-3
GRANT COUNTY STATISTICS**

JURISDICTION	1980 POPULATION	1990 POPULATION	PERCENT CHANGE	1980 EMPLOYMENT	1990 EMPLOYMENT	PERCENT CHANGE
Grant County	10,210	10,428	2%	5,594	4,486	-20%
Bayard	540	414	-23%	161	175	9%

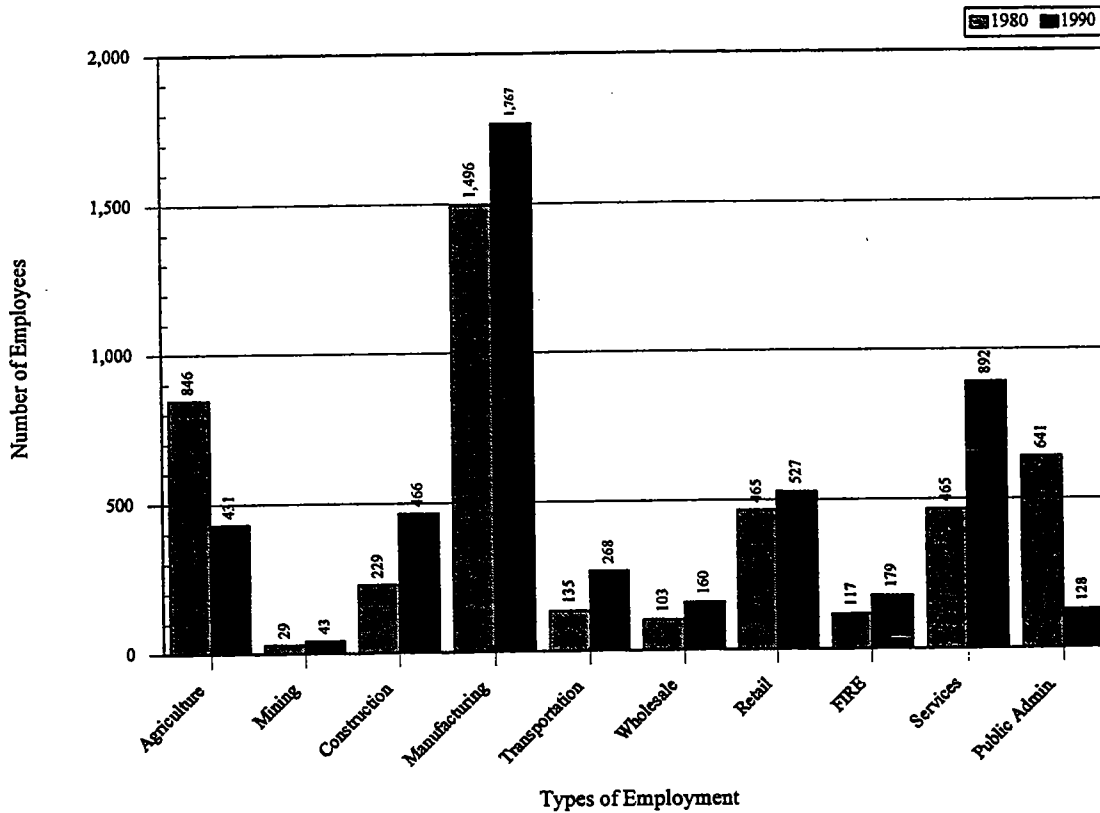
JURISDICTION	1990 UNEMPLOYMENT	1990 % BELOW POVERTY	1990 PER CAPITA INCOME
Grant County	6%	15%	\$10,394
Bayard	9%	10%	\$10,675



**FIGURE III-4
HARDY COUNTY STATISTICS**

JURISDICTION	1980 POPULATION	1990 POPULATION	PERCENT CHANGE	1980 EMPLOYMENT	1990 EMPLOYMENT	PERCENT CHANGE
Hardy County	10,030	10,977	9%	4,526	4,861	7%
Moorefield	2,257	2,148	-5%	1,019	999	-2%
Wardensville	241	121	-50%	70	40	-43%

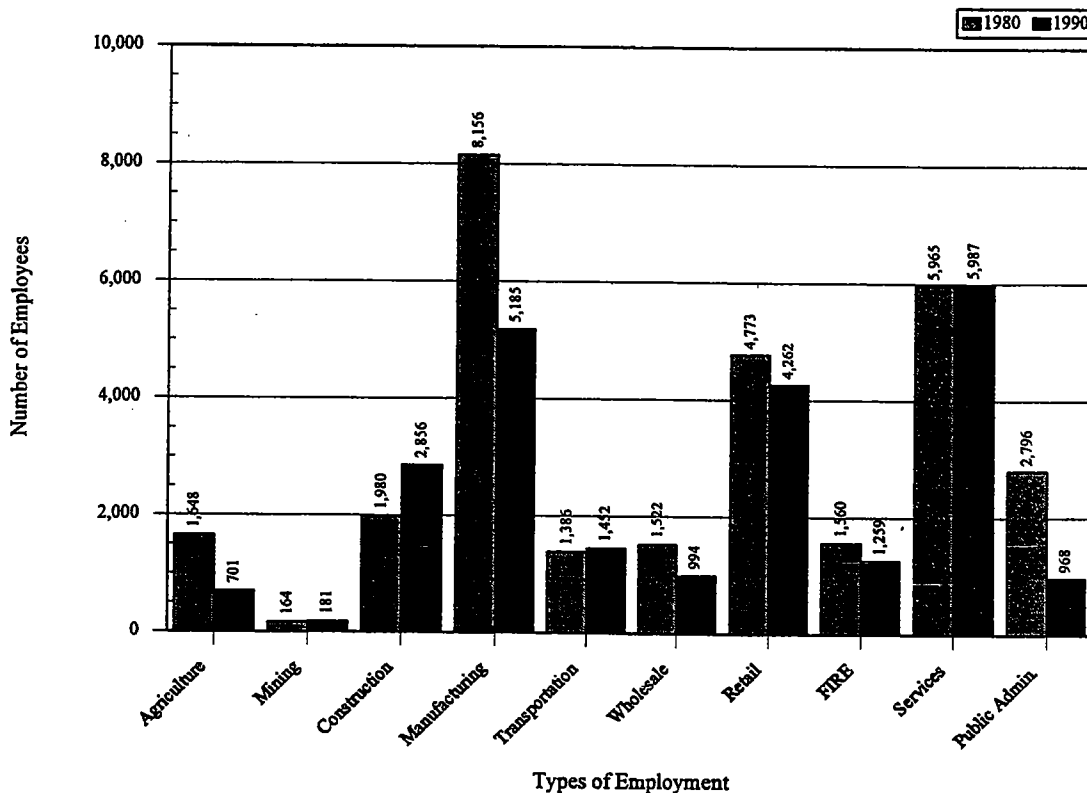
JURISDICTION	1990 UNEMPLOYMENT	1990 % BELOW POVERTY	1990 PER CAPITA INCOME
Hardy County	5%	15%	\$10,696
Moorefield	5%	19%	\$11,780
Wardensville	9%	26%	\$8,455



**FIGURE III-5
FREDERICK COUNTY STATISTICS**

JURISDICTION	1980 POPULATION	1990 POPULATION	PERCENT CHANGE	1980 EMPLOYMENT	1990 EMPLOYMENT	PERCENT CHANGE
Frederick County	34,150	45,723	34%	29,950	43,056	44%
Winchester	20,217	21,947	9%	9,326	11,399	22%

JURISDICTION	1990 UNEMPLOYMENT	1990 % BELOW POVERTY	1990 PER CAPITA INCOME
Frederick County	4.3%	7%	\$13,671
Winchester	5%	11%	\$14,214



**FIGURE III-6
SHENANDOAH COUNTY STATISTICS**

JURISDICTION	1980 POPULATION	1990 POPULATION	PERCENT CHANGE	1980 EMPLOYMENT	1990 EMPLOYMENT	PERCENT CHANGE
Shenandoah County	27,559	31,636	15%	12,575	15,622	24%
Strasburg	2,311	3,762	63%	994	1,824	84%

JURISDICTION	1990 UNEMPLOYMENT	1990 % BELOW POVERTY	1990 PER CAPITA INCOME
Shenandoah County	3.8%	11%	\$12,686
Strasburg	5%	14%	\$11,286

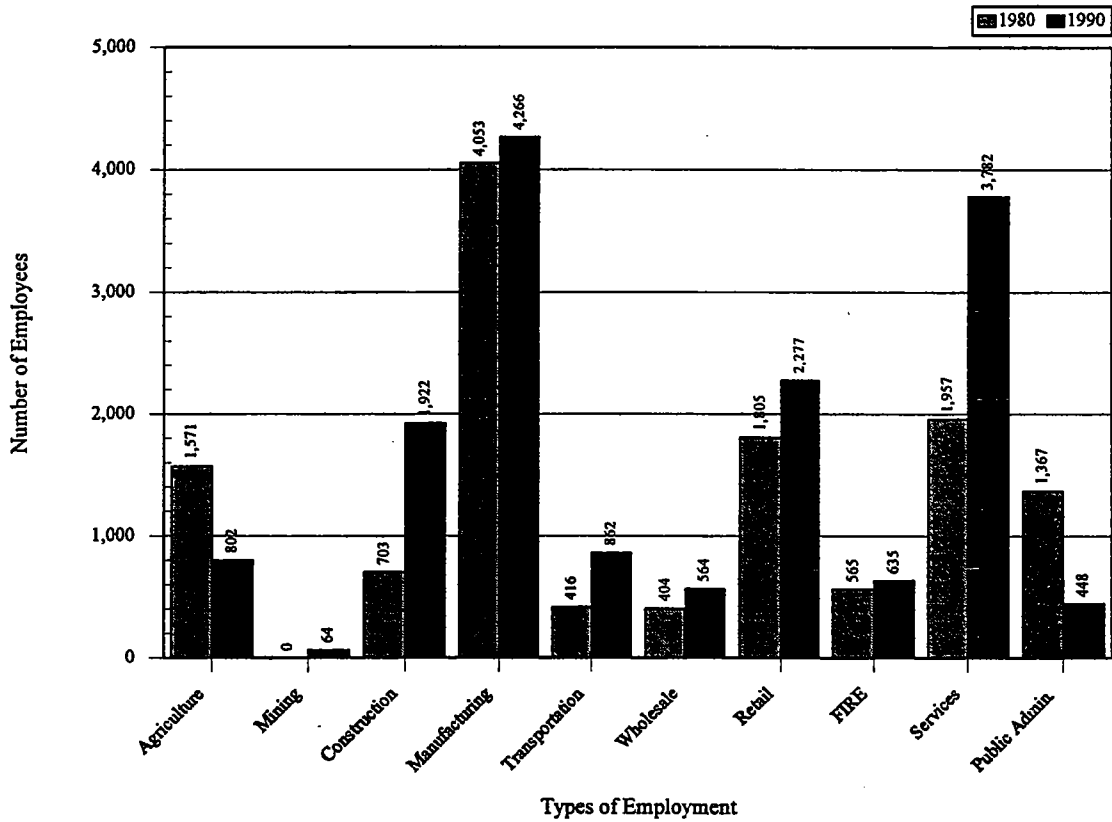
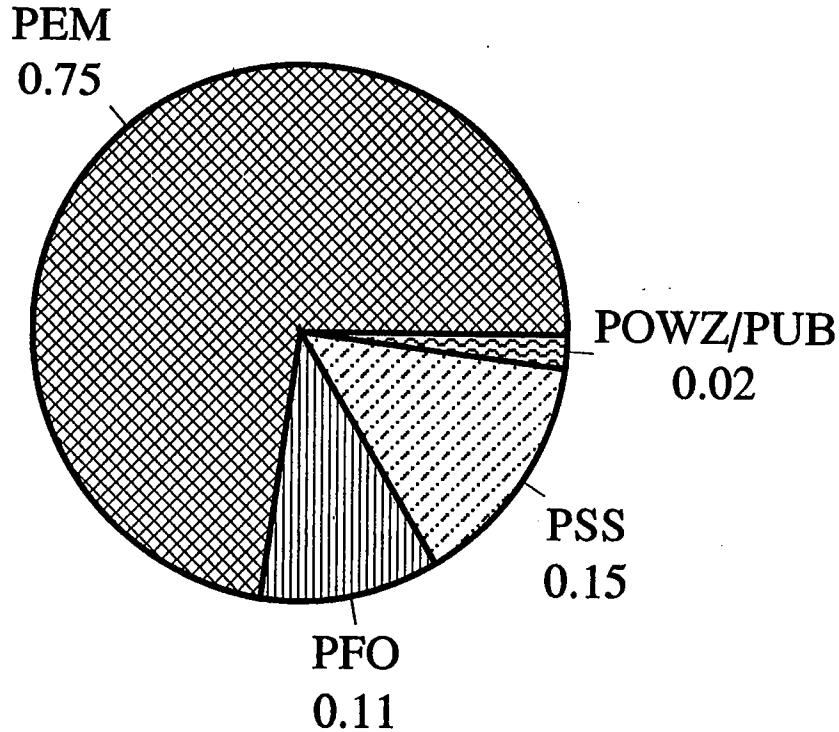


Figure III-7
Impacted Wetlands in the Tygart Valley River Watershed

Wetland Hectares: 155.44
Percent Impacted - IRA: 0.663%
Line A: 1.248%

IRA

Hectares Impacted: 1.03



Line A

Hectares Impacted: 1.94

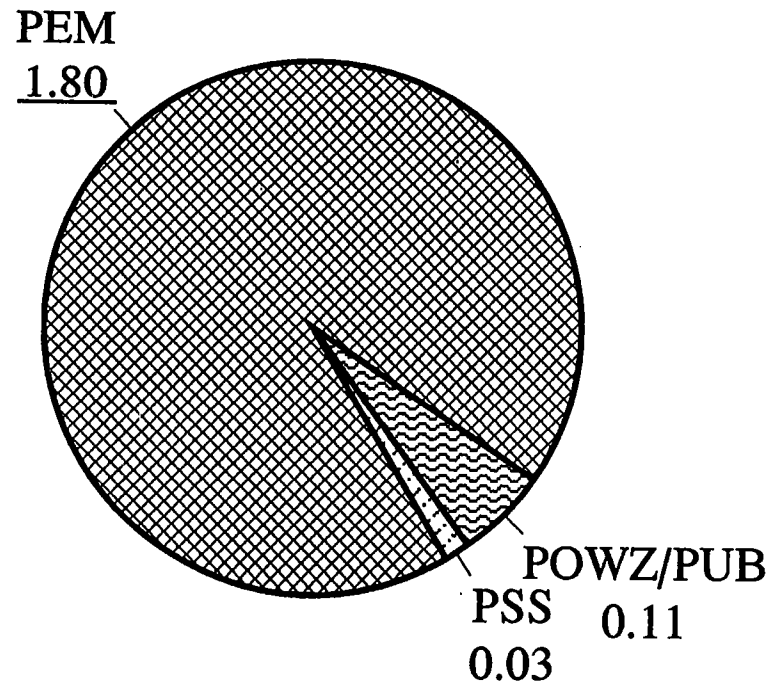


Figure III-8
Impacted Wetlands in the Cheat River Watershed

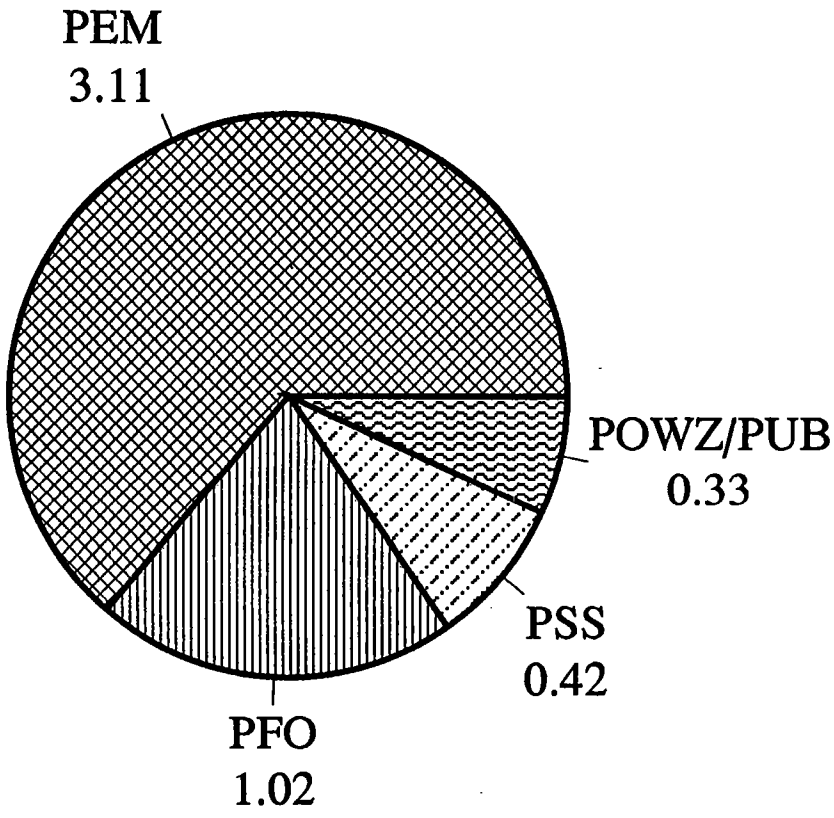
Wetland Hectares: 9102.99

Percent Impacted - IRA: 0.054%

Line A: 0.085%

IRA

Hectares Impacted: 4.88



Line A

Hectares Impacted: 7.77

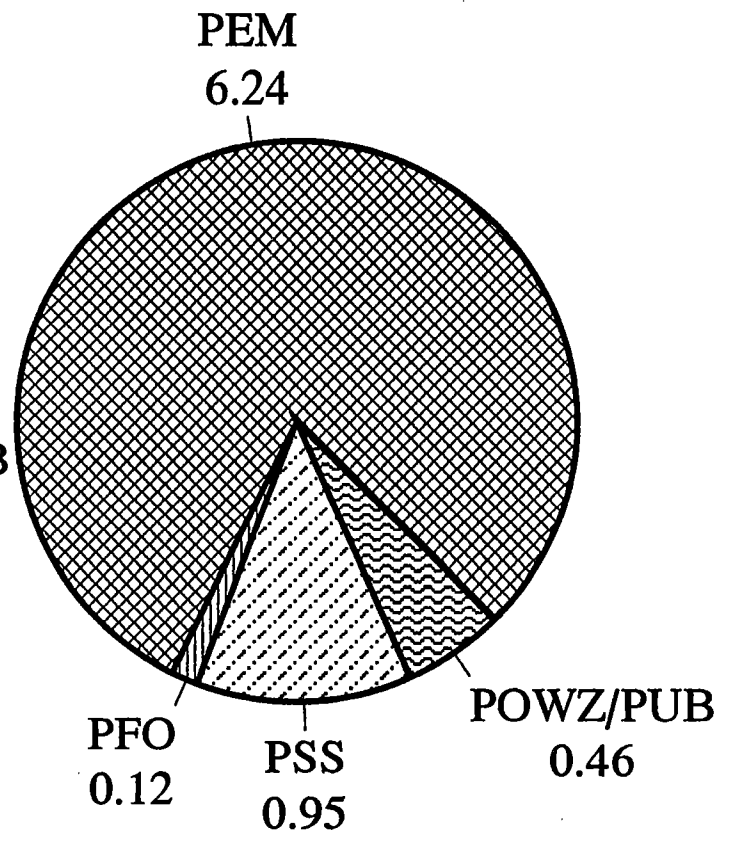


Figure III-9
Impacted Wetlands in the North Branch Potomac River Watershed

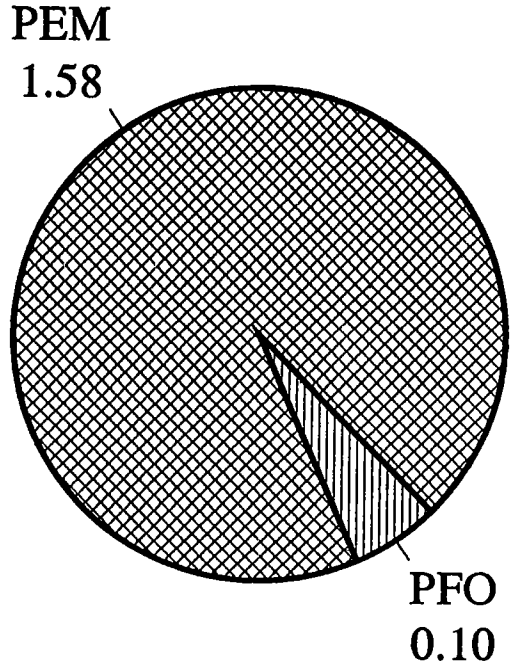
Wetland Hectares: 1927.27

Percent Impacted - IRA: 0.087%

Line A: 0.181%

IRA

Hectares Impacted: 1.68



Line A

Hectares Impacted: 3.48

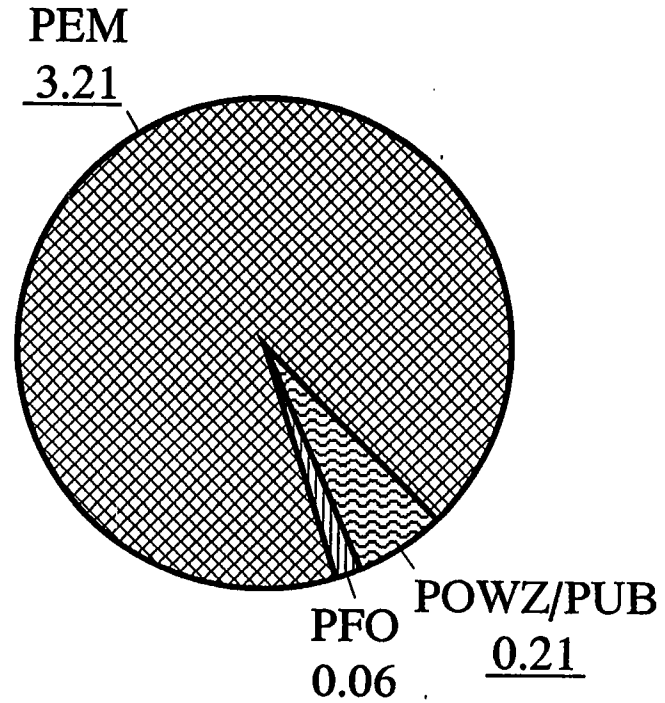


Figure III-10
Impacted Wetlands in the South Branch Potomac River Watershed

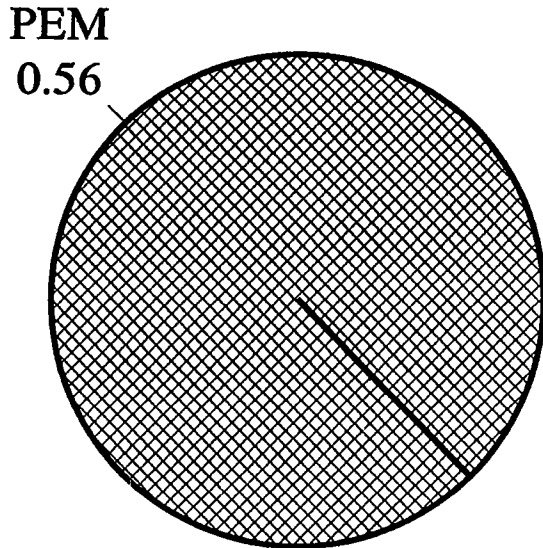
Wetland Hectares: 338.44

Percent Impacted - IRA: 0.165%

Line A: 0.239%

IRA

Hectares Impacted: 0.56



Line A

Hectares Impacted: 0.81

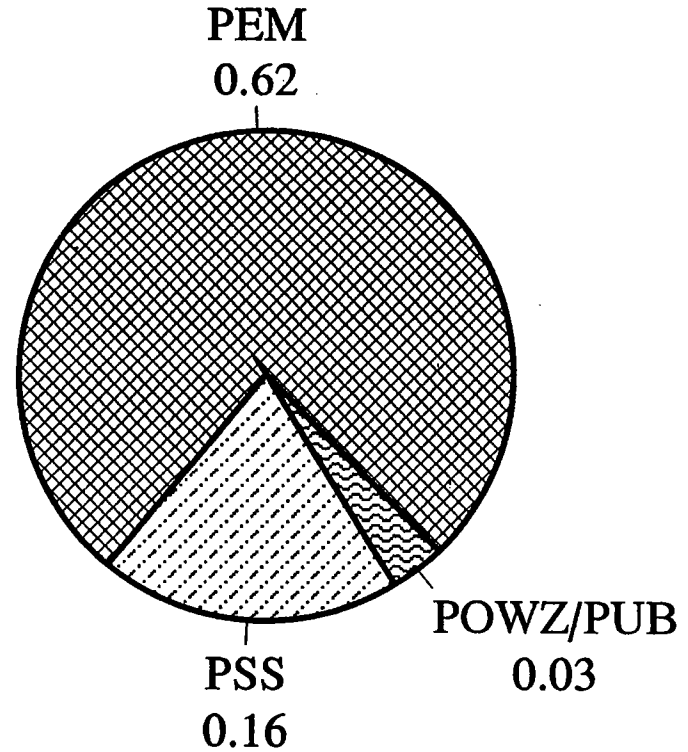


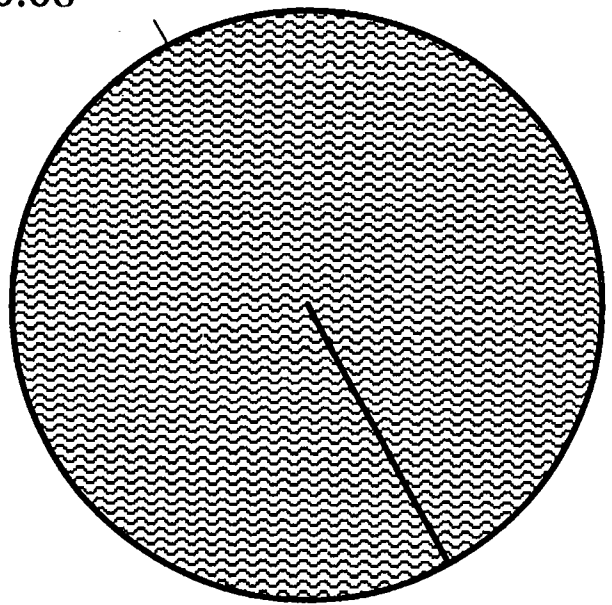
Figure III-11
Impacted Wetlands in the Cacapon River Watershed

Wetland Hectares: 349.39
Percent Impacted - IRA: 0.023%
Line A: 0.260%

IRA

Hectares Impacted: 0.08

POWZ/PUB
0.08



Line A

Hectares Impacted: 0.91

PEM
0.54

PFO
0.10

PSS
0.06

POWZ/PUB
0.21

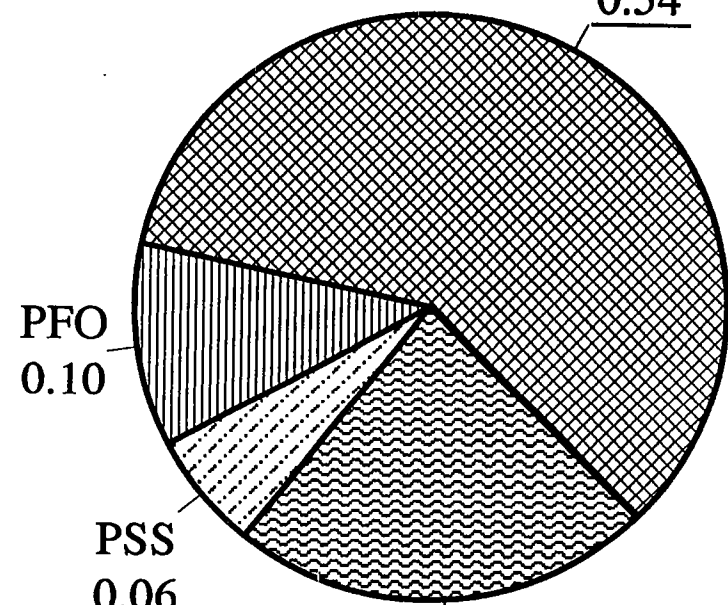


Figure III-12
Impacted Wetlands in the Shenandoah River Watershed

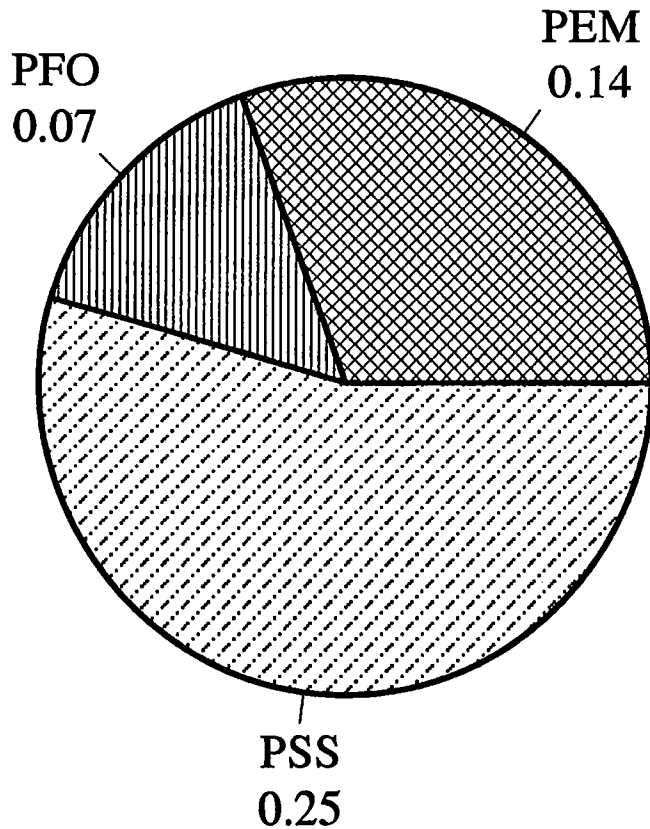
Wetland Hectares: 260.62

Percent Impacted - IRA: 0.177%

Line A: 0.127%

IRA

Hectares Impacted: 0.46



Line A

Hectares Impacted: 0.33

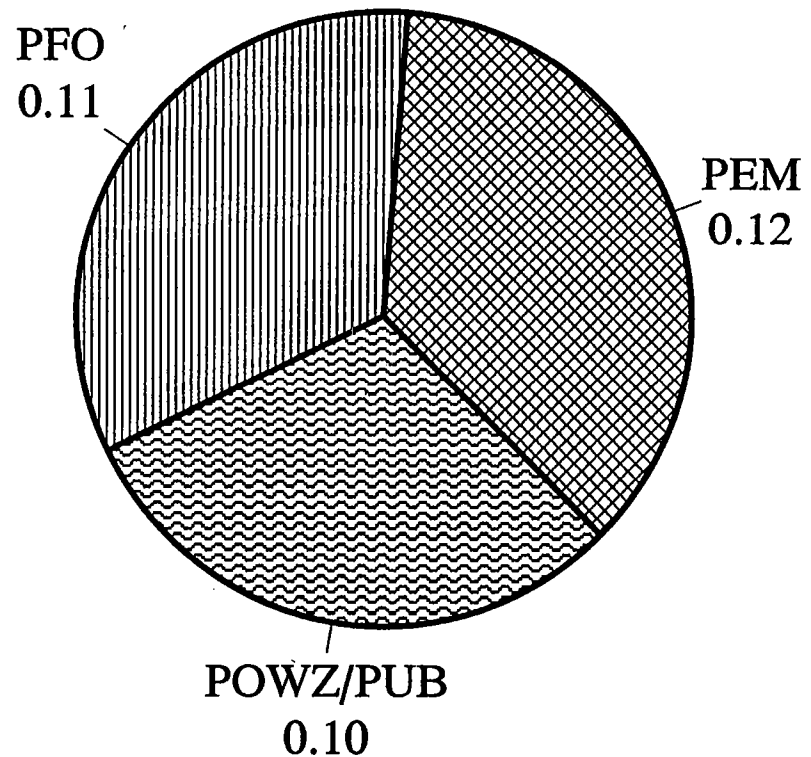


Figure III-13

Sizes of Wetlands Impacted in the Tygart Valley River and Cheat River Watersheds

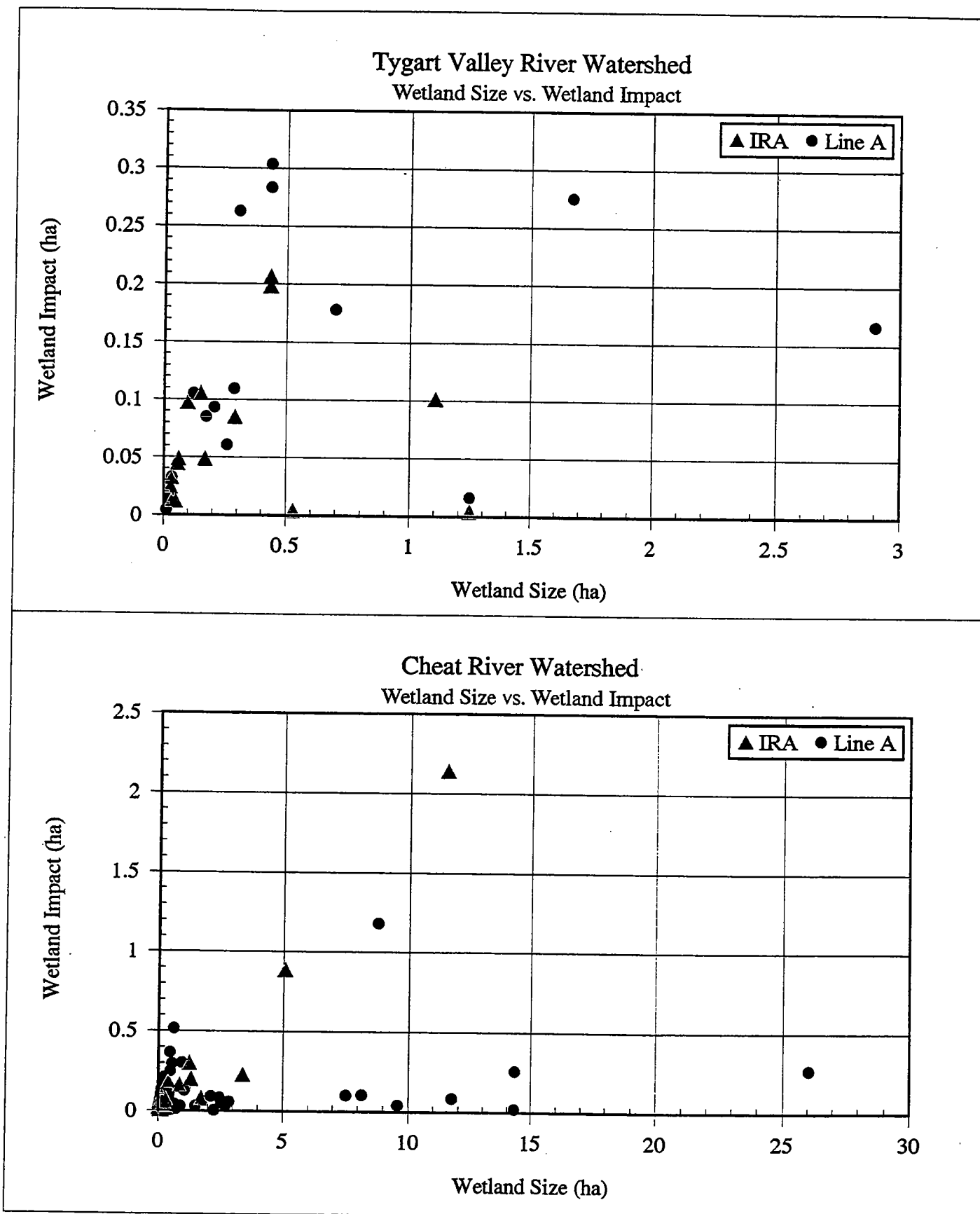


Figure III-14
Sizes of Wetlands Impacted in the North and South Branch Potomac River Watersheds

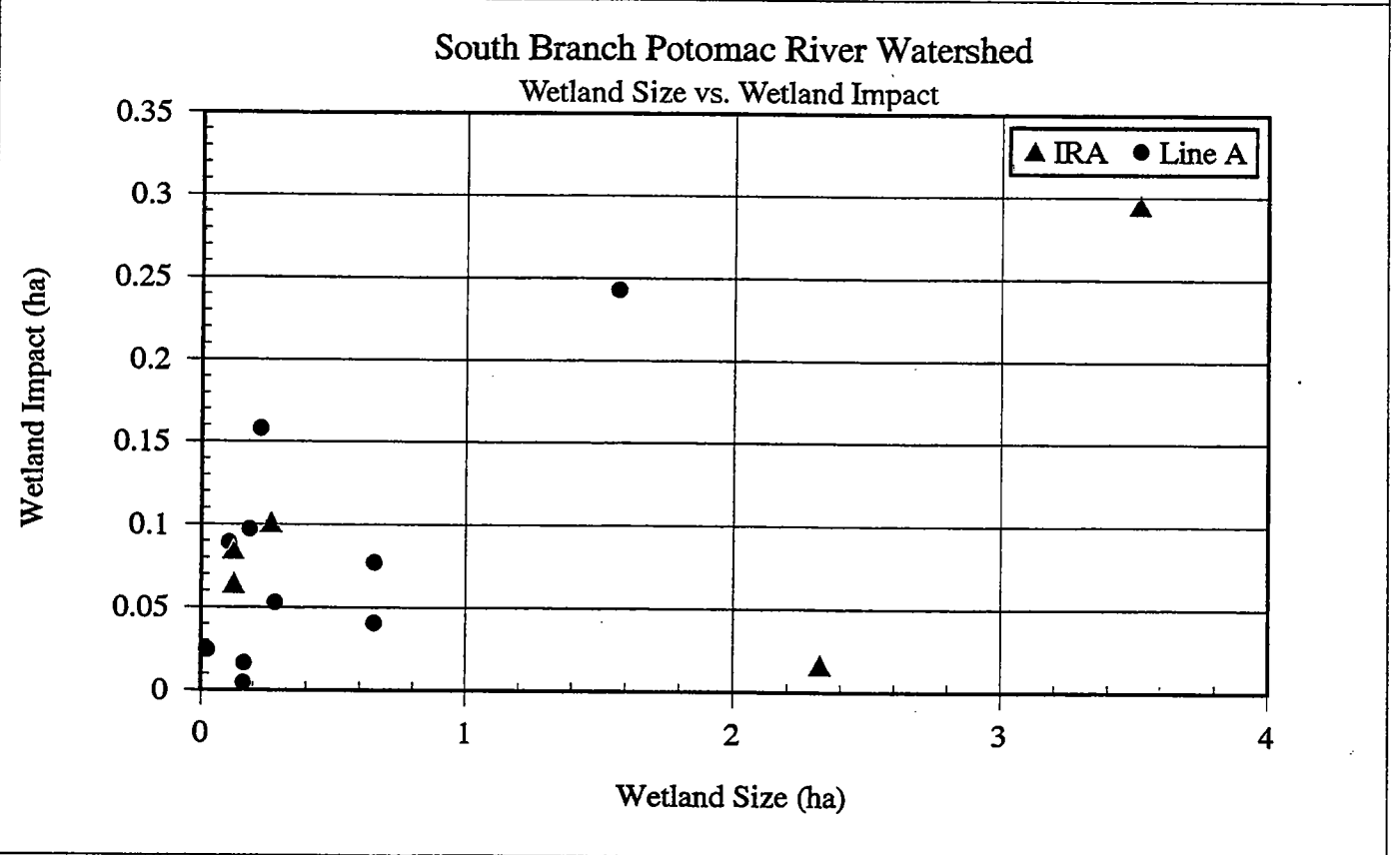
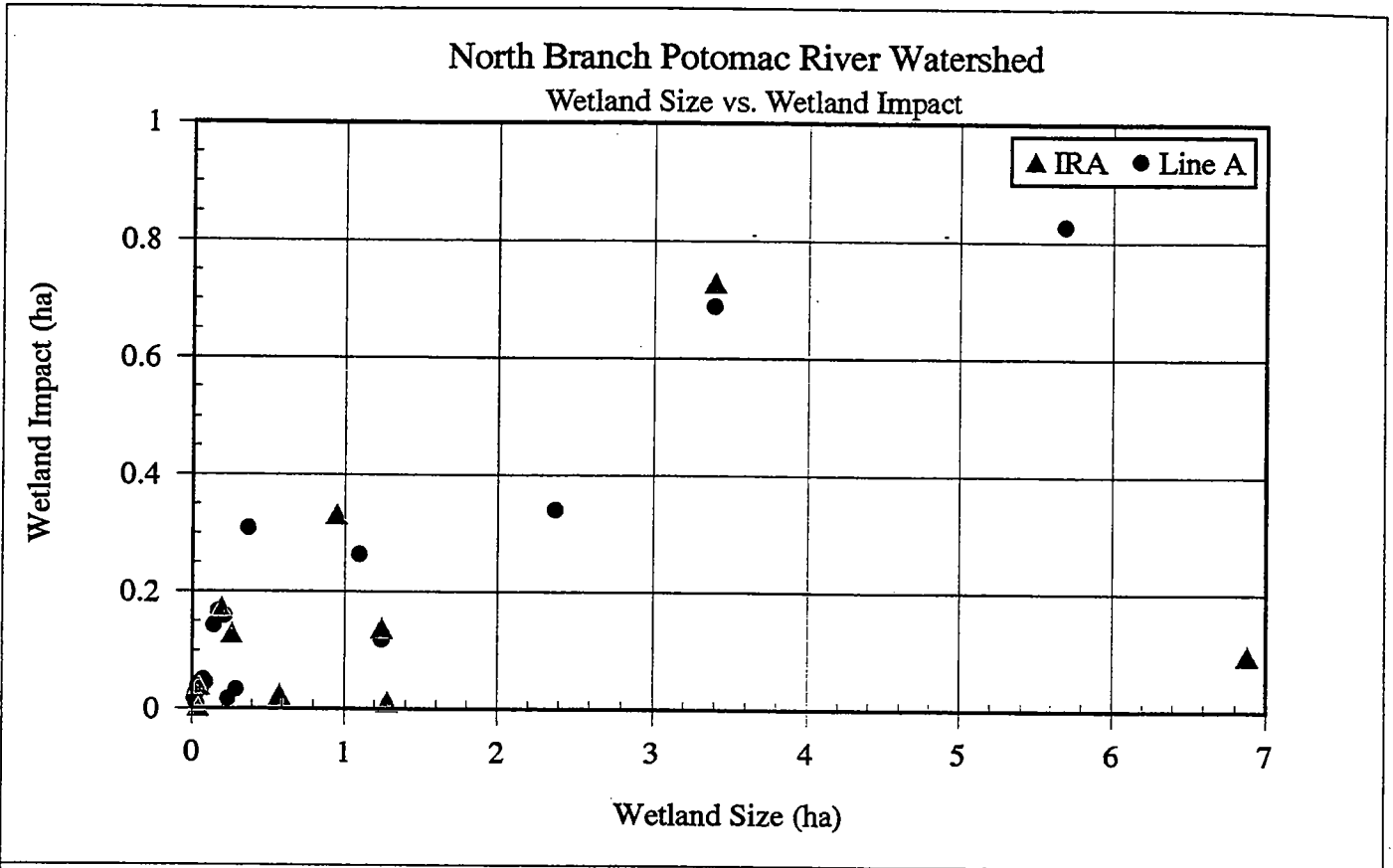


Figure III-15
Sizes of Impacted Wetlands in the Cacapon River and Shenandoah River Watersheds

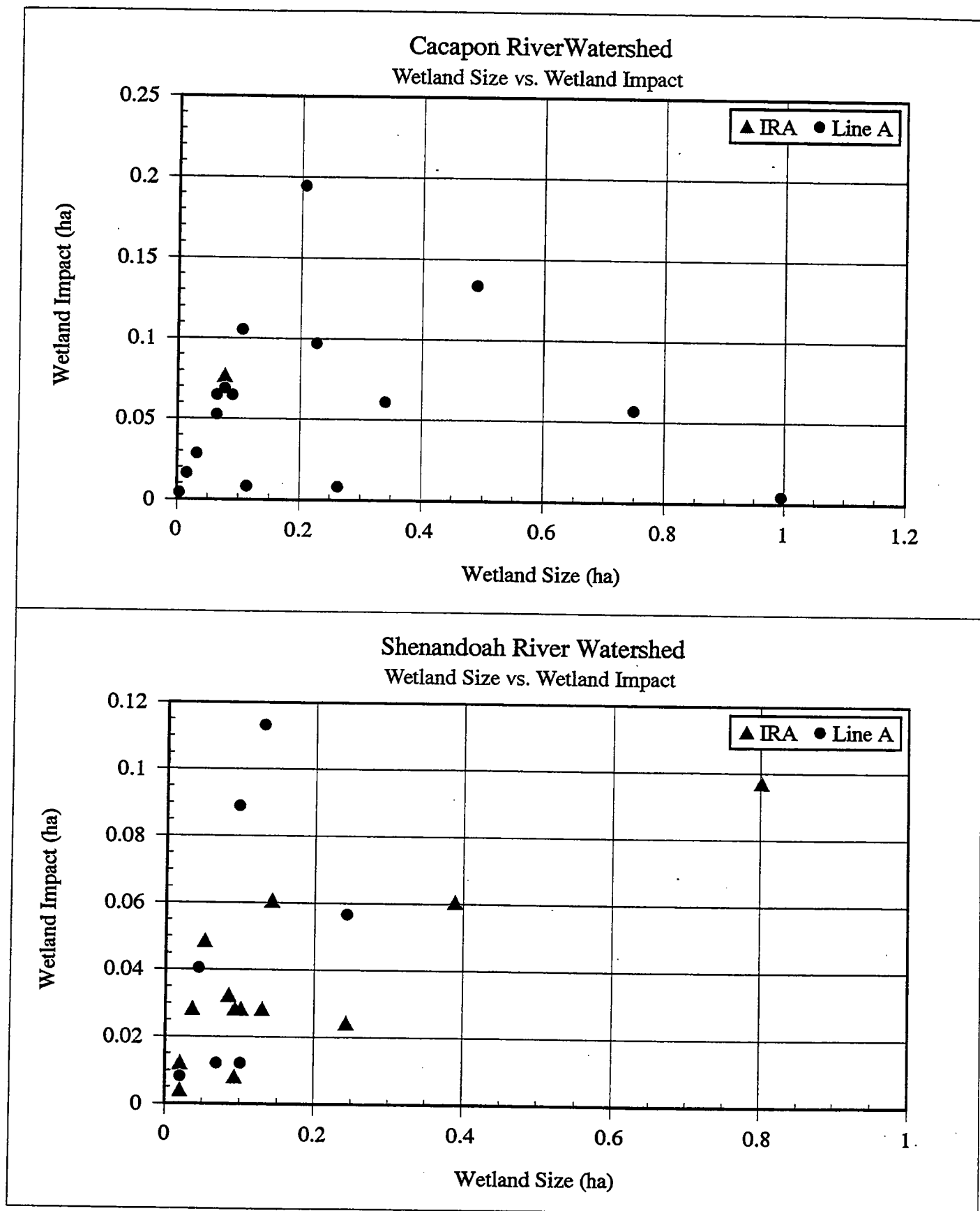


Figure III-16
Sizes of Impacted Wetlands

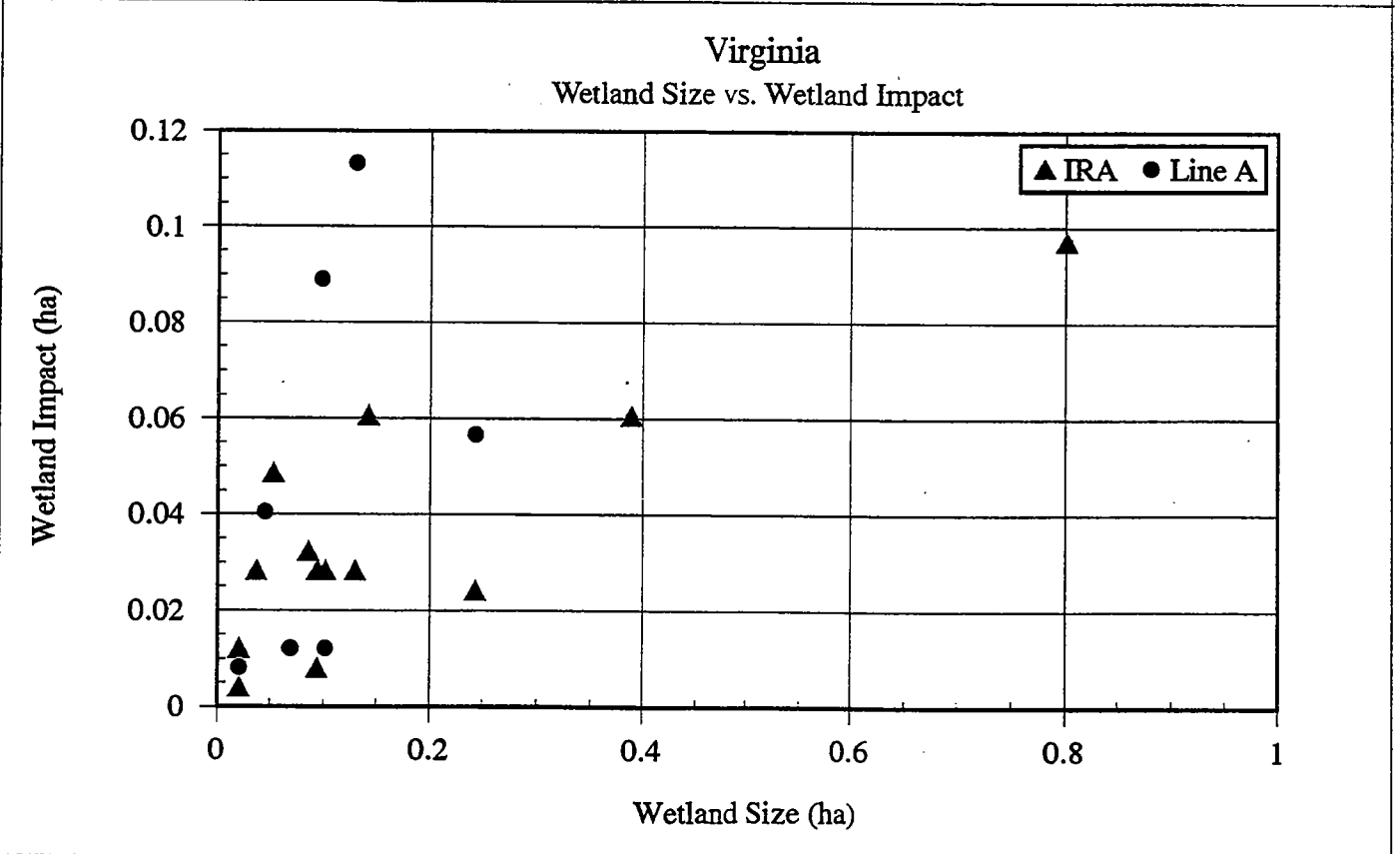
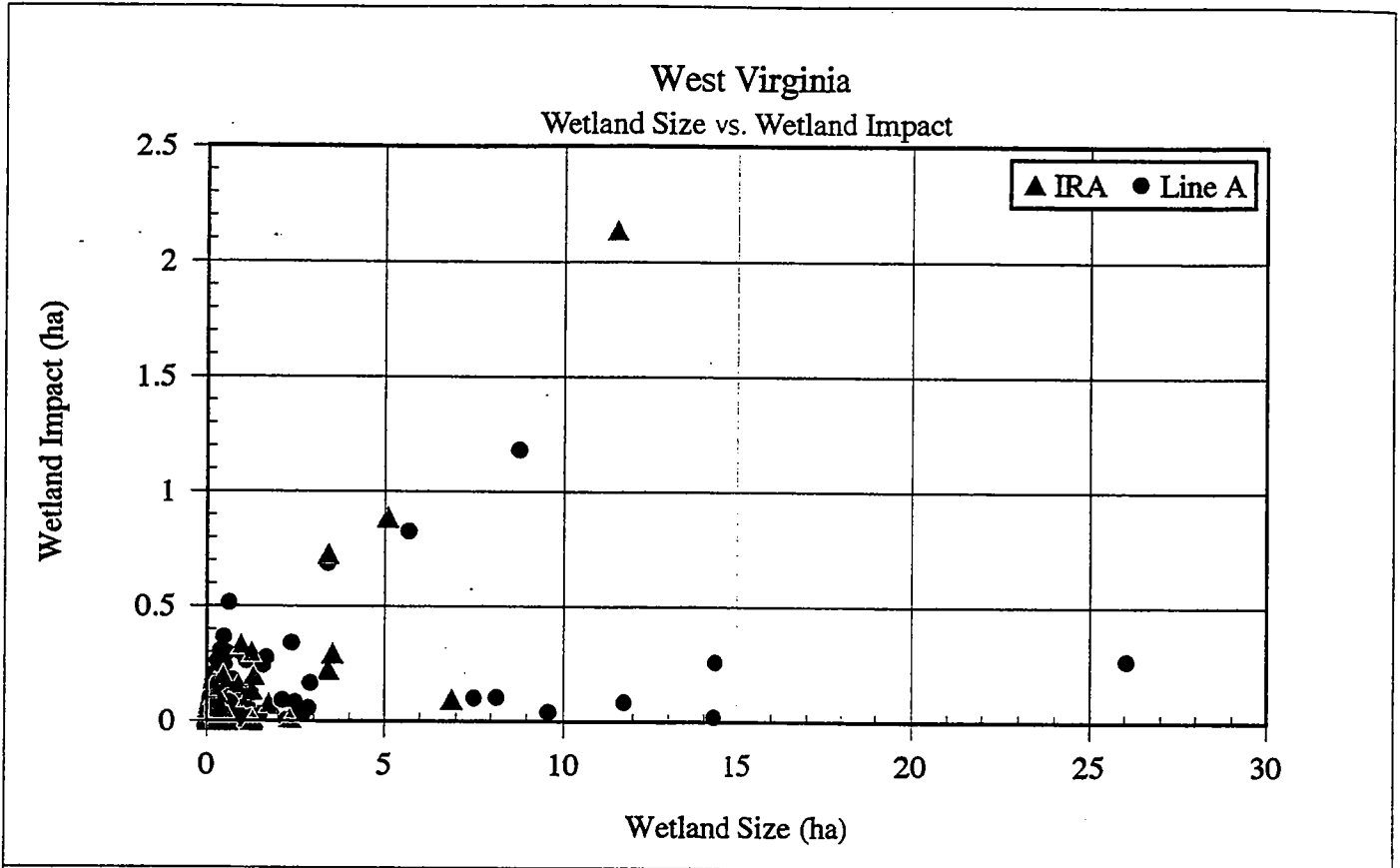
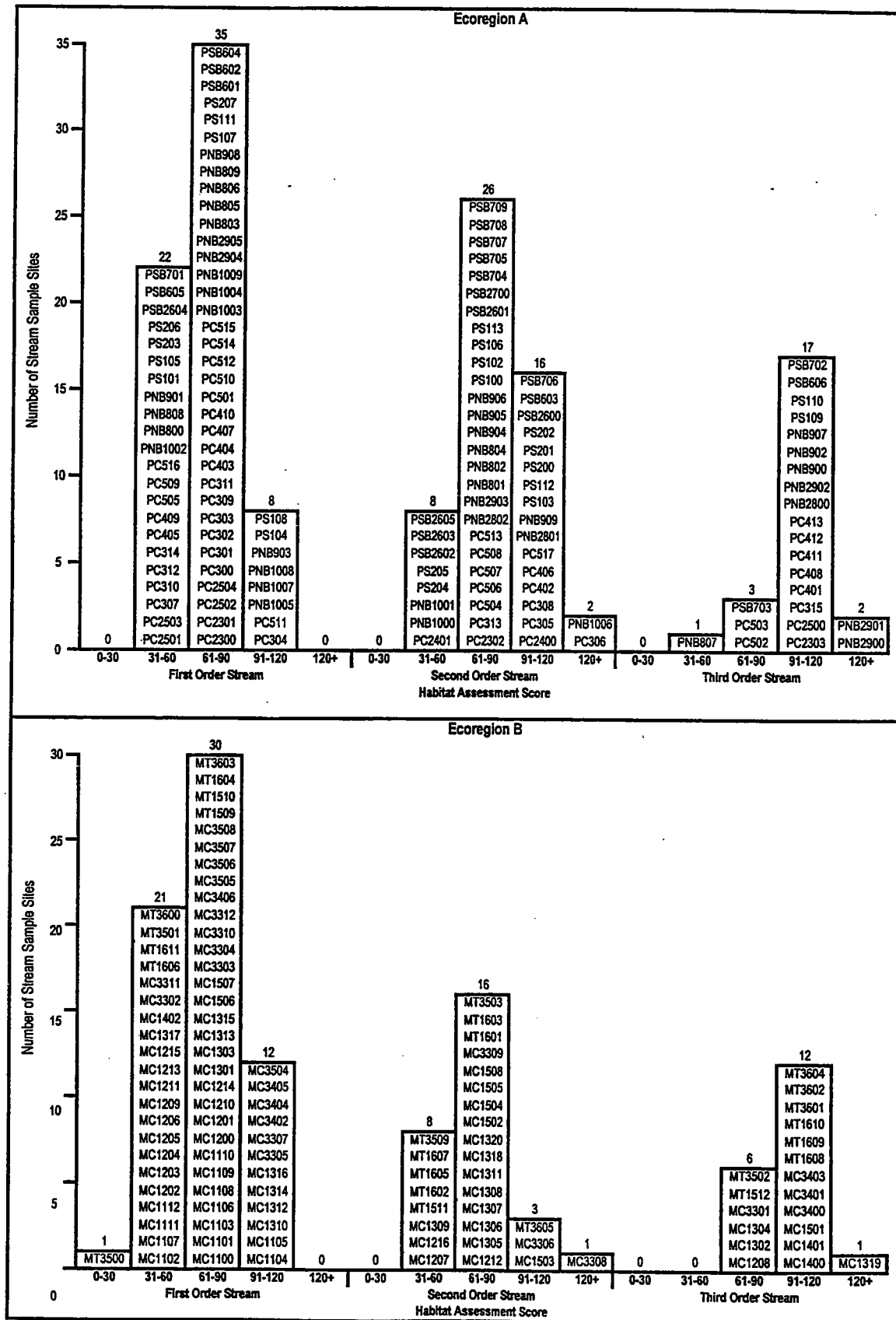
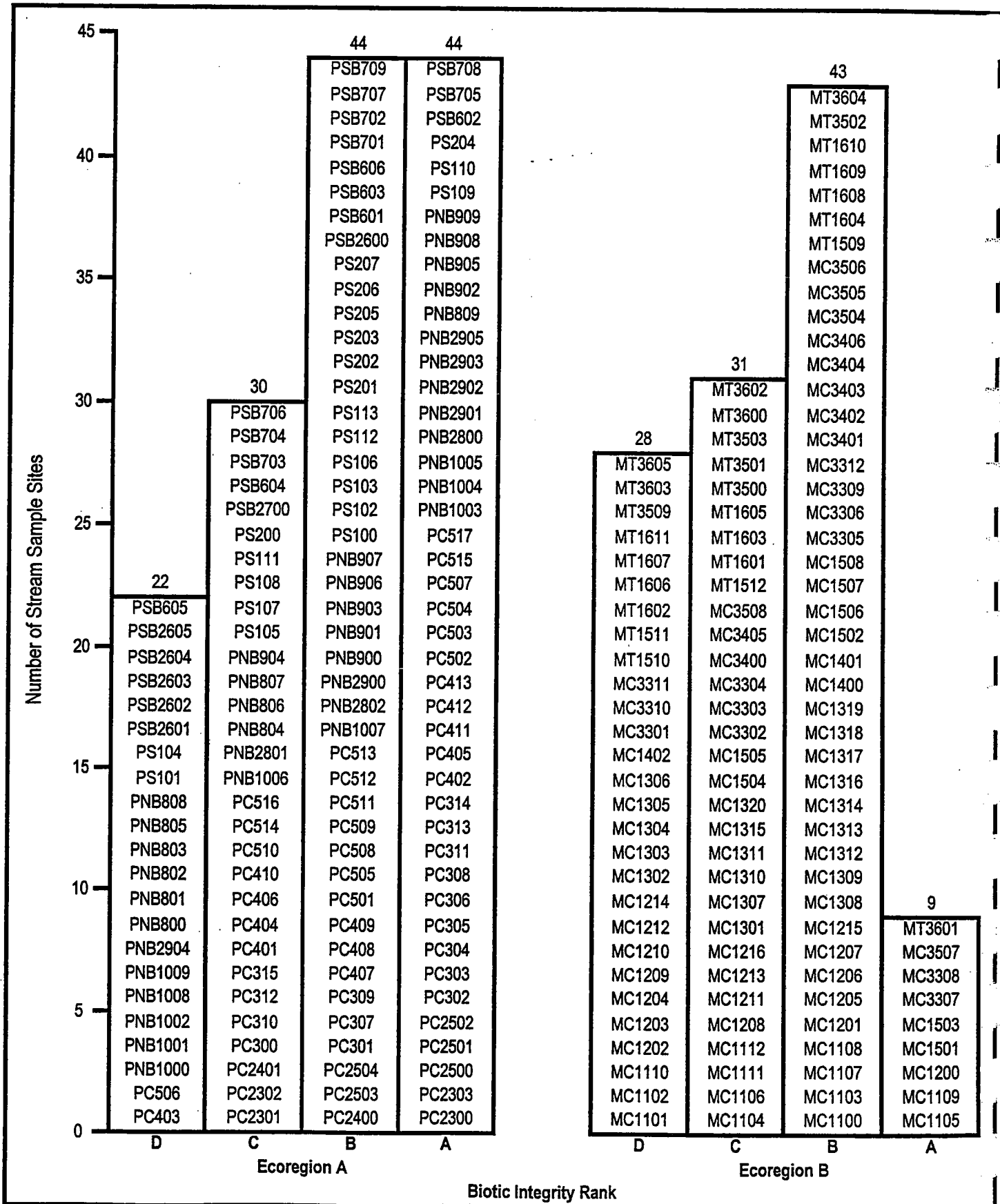


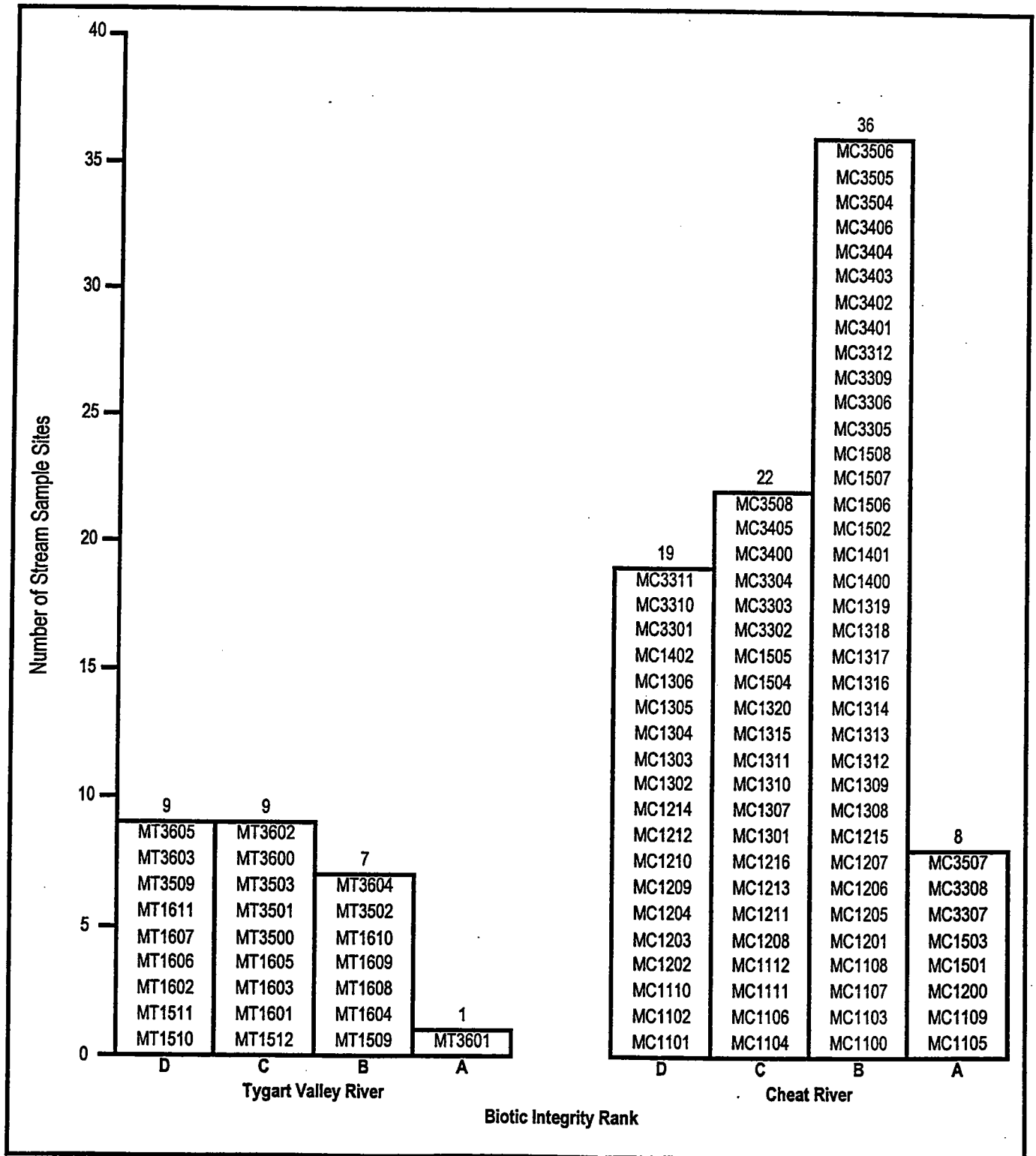
FIGURE III-17
CLUSTERING OF HABITAT ASSESSMENT SCORES BY ECOREGION AND STREAM ORDER



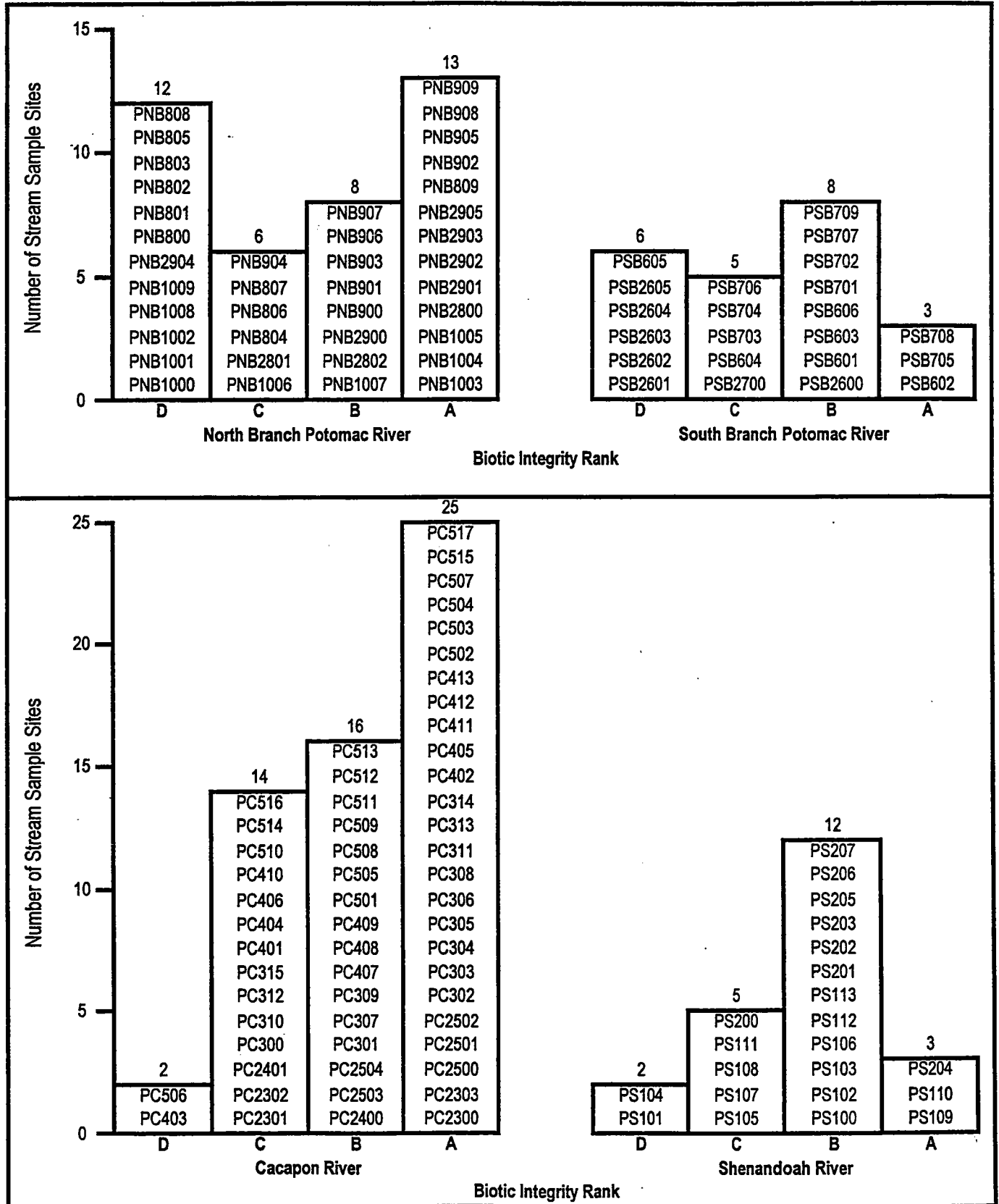
**FIGURE III-18
CLUSTERING OF BIOTIC INTEGRITY RANKS BY ECOREGION**



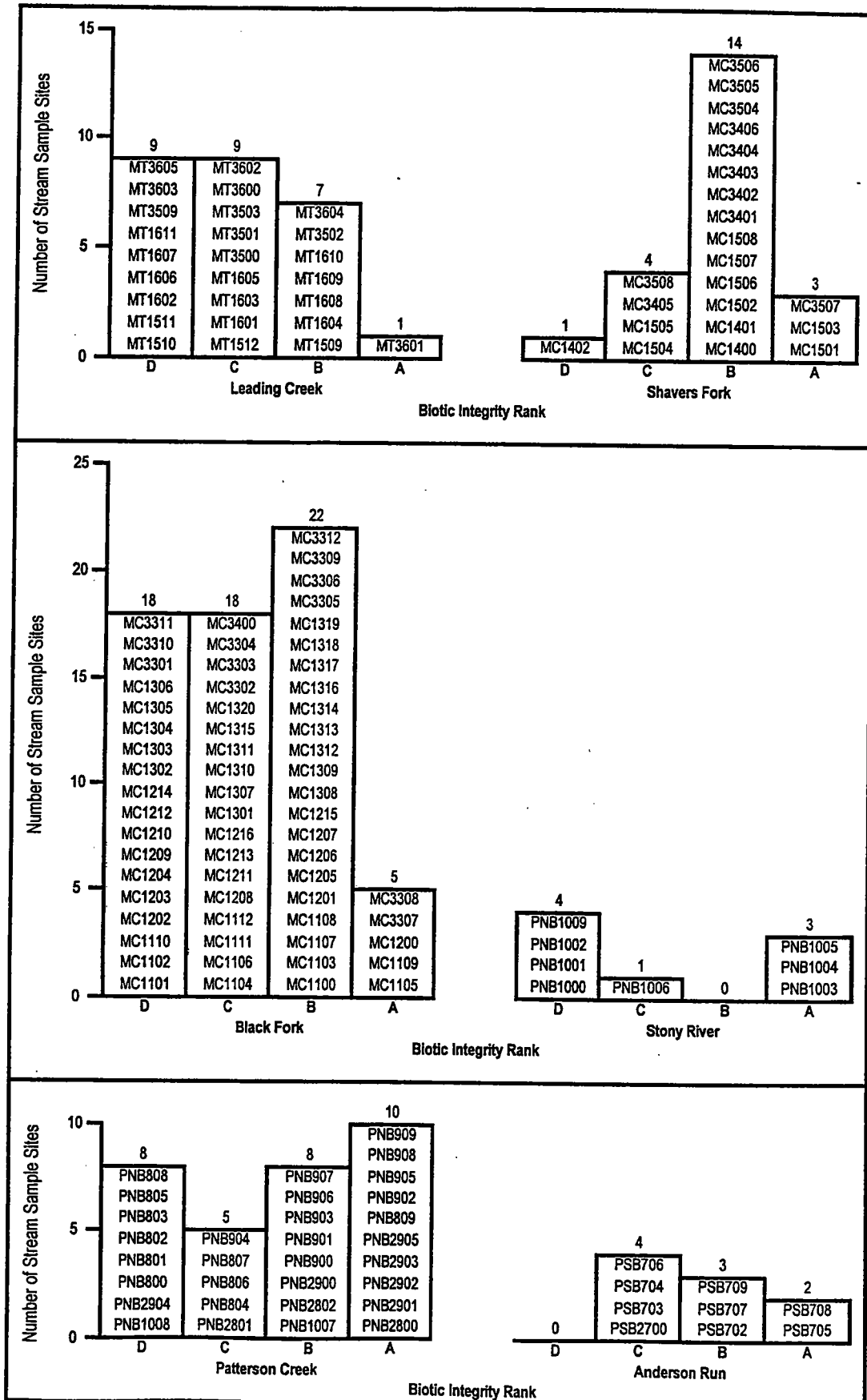
**FIGURE III-19
CLUSTERING OF BIOTIC INTEGRITY RANKS BY REGIONAL PROJECT WATERSHED**



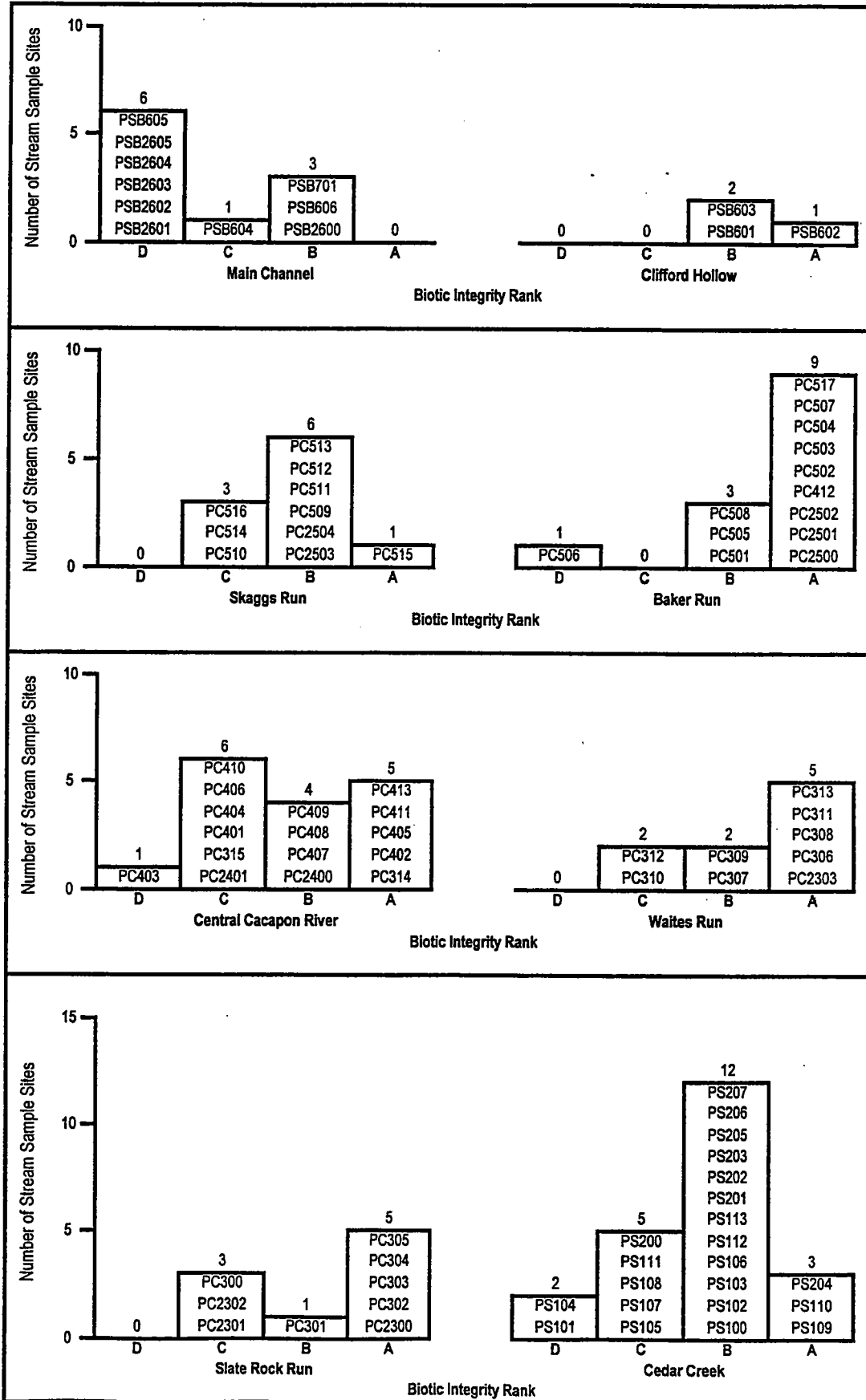
**FIGURE III-19
CLUSTERING OF BIOTIC INTEGRITY RANKS BY REGIONAL PROJECT WATERSHED**



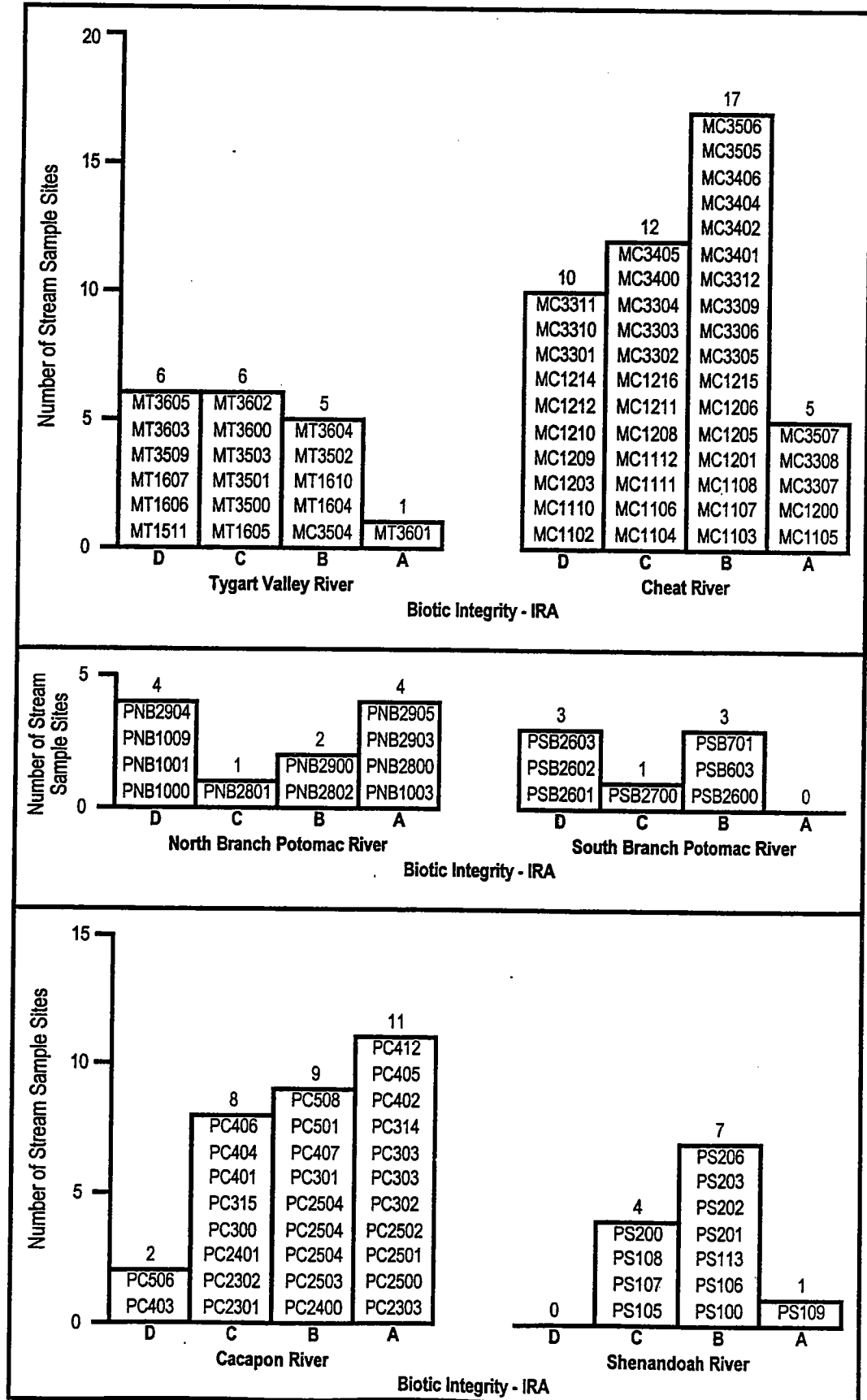
**FIGURE III-20
CLUSTERING OF BIOTIC INTEGRITY RANKS BY LOCAL PROJECT WATERSHED**



**FIGURE III-20
CLUSTERING OF BIOTIC INTEGRITY RANKS BY LOCAL PROJECT WATERSHED**



**FIGURE III-21
CLUSTERING OF IRA
STREAM CROSSINGS - BIOTIC INTEGRITY RANK
BY REGIONAL PROJECT WATERSHED**



**FIGURE III-22
CLUSTERING OF IRA
STREAM CROSSINGS - HABITAT ASSESSMENT SCORE
BY REGIONAL PROJECT WATERSHED**

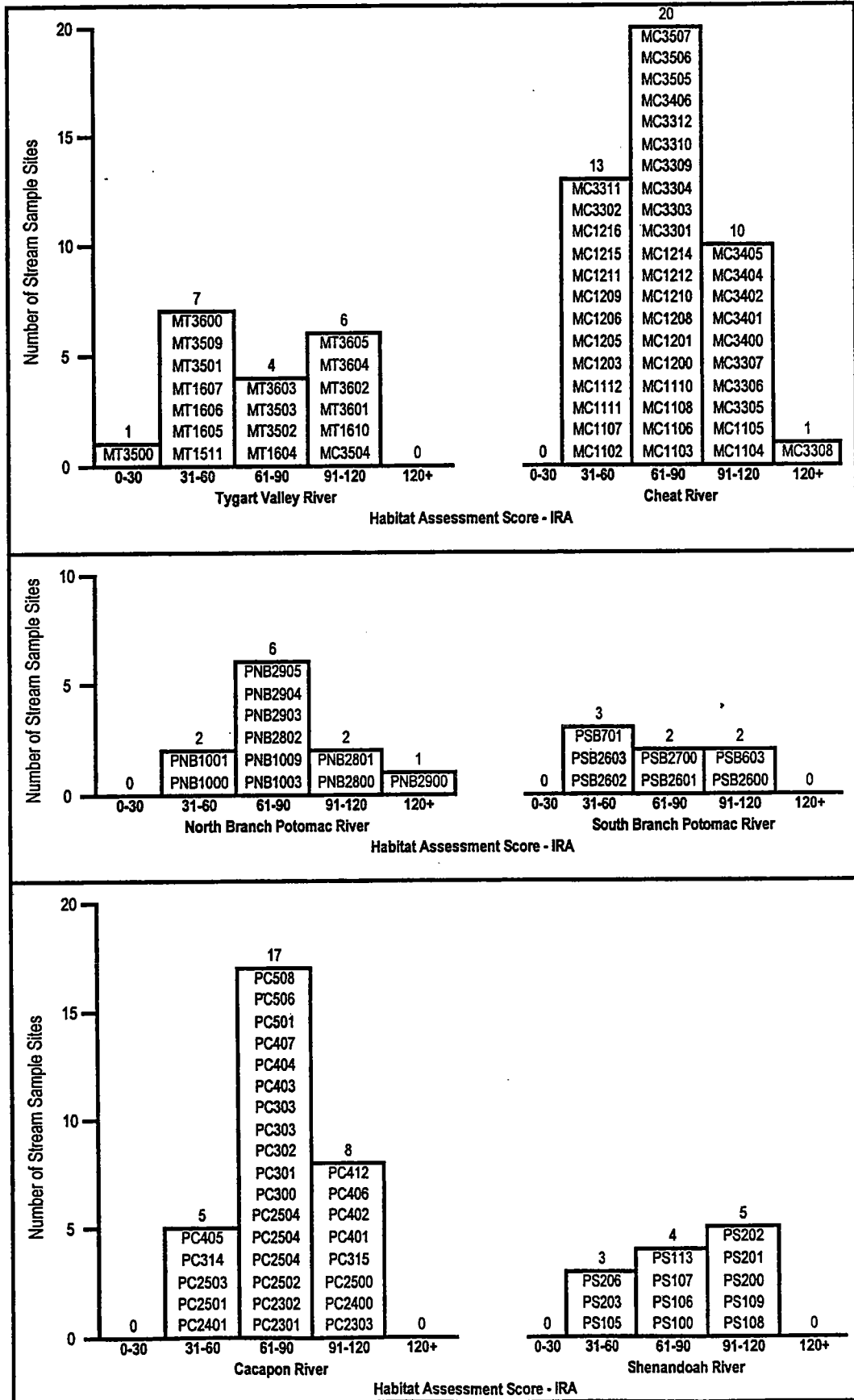
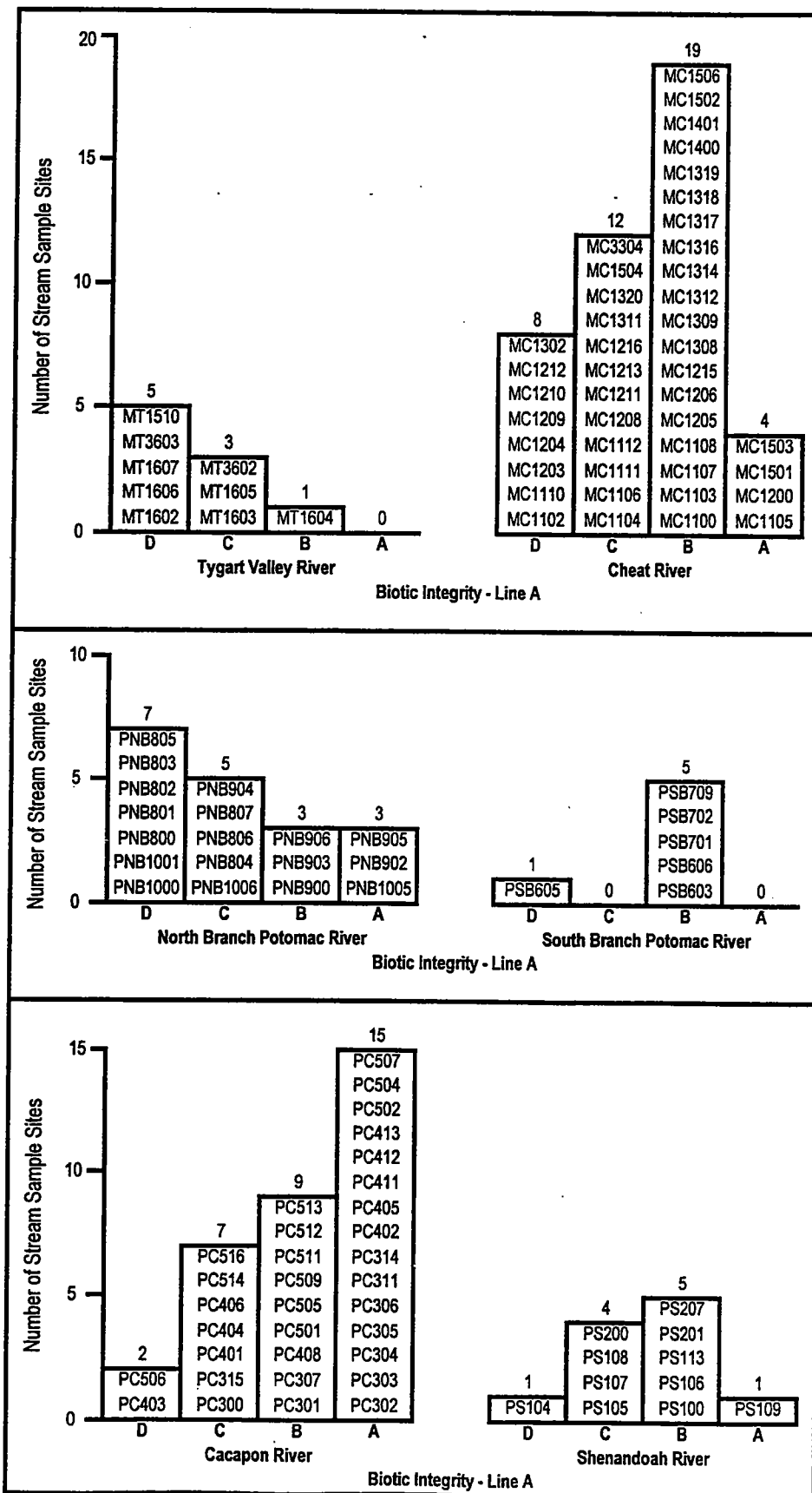
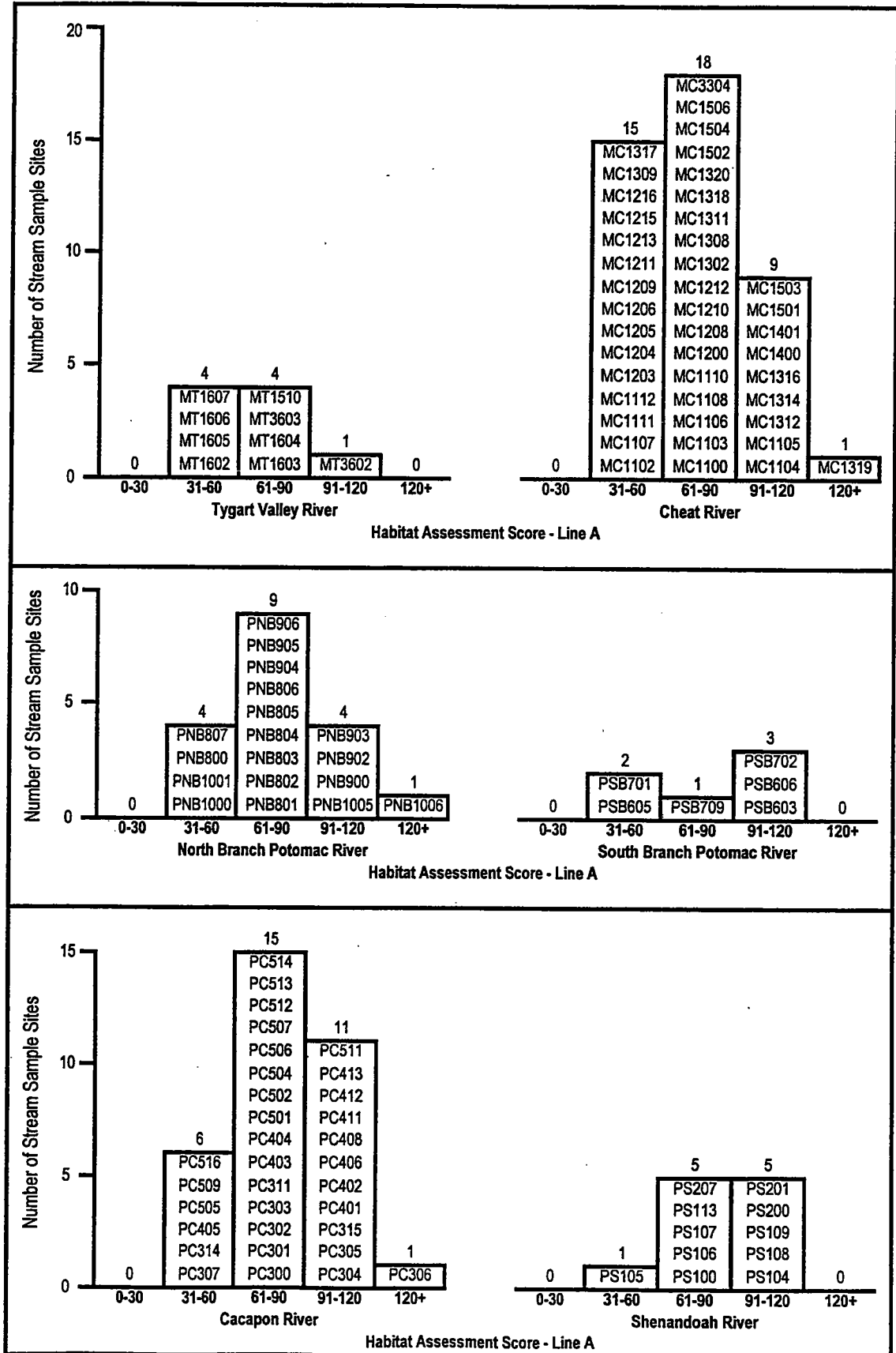


FIGURE III-23
CLUSTERING OF LINE A
STREAM CROSSINGS - BIOTIC INTEGRITY RANK
BY REGIONAL PROJECT WATERSHED



**FIGURE III-24
CLUSTERING OF LINE A
STREAM CROSSINGS - HABITAT ASSESSMENT SCORE
BY REGIONAL PROJECT WATERSHED**



APPENDIX A

Virginia Commonwealth Transportation Board Resolution

Moved by Thomas
Seconded by Rich, that

WHEREAS, in accordance with the statutes of the Commonwealth of Virginia and policies of the Commonwealth Transportation Board, a Location Public Hearing was held in the Middletown Elementary School, Middletown, Virginia, and at the Indian Hollow Elementary School, Hayfield, Virginia, on February 9th and 10th, 1993, for the purpose of considering the proposed Corridor H project from Elkins, West Virginia to Interstate Route 81 in Virginia; Federal Project APD-484 (59); and

WHEREAS, the Commonwealth Transportation Board on May 20, 1993, approved a corridor for this project identified for future study along a Southern Corridor in Virginia, which did not constitute approval or a commitment of the Commonwealth; but, directed the study process to continue to develop the factual data necessary for analysis of the advantages and disadvantages of this project to the Commonwealth and its citizens; and

WHEREAS, on January 11th and 12th, 1995, from 2:00 p.m. to 8:00 p.m. a Location Public Hearing was conducted at the Lord Fairfax Community College in Middletown, Virginia, to present the findings of the Tier II phase of the project; and

WHEREAS, proper notice was given in advance, and all those present were given full opportunity to express their opinions and recommendations for or against the proposed project as presented, and their statements being duly recorded; and

WHEREAS, the economical, social, and environmental effects of the proposed project have been examined and given proper consideration, and this evidence, along with all other, has been carefully reviewed; and

WHEREAS, while the majority of the comments expressed desired a No-Build option;

NOW THEREFORE BE IT RESOLVED that the Commonwealth of Virginia adamantly cannot support the four-laning alternative of Corridor H in Virginia; and

BE IT FURTHER RESOLVED, that the Commonwealth Transportation Board also cannot support the Improved Roadway Alternative (IRA), presented at the public hearing, due to the breadth of its impacts to residences, businesses, and cultural and environmental resources.

BE IT FURTHER RESOLVED, that in keeping with broad community goals, the Department of Transportation is hereby directed, as may be included in the Six Year Plan, to study the Route 55 corridor safety aspects such as horizontal and vertical alignments, possible need for truck climbing lanes, intersection safety improvements, and other safety related features of the roadway.

APPENDIX B

Section 106 Programmatic Agreement

PROGRAMMATIC AGREEMENT

AMONG
THE FEDERAL HIGHWAY ADMINISTRATION,
THE WEST VIRGINIA STATE HISTORIC PRESERVATION OFFICER
AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION,
REGARDING
THE CONSTRUCTION OF APPALACHIAN CORRIDOR H,
ELKINS TO THE WEST VIRGINIA/VIRGINIA STATE LINE
STATE PROJECT: X142-H-38.99 C-2; FEDERAL PROJECT: APD-484 (59),
IN HARDY, GRANT, TUCKER, AND RANDOLPH COUNTIES,
WEST VIRGINIA

WHEREAS, the Federal Highway Administration (FHWA) proposes to construct a facility between Elkins, West Virginia and the West Virginia/Virginia State Line, designated as Appalachian Corridor H (the Project); which consists of the Project Build Alternative - Line A (including Option Areas I and F); and

WHEREAS, the FHWA has determined that the Project may have an effect upon properties eligible for inclusion in the National Register of Historic Places (Register) and has consulted with the Advisory Council on Historic Preservation (Council), the West Virginia State Historic Preservation Officer (WVSHPO), and the Virginia State Historic Preservation Officer (VASHPO) pursuant to 36 CFR Part 800, *Protection of Historic Properties*, regulations implementing Section 106 of the National Historic Preservation Act, (16 U.S.C. 470f), as amended; and

WHEREAS, the West Virginia Department of Transportation (WVDOT) has participated in the development of the Project, and has been invited to concur in this agreement; and

WHEREAS, the United States Department of Agriculture, Forest Service, Monongahela National Forest (Monongahela National Forest) and the George Washington National Forest (George Washington National Forest); Capon Springs and Farms; Corridor H Alternatives (CHA); the Association for the Preservation of Civil War Sites (APCWS); and, the Hampshire County, West Virginia, Planning Commission participated in the consultation and have been invited to concur in this agreement; and

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WHEREAS, the FHWA has conducted the following cultural resources studies with regard to said Project; and documentation has been provided to the WVSHPO and the VASHPO:

Corridor Selection Supplemental Draft Environmental Impact Statement (SDEIS) Historic and Archaeological Resources Technical Report November 1991 ; 1st Revision, November 1992 ;

Additional Assessment of Historic Structures and Prehistoric Site Sensitivity for Corridor Scheme Options D and E Utilizing Historic Aerial Photography, addendum to the Corridor Selection SDEIS Historic and Archaeological Resources Technical Report, (September 1994);

Alignment Selection SDEIS Appalachian Corridor H, Elkins to Interstate 81 Cultural Resources Technical Report - Volumes 1-3 (September 1994 ; 1st Revision, November 1994; 2nd Revision, January 1995);

Alignment Selection SDEIS Appalachian Corridor H, Elkins to Interstate 81 Cultural Resources Model Test Report: Development and Field Testing of a Prehistoric Site Sensitivity Model for the Corridor H Project Area, West Virginia and Virginia (September 1994);

WHEREAS, due to the size and complexity of the project and the desirability of prioritizing both final design and cultural resources work in accordance with proposed schedules, the project has been divided into 14 sections (sections 3 to 16) located within West Virginia, as defined in Appendix A (See figure 1).

NOW, THEREFORE, the FHWA the WVSHPO and the Council agree that the project will be implemented in accordance with the following stipulations in order to take into account the effect of the project on historic properties:

Stipulations

The FHWA will ensure that the following measures are carried out:

I. Project Sequencing

A. Unless otherwise agreed to by the parties to this agreement, the proposed cultural resources investigations and resulting reports [i.e., Management Summaries, Phase I/Phase II Reports, Determination of Eligibility Reports, Criteria of Effect Reports, Mitigation Reports(e.g., Phase III Data Recovery Reports) and Treatment Plans] will be conducted by section, beginning with Section 6 and followed sequentially by Sections 5, 4, 3, Walnut Bottom Run Wetlands Replacement Area (located within Section 7), Cherry Fork Wetlands Replacement Area (located within Section 16), and Sections 7, 16, 15, 14, 13, 12, 11, 10, 9, and 8.

B. The FHWA affirms that avoidance of adverse effects to cultural resources remains the preferred course of action and that design activities in any Section will not preclude the shifting of the Project centerline, or the cut and fill boundaries, in any adjacent Section if necessary to avoid, minimize or mitigate adverse impacts to historic resources. No design engineering shall be finalized in any Section until Stipulations II.A-G, III.A-D and IV.A have been completed. No work shall proceed in any section which precludes consideration of alternate alignments in Sections where treatment of historic properties has not yet been finalized.

II. Historic Resources

A. Historic resources are defined as all non-archaeological resources consisting of historic buildings, structures, objects, and districts.

B. The FHWA will identify and evaluate all identified buildings, districts, structures, and objects located within the APE for Register eligibility in accordance with 36 CFR Part 800.4(c). This work will comply with the West Virginia Division of Culture and History, Historic Preservation Unit *Guidelines for Phase I Surveys, Phase II Testing, Phase III Mitigation and Cultural Resource Reports* (October 1991, and as amended).

C. Determination of Eligibility reports, by section, will be submitted to the WVSHPO for review and comment. The reports will include research design and methods, location information, property descriptions, photographs, site plans, boundary descriptions, pertinent maps, a location specific context statement to evaluate eligibility, eligibility assessments according to the National Register Criteria, and updated West Virginia Historic Resource Inventory forms (and as needed, Virginia Historic Resource forms). Unless otherwise directed by the FHWA in order to comply with Project design scheduling, sequencing of Determination of Eligibility Report submissions will be as stated in Appendix C.

D. If a concurrence regarding eligibility of a resource cannot be reached, FHWA shall obtain a determination from the Secretary of the Interior in accordance with 36 CFR Part 800.4. If the evaluation results in the identification of resources that are eligible for inclusion in the Register, FHWA will ensure that avoidance of adverse effects to the resource is the preferred alternative.

E. The FHWA, in consultation with the WVSHPO, will assess the effects of the Project on all Register eligible properties in accordance with 36 CFR Part 800.5. Criteria of Effect reports, by section (as noted Appendix B), will be submitted to the WVSHPO for review and concurrence. The reports will include property descriptions, photographs, application of the Criteria of Effect and Adverse Effect, pertinent maps, and related information. Project effects will be assessed with regard to physical as well as indirect effects, e.g., visual, audible, and atmospheric effects.

F. The FHWA affirms that they will utilize all feasible, prudent and practicable measures to avoid adverse effects to Register-eligible properties. If it is determined by WVDOT that avoidance may not be possible, FHWA will ensure that a report is prepared section by section and submitted to the WVSHPO for review and comment. This report would evaluate design modifications that will avoid

adverse effects to the cultural resource and take into account feasibility of engineering, cost and other appropriate factors. Consultation based on this report will occur prior to any design engineering or conceptual planning that would compromise the ability to make alterations, to determine whether avoidance of adverse effects to historic resources is practicable.

G. Subsequent to SHPO concurrence that avoidance of the resource is neither prudent nor feasible, or is impracticable, and based upon the results of the Cultural Resource Avoidance Feasibility Reports, the parties shall consult to develop a mitigation plan on a section-by-section basis incorporating appropriate measures to avoid and/or minimize effects to historic resources. Mitigation plans will be subject to approval by the WVSHPO and the Council. The FHWA will ensure that any such mitigation plans are implemented prior to Project construction within the designated area of effect.

III. Archaeological Resources

A. The FHWA will conduct a Phase I reconnaissance and sub-surface testing program within areas of the Project Build Alternative where ground disturbance may result, including all staging, borrow, and designated blast zones (defined as excavation areas). Phase I management summaries of each section will be submitted by WVDOT to the WVSHPO for review and concurrence. The results of Phase I reconnaissance shall be documented by section in a Phase I Management Summary which shall include locational information, descriptions of fieldwork, methods employed, results of fieldwork, pertinent maps, photographs (if required), completed West Virginia Archaeological Site Forms, and recommendations and scope(s) of work for Phase II investigations. Unless otherwise directed by the FHWA in order to comply with Project design scheduling, sequencing of Phase I management summary submissions shall follow the schedule provided in Appendix B.

B. When Phase I survey efforts indicate the presence of archaeological resources that require Phase II testing as determined by FHWA in consultation with the WVSHPO, Phase II sub-surface archaeological testing as detailed in the Phase I Management Summaries will be conducted in accordance with the Secretary of the Interior's "Standards and Guidelines for Archeology and Historic Preservation" (48FR44716). FHWA will insure that the WVSHPO is provided with an opportunity to review and comment on the Scope of Work (SOW) contained in the Phase I management summary prior to its implementation. If the WVSHPO does not object within 30 days from the receipt of the Phase II SOW, FHWA may implement the Phase II SOW for that section in accordance with the SOW. Following completion of field work, a Phase II management summary will be prepared and provided to the WVSHPO by WVDOT for review and comment. Phase II management summaries will document location information, description of fieldwork, methods employed and results of fieldwork. The summaries will contain descriptions of stratigraphy and features, appropriate mapping, site plans, photographs and evaluation of eligibility according to the National Register Criteria.

C. If FHWA and the WVSHPO agree that an archaeological site is not eligible to the Register then no further cultural resource investigation of that site will be conducted. If FHWA and the WVSHPO agree that an archaeological site is eligible to the NRHP then FHWA will ensure that

Stipulations IID and IIE of the agreement are implemented. If the FHWA and WVSHPO cannot concur regarding eligibility of an archaeological site, FHWA shall obtain a determination from the Secretary of the Interior in accordance with 36 CFR Part 800.4. If the evaluation results in the identification of an archaeological site that is eligible for inclusion in the Register, FHWA will ensure that avoidance of the site is the preferred alternative.

D. FHWA shall consider means to avoid all archaeological sites determined eligible for inclusion on the Register. If it is ascertained by WVDOT that avoidance of an archaeological site determined eligible to the Register may not be possible, FHWA will ensure that a report detailing why avoidance is not feasible is prepared and submitted to the WVSHPO for review and concurrence. This report will evaluate design modifications to avoid the archaeological site and take into account feasibility of engineering, cost and other appropriate factors. Consultation regarding this report will occur prior to any design engineering or conceptual planning that would compromise the ability to make alterations to avoid the resource. Subsequent to consultation, WVSHPO and FHWA will consider appropriate measures to address the findings of the report. If WVSHPO and FHWA cannot concur on the appropriate course of treatment, FHWA will seek the Council's participation in consultation.

E. If it is determined by FHWA and WVSHPO that avoidance of an archaeological site is neither prudent nor feasible, or is impracticable, the FHWA will develop a Phase III data recovery plan in consultation with the WVSHPO in order to mitigate the adverse effects. The Council will be afforded an opportunity to comment on said plan. The data recovery plan will be subject to approval by the WVSHPO and the Council prior to implementation and will be completed prior to the initiation of construction within the area of effect.

F. Within one week of receiving Phase I reports and Phase II reports by section from the consultant given in Appendix B, WVDOT shall distribute to the WVSHPO for review and concurrence. These reports will provide detailed information on archaeological sites identified during the course of the Phase I survey and subsequent Phase II archaeological testing; and will contain all appropriate location information, site and artifact data, specific prehistoric and/or historic contextual information with regard to site descriptions, site mapping, applicable photographs, illustrations, in addition to recommendations for appropriate data recovery. These reports shall incorporate the findings of the Phase I and Phase II management summary reports. These reports will not be used as the basis for determinations of Register eligibility regarding archaeological sites since those determinations will be made on the basis of the Phase II management summary reports. All reports will comply with the West Virginia Division of Culture and History, Historic Preservation Unit "Guidelines for Phase I Surveys, Phase II Testing, Phase III Mitigation and Cultural Resource Reports (October 1991, and as amended).

G. Any artifactual material(s) recovered during the course of Project investigations will be cleaned, labeled, documented, and packaged pursuant to 36 CFR 79 and the *West Virginia Division of Culture and History Curatorial Guidelines - Collections Management Facility* (n.d.). Unless otherwise agreed to, all artifacts recovered outside of public lands, as well as all supporting documentation (i.e., field notes, mapping, laboratory notes, photographs, and reports), will be delivered to the Collections Management Facility, West Virginia Division of Culture and History upon

completion of the Section 106 process. Artifactual material(s) recovered on public lands (e.g. National Forest lands) as well as all supporting documentation (i.e., field notes, mapping, laboratory notes, photographs, and reports), will be delivered to their respective owners upon completion of the Section 106 process.

IV. Marked and Unmarked Cemeteries, and Burial Places

A. FHWA will ensure that all marked cemeteries within the Area of Potential Effect will be inventoried and evaluated for eligibility in the Register in accordance with 36 CFR Part 800.4. If determined eligible, avoidance and review of alternatives to direct impact will be considered as laid out in Stipulation II.F. All procedures for identifying and evaluating burial places will comply with guidelines established in the National Park Service Publication, *National Register Bulletin 41 - Guidelines for Evaluating and Registering Cemeteries and Burial Places* (1992), West Virginia Code 29-1-6b, and the Native American Graves Protection and Repatriation Act of 1990 (P.L. 101-601).

V. Archaeological Monitoring

During the completion of Stipulation III, FHWA will ensure that an appropriate plan for archaeological monitoring of construction areas is developed and implemented as detailed below. It is understood that the measures outlined below will go into effect after the intensive Phase I, Phase II and Phase III archaeological fieldwork has been completed for Sections 3-16 and should not be construed as a replacement strategy for said work.

1) Archaeological monitors, here defined as persons meeting at a minimum the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-9), shall be employed during all soil excavation activities during construction of sections 3-16 of the proposed Appalachian Corridor H project in the following areas: 1) areas defined as having a high potential for containing intact archaeological deposits including but not limited to floodplain, saddles, and ridge tops and 2) areas where previously recorded archaeological sites are in close proximity, approximately within 15-20 meters, to the proposed construction limits although no evidence of their existence was discovered during the initial intensive systematic archaeological field survey effort. Where determined appropriate through consultation with the WVSHPO known site locations will be cordoned off with construction fencing and flagged. No heavy equipment use will be permitted in these areas.

2) The FHWA shall ensure archeological monitors will be on-site during all soil excavation activities in the project areas as specified in paragraph 1 of this plan. The monitors shall maintain surveillance on the construction area as the soil is removed, to identify locations in which the buried cultural strata are exposed. In all areas in which cultural strata is exposed, the monitors will conduct pedestrian investigations to identify whether any significant archaeological features are present. During the execution of the archeological monitoring, the monitors shall maintain a daily written and photographic record of the construction excavation in progress. The archeological monitor will provide monthly progress reports. The report will briefly summarize the purpose, methodology, and results of the monitoring. Each monthly report shall include a site map illustrating portions

completed, and any archeological features recorded during the monitoring.

VI. Unanticipated Discovery

A. In the event of the identification of a feature containing potentially significant archeological features following completion of intensive Phase I, II, and III Archaeological field work, the monitor will stake an area with a ten foot radius around the feature, with safety ribbon tied between the stakes. The monitor will instruct the construction contractor to avoid any additional soil excavation or machine movement through the staked area until such time as the resource can be evaluated for Register eligibility and appropriate treatment plan is developed and implemented. Based upon the type of feature and artifacts found in association with it, the monitor shall determine the potential eligibility of the feature for listing on the Register. Documentation of the finding will be provided to the WVSHPO in a weekly management summary. When the WVSHPO concurs that cultural features are not Register eligible, the monitors shall excavate the remainder of the feature, and then immediately notify the construction contractor that construction activities may resume in the area.

B. In the event the identification of a feature containing human remains is found, treatment shall proceed according to the measures in stipulation VII.

VII. Human Remains

Throughout this agreement, reference to human remains includes "cultural items" defined as associated funerary objects, unassociated funerary objects, sacred objects, and items of cultural patrimony.

A. The FHWA will ensure that the discovery of unmarked cemeteries, human remains and associated grave goods and funerary objects during the course of cultural resources investigations or construction activity related to said Project will be brought to the immediate attention of the WVSHPO. The monitors will instruct the construction contractor that the staked area must be avoided until appropriately treated. The monitor shall then proceed to notify the FHWA, as well as the WVSHPO, of the discovery. The location shall be covered in plastic and backfilled with soil, to protect the location until excavation of the human remains can be authorized. No human remains will be intentionally excavated until consultation with the WVSHPO has occurred.

B. FHWA will ensure that all appropriate associated lineage groups or descendant families are contacted. If the human remains are non-Native American in origin, and are associated with unmarked graves and/or cemeteries, the FHWA will contact the appropriate local authorities (e.g. police, coroner's office). If the human remains are Native American in origin, the FHWA will ensure that the appropriate Native American groups are contacted concerning the discovery of human remains and afforded an opportunity to comment on the implementation of stipulations.

C. The FHWA will ensure that the treatment of human remains is in full compliance with the West Virginia Unmarked Burial Law.

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D. The FHWA will ensure that the WVSHPO and the Council are provided with information such as the location, description and disposition, concerning the discovery of human remains within 24 hours if the discovery is made during the work week, or the following work day if the discovery is made on a weekend/holiday. No activities that may disturb such sites will be conducted until a treatment plan has been developed in consultation with WVSHPO and appropriate interested parties, the WVSHPO and the Council have been afforded an opportunity to comment, and the plan is implemented.

E. The FHWA affirms that they will avoid human remains encountered during work associated with the Project, where feasible. The location of the burial will be noted on Project mapping, and the location will be cordoned off by fencing to ensure further non-disturbance of the burial site by Project activities. The exposed portion of the burial will be mapped, illustrated, and photographed before being restored to its pre-discovery condition.

F. If avoidance of human remains is considered not feasible, as determined in consultation with the WVSHPO, the following steps will be taken by FHWA:

1) NON-NATIVE AMERICAN HUMAN REMAINS

- a) The non-Native human remains will be evaluated for eligibility in the Register in accordance with 36 CFR Part 800.4. If it is determined by FHWA and WVSHPO that the remains are not eligible, FHWA will ensure that the remains are either avoided or removed to an appropriate reinternment location.
- b) If the remains are determined eligible, FHWA will evaluate feasibility of avoidance in consultation with the WVSHPO. If construction limits can be altered to avoid the remains, the remains will be restored to pre-discovery conditions, cordoned off and avoided. If the remains cannot be avoided, the following steps will be taken to ensure their proper excavation:
 - i. The burial(s) will be documented fully prior to excavation. Documentation will consist of appropriate detailed mapping, illustrations, and photographs.
 - ii. Excavation of human remains will be undertaken in a careful, respectful, and complete manner in accordance with proper archaeological methods. In addition, excavation of human remains will not involve the use of chemicals which may damage bones during or after excavation.
 - iii. Bones will be labeled and packaged with appropriate locational and contextual information and their location plotted on measured illustrations.

iv. Any artifacts found in association with human burials will be labeled and packaged with appropriate locational and contextual information and their location plotted on measured illustrations.

v. All soil associated with the excavation of a human burial will be saved and stored in labeled packaging.

vi. In the event that scientific analyses will be conducted on human remains, the FHWA, in consultation with the WVSHPO, the Council, and interested persons will devise an appropriate schedule for the completion of said scientific studies.

vii. When claimed by cultural or familial descendants, human remains and associated artifacts shall be reburied following the completion of the post-excavation treatment plan. The FHWA, in consultation with the WVSHPO, and the Council, will ensure the return of human remains to an agreed upon recipient for repatriation within a year following completion of analysis.

viii. When human remains and associated artifacts (grave goods) from unmarked graves are not claimed by descendants the FHWA, in consultation with the WVSHPO, has the option to rebury the remains after archaeological investigations have been completed, or to place them into the state museum where they will be cared for with dignity and respect as determined by the WVSHPO, or designee, or interested parties.

2) NATIVE AMERICAN REMAINS

- a) If it is determined that the human remains are Native American in origin the Native human remains will be evaluated for eligibility in the Register in accordance with 36 CFR Part 800.4. If it is determined by FHWA and WVSHPO that the remains are not eligible, the FHWA will ensure that the remains are either avoided or removed to an appropriate reinternment location.
- b) FHWA will consult with the WVSHPO and all appropriate Native American tribes and groups regarding any decisions to avoid, preserve in place, or excavate any Native American remains discovered during archaeological monitoring activities. If the avoidance of human remains in the construction corridors is not feasible, then the burial will be excavated following the procedures outlined in below:
 - i. Prior to examination of the remains, all soil around the burial will be carefully removed and saved in labeled containers.
 - ii. Photographs will be taken of the burial in place, with detail photographs taken to show noteworthy features.

iii. Detailed measured drawings will be developed to record the archaeological feature, the positions of the bones, and any related artifacts.

iv. Based upon the information gathered from the above measures, FHWA will determine, to the best of its ability, the cultural affiliation of both the remains and associated grave goods.

v. FHWA will notify the WVSHPO, and the Council, as well as any tribe determined to be culturally affiliated with the remains, of their determination of cultural affiliation as well as the basis for this determination.

vi. The WVSHPO will then provide the FHWA with comments on their conclusions of cultural affiliation for the remains within 14 calendar days.

vii. All comments received within the 14 calendar days will be used by the FHWA in making its final determination of cultural affiliation. The final determination by FHWA will be communicated to the WVSHPO, and the Council. If a particular tribe is determined to be affiliated with the remains, the WVSHPO will consult with them regarding further treatment of the remains.

viii. Unless any party objects, FHWA shall proceed with the excavation of the remains.

ix. The Native American groups will be invited to attend the excavation and FHWA will welcome them to perform any religious ceremonies or rituals regarding the excavation of the remains.

- c) If the remains are determined eligible, FHWA will evaluate feasibility of avoidance in consultation with the WVSHPO. If construction limits can be altered to avoid the remains, the remains will be restored to pre-discovery conditions, cordoned off and avoided. If the remains cannot be avoided, the following steps will be taken to ensure their proper excavation:
- d) The FHWA will coordinate with the appropriate Native American groups, as determined by the methods outlined above, to discuss scientific testing of the remains for which the groups have demonstrated cultural affiliation.

VIII. Performance Standards, Report Submission Schedule and Review Responsibilities

A. All historic and archaeological work will be conducted under the direct supervision of a person or persons who meet, at a minimum, the appropriate qualification standards set forth in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, 48 FR 44738-9, and who have experience in the region and in the pertinent sub-fields of their disciplines. All archeological work will be conducted with reference to and be consistent with the principles contained in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic

Preservation and in the Council's Treatment of Archeological Properties, as well as the Guidelines for Phase I surveys, Phase II Testing, Phase III Mitigation and Cultural Resource Reports established by the WVSHPO in 1991. All other survey work will be conducted according to the Secretary of the Interior's Standards for Identification and Evaluation as well as WVSHPO Guidelines.

B. The FHWA will submit all Project reports defined as: Phase I management summaries, Phase II management summaries, combined Phase I/II technical reports, Determination of eligibility Reports, Criteria of Effect Reports, Cultural Resource Avoidance Feasibility reports and Data Recovery Plans, addressed in this agreement to the WVSHPO for review within a period not to exceed 90 days from completion of the fieldwork. Unless otherwise noted, WVSHPO will review and comment on Project reports within 45 calendar days of receipt of said reports. If the reports cannot be reviewed in this time frame, the WVSHPO will so inform the FHWA. The WVSHPO must approve treatment plans.

C. The Council will be afforded an opportunity to comment in all instances where an adverse effect may occur. The Council will provide comments on these issues within 45 calendar days upon receipt of all pertinent documentation.

D. The FHWA will ensure that all consulting parties are notified when Determination of Eligibility reports, Management Summary reports, and Archaeological reports are available for inspection. Consulting parties will be notified concurrence by copies of transmittal letters of said reports to WVSHPO. If the Project report includes activities affecting Forest Service lands, a copy of the report will be furnished directly to the Monongahela or George Washington National Forest, as appropriate. The consulting parties may examine any Project report submitted to the WVSHPO by contacting the FHWA in order to obtain a copy of a Project report. Project reports distributed to the consulting parties, with the exception of the Monongahela National Forest and the George Washington National Forest, will not include archaeological location specific information (e.g., UTM coordinates, station markers, and mapping). The consulting parties shall have 30 days from receipt to provide comments to FHWA.

E. The WVDOT shall provide two copies of all final reports to the WVSHPO in accordance with the WVSHPO's guidelines for surveys. One copy of the report will include original photographs or halftones and will be on acid free paper. Any completed site forms will also be on acid free paper when sent to the WVSHPO.

IX. FUTURE COOPERATION WITH VASHPO

FHWA will ensure that the appropriate level of review with the VASHPO is conducted if it is determined that the Project will impact that state's historic properties.

X. Public Participation

A. FHWA will ensure that an active public participation program is carried out. In addition to promptly notifying all consulting parties of the availability of the Determination of Eligibility, Management Summary and Archaeological reports, these reports will be made available for review to interested persons and the general public at the FHWA West Virginia Division Office and the WVSHPO. The views of consulting parties, interested persons and the general public will be considered in the determination of appropriate actions to avoid, minimize or mitigate adverse effects to historic properties. The Report Submission Schedule and Review Responsibilities for these actions are further detailed in section III F. of this agreement.

B. As stated in Section 304(16U.S.C. 470w-3) of the National Historic Preservation Act of 1966, as amended, the signatories to this Agreement and participating consulting parties will withhold from disclosure to the public, information about the location, character, or ownership of a historic resource if it is determined that disclosure may (1) cause a significant invasion of privacy; (2) risk harm to the historic resource; or (3) impede the use of a traditional religious site by practitioners.

C. Under the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470hh), the signatories to this Agreement and participating consulting parties will withhold from disclosure to the public, information concerning the nature and location of any Archaeological resource located on public lands for which the excavation or removal requires a permit or other permission.

D. The FHWA, the WVDOT and the WVSHPO reserve the right to restrict information concerning the location, character, or ownership of a historic resource as stipulated in the West Virginia Code, Chapter 29 B, Article 1.

E. Prior to construction, FHWA will investigate the cultural affiliation of various Native American groups that may have inhabited the vicinity at various times during the prehistoric and protohistoric periods. All Native American groups which have the potential to be culturally affiliated with the vicinity will be notified of the potential to discover human remains, FHWA will contact the West Virginia Council on American Indian Burial Rights, Inc., as an Interested Party, regarding the discovery or excavation of any Native American remains encountered during archaeological monitoring.

F. FHWA will provide the selected Native American groups with a draft treatment plan section by section and request their comments. The plan describes FHWA efforts regarding the avoidance or preservation in place of the remains, the excavation of the remains, the scientific testing of the remains, and the determination of the repatriation or reburial of the remains.

XI. Amendments to Programmatic Agreement

Any party to this agreement may request that it be amended, whereupon the parties will consult in accordance with 36 CFR Part 800.13 to consider such amendment.

12: 10-5-95

XII. Dispute Resolution

A. Should any party object to any documentation completed or actions proposed pursuant to this agreement FHWA will, within 30 calendar days, consult in good faith with the appropriate parties to resolve the dispute. If the FHWA determines that the dispute cannot be resolved, the FHWA will forward all documentation relevant to the dispute to the Council. Within 30 calendar days after receipt of all pertinent documentation, the Council will either:

1. Provide the FHWA with recommendations, which the FHWA will take into account in reaching a final decision regarding the dispute; or
2. Notify the FHWA that it will comment pursuant to 36 CFR Part 800.6(b) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by the FHWA in accordance with 36 CFR Part 800.6(c)(2) with reference to the subject of the dispute.

B. Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute. The FHWA responsibility to carry out all actions under the agreement that are not the subjects of the dispute will remain unchanged. If the Council fails to pursue either Stipulation VII or VIII.B, as listed above, within the 30 calendar days mentioned, the FHWA may proceed with its plans.

XIII. Monitoring

The Council and the WVSHPO may have access to activities carried out pursuant to this Agreement, and the Council will review such activities if so requested. The FHWA will cooperate with the Council and the WVSHPO in carrying out their monitoring and review responsibilities.

Execution of this agreement and implementation of its terms evidence that the FHWA has taken into account the effects of the Appalachian Corridor H Project on historic properties and has afforded the Council the opportunity to comment on the Project and its effects on historic properties.

PROGRAMMATIC AGREEMENT
APPALACHIAN CORRIDOR H
ELKINS TO THE WEST VIRGINIA/VIRGINIA STATE LINE

FEDERAL HIGHWAY ADMINISTRATION

BY: David E. Bender 10/6/95
David E. Bender, Division Administrator Date

WEST VIRGINIA STATE HISTORIC
PRESERVATION OFFICER

BY: William G. Farrar 10/5/95
William G. Farrar, Deputy Date

ADVISORY COUNCIL ON HISTORIC PRESERVATION

BY: Cathryn B. Slater 11-8-95
Cathryn B. Slater, Chairman Date

CONCUR:

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

BY: Fred Van Kirk 10/5/95
Fred Van Kirk, Secretary/Commissioner Date

CONCUR:

MONONGAHELA NATIONAL FOREST

BY: Jim Page 10/9/95
Jim Page, Forest Supervisor Date

CONCUR:

GEORGE WASHINGTON NATIONAL FOREST

BY: William Damon 10/12/95
William Damon, Forest Supervisor Date

APPENDIX A: PROJECT SECTION DESCRIPTIONS

SECTION 16:	Route 3/3 near Kerens to Elkins	9.1 mi (14.6 km)
SECTION 15:	Shavers Fork near Pleasants Run to Route 3/3 near Kerens	5.9 mi (9.5 km)
SECTION 14:	Black Fork to Shavers Fork near Pleasants Run	5.1 mi (8.2 km)
SECTION 13:	Blackwater River to Black Fork	9.7 mi (15.6 km)
SECTION 12:	Gatzmer to Blackwater River	7.7 mi (12.4 km)
SECTION 11:	Mt. Storm Lake to Gatzmer	6.9 mi (11.1 km)
SECTION 10:	Two miles west of Scherr to Mt. Storm Lake	6.7 mi (10.8 km)
SECTION 9:	Route 3 to two miles west of Scherr	6.4 mi (10.3 km)
SECTION 8:	Grant County Line to Route 3	6.3 mi (10.1 km)
SECTION 7:	South Branch of Potomac River to Grant County Line	6.8 mi (10.9 km)
SECTION 6:	Route 1 to South Branch of Potomac River	7.1 mi (11.4 km)
SECTION 5:	State Route 259 to Route 1	8.1 mi (13.0 km)
SECTION 4:	Route 23/12 to State Route 259	7.5 mi (12.1 km)
SECTION 3:	West Virginia/Virginia State Line to Route 23/12	4.6 mi (7.4 km)

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APPENDIX C

Agency Comment Letters - Corridor Selection



United States Department of the Interior

BUREAU OF MINES
Intermountain Field Operations Center
P.O. Box 25086
Building 20, Denver Federal Center
Denver, Colorado 80226



January 12, 1993

Randy T. Epperly, Jr.
Director, Roadway Design Division
WVDOT - Division of Highways
State Capitol Complex, Building Five
Charleston, West Virginia 25305

Dear Mr. Epperly:

Subject: Corridor Selection, Supplemental Draft Environmental Impact Statement, Appalachian Corridor H, Elkins to Interstate 81, State Project X142-H38.99 C-2, Federal Project APD-484(59)

We received a copy of the above statement and thank you for giving us the opportunity to offer our comments. As you are aware, our interest in the project concerns its potential affect on local mineral resources and production facilities.

We have received official notification from Department of the Interior, Office of Environmental Affairs, regarding Departmental review of the statement. As a result, we will not submit comments at this time; instead, our evaluation will be included in the official Department review.

Sincerely,

Mark H. Hibshman
Supervisory Physical Scientist

jad/plt

Department of Service National Forest P.O. Box 233
Agriculture Harrisonburg, VA 22801
703 433-2491

Reply to: 1920

Date: January 25, 1993

Mr. Randolph T. Epperly, Jr.
Director, Roadway Design Division
WVDOT - Division of Highways
State Capitol Complex, Building Five
Charleston, West Virginia 25305

Dear Mr. Epperly:

We have reviewed the Supplemental Draft Environmental Impact Statement (SDEIS) for Appalachian Corridor H. Members of my staff have also attended the public information meeting and hearing held in Moorefield, West Virginia.

The George Washington National Forest (GWNF) does not have an official position on whether or not Corridor H should be built. In addition we do not have a preferred Scheme should the decision be made to construct the road.

As you know, proposed Schemes A, B and D would cross GWNF lands on the approximate location of State Route 55 between Wardensville, West Virginia and Strasburg, Virginia. Should one of these schemes ultimately be selected we will be very much interested in working with you on the final alignment and mitigation of effects on GWNF resources.

In reviewing the SDEIS we believe there is an error concerning GWNF resources which should be corrected. Page IV-26 of the SDEIS lists the Big Blue Trail as qualifying for Section 4(f) designation under the 1966 Department of Transportation Act. While we consider the Big Blue Trail to be an important resource, we do not believe it should be listed as Section 4(f). We recommend that the 4(f) designation for the Big Blue Trail be dropped in the Final EIS.

Should Scheme A, B or D be selected, we will work with you on protecting and enhancing the Big Blue Trail where it would cross Corridor H. Our main concerns are to provide ample parking and a safe crossing.

Thank you for the opportunity to review the SDEIS. We look forward to working with you in the future if Scheme A, B or D should be selected.

Sincerely,

GEORGE W. KELLEY
Forest Supervisor

cc: Michael Baker, Inc.
Lee Ranger District
Planning



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 REGION III
 841 Chestnut Building
 Philadelphia, Pennsylvania 19107

Mr. David Gandell
 Regional Administrator
 Region 3
 Federal Highway Administration
 George H. Fallon Building
 31 Hopkins Plaza
 Baltimore, MD 21202

re: Appalachian Corridor H Highway project

Dear Mr. Gandell:

In accordance with our responsibilities under the National Environmental Policy Act of 1969 (NEPA) and Section 309 of the Clean Air Act, the Environmental Protection Agency (EPA), Region III, has completed a review of the supplemental Draft Environmental Impact Statement (sDEIS) for the Appalachian Corridor H project.

EPA commends the efforts of West Virginia Division of Highways (WV DOH) and its consultants to coordinate with our agency in an effort to objectively evaluate alternative actions and their associated environmental impacts at the corridor level. We appreciate WV DOH's willingness to engage in an open process, providing us with opportunities for input on the sDEIS, as it was being developed. As a result, EPA believes that the range of alternatives evaluated in the sDEIS is consistent with the Council on the Environmental Quality Regulations (40 CFR Parts 1500-1508). In addition, EPA agrees that, for most environmental areas of concern, the information provided is comprehensive and well-documented.

The Appalachian Corridor H project is a proposed 4-lane highway, partial access, east-west linkage from Elkins, WV to I-81 in Virginia. The intent of the Appalachian Development Highway System (ADHS) is to provide access to the more inaccessible areas of Appalachia and to generate traffic as a means of promoting economic development. The proposed Corridor H project is one the remaining portions of the ADHS to be constructed. The sDEIS states that Corridor H will enhance and promote opportunities for economic development within the project area by providing a safe and efficient means to local and regional markets and by promoting tourism. EPA acknowledges that the purpose and need stated in the sDEIS is sufficiently documented. However, we believe that such benefits must also be considered within the context of potential adverse environmental impacts.

Alternatives Evaluation

Each of the alternatives presented in the sDEIS traverse areas of valuable natural resources. EPA cannot dismiss the severity of the environmental impacts from this project. The very nature of the geographic area makes it impossible to lessen the impacts to a degree which would raise no environmental criticism. However, through the data presented in the sDEIS, EPA has determined that the northern routes present more opportunities for avoidance or reduction of significant impacts. Therefore, we rate the northern routes (Schemes D and E) EC-2 (Environmental Concerns, Insufficient Information).

After carefully evaluating the data presented, EPA believes that the potential adverse impacts associated with the other alternatives due to the direct, indirect and cumulative impacts to water quality, aquatic and terrestrial resources, are environmentally unacceptable. Consequently, we have rated Scheme A as EU-2 (Environmentally Unsatisfactory, Insufficient Information).

We have not provided a rating for Schemes B and C since WV DOH has eliminated these schemes from further consideration. We concur with WV DOH's decision, which is a matter of public record (see Official Transcript of Public Hearing-Appalachian Corridor H, January 12, 1993, Elkins, WV), to not recommend Schemes B and C for their preferred corridor alternative. We would recommend that the record of that decision be included in the decision document resulting from the evaluation of this sDEIS. We should note, however, that if Schemes B and C had not been eliminated, we would have rated them EU due to their significant impacts to natural resources.

The basis for the assigned ratings focuses primarily on the extent and potential severity of stream related impacts. We acknowledge that at this (corridor) level of study, site specific impacts associated with each stream involvement cannot be ascertained, nor do we expect such detailed analysis, at this time. However, the scientific literature provides extensive information on impacts which would be expected from the kind of stream involvements outlined in this document. In general, stream crossings (bridges and/or culverts), stream channelization, and other stream alterations would result in greater rates of sedimentation and siltation, alteration of stream flow, decreased benthic macroinvertebrate populations, decreased fisheries, loss of species richness and increased accumulation of surface runoff pollutants in the stream's water column and sediment. For those streams associated with wetlands, stream channelization could alter the drainage patterns of the wetland and eliminate the water holding capacity of the system and thus its capacity for groundwater recharge.


In addition, many of the stream crossings occur within the same watershed and, in some cases, a particular stream may be involved

In closing, we would like to emphasize that the range in the ratings of alternatives is great and that it clearly points to the alternatives which should be carried forward to the next phase of this sDZIS.

We encourage WV DOT to work closely with our staff in the next phase of the process, especially in the areas of secondary and cumulative impacts, and in the selection of the alignment which would adequately reduce the extent and severity of impacts to wetlands and other aquatic and terrestrial resources.

Thank you for the opportunity to review and comment on the Appalachian Corridor H sDZIS. We have enclosed a description of EPA's rating system and our technical comments. If you have questions regarding our comments, please do not hesitate to contact me or my staff, Susan McDowell (218/597-0388) and John Forren (215/597-3361).

Sincerely,


Stanley L. Laskowski
Acting Regional Administrator

Enclosures

cc: Robert Gatz, Federal Highway Administration, Region 3
Randolph Epperly, WV Division of Highways
Pat Haman, EPA, Office of Federal Activities
Chris Clever, Department of the Interior, U.S. Fish and Wildlife Service
Robert Gift, Department of the Interior, National Park Service
Roger Anderson, WV Department of Natural Resources

EPA Technical Comments
Appalachian Corridor H Highway Project

- Natural Environment -

I. Aquatic Resource Concerns

Surface Waters

There are a total of 146 streams located within the corridor study area. Eighty-nine of those streams are considered by WV, National Resource Waters. Ninety streams are listed as WV High Quality Streams and 43 streams support native or stocked trout. A total of 11 streams are included in the National Rivers Inventory.

Scheme A potentially would have the greatest adverse effect on stream quality. Scheme A would potentially result in 48-63 stream involvements, depending on the scheme option. Of these streams, Scheme A would potentially impact 24-39 streams classified as National Resource Waters, as well as, impacting 20-31 WV High Quality Streams. Scheme A would also involve the greatest number of streams supporting native and stocked trout (10-23). Scheme A would also potentially involve 5-6 streams listed on the National Rivers Inventory. Scheme A has the greatest number of stream involvements ranked as having a High impact probability (long stretches of parallel construction, new crossings, etc.). We should note that the "high" impact probability, as described in the sDZIS, can be misleading. "High" impact is characterized, in part, as stream relocations or parallel construction of 3000 ft or greater. Given the maps in the associated Technical Report, parallel construction could occur for up to several miles along some streams. As such, this represents a far greater impact than one would assume from the analysis.

In addition, Scheme A would result in significant, long-term adverse impacts to the Bowden National Fish Hatchery by altering the amount and quality of the water supplied to the hatchery via the North Spring. Highway construction, involving blasting, excavation and other surface or sub-surface disturbances could result in fissures in the karst limestone formations which encompass the North Spring recharge zone. The future viability of the Bowden National Fish Hatchery requires clean, clear water with sufficient flow.

By contrast, the northern routes (Schemes D and E), will result in fewer stream involvements overall (41-47) and, in particular, will affect fewer National Resource Waters (Scheme D: 21-22; Scheme E: 12-13). Schemes D and E will have involvements with streams supporting native or stocked trout (7-9) and fewer

EPA Technical Comments
Appalachian Corridor M Highway Project

provides that the practicable alternative selected must have the least adverse impact on the aquatic ecosystem, "so long as the alternative does not have other significant adverse environmental consequences." Therefore, in addition to the direct and indirect impacts to watercourses, waterbodies, and wetlands, consideration of other significant environmental impacts, such as those relative to the forested ecosystem, must also be weighed in the alternative analysis. Consequently, despite the potential for higher wetlands impacts than the southern routes, we consider the northern routes to be less impactful in overall environmental significance.

Among the alternatives, the document indicates that all the corridors except Corridor A and its options contain "high" value wetlands numbering about 400 acres. Total acreage of wetlands for the same corridors ranges from 586 to 786. These numbers in and of themselves would seem to make Corridor A the environmentally desirable alternative. However, a comprehensive, holistic view must be taken of the regional ecosystem. When this is done, Corridors D and E clearly are less impactful overall. The justification for this conclusion can be found in the following, taken together with other resource sections of this comment letter.

The bulk of the wetlands found in Corridors D and E are part of the Beaver Creek wetlands complex. Unfortunately, this area has been degraded by mining activity and Beaver Creek itself is of poor water quality. This fact by itself does little to diminish the value of this wetlands complex. However, compared against other high quality streams, rivers, wetlands, and terrestrial systems that would be adversely impacted with other corridors, the Beaver Creek wetlands complex would be of less relative value.

Recommendations

We concur with your approach in quantifying and qualifying wetlands and in determining the probability of impact on those wetlands. Your approach of assigning relative levels of resource values and impact probabilities of wetlands as well as comparing total wetland areas as a percentage of corridor areas is a good way to give the reader a sense of the potential impacts to wetlands from each of the corridors. However, we have some questions and comments regarding the framework and criteria used in making this wetlands assessment. Some of the following questions are posed for clarification while others are posed with the expectation that modifications of the next document will be made where appropriate.

EPA Technical Comments
Appalachian Corridor M Highway Project

1. The Natural Resources Technical Report indicates that the National Wetlands Inventory (NWI) mapping was used as the baseline for wetlands verification in the field. Were all the hydric soil areas that are identified in the Soil Surveys but outside wetland designations on the NWI maps included in the field survey of wetlands?

2. Were all wetlands field verified? If not, then we recommend that all hydric soil areas in the Soil Surveys not overlapped by an NWI wetlands designation be included as a wetlands area until otherwise deleted by a more detailed field verification in the next phase of the project. The Natural Resources Technical Report indicates that some NWI wetlands were deleted based on Soil Surveys. We recommend that those areas be included in this corridor-level study as wetlands or field verified before being deleted.

3. What species with exceptionally narrow habitat requirements were used in the determinations of wetlands resource values, particularly those listed in Table III-27?

While we concur with the basic approach of impact probability used in the document, there are circumstances where the value assigned may be misleading. For instance, a crossing of a wetland perpendicular to the corridor may be far less impactful than one of a wetland oriented parallel or angled to the corridor. Moreover, the approach used does not include considerations of indirect impacts, such as those that would likely occur from a road paralleling a wetland without actually crossing it. Finally, some corridors may encompass wetland complexes where acreage of wetlands are spatially confined, such as those found along Beaver Creek, rather than widely spread. In situations of wetlands complexes, the worst-case fill required for the highway alignment through the wetlands complex would be approximately 300-foot wide, yet all the wetland acreage in the complex are listed as high impact probability in the totals for the corridor.

There are additional considerations involving engineering design and construction that, while they cannot be detailed at this level of study, should be addressed in general terms to provide further projections of environmental impacts. For example, a summary of the basic highway design criteria that would constrain efforts to shift alignments within corridors should be provided. Such information would be extremely useful in the review of the aquatic resources maps relative to opportunities to avoid and minimize impacts. If the project moves forward to the alignment selection phase, we strongly recommend an interagency effort to

EPA Technical Comments
Appalachian Corridor H Highway Project

habitats and surrounded by areas of inhospitable environments for the original species. Wilcove et al. (1986) describe how components of habitat fragmentation which can lead to species extinction: 1) reduction of total habitat area, which primarily affects populations sizes and 2) redistribution of the remaining area into disjunct fragments which primarily affect dispersal and immigration rates.

The size of the resulting isolated fragments and the degree of adverse impacts associated with fragmentation may vary by species/populations. It is a matter of scale. Lord and Norton (1990) make the following observations:

"...habitat reduction per se has equal impacts at any scale of fragmentation when assessed for the organisms that operate at that scale. The division of a small area of forest by a concrete path, for example, is just as important to a ground-dwelling invertebrate as the division of a large forest tract is to a forest raptor.."

Fragmentation of habitats results in the creation of "edges". The concept of edge effects is pervasive throughout the scientific community. Some edge effects include increased vulnerability to predation, increased competition among species for food resources and nesting sites, and the physical displacement of less "edge tolerant" species. All of the above can contribute to a loss of biological diversity (genetic, species or ecosystem diversity) and species extinction (see Whitney and Runkle 1981; Loveloy et al. 1986; Wilcove et al. 1986).

Scheme A would potentially have the greatest impact on the remote areas of the MNF including those management areas emphasizing remote wildlife habitat, semi-primitive recreation and special botanical areas. Major impacts to remote habitat range from 690-2497 acres for Scheme A, depending on the option. Schemes D and E would not involve major impacts to remote habitat but would result in the greatest number of minor impacts (897-1309 acres).

Our Agency participates in the Neotropical Migratory Bird Conservation Program, known as Partners in Flight. The goal of this program is to coordinate, among agencies, efforts to address the decline of migratory songbirds, primarily forest interior species. The SDEIS mentions the phenomenon of declining neotropical migratory birds with special reference to forest interior birds. While it is true that uncertainties remain regarding the ultimate causes for these declining populations, it is generally understood among scientists that forest

EPA Technical Comments
Appalachian Corridor H Highway Project

fragmentation does play a contributing role in the decline of certain bird species (see Terborgh 1989; Lynch and Whigham 1984).

The construction and use of the proposed Corridor H highway will result in the direct loss of valuable forested habitat and its associated ecological functions. Forests not only provide habitat for wildlife but function in flood abatement, soil erosion prevention, moderation of climate and as sinks for carbon dioxide. Subsequent fragmentation of forested tracts will have far-reaching effects not only to wildlife but to the forest ecosystem itself by exposing it to weather variables such as wind and higher (or colder) temperatures and the increased intrusion of browsing animals such as deer (Saunders et al. 1991).

Schemes A will have the greatest number of major impacts (i.e. dissecting large tracts) on the MNF's management areas of remote habitat, and other special botanical areas. Schemes D and E would not result in any major impacts to remote habitat areas but would result in minor impacts (i.e. adjacency to remote habitat). We believe that these minor impacts can be avoided or reduced at the alignment level study.

It should be noted that MNF's designation of remote habitat applies only to those areas within the boundaries of the National Forest. Other areas on private lands may also exhibit remote habitat qualities. This clarification should be included in the analysis.

It is difficult to assess the impacts as it relates to the George Washington National Forest as similar analyses have not been performed. Although a 4-lane highway currently runs through the GWNF, upgrading it to the standards as outlined for the Corridor H project would result in the direct loss of additional forested habitat. Also, it is unclear if remote habitats or special botanical areas exist within the study area for the GWNF which may result in either major or minor impacts.

III. Threatened and Endangered Species Concerns

EPA has been informally consulting with U.S. Fish and Wildlife Service (USFWS) regarding the potential adverse impacts to threatened and endangered species and their critical habitat. We concur with the USFWS's findings and recommendations as stated in previous and current correspondence with WV DCH.

IV. Nonpoint Source Pollution Concerns

Impacts, encroachments, involvements of surface and ground water

EPA Technical Comments
Appalachian Corridor H Highway Project

and the text indicates that these costs do not include mitigation costs. Verbal discussions with WV DOH have indicated that the costs do indeed include mitigation costs. Please clarify.

Recommendation

EPA agrees that a more detailed assessment of secondary impacts can best be achieved at the alignment phase; however, we believe that there are some general adverse impacts associated with secondary development which could have been highlighted at the corridor level (as was described under positive effects). Such potential impacts include nonpoint source pollution, changes/expansion in infrastructure, further loss and/or degradation of terrestrial and aquatic habitat. Though we feel an opportunity has been missed in not addressing these issues at the corridor level, we need to be assured that secondary impacts will not be neglected at the next study phase.

EPA Technical Comments
Appalachian Corridor H Highway Project

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**SUMMARY OF FINDING OBSERVATIONS
AND FOLLOW-UP ACTIONS**

Environmental Impact of the Action

10--List of Objections

The EPA review has not identified any potential environmental impacts resulting from substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

11--Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may include changes to the proposed alternative or application of mitigation measures that can reduce the environmental impacts. EPA would like to work with the lead agency to reduce these impacts.

12--Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative and/or consideration of one or more other project alternatives (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

13--Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEO.

Adequacy of the Impact Statement

Category 1--Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the proposed alternative and those of the alternative reasonably available to the project or action. No further analysis or data collection is necessary, but the response may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment. If the EPA review has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which would reduce the environmental impacts of the action, the draft EIS, which would reduce the environmental impacts of the action, the identifies additional information, data, analysis, or discussion should be included in the final EIS.

Category 3--Inadequate

EPA does not believe that the draft EIS adequately assessed potentially significant environmental impacts of the action, or the EPA review has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which would be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the project requires additional information, data, analysis, or discussion are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA under Section 102 review, and that should be formally reviewed and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEO.

*From EPA Manual 1646 Policy and Procedures for the Review of Federal Actions Requiring the EIS/IS Act.

Figure 4-1



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER-92/1062

Mr. Billy R. Higginbotham
Division Administrator
Federal Highway Administration
550 Eagan Street, Suite 300
Charleston, West Virginia 25301

Dear Mr. Higginbotham:

This is in response to the request for the Department of the Interior's comments on the supplemental draft environmental/Section 4(f)/6(f) evaluation concerning Appalachian Corridor H, Elkins, West Virginia to I-81 in Virginia.

SECTION 4(f)/STATEMENT COMMENTS

Of the alternatives discussed in the supplemental statement and the original alternatives, Scheme E1 is recommended as the most feasible and prudent alternative involving the utilization and upgrading of existing US-219 from Elkins to US-50 (via Route 93), and from there on US-50 to Winchester, Virginia. It would appear that by upgrading and improving existing facilities, the economy, and environmental resources would be more in balance, as would the promotional aspect of attracting tourists with the need to protect the environmental qualities for which the region is known. Our comments on the remaining alternatives are essentially repetitious of our draft statement comments of September 23, 1981 as they still remain valid. In support of our position the following comments are presented for the other alternatives under consideration.

Scheme A is the most environmentally damaging Build Option and has the greatest potential for adverse impacts to Section 4(f) resources. All remaining Build Options could adversely affect listed and eligible cultural and natural Section 4(f) resources.

These proposed alternatives will traverse and impact high quality terrestrial and aquatic habitat and some of the most scenic, historically significant, and unique recreational resources within the region. Significant adverse impacts to fish and wildlife will result from numerous stream crossings and relocations, floodplain encroachment, wetland infringement, and turkey and white-tailed deer habitat. In addition, some alignments have the potential to seriously degrade the primary water supply to Bowden National Fish Hatchery and would encroach on the proposed Canaan Valley National Wildlife Refuge.

Page III-21. Consistency with Comprehensive Development Plans. Scheme Options D1 through D6, E1, and E2 exhibit the highest compatibility potential with Regional Comprehensive Development Plans, and also have the least conflict with the HNF Plan. Scheme Options A1 through A8 have the greatest potential to conflict with the HNF Plan. Scheme Options D1, D2, D3, and E1 avoid impacts to these areas.

The final document should also provide discussion on the potential impacts of the project on HNF Management Prescriptions 1.1, 2.0, and 3.0 rather than simply stating their compatibility.

Detailed discussion of the project's consistency with the GWNF Plan is absent. The GWNF plan calls State Route 55 an "Outstanding Scenic Route" and nearby portions of the Forest are managed as remote highlands and have a number of restrictions. This section should be revised in the final document and address whether Scheme D would adversely affect these remote areas. Only Scheme E avoids the GWNF.

Page III-52. Economic Activity

The sustained continuous economic growth with the present road systems is contrary to the SDEIS statement that implies that access to the recreational resources is difficult and prospective tourists would likely go elsewhere. Comments made at many of the Public Meetings and Hearings indicate that many residents and tourists consider the country roads as part of the "experience" and do not want to see the "crown jewels" of the Allegheny Highlands diminished or degraded by Schemes A or D Options.

Page III-67. Noise. The SDEIS states that Dolly Sods Wilderness Area, Otter Creek Wilderness Area, Canaan Valley State Park, and the Spruce Knob/Seneca Rocks National Recreation Area are "particularly enjoyed for their quiet atmosphere." All of the remaining practicable Scheme A Options would be situated within 200 to 2,000 linear feet of the two wilderness areas. Schemes D and E Options avoid noise impacts to these areas.

Page III-72. Water Resources. The level of detail and the methods used in the SDEIS for assessing impacts to water resources were somewhat misleading as with the case of the Lost/Ocasop River System. Impact assessment was based on whether highway construction involved perpendicular or parallel construction and the extent of disturbance. Parallel construction along the Lost River could require the channelization of up to six miles of this National Resource Water yet it is listed as one high potential impact. The real scope of construction impacts can only be determined by careful examination of the maps provided in the Natural Resources Technical Report. Future work on the Alignment draft environmental impact statement (DEIS) must utilize quantitative methods for assessing impacts.

Stream channelization of High Quality Streams and National Resource Waters should be avoided to the maximum extent possible. The scientific literature is replete with information on the adverse impacts of channelization to water quality and aquatic biota. Scheme A could require extensive stream channelization/relocation of over ten miles of the North Fork of the South Branch of the Potomac River (a National Resource Water) and almost three miles of the South Branch of the Potomac River (a West Virginia High Quality Stream). Schemes A and D would

require the relocation/channelization of up to six miles of the Lost River (a West Virginia High Quality Stream and a National Resource Water).

We are highly concerned with the level of adverse impact to water resources associated with all remaining build alternatives. Total streams crossed, paralleled, or otherwise adversely impacted range from 41 in Scheme D5 to 63 in Scheme A1. National Resource Waters affected range from 12 in Scheme E2 to 39 in Schemes A1 and A8. Of the remaining scheme options those in Schemes B and E would adversely impact the fewest streams in general and Scheme E would adversely affect the fewest National Resource Waters (12). The high number of National Resource Waters and High Quality Streams adversely affected by Scheme A Options is indicative of the high number of native brook trout streams, other trout streams, and high quality warmwater streams within the HNF. Scheme D Options would adversely affect the high quality trout streams of the GWNF.

Extensive erosion and sediment control would also need to be implemented to avoid water quality impacts during construction. Because of the uniqueness and scenic quality of the region, consideration should be given where appropriate to the protection of the resource by minimizing water pollution from stormwater runoff. For consideration, refer to the Intermodal Surface Transportation Efficiency Act (23 USC 101) and that section dealing with eligibility for transportation enhancement projects.

Page III-79. Bowden National Fish Hatchery. Studies proposed to determine the potential impacts of highway construction on the North Spring recharge zone should be done prior to selection of a corridor. Failure to produce this information prior to corridor selection results in a void of information necessary to identify and analyze the project's full impacts to the Hatchery. The WV DOT proposal to conduct these studies after corridor selection could result in little or no potential to avoid adverse impacts to, and the subsequent loss or degradation of, the North Spring if Scheme A, B, or C is selected. Any blasting, excavation, or other disturbance could cause fissures in the karst limestone formations that make up the North Spring recharge zone and reduce or eliminate flow in the North Spring. Turbidity problems similar to those documented during construction of Corridor H over the South Spring recharge zone will undoubtedly occur.

A karst geomorphologist is recommended to examine the spring flow/recharge in the area. Extensive fracture trace studies and thorough mapping using false color infrared photography should be performed for the North Spring. Dye-tracing tests remain the best way to determine flow patterns. Avoidance of impacts to the North Spring is the only acceptable mitigation.

Page III-91. Wetlands. While National Wetland Inventory (NWI) maps are a good tool, more complete, on-the-ground mapping must take place prior to the completion of the alignment DEIS. The actual acreage within each corridor may be higher since the Natural Resources Technical Report maps do not show many of the wetlands within each corridor. Although fitting a 150- to 300-foot wide highway within the 2,000-foot wide study corridor may substantially reduce "potential impacts," avoidance of specific wetlands should be possible by roadway/alignment shifts. The selected alignment should have the fewest possible number and amount of wetland impacts practicable. Adverse wetland and other environmental impacts associated with Scheme E1 can largely be avoided and/or minimized during the alignment selection.

7. Review any other relevant information.

If the WV DOT determines that the proposed action "may affect" any of the listed species or critical habitats, they must request, in writing, formal consultation with FWS, pursuant to Section 7(a) of the ESA. If the determination is "no effect," no further consultation is necessary, unless requested by FWS. Regardless of the findings a copy of the DA and any other relevant information that assisted in reaching a conclusion, should be provided the FWS office.

Listed species to be considered in the DA

Virginia Northern flying squirrel, *Glaucomya sabrinus fuscus*
 Indiana bat, *Myotis sodalis*
 Virginia big-eared bat, *Plecotus townsendii virginianus*
 Eastern cougar, *Felis concolor cougar*
 Peregrine falcon, *Falco peregrinus anatum*
 Bald eagle, *Haliaeetus leucocephalus*
 Cheat Mountain salamander, *Plethodon natteringi*
 Running buffalo clover, *Trifolium stoloniferum*
 Shale-barren rockcress, *Arabis serotina*

Specific

Page III-141, 2. AFFECTED ENVIRONMENT. a. Endangered and Threatened Species.
 The last two sentences regarding the loggerhead shrike are unclear. The discussion should probably read as follows: the loggerhead shrike is listed as a State endangered species in Virginia and could be found in the project area. In addition, the wood turtle (*Glennys insculpta*), listed as threatened by the State of Virginia, is known from Frederick County and could be found in the study area. Detailed surveys will reveal the presence of the shrike and/or the wood turtle or their habitat; appropriate measures to reduce or eliminate the impacts could then be taken.

Page III-144, second paragraph. The last two sentences state that Cave Hollow Cave is the largest maternity colony and hibernaculum known for the Virginia big-eared bat. However, Cliff Cave is the largest maternity colony and Hellhole Cave is the largest hibernaculum known for the Virginia big-eared bat. Cave Hollow Cave is second in population size and provides a significant portion of the Virginia big-eared bat's summer and winter habitat.

Page III-145, fourth paragraph. This section states that a population of running buffalo clover located within the 2,000-foot study corridor of Subscheme KP is the largest in the State. On the contrary, this population is relatively small, especially when compared to several populations found to the south of the study corridor. This reach of Schemes D and E should be considered potential habitat for the clover.

Page III-148. The last bullet states that Schemes D and E would involve confirmed populations and potential habitat of the Cheat Mountain salamander on Backbone Mountain. However, there are no confirmed populations within the 2,000-foot study corridor of Schemes D and E. There is potential habitat. Two known populations are located approximately two miles south of the corridor.

Page III-147, TABLE III-38, THREATENED AND ENDANGERED SPECIES. It is recommended that the following information be used to correct the subject table. Under the protective status column, the Cheat Mountain salamander is the only Federally threatened species in the study area. The remaining listed species in the table are Federally endangered.

Based on the previous two specific comments regarding running buffalo clover (page III-145, fourth paragraph) and the Cheat Mountain salamander (page III-148, last bullet), the table should show that Scheme Options D4, D5, D6, and E2 involve a confirmed population of running buffalo clover due only to Subscheme KP. In regard to the Cheat Mountain salamander, there is no confirmed involvement with Schemes D and E, with the closest populations approximately two miles south.

Page III-152, TABLE III-39, FEDERAL CANDIDATE SPECIES (Category 2), Number of Potential Involvement. The table is confusing because of the mixing of different species groups together (i.e., plants and animals and birds, mammals, and mussels). They should be separated in their like groups.

The following species are recommended for omission from the existing table:

PLANTS

Jacob's ladder, *Polemonium van-bruntiae* (3C)
 Mountain pimpernel, *Teesdalia montana* (3C)
 Kates Mountain clover, *Trifolium virginicum* (3C)

ANIMALS

Eastern ribbon snake, *Thamnophis sauritus* (NC)

3C - Taxa that have proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat. If further research or changes in habitat indicate a significant decline in any of these taxa, they may be reevaluated for possible inclusion in Categories 1 or 2.

NC - Not classified as a Federal candidate for listing.

The following category 2 (2C) species should be added to the table:

PLANTS

Horsenint, *Monarda fistulosa* var. *brevis*
 Butternut, *Juglans cinerea*

ANIMALS

Eastern woodrat, *Neotoma floridana magister*
 Southern water shrew, *Sorex palustris punctulatus*
 Northern goshawk, *Accipiter gentilis*
 Cerulean warbler, *Dendroica cerulea*
 Yellow lampbrush, *Lampyris cariosa*



COMMONWEALTH of VIRGINIA
STATE WATER CONTROL BOARD

Richard N. Burton
Executive Director

P O Box #143
Richmond, Virginia 23230-1143
(804) 527-5000
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February 2, 1993

Mr. Randolph T. Epperly, Jr.
Director, Roadway Design Division
WVDOT - Division of Highways
State Capitol Complex, Building Five
Charleston, West Virginia 25305

RE: Corridor Selection Supplemental Draft Environmental
Impact Statement for Appalachian Corridor H
Elkins, West Virginia to Interstate 81 in Virginia

Dear Mr. Epperly:

We have received the corridor selection supplemental draft environmental impact statement (SDEIS) for the Appalachian Corridor H project from Elkins, West Virginia to Interstate 81 in Virginia. We are writing to provide our comments to the SDEIS and to identify potential concerns that may require further coordination and/or permits from the Virginia State Water Control Board (SWCB). Please note that in reviewing such a large corridor, we are only able to supply very generalized comments. Once the alignments have been chosen and more detailed information is available concerning water quality impacts, we will be able to provide more site specific comments.

In regards to the segments occurring in Virginia, Scheme E (the Winchester terminus) poses potential impacts for the following streams: Isaacs Creek, Back Creek, Hogue Creek, Gap Run, Abrams Creek, Redbud Run, and 2 intermittent tributaries. Most of this corridor, however, is already a four-lane facility. Thus, the impacts for Scheme E may be diminished. Scheme D (the Strasburg terminus) could potentially impact the following streams: Duck Run (a SWCB-designated Class VI Natural Trout Stream), Cedar Creek, Turkey Run, Mulberry Run, and 6 intermittent tributaries. This corridor, on the other hand, is mostly a two-lane facility. Hence, greater impacts could be anticipated with an expansion to a four-lane facility. Again, comparing impacts between corridors at this time is very difficult due to the 2,000 foot width of the corridors. For

Mr. Randolph T. Epperly, Jr.
Page 2

example, even though a stream may occur within the 2,000 foot corridor, when the final alignment is chosen, it is possible that this stream may not be directly impacted by the project.

Due to the size of this project and the potential water quality impacts, this project will require applications for the following permits issued by the SWCB:

- 1) Stormwater Permit for Construction -- required for construction activities (clearing, grading, and excavation) on five (5) acres of land or more. This permit, effective October 1, 1992, is issued by the Virginia Pollution Discharge Elimination System (VPDES) Stormwater Permitting Program.
- 2) Stormwater Permit for Industrial Activities -- required for transportation facilities. This permit, effective October 1, 1992, is issued by the Virginia Pollution Discharge Elimination System (VPDES) Stormwater Permitting Program.
- 3) Virginia Water Protection Permit (VWPP) -- required for projects involving dredging, filling or discharging any pollutant into, or adjacent to surface waters, or that will otherwise alter the physical, chemical or biological properties of surface waters (VR 680-15-02). This permit, effective May 20, 1992, is issued by the VWPP program.

The following conditions shall apply for work within the Commonwealth of Virginia:

- 1) The Virginia Erosion and Sediment Control Handbook should be referred to for acceptable erosion and sediment control practices.
- 2) Bridges are the preferred crossing structures since they present fewer water quality impacts. Also, they allow the existing substrate to remain, facilitating the continued existence of benthic organisms. Finally, bridges do not impede low flow channels, thus aquatic species movement and migration is not obstructed.
- 3) When bridged crossings are not practical, we prefer open-bottomed arch structures, which also leave the existing substrate intact.
- 4) Where pipes or culverts are used, these structures must be countersunk six inches and a low flow channel must be provided for multiple structures.



COMMONWEALTH of VIRGINIA

Department of Game and Inland Fisheries

February 8, 1993

Mr. Randy Epperly
West Virginia Department of Transportation
1900 Kanawha Boulevard E.
Building Five
Charleston, West Virginia 25305-0430

Re: Appalachian Corridor H, Elkins, West Virginia
to I-81 in Virginia
ESSLOG #1988

Dear Mr. Epperly:

We have reviewed the Corridor Selection Supplemental Draft Environmental Impact Statement which you recently submitted for our consideration. The Department of Game and Inland Fisheries is the primary wildlife and freshwater fish management agency in the Commonwealth, with full law enforcement and regulatory jurisdiction over those resources, inclusive of state or federally endangered or threatened species, but excluding insects and plants. We are a consulting agency under the U.S. Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and we provide environmental analysis of projects or permit applications coordinated through the Virginia Council on the Environment, the Virginia Marine Resources Commission, the Virginia State Water Control Board, the Virginia Department of Waste Management, the Virginia Department of Transportation, the U.S. Army Corps of Engineers, the Federal Energy Regulatory Commission, and other state or federal agencies. Our role in such procedures is to determine likely impacts of proposed projects upon fish and wildlife resources and habitats, and to recommend appropriate measures to avoid, reduce, or mitigate for those impacts.

Primary issues of concern to our agency include impacts upon upland, wetland, and aquatic fish and wildlife resources and habitats; protection of instream flow; protection of endangered or threatened species; and impacts upon streams or other surface waters and interconnected groundwaters. Sediment and erosion control, water quality protection, and proper disposal or handling of hazardous or toxic materials, as these issues may impact fish and wildlife resources, are also of concern to the Department. We are particularly interested in discussion of alternatives to the proposed action, and proposals of mitigatory measures to compensate for unavoidable impacts.

Our Fish and Wildlife Information System (FWIS) personnel in the Division of Planning, Policy, and Environmental Services can provide life history profiles for wildlife species found in the Commonwealth, and summary lists of wildlife species occurring in a given geographic area; and will conduct database searches for known or probable occurrence of endangered or threatened species. There is a nominal charge for these services. Inquiries or requests regarding these services should be addressed to Ms. Becky Wajda, FWIS Coordinator, at the letterhead address.

Mr. Randy Epperly
February 8, 1993
Page 2

Despite the fact that this proposal includes 24 separate routes for evaluation, only two corridors are being considered for the road section within Virginia. From both wildlife and fisheries points of view, the corridor represented by Schemes C and E is far more acceptable than the corridor for Schemes A, B and D. Following is a brief synopsis of our primary concerns:

FISHERIES:

- Corridor A, B, D follows at least a portion of Duck Run which is a Class II native brook trout stream.
- Corridor A, B, D crosses Cedar Creek in the vicinity of our put-n-take trout section. Cedar Creek is a high quality stream resource which we hope to develop further. It also provides good quality smallmouth bass habitat just below the proposed crossing.
- Corridor A, B, D will impact an area along the Cedar Creek drainage that contains significant karst formations, resulting in a number of high quality limestone springs. These springs are responsible for the high quality habitat in Cedar Creek, and several are used for commercial trout production.
- The streams along Corridor C, E have been significantly degraded by construction of a number of dams and by residential and agricultural developments. These streams all provide poor fisheries habitat. We do maintain a put-n-take trout fishery on Hogue Creek well below the proposed crossing of this stream. Few other recreational fishing opportunities exist along this corridor.

WILDLIFE:

- Corridor A, B, D will bisect both Great North Mountain and Paddy Mountain in the vicinity of an area known as Vances Cove. Vances Cove has long been recognized as an outstanding wildlife area and the Department has invested considerable resources in habitat improvement in this area. Bisecting these two mountains will significantly impact movements of many wildlife species.
- Corridor C, E crosses in an area where wildlife habitat is already significantly impacted and remote areas are not a factor.

THREATENED OR ENDANGERED SPECIES:

- Corridor A, B, D will disturb a significant quantity of habitat that appears likely to contain the Cow Knob Salamander (*Plethodon punctatus*), a state species of special concern.
- Corridor A, B, D bisects a remote mountainous area that is capable of providing excellent nesting sites for peregrine falcons (*Falco peregrinus*), a federally endangered species.
- The wood turtle (*Clemmys insculpta*), a state threatened species, is known to occur within the A, B, D corridor. Habitat along Cedar Creek appears to be ideal for this species.

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Mr. Fred Vankirk
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February 10, 1993

scope. We trust that the opportunity to evaluate this detailed information will be made available in the future by utilizing the NEPA process for highway alignment.

After examining information provided in the SDEIS, our choice of corridor scheme remains directionally consistent with our July 1981 position which selected a northern routing as our preferred scheme. Our information, which agrees with your consultant's evaluation, indicates the northern schemes will provide the greatest benefits to the most people and incur the least total environmental impact. We believe that when the total environmental impacts for scheme A, and its associated subschemes, are compared to either scheme D or E, that the northern routes will be the least impacting on our state's natural resources. Remaining impacts can be eliminated through adjustments of the highway alignment or otherwise mitigated.

C-25
The following sections provide the rationale for our routing selection by documenting significant environmental impacts expected under a southern (Scheme A) routing and avoided by the northern alternatives.

We are seriously concerned with the probable loss of the Bowden National Fish Hatchery already impacted by past Corridor H construction. This hatchery produces 25 percent of the trout stocked in West Virginia. These 250,000 trout generate an estimated 500,000 days of resident and non-resident recreation. Trip related (i.e. not including equipment, licenses, etc.) angler expenditures generated by these trout contribute in excess of \$7.5 million to the West Virginia economy each year. The southern routing could have severely detrimental, unmitigatable impacts to the north spring and associated recharge area supplying the hatchery. Realized impacts to this spring will result in the loss or degradation of the hatchery's major water supply causing, at best, a reduction in production or, more likely, closure of the hatchery.

Our evaluation indicates that a southern routing would significantly impact no less than four of our premier native, put and grow and stocked trout fisheries. The mountain areas of the southern route contain additional, high quality streams supporting native trout populations which will be unavoidably impacted by this routing. Streams of this quality are irreplaceable and damage to them is essentially unmitigatable. We cannot

Mr. Fred Vankirk
Page 3
February 10, 1993

concur with disturbances to these valuable resources when other less damaging alternatives exist.

Threatened and endangered species are also of great concern to our agency. In general, the southern routes have the greater potential to affect more rare, threatened and endangered species and their habitats. If these species are encountered during the alignment or construction stages, significant delays or termination of work could occur. If endangered species are encountered after construction begins, federally approved mitigation options may not be available to allow construction to continue. Federally mandated realignment could be required with additional expenditure of time and money.

Ecologists have long known the importance of large expanses of unbroken, largely mature forest to certain game species like black bear and turkey. Studies during the past decade indicate an important relationship also exists between unfragmented forest and the presence of other nongame vertebrate species. U.S. Forest Service designation of remote forest tracts as 6.1 and 6.2 areas serves, in part, to protect these important habitat components for these game and non-game species. Southern routing schemes would fragment these areas to a greater extent than northern alternatives and result in significant impacts to dependent wildlife species.

The northern routes are not without environmental impacts. The SDEIS indicates the most significant impact resulting from a northern route will be to wetlands. The DNR is a staunch advocate of wetland protection. We are also aware that considerable latitude exists within the 2000 foot corridors for avoiding wetlands by careful alignment. Our experience indicates that many of these impacts can and will be avoided here as they have in previous segments.

The DOH has demonstrated their willingness and capability to satisfactorily replace impacted wetlands and wetland values through construction and enhancement methodologies. Because of this ability and commitment, we believe wetland impacts can be satisfactorily mitigated.

In summary, we find the probable and possible extent of the environmental impacts, the probability of unmitigatable impacts and the

628895
Mr. VanKirk

- 2 -

February 12, 1993

For the reasons outlined above, we do not believe existing historic resource information, as summarized in the Technical Report, can be used for corridor selection. Furthermore, we do not believe a corridor should be chosen until additional, substantial identification efforts are completed. Please recognize that we do not object to the concept of a "staged" approach to environmental and historic resource documentation, particularly given the scale and complexity of the project. We recommend, however, that your agency consider a revised approach to historic resource documentation for corridor and alignment selection as outlined below:

1. **Actions for corridor selection (Corridor SDEIS):**
 - A. Conduct a complete architectural survey of each corridor alternative in Virginia (entirety of each 2000 foot study area). Given the level of existing information about the northern corridor, most of this effort will be limited to the southern corridor through Shenandoah County.
 - B. Conduct the "pre-Phase I archaeological reconnaissance activities described by your consultant on page VIII-2 of the Technical Report (Section 8.1).

Completing these activities prior to corridor selection will provide more accurate information regarding anticipated impacts on historic resources.
2. **Actions following corridor selection to be used for alignment selection (Alignment SDEIS):**
 - A. Evaluate (Phase II study) the significance of all identified architectural resources.

Knowing the number and location of all eligible structures will aid in the design of the alignment alternatives.
3. **Actions following design of alignment alternatives (Final EIS):**
 - A. Conduct a complete Phase I archaeological survey of all alignment alternatives, not just the final preferred alignment.
 - B. Develop a preliminary effect assessment on all historic resources (archaeological and architectural). This would be used to select a final preferred alignment.
4. **Actions following selection of final preferred alignment (Final EIS):**
 - A. Evaluate (Phase II study) the significance of identified archaeological resources along the final preferred alignment.

Mr. VanKirk

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February 12, 1993

B. Develop a final effect assessment on significant historic resources (i.e. "historic properties," both archaeological and architectural) in consultation with both our agency and the Advisory Council on Historic Preservation.

C. Determine appropriate treatment for historic properties that will be affected by the undertaking in consultation with both our agency and the Advisory Council on Historic Preservation.

We believe that the staged approach outlined above will work within the structure of environmental documentation that is proposed for this project. Item 1 can be included in a revised Corridor Selection SDEIS and Item 2 in an Alignment Selection SDEIS. Items 3 and 4 would be appropriate for preparation of the Final EIS for the project.

We hope that our comments will assist your agency in preparing further environmental and historic resource documentation for the proposed Appalachian Corridor H. If you have any questions, please contact Antony Opperman or Elizabeth Hoge of our staff.

Sincerely,


Bruce J. Larson
Project Review Section Supervisor

cc: William Farrar, West Virginia Division of Culture and History
Philip A. Shucet, Michael Baker Jr., Inc.

62895



RECEIVED
FEB 23 1993

DEPARTMENT OF COMMERCE, LABOR & ENVIRONMENTAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
1201 Greenbrier Street
Charleston, WV 25311-1088

John M. Ranson
Cabinet Secretary
ROADWAY DESIGN DIVISION
DIVISION OF HIGHWAYS

February 19, 1993

David C. Callaghan
Director
Ann A. Spaner
Deputy Director

Mr. Randolph T. Epperly, Jr.
Director, Roadway Design Division
WVDOT - Division of Highways
State Capitol Complex, Building Five
Charleston, West Virginia 25305

RE: Supplemental Draft Environmental
Statement (DEIS), Corridor H - Elkins to I-81.

Dear Mr. Epperly:

The Office of Water Resources (OWR), West Virginia Division of Environmental Protection, has completed its review of the above-referenced DEIS and submits the following comments.

The DEIS proposes 5 roadway schemes which, when combined with various schemes and subschemes, result in 24 scheme options. Each option is a 2,000 foot-wide corridor.

Scheme A is the southern most corridor which travels east from Elkins and turns north along North Fork of the South Branch/Potomac. At Moorefield, Scheme A joins Schemes B and D to continue east to I-81. Scheme A will significantly impact water quality and aquatic resources of North Fork temporarily, during construction, and permanently, as a result of storm water runoff. Likewise, Lost River will be impacted between Baker and Wardensville. North Fork and Lost River, both within National Forest boundaries are, in accordance with the Legislative Rules Governing Water Quality Standards, Title 46, Series I, classified as National Resource Waters. Impacts to National Resource Waters must be temporary in nature and not result in aquatic degradation.

Schemes B and C travel northeast from Bowden and involve the proposed Canaan Valley National Wildlife Refuge and Canaan Valley State Park. Waters of the state, including wetlands, within the State Park are subject to the National

Mr. Randolph T. Epperly
Page Two
February 19, 1993

Resource Water classification. Wetlands in Canaan Valley as a whole would also meet the guidelines of the National Resource Water definition due to the characteristics of the Valley as a southern terminus for many northern species of flora. Impacts to streams and wetlands in either the Park or the Valley must be temporary in nature and not degrade the aquatic system.

Schemes D and E travel identically northeast from Elkins until the corridor reaches Bismarck where the schemes diverge. Scheme D travels east to join Schemes A and B and continues to I-81 at Strasburg. Scheme E continues north to New Creek and turns easterly to pass through Romney and Augusta to I-81 at Winchester. Schemes D and E involve streams which include Blackwater River, Beaver Creek and Stoney River. The West Virginia Division of Environmental Protection (WVDEP) has selected Blackwater River as one of the first projects for the agency's stream restoration program. Restoration will include treatment and abatement of acid conditions within a designated reach of the Blackwater River. Scheme E will involve major streams including Patterson Creek, South Branch/Potomac River, Little Cacapon River, North River and Cacapon River.

The Office of Water Resources recognizes that the DEIS is a corridor level study and cannot completely assess potential alignment impacts. However, Schemes A, B and C each significantly involve unique aquatic resources in the State of West Virginia. Resources which occur in these schemes will be impacted by any alignment selection within the corridors. Resources such as Canaan Valley and Dolly Sods cannot be replaced or otherwise mitigated. Consequently, Schemes A, B or C are unacceptable corridors for further consideration of alignment alternatives.

Schemes D and E also involve important waters, but the corridors appear to approach most streams perpendicularly which should result in a lesser degree of aquatic disturbance and impact. OWR is concerned that at the corridor level both schemes impact the greatest number of wetlands. Each of the corridors include over 700 acres of wetlands within the 2,000-foot area. It is currently understood that the 2,000-foot corridor facilitates the design of alignment options and can be designed to avoid significant areas. Furthermore, the corridor level evaluation will exaggerate wetland impacts to an extent the relationship to an actual alignment impacts may be misleading. However, should tangible wetland impacts not be greatly exaggerated, it should be made clear that OWR could not accept the loss of over 700 acres of wetland resources.

Although OWR recognizes the reasoning for choosing to pursue a corridor level study, such a level makes the evaluation of specific impacts nearly impossible. Additionally, secondary and cumulative impacts have not been addressed within an

C-29

Corridor H Final EIS

APPENDIX D

Agency Comment Letters - Alignment Selection

UNITED STATES
DEPARTMENT OF
AGRICULTURE

NATURAL RESOURCES
CONSERVATION
SERVICE

75 High Street Rm 301
Morgantown, WV 26505

RECEIVED
JAN 20 1995

W. VA. DEPT. OF HIGHWAYS
CHIEF ENGINEER DEVELOPMENT

January 18, 1994

Mr. Fred VanKirk, Commissioner
WV Department of Transportation
Division of Highways
1900 Kanawha Boulevard, East
Building 5, Room 109
Charleston, WV 25305-0430

Dear Mr. VanKirk:

This letter is in response to your request for review of the Alignment Selection Supplemental Draft Environmental Impact Statement (SDEIS) for Appalachian Corridor H. We understand that our comments on the subject document will also be considered in the Section 404 Permit review process.

Our primary area of responsibility for environmental review is an assessment of potential impact to prime and important farmland within the project area. Section III-E of the SDEIS adequately addresses this issue. Based on criteria set forth in the Farmland Protection Policy Act of 1984, I concur with the finding of minimal effect on farmland conversion within the project area in West Virginia.

Temporary and permanent sediment and erosion control measures for all land impacted by the construction of the project are critical. Section III-X-6 provides a general description of preventive measures to be used, deferring the planning of site-specific measures until development of preliminary and final designs. It appears that with the alignments now being considered, construction of the highway will not directly affect PL 534 flood control dams built in the Patterson Creek watershed by the Potomac Valley Soil Conservation District (PVSCD). We do request the opportunity to review with DOH and PVSCD the final sediment and erosion control designs where sub-watersheds for PVSCD flood control dams may be traversed, to assure that the impoundments are adequately protected.

JAN 20 95

DEPARTMENT OF HIGHWAYS
CORRIDOR H
GENERAL FILES

The Natural Resources Conservation Service,
Formerly the Soil Conservation Service,
is an agency of the
United States Department of Agriculture

AN EQUAL OPPORTUNITY EMPLOYER

Thank you for the opportunity to review and comment on this document.

Sincerely,

Paul S. Stenn, Acting

George L. Stenn
Acting State Conservationist

cc: Richard B. Pollin, COE, Pittsburgh District
Frank Pelurie, WVDEP Water Resources
Ron Estepp, Area Soil Scientist, Romney Sub AO
Ed Kesecker, DC, Moorefield FO
Larry Casseday, DC, Elkins FO
Richard Gray, DC, Petersburg FO

United States Department of Agriculture	Forest Service	George Washington National Forest	Harrison Plaza P.O. Box 233 Harrisonburg, VA 22801 703 564-8300
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File Code: 1920/7700

Date: February 8, 1995

Mr. Randolph T. Epperly, Jr.
Director, Roadway Design Division
WVDOT, Division of Highways
State Capitol Complex, Bldg. 5
Charleston, West Virginia 25305

Dear Mr. Epperly:

In reference to the Alignment Selection SDEIS for Corridor H, I would like to offer an additional alternative to mitigate impacts to the Big Blue Trail. I apologize if this input is a bit late but it just came to our attention and we feel it is an alternative worth considering.

Larry Bradford, Potomac Appalachian Trail Club's manager for the southern section of the Big Blue Trail, suggested we consider an alternative of relocating the trail on the West Virginia side of Great North Mountain. Input to date has centered on relocations on the Virginia side and bridging at the top.

The attached maps show this alternative as it relates to Line A. The relocation would leave the Big Blue south of the present WV/VA Route 55 at about the 2280 ft. contour, descend on about an 8 percent grade, then switchback near the Shumaker Spring hollow (the hollow that crosses Line A at station 6951). It would then pass under Line A at the stream crossing at station 7781. This would require a roadway bridge rather than the presently planned culvert. It would then proceed north to intersect the present Big Blue Trail near Hawk Camp. There are several alternative routes once Line A is crossed. Two are shown on the attached map. Much of this section of the trail relocation could use existing "old woods" roads that are closed to public motorized traffic. A trailhead parking facility would be needed in the area of the intersection of the relocated trail and the present Route 55. Summarily, this alternative would include a roadway bridge, trail relocation, and parking area on the West Virginia side of Great North Mountain. If selected it would replace the alternative proposed for the Virginia side as shown on the SDEIS location plans.

This appears to be a sound alternative to mitigate Line A impacts to the Big Blue Trail. It differs from the Virginia alternative by eliminating the trail climbing over Great North Mountain on the north side of the present Route 55.

Copies to:

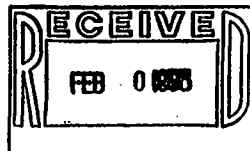
Mr. Charles A. Graf, President
Potomac Appalachian Trail Club
118 Park Street, SE.
Vienna, Virginia 22180

Mr. W. Byron Coburn, Jr.
Dist. Construction Engineer
Va. Dept. of Transportation
P.O. Box 2249
Staunton, Virginia 24401

Ms. Patricia Gasing, P.E.
Michael Baker, Jr., Inc.
Airport Office Park, Bldg. 3
420 Rouser Road, 1531
Coraopolis, Penna. 15108

Mr. John Coleman
Lee District Ranger
USDA Forest Service
109 Molineu Road
Edinburg, Virginia 22824

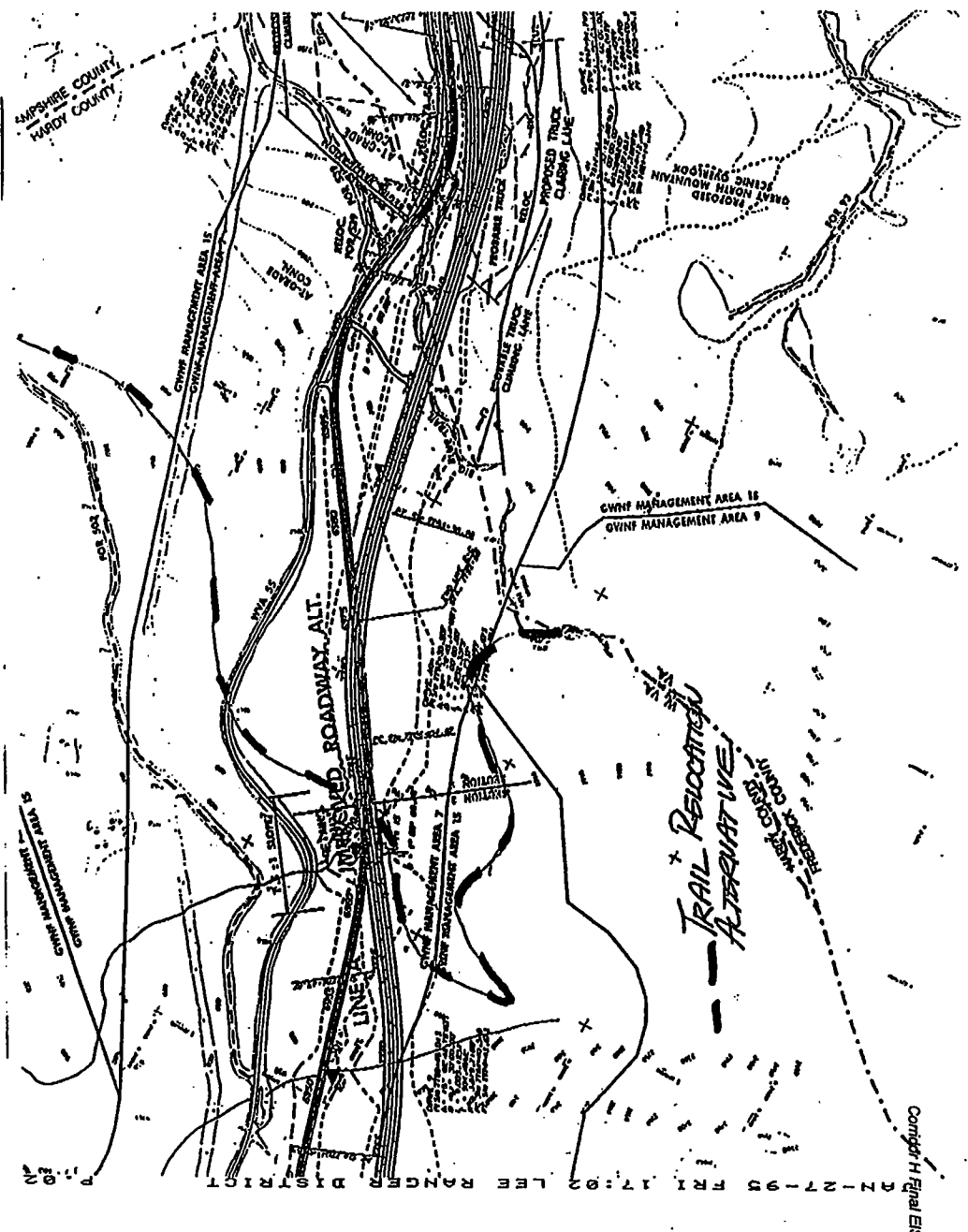
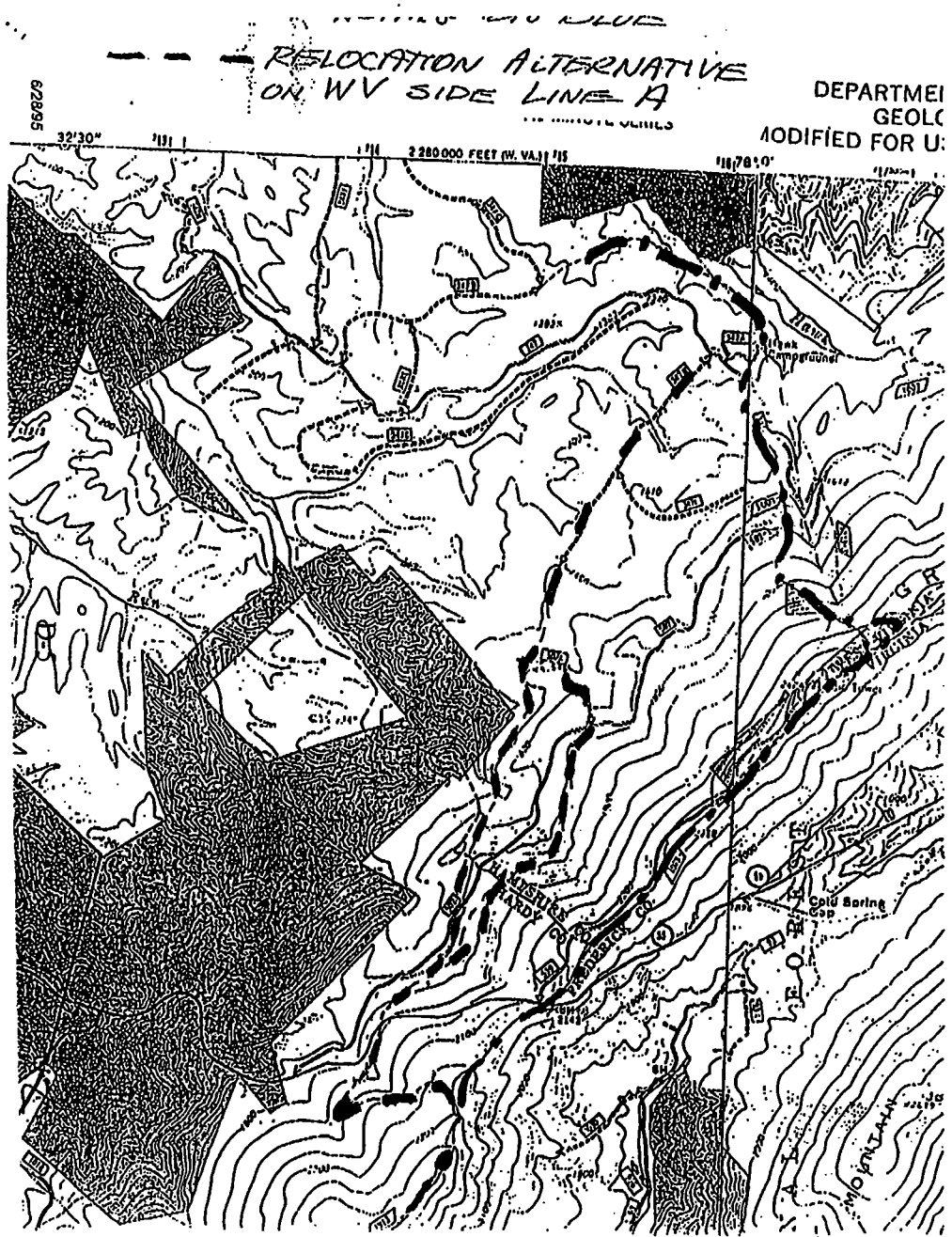
Mr. Robert Joslin, Regional Forester
Southern Region, R-8
USDA Forest Service
1720 Peachtree Road, NW.
Atlanta, Georgia 30367



D-4

RELOCATION ALTERNATIVE
ON WV SIDE LINE A

DEPARTMENT OF
GEOLOGY
MODIFIED FOR USE



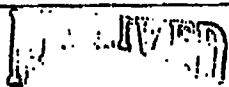


United States
Department of
Agriculture

Forest
Service

Monongahela
National
Forest

200 Sycamore Street
Elkins, West Virginia 26241
VOICE and TTY 304-638-1800
FAX 304-638-1875



Reply To: 7700

FEB 10 1995

Date: February 16, 1995

ROADWAY DESIGN DIVISION
WV DIVISION OF HIGHWAYS

Mr. Randolph Epperly, Jr.
Director, Roadway Design Division
WVDOT - Division of Highways
State Capitol Complex, Building Five
Charleston, West Virginia 26305

Dear Mr. Epperly;

We have reviewed the Alignment Selection Supplemental Draft Environmental Impact Statement (SDEIS), and the related Technical Reports for Appalachian Corridor H, Elkins to Interstate 81. This review has generated a number of comments and recommendations for your consideration as you develop the final Alignment Environmental Impact Statement (EIS) for the project. General comments are presented first followed by specific comments and recommendations applicable to the SDEIS and Technical Reports.

We hope the attached comments will be useful in the development of the Final Alignment EIS. This Forest plans to continue to work with your agency, your consultants, and other State and Federal agencies in the development of a preferred alignment which would, to the extent possible, minimize the effects on the Forest but still meet the intent and objectives of the existing Acts (legislation) and the Monongahela National Forest Land and Resource Management Plan.

If you have any further questions or concerns with these comments please call Lynn Hicks, in this office, at (304)638-1800.

Sincerely,

JIM PAGE
Forest Supervisor

Attachment



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Caring for the Land and Serving People

FS-6200-28b(4/88)

Corridor H Final EIS

COMMENTS ON APPALACHIAN CORRIDOR H ALIGNMENT SELECTION SDEIS

SUPPLEMENTAL DRAFT EIS:

General Comments;

Special bridge designs which will be required for 10 bridges over the course of the route will offer the opportunity to bridge interesting and exciting forms to the landscape. These structures should enhance the landscape the highway passes through.

The consideration of bifurcation (lane separation), overlooks, wood guardrails, grass shoulder, slope rounding, landscaping and wildflower planting, rock cut sculpturing, architectural bridge treatments, and interpretive facilities for use in mitigation will enhance the highway and assure an aesthetically driving experience.

We are concerned about the highway design measures for handling cross drainage and highway runoff. The highway itself will concentrate surface runoff, and change the natural drainage patterns. The existing channels adjust to change in volume with a lengthy period of downcutting and erosion. The downstream receiving waters are affected by the increased sediment loads. This has a long term effect on the stream water quality. We feel it is important to address this problem and describe mitigation measures in the EIS.

We are concerned about the effect a large cut may have on the normal subsurface flow of water. The cut will effectively cut off this flow and transfer it to a specific drainage channel. This channel will probably be destabilized due to the increase in water volume which will lead to erosion and downstream sedimentation. Again, it is important to address this potential problem and describe specific mitigation measures, in the EIS, to reduce erosion and sedimentation.

In the Shavers Fork area we prefer line A over line B in order to keep the road as low as possible on the hillside. This alignment does not have a negative effect on the view of the hillside when driving north on U.S. 219.

The proposal to incorporate an overlook of the Cheat River Valley north of Parsons is a good idea.

The proposed bike route information is vague at this point. We question the need for a separate bike path because it may be too expensive to maintain and the type of riders apt to follow the route wouldn't likely use it. This is a Corridor highway and not an interstate so bikes are allowed to use it. To improve the safety of cyclists who will utilize the highway we suggest the design incorporate shoulder rumble strips which are at least one foot away from the edge of the driving lane. Newly constructed sections of Corridor H west of Elkins have the rumble strips on the inside edge of shoulders. This is dangerous to cyclists.

D-6

62895

Specific Comments;

Table III-29 - We agree with the recreation resource impact evaluations shown. The impacts of construction on the recreation resource would be none to minor.

Page III-177 Visual Resources - We applaud the inclusion of consideration of what positive views will be provided by construction of the new highway. Views from the new highway will provide many vistas of the surrounding landscapes which are not possible from existing roads.

Page III-178 - In section 2.a. the Monongahela National Forest is described as having "unique" visual qualities. We believe the term is misleading. The forest, while attractive and certainly a tourist attraction in its own right, is not truly unique, that is, one of a kind. Similar forests can be found elsewhere. The use of the term "unique" in reference to the National Forest could lead the public to impart values to the scenery of the area which it does not truly possess.

Table III-31, Page III-180 - The EIS states the visual impact assessment was based on Visual Resource Management methods used by several Federal agencies. In this light, we suggest a change in the listing of the Monongahela National Forest in this table. The visual resource of the Monongahela is currently listed as "distinctive". Under the visual resource management system we use in the Forest Service the "distinctive" designation is reserved for truly outstanding and rather discrete portions of the landscape. Seneca Rocks is an example of a distinctive resource. We do not believe the broader general forested area should be known as "distinctive". To do so overstates the visual importance of such vast portions of the landscape. We recommend the listing for the Monongahela National Forest be changed to "common" which, in our Visual Management System, is used for those areas "which tend to be common throughout the character type and are not of outstanding visual quality".

Page III-181 - The Monongahela National Forest should not be termed unique and the term "distinctive" should be replaced with "common".

Page III-184 - Section a. - We agree a major benefit of the project, from a visual standpoint, will be to open up vistas and scenic view which are not currently available on existing highways along the corridor.

Table III-34 - We agree Line A would not have an adverse impact on the visual resource of the Monongahela National Forest.

Cultural Resources - There are three sites eligible for the National Register of Historic Places which are partly owned by the U.S. Government and managed by the Forest Service: Corrick's Ford Battle Site, Western Maryland Railroad in the Blackwater Canyon, and the Coketon area of the Davis Coal and Coke Company. Each of these will be adversely effected to some extent by the project and subject to the requirements of Section 106 of the National Historic Preservation Act.

The Corrick's Ford Battle Site is an Historic District extending from the vicinity of the confluence of Pleasant/Pheasant Run and the Shavers Fork (Kalar's Ford) down along the River to South Parsons. The Kalar's Ford area, partly owned by the U.S. Government, retains the highest integrity of the entire site. The old River crossing is intact, and it will be directly adversely impacted by bridge construction. The remainder of the site will be visually impacted. All of the site will sustain auditory impacts. (Ref. Table 6.2, page 406, Cultural Resources Technical Report - Volume 1.)

The Western Maryland Railroad and Coketon are contiguous properties and should be addressed as if they were one. Elements of the railroad that remain are the grade, culverts, bridges, and retaining walls. The Coketon part contains coke ovens, portals, foundations, piers, the Davis Coal and Coke Company Office, the B & L Store (company store), and numerous company houses. Construction of the bridge across the canyon will have direct and adverse impacts to the site. One important aspect of this site is the vastness of the whole, and the complexity of its parts. It is an example of a political/industrial/social complex.

The Forest administers parts of three significant sites that will be affected by the project. In keeping with our responsibility to protect such sites, we recommend that they be avoided if possible and if not the impacts must be mitigated as described in the EIS. Mitigation measures should be developed in consultation with the SHPO and the Forest Service, and designed to enable a finding of no adverse effect as referenced in 36 CFR 800.

Our concerns about scheduling the project can be met by doing the Phase I surveys prior to making an irreversible commitment to one alignment. An alternative would be to leave room within the alignment to shift away from important sites located by the Phase I survey.

We can make substantive conclusions regarding effects to sites following a more definitive description of the limits of impacts and boundaries of sites. Keep in mind that a farmstead is more than just the residence.

SOCIAL AND ECONOMIC TECHNICAL REPORT:

Alpena Gap is a trailhead, not a National Recreation Area. Big Bend is a campground, not a National Recreation Area. Sinks of Gandy is in private ownership. No camping is available there.

STREAMS TECHNICAL REPORT:

In general the analysis contained in the Corridor H Stream Technical Report was very well done. It contained a large volume of data for streams in the National Forest which will prove to be useful in planning and implementing future aquatic projects.



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200 Sycamore Street
Elkins, West Virginia 26241
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We have a strong concern about the effect of the highway on the tributaries of Mill Run. The report states both Line A and the IRA could impact a small tributary to Mill Run by increased silt loads due to construction and there may be measurable reductions in the Biotto Integrity Ranks due to construction based on existing land use and water quality. However, effects on Mill Run were not discussed in the Cumulative Effects section of the Technical Report. We recommend this be reviewed and possibly revised to reflect our concern.

The report does not discuss modified water flow regime effects to Mill Run related to the road alignment. Increasing or decreasing water discharge in specific portions of the Mill Run drainage would have a long term adverse effects on Mill Run.

Reply To: 7700

Date: March 10, 1995

Ms. Patricia S. Gesing, P.E.
Project Manager
Michael Baker Jr., Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, PA 15108

Dear Ms. Gesing:

Here is our response to your February 10, 1995 letter requesting information on the Allegheny and American Discovery Trails which pass through the Monongahela National Forest. We have reviewed the applicable Corridor H Technical reports, maps, SDEIS, and our own records to arrive at the following opinions and responses to your questions. They are:

1. **Is the Allegheny Trail and/or the American Discovery Trail a designated "scenic" or "recreational" trail?**
Neither of these trails carry a National "scenic" or "recreational" designation. The National Park Service (NPS) has been commissioned by Congress to study the feasibility of recommending the American Discovery Trail for inclusion in the National Trails System. A recommendation is expected this year.
2. **Who is the jurisdictional authority of these resources?**
The West Virginia Scenic Trails Association is the sponsor of the Allegheny Trail. This group is responsible for location, design, construction, and maintenance on private property. By cooperative agreement the USDA Forest Service manages this trail within the Forest Boundary. The NPS is the coordinating agency for the American Discovery Trail. The NPS works with private groups, State, Local, and other federal agencies on the management of this trail.
3. **Are either of these trails through the Monongahela N. F. on publicly owned property in the areas in which there is project involvement?**
Yes, for the Allegheny Trail the involved locations are FR18 and 717, and the old Western Maryland Railroad grade in Coketon. The American Discovery Trail involved location is the Western Maryland Railroad grade near Coketon. The American Discovery Trail may involve Government land near Porterwood II, under the build alternative, Line A is constructed, County 41 is severed by the highway, and the new location is routed over land.



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FS-6200-26b(4/88)



Lynn Hicks, P.E.
March 10, 1995

622995

4. Do you consider either of these resources to be eligible for Section 4(f) status and, if so, what is the significance of these resources?
No, these are both multiple use trails crossing lands designated for multiple use and do not meet the requirements of Section 4(f). In most cases the trails in question are located on existing roads at the potential involvement sites.

If you have any further questions or concerns with these comments please call Lynn Hicks, in this office, at (304)636-1800.

Sincerely,



JIM PAGE
Forest Supervisor

cc: Hicks
Cheat DR
Randy Epperly WVDOT-DOH
Susan Manes-Harrison - Michael Baker Jr. Inc.

D-9



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Elkins, West Virginia 26241
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RECEIVED
MAR 21 1995

Reply To: 7700

Date: March 17, 1995

Mr. Randolph Epperly, Jr.
Director, Roadway Design Division
WVDOT - Division of Highways
State Capitol Complex, Building Five
Charleston, West Virginia 25305
ROADWAY DESIGN DIVISION
DIVISION OF HIGHWAYS

Dear Mr. Epperly:

On February 16, 1995, we sent you comments and recommendations on the Alignment Selection Supplemental Draft Environmental Impact Statement (SDEIS), and the related Technical Reports for Appalachian Corridor H, Elkins to Interstate 81. Upon further review of the SDEIS we have generated a few more comments which, if incorporated, would improve the accuracy of the Wild and Scenic Rivers section of the document. The comments are:

1. Section III, p. 481, 4th paragraph: The first sentence is not necessarily true. Rivers listed in the Nationwide Rivers Inventory (NRI) may subsequently be listed in Subsection 5(a) of the Wild and Scenic Rivers Act for further study, but they may also be studied without formal listing in 5(a) under provisions of Subsection 5(d), as are the rivers currently being studied on the Monongahela National Forest (including Shavers Fork). Rivers may also be listed by congress in 5(a) for study without being on the NRI (e.g. the segment of the New River above Bluestone Lake)
2. Section III, p. 482, 2nd paragraph: An eligibility study might or might not determine probable classification (but usually would), but would not determine suitability. Eligibility and probable classification determinations might be made separately or might be made as part of an overall study under Subsection 5(a) or 5(d).
3. Section III, p. 483, last paragraph: The words 'upstream' (3rd line) and 'downstream' (6th line) should be reversed. This segment from Job's Run upstream to WV33/8 bridge (not owned by the U.S. Government) is only 21.9 miles long.

If you have any further questions or concerns with these comments please call Lynn Hicks, in this office, at (304)636-1800.

Sincerely,



JIM PAGE
Forest Supervisor

RECEIVED
APR - 7 1995



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Corridor H
Final EIS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 24 1995

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Mr. David Gendell
Regional Administrator
Federal Highway Administration
Region III
10 South Howard Street
Suite 4000
Baltimore, MD 21201

Re: Appalachian Corridor H Project, Alignment Selection
Supplemental Draft Environmental Impact Statement

Dear Mr. Gendell:

The Environmental Protection Agency (EPA) has the responsibility and obligation under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act to review and comment on environmental impact statements. In discharging that responsibility, EPA has reviewed the supplemental draft environmental impact statement (sDEIS) for the alignment phase of the proposed Appalachian Corridor H highway project.

Based on our review of the information contained in the sDEIS and in light of our knowledge of the project area, EPA has rated the document E0-3 (Environmental Objections, Insufficient Information). This rating reflects EPA's position, based on your agency's sDEIS, that significant adverse environmental impacts have been identified that must be avoided in order to provide adequate environmental protection. A copy of our rating system is enclosed for your information.

We commend your agency and the West Virginia Division of Highways (WV DOH) for diligently working to achieve full compliance with the procedural requirements of NEPA. We believe the cooperative efforts of the state and federal agencies have enabled the integrated NEPA/404 process to fulfill its aims. In addition, the willingness of WV DOH to address agency concerns and seek our input enabled us to conduct a comprehensive review of the project, focusing on significant environmental issues rather than inadequacies of the documentation.



We would like to thank the Federal Highway Administration (FHWA) for hosting the meeting between EPA, FHWA and WV DOH on March 17, 1995. It was a good opportunity to discuss some of our concerns and to lay the foundation for continuing to work together to reduce impacts through minimization and additional mitigation. We are particularly encouraged with your commitment to develop mitigation plans designed to address the various concerns which we discussed. Below is a summary of our major concerns, each of which we discussed at our meeting on March 17.

Of special concern is the potential for surface water impacts which may result from the exposure to the atmosphere of coal seams and overburden containing acidic material. Drainage from this material, which often has a pH below 3.5 and often contains high concentrations of iron and sulfates, may have an adverse impact on the receiving streams, rendering them incapable of supporting healthy aquatic systems and unfit for most uses.

The sDEIS does not present adequate analytical evidence to predict the potential for acid production from the overburden. The document should describe the potential for disturbed overburden to produce and release acid drainage to receiving streams, impacting existing uses which may be impaired. These concerns also need to be addressed within the context of the Federal Antidegradation Policy required by the Clean Water Act and the water quality standards of Virginia and West Virginia.

The sDEIS does not contain information which describes the techniques for disposal and associated adverse impacts which may result from the disposal of this overburden material. Appendix A identifies 51,389,818 and 8,899,511 cubic yards of waste fill from road construction in West Virginia and in Virginia, respectively. This represents a significant threat to both aquatic and terrestrial resources and could result in additional adverse impacts to upland, riparian, and stream habitat. The document does not disclose information on the location and feasibility of potential disposal areas, thus failing to evaluate potential impacts which may result.

EPA is also concerned with the potential for disruption of ecological functions associated with the predominately unfragmented forest of the area. The Eastern forests in West Virginia, western Pennsylvania and western Virginia are some of the last high quality large forested ecosystems in Region 3. The Northern Hardwood and Mixed Hardwood forests which typify the project area exhibit exceptional diversity. These forests provide habitat for a wide range of species and conserve our biologic heritage. They also contribute significantly to the maintenance of other regional ecosystem functions. Upland forest/wetland mosaics are often vital for life history requirements of many species.

Line A, the Build Alternative, will directly impact over 3000 acres of forest land. Approximately 206 forest patches less

than 370 acres would also be created with over 50% of these being less than 2.5 acres. Additional forest acres would incur "edge" effects. The direct and cumulative impacts from the construction, habitat modification and auto exhaust exposure need to be fully described in the final environmental impact statement (FEIS) to ensure that adequate safeguards can be developed to protect this valued ecosystem.

The project will result in over 100 stream crossings or modifications in 6 major watersheds. Four rivers listed on the National Rivers Inventory will be crossed. Shavers Fork will lose its eligibility for scenic designation due to several bridge crossings. Some streams will need to assimilate several alterations within a short stretch of river including pipes, stream relocation, box culverts and bridging. For instance, Patterson Creek, a state designated high quality stream, will be affected by ten stream alterations including seven enclosures (five pipes and two box culverts), and three bridge crossings. Impacts associated with these kinds of stream alterations include direct loss of aquatic and associated riparian habitat, simplification of the stream environment, increased rates of sedimentation, loss of diversity, and reduced water quality and quantity.

EPA believes that the success of this project is dependent upon the development and implementation of corrective measures as part of a strong commitment to a comprehensive mitigation strategy. We have additional technical comments which provide greater detail concerning those issues we discussed at the March 17th meeting. EPA Region 3 is prepared to present and discuss these with you and the WV DOH as our agencies work together to bring the FEIS to closure.

Sincerely,


Steven A. Newman
Assistant Administrator

Enclosure

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LC-Lack of Objection

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have identified opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to address these impacts.

EO-Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantive changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to address these impacts.

EU-Environmental Urgency

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, the proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adaptivity of the Impact Statement

Category 1-Adaptivity

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the proposed alternative and those of the alternative(s) reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analysis, or discussion should be included in the final EIS.

Category 3-Insufficient

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analysis, or discussion are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 303 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be recommended for referral to the CEQ.

*From: EPA Manual (406), "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

United States
Department of
Agriculture

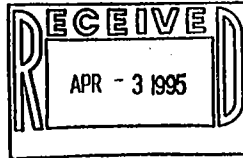
Forest
Service

George Washington
National Forests
Harrison Plaza
Room 233
Harrisonburg, VA 22801
703 564-8300

File Code: 2350/1920/7700

Date: March 31, 1995

Mr. Randolph T. Epperly, Jr.
Director, Roadway Design Division
WVDOT-Division of Highways
State Capitol Complex, Bldg. 5
Charleston, WV 25305



Dear Mr. Epperly:

An on-the-ground meeting was held on Saturday, March 4, 1995 with Charles Graf and Don White of the Potomac Appalachian Trail Club (PATC). Notes of this meeting are attached. The notes and the following comments and questions are submitted to you as input for the Corridor H decision process.

PATC is still concerned that none of the documentation to date, including the latest SDEIS, includes a specific statement that the appropriate state Department of Transportation will, in fact, provide funding or contract for mitigation of the Big Blue Trail. The PATC representatives indicated that they will provide you with their thoughts and input.

There are three alternatives for mitigation of the impacts of Corridor H on the Big Blue Trail. They are: (1) Maintain the current trail location on the mountain crest and install a trail bridge across Corridor H suitable for hikers, horses and mountain bikes; (2) Relocate the trail, crossing under Corridor H at an extended roadway bridge on the Virginia side; and (3) Relocate the trail, crossing under Corridor H on the West Virginia side.

PATC and the Forest Service agreed during the March 4 meeting that of the relocation alternatives, Alternative 3 is preferable to Alternative 2. By using the West Virginia side, the necessity to climb over Great North Mountain is eliminated. PATC indicated that they still prefer Alternative 1.

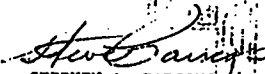
It was agreed that it would be desirable to obtain a cost analysis of the three alternatives. A cost comparison is needed to objectively analyze the alternatives toward recommending the preferred choice to mitigate impacts to the Big Blue Trail.

We hereby request that WVDOT do the cost analysis. Ranger Coleman is willing to identify the approximate relocations on the ground. If you desire we can also provide you with a list of trail construction contractors from which you can choose a consultant to provide the cost estimates for the relocations.

Mr. Randolph Epperly

I appreciate your patience as we work through this issue. Feel free to contact Ranger Coleman at 703-984-4101 or Al McPherson at 703-564-8378 if you have any questions or if we can be of assistance in helping with the cost estimates.

Sincerely,


STEPHEN A. PARSONS
Acting Forest Supervisor

Enclosure

cc: Charles Graf, President, PATC
Patricia Gasing, P.E., Michael Baker, Jr., Inc.
Lee RD
RO
W. Byron Coburn, Jr., VDOT
Susan McDowell, EPA

Corridor H Final EIS

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MEETING NOTES
March 4, 1995

Attendees: Charles Graf, President, PATC
Don White, PATC Corridor H Coordinator
Al McPherson, GWNF Acting Customer Services Director
John Coleman, District Ranger Lee Ranger District

The group met at 1000 hours at West End Grocery and departed for the Big Blue trail crossing of Highway 55 at the State line. The group reviewed the Corridor H process to date and the input provided in regards to the Big Blue.

PATC questions the Forest Service (FS) position that the trail corridor is not 4(f) land. They feel that designation as 4(f) would guarantee that impacts to the trail would be mitigated with no questions. The FS pointed out that DOT will mitigate regardless of whether or not the trail is 4(f). PATC pointed out that nowhere in the Corridor H documents is this clearly stated, nor is the mitigation specified.

FS reviewed the three alternatives suggested to mitigate. These are: a trail bridge on current crest location for hikers, horses, and mountain bikes; a relocation on the Virginia side crossing under the roadway at an extended roadway bridge; and the same on the West Virginia side. PATC prefers the trail bridge and stated that no cost estimates have been provided for any of the three alternatives.

The group then drove to the ATT tower and walked a short section of the Big Blue. The terrain, the extreme mortality of the timber along the top and on the Virginia side, and the salvage cutting on the Virginia side was noted. The old homesite north of the ATT tower and the old Zane road which the Big Blue presently follows were discussed.

The group then drove FDR 502, stopping and taking short walks to approximate points along the possible relocation of the Big Blue on the West Virginia of Great North Mountain. The mortality of the timber, on-going salvage sales, and planned salvage sales were discussed. The end of this possible relocation at Hawk Camp was visited and a short distance walked.

PATC stated that the relocation on the West Virginia side was preferable to the Virginia side. A trail bridge was still their first choice.

After lunch the group visited two newly constructed trailhead parking lots on trail that links with the Big Blue.

Prepared by: John Coleman



United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

ER 94/907

APR 13 1995

David E. Bender
Mr. Billy R. Higginbotham
Division Administrator
Federal Highway Administration
550 Eagan Street, Suite 300
Charleston, West Virginia 25301

Dear Mr. Higginbotham:

The Department of the Interior has reviewed the Supplemental Draft Environmental Impact Statement for the Appalachian Corridor H, from Elkins, West Virginia, to US-81 in Virginia. The following comments and recommendations are provided for your consideration.

GENERAL COMMENTS

The approach to the project does not seem to address the requirements of the Intermodal Surface Transportation Efficiency Act of 1990 (ISTEA). Other categories of ISTEA, including regional planning, mass transit alternatives, bicycle and pedestrian travel, enhancements and scenic byways, have been recognized and in some instances actively embraced by the State of West Virginia. The justification for Corridor H, based on circumstances of the 1960s, seem to be in conflict with other initiatives by the State.

In addition, the projected economic benefits appear to be inaccurate. Studies by Scenic America and others, including the faculty of West Virginia University, indicate that four-lane roads in rural areas have no positive economic impacts but often introduce impacts on local economies and the quality of life. They often encourage franchise businesses at interchanges, lower the wage rate and drain dollars from the Main Street center and the region.

Likewise, the analysis appears to underestimate the value of maintaining farmlands versus the expense of utility development. The American Farmland Trust has studied this issue in depth and can provide more information. Impacts from a four-lane, limited-access road would destroy many of the qualities which many people in this region and other areas of the nation are seeking to conserve. Perhaps the economic benefits and cost of the project could be analyzed based on documentation and clarification of assumptions.

ALL	
	Div. Adm.
	Secretary
	Asst. Dir. Adm.
	Op. Mgt. Engineer
	Financial Mgr.
	Planning Eng.
	Env./ROW
	Struct./Res. Eng.
	Asst. S/R Eng.
	AE-1 Design
	AE-2 Operations
	AE-3 Materials
	Adm. Prog. Coord.
	Financial Asst.
	Admin. Asst.
	Computer Spec.
	Library
	OMC
	File

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We question the omission of a sub-section discussing avoidance, minimization, and mitigation for Vegetation and Wildlife in Section III of the SDEIS. All other topic categories within Section III have this sub-section as appropriate. The Fish and Wildlife Service (FWS) discussed the necessity for mitigation for impacts to terrestrial wildlife habitat at several inter-agency meetings and with the project consultant. While there is no mention of mitigation in the text, Table II-12 mentions the purchase of "Wildlife Refuge Property Acquisition" as a mitigation cost. The FWS prefers to see mitigation based on habitat units lost. Compensatory mitigation typically consists of replacing the lost habitat units via creation or enhancement on existing habitat. Purchase of habitat for mitigation may occur but mitigation ratios often run in the neighborhood of ten (purchased) to one (lost); this can be based on habitat units or acres. Discussions during field reviews recognized the potential to enhance strip mined affected areas in Grant and Tucker Counties. Other discussions dealt with purchase of high quality wildlife habitat in Canaan Valley to offset habitat units losses. The FWS would consider both mitigation methods provided they are habitat unit-based. The \$1.8 million figure is likely low if it includes both enhancement and acquisition. This issue must be resolved prior to the selection of a preferred alignment.

We are also concerned regarding the potential adverse impacts to surface and groundwater from acid drainage associated with road construction through acid-producing shales, sandstones, and clays in addition to coal bearing strata in Grant and Tucker Counties. Acid drainage is possible whether the strata are above or below the water table. In 1990, the WVDOT argued that avoidance of a palustrine wetland between Elkins and Buckhannon would require exposing an acid producing coal seam; a permit was issued for the wetland fill to avoid the potential creation of acid drainage impacts. It appears the preferred route for this segment could cause the production of acid drainage. This segment also has the highest density of wetlands. A thorough discussion of the direct and secondary impacts of acid drainage to surface and groundwater must be incorporated into the SDEIS. It may again be necessary to fill additional wetlands to avoid creating perpetual acid drainage. The FWS must have this information in order to properly assess project impacts and discuss mitigative measures. Mitigative measures, including avoidance, for acid drainage must be proposed and approved prior to issuance of a permit for the project.

The 1992 Corridor Selection SDEIS noted the potential involvement of 41 high quality streams or national resource waters (West Virginia Water Quality Standards) for Scheme D5. Impacts to some of these streams have been avoided or

Mr. Billy R. Higginbotham

In addition, it seems that the four-lane road would impact some Civil War sites, which have been receiving increased recognition for their contribution to local, State and national history. Many communities and regions have chosen to conserve such natural and historical resources and the qualities which make them unique, using these as a basis for a wide range of community-based businesses and livelihoods.

Although, the Department appreciates the inclusion of an Improved Roadway Alternative (IRA) in the subject document, the IRA failed to offer a realistic alternative to the No-build or 4-lane options. The design constraints resulted in a significant portion (62 percent) of the IRA requiring construction on new alignment or relocation. We envisioned a less intrusive approach that involved road widening and horizontal and vertical curve improvements as reasonably permitted by topographical, environmental, and social constraints.

Discussion of secondary and cumulative impacts associated with the Build Alternatives (Line A and the IRA) is inadequate. The document does discuss these impacts with respect to wildlife habitat, including land within the 30-minute commuting distance of the proposed Build Alternative. However, discussion of secondary and cumulative impacts for wetlands is confined to potential build-out at the known industrial parks along the corridor. To suggest that projected development could occur without adverse wetland impacts "...because sufficient raw land is available to support all predicted residential and industrial development..." ignores present day reality.

The predicted direct and secondary impacts to vegetation and wildlife associated with the Line A Build Alternative will eliminate nearly 2 percent (31,464 acres) of the available upland wildlife habitat in the project area. The Habitat Evaluation Procedures (HEP) process has likely underestimated the impacts associated with direct and secondary impacts. Of concern are the zero values for ruffed grouse and the low values for the warblers. While not superb, habitat for ruffed grouse is considered average to above average in many areas traversed by the corridor. Likewise, good to excellent habitat for warblers occurs in the project area.

Evaluation species are utilized in a HEP to quantify habitat suitability and to determine changes in the number of available habitat units. If a species records a zero in the habitat suitability index, no determination of net changes can be made. Such a species should not be used in the HEP. This problem may have been avoided had the HEP team been made up of the action agency/consultant and the review agency member as typically occurs.

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minimized by incorporating bridges. However, the Alignment Selection SDEIS notes 74 stream enclosures and 19 stream relocations affecting nearly 7.2 stream miles. Over 50 percent of the stream points sampled recorded a Biotic Index ranking of A or B. This indicates they have benthic macroinvertebrate communities that are non-impaired conditions (A) or moderately impaired (B). In addition, over 1 mile of riparian habitat bordering 13 different streams would be adversely affected.

Appendix A of the SDEIS lists 51,389,918 and 8,899,511 cubic yards of waste fill from road construction in West Virginia and Virginia, respectively for a total of 60,289,429 cubic yards. At 10 yards (30 feet) deep this amount of fill would cover nearly 1,246 acres or 2 square miles. It is anticipated that disposal would adversely impact upland, riparian, instream, and potentially, wetland wildlife habitat. However, there is no discussion of the potential direct, secondary, or cumulative impacts from the loss of this habitat resulting from the disposal of excess fill material.

The FWS biologists recently met with the Federal Highway Administration, WVDOT and their consultant to discuss the disposition of waste fill from the project. Preliminary plans for estimated earthwork balance (waste) to 4 of the 16 Line A project sections indicate a 73 percent reduction in waste fill. The WVDOT believes it can reduce waste fill overall by 30 to 50 percent. Final plans for waste fill reduction are currently being developed.

The proposed project will result in the direct loss of 37.7 acres of wetland, 7.2 miles of stream habitat, 1.1 mile of riparian habitat, 3,795 acres of terrestrial wildlife habitat, and substantial, but unknown, habitat due to waste fill disposal. Secondary impacts will likely result in additional losses of floodplain and wetland habitat, nearly 28,000 additional acres of terrestrial wildlife habitat, and substantial, but unknown, stream miles due to siltation, acid drainage, acid deposition, and waste fill disposal.

SPECIFIC COMMENTS

Page 8-12, Beneficial Impacts, No-build Alternative. This section should elaborate on the lack of adverse impacts to the natural resources of the project area.

Page 8-13, Table 8-2. Include Federally-designated candidate species with Federally-listed Threatened and Endangered Species.

Page 8-14, Table 8-3. Businesses potentially relocated should include farms rendered unprofitable by roadway construction.

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Page 8-16, Table 8-3. Include total acres of habitat loss projected under secondary impacts.

Page 8-20, Comparison of the IRA and the Build Alternative. We disagree that the IRA, as proposed, remains largely on existing alignment. Rather, it would require relocation or new right of way for 62 percent of its length.

Page I-2, Project Purpose and Need. The minutes from both Resource Agency Workshops are only referenced in Section VII of the 1992 Corridor Selection SDEIS. The summaries of these workshops should be given more emphasis.

Page II-95, Table II-12, Right-Of-Way Acquisition and Mitigation Cost Estimates. The table lists \$1.8 million for the acquisition of property for the Canaan Valley National Wildlife Refuge. We could not find discussion or justification for this action in the document or technical reports. This action has been discussed with FWS personnel as a means to mitigating adverse impacts to wildlife. However, no discussion of wildlife mitigation has occurred in the document as mentioned above. Mitigation of this type is inferior to enhancement or restoration of habitat, but is acceptable when the habitat to be preserved is of high wildlife value and in jeopardy of being developed.

We support the inclusion of funding for an environmental monitor to assure all mitigative measures agreed to, during field reviews and incorporated into permits, are carried out.

Page III-31. Industrial development was assumed to take place at existing and planned industrial parks within the corridor-influenced area. We note that the Garrett County (MD) site is equidistant between I-68 and the proposed corridor, and the Virginia sites are all located along I-81. Industrial development at these sites is likely to grow independent of the construction of Corridor H.

Page III-41. Discussion is lacking regarding the adverse impacts to in-town businesses resulting from development of interchange development and loss of traffic.

Page III-87. This section lacks discussion of potential impacts to groundwater wells and springs from acid drainage as a result of highway construction.

Page III-122. During the Alignment Selection SDEIS Technical presentation in 10/94, the FWS voiced its concern for the document's failure to address NOx and other acid rain producing chemicals. The current SDEIS remains inadequate in addressing these concerns. Acid deposition currently affects nearly 388 miles of streams in West Virginia. The SDEIS

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should thoroughly document what effect the Build Alternatives will contribute to this problem.

Page III-276. Floodplains, Tygart Valley Watershed. The discussion of raising flood elevations should specify where these are likely to occur. Many residents of the Crystal Springs area near Elkins are currently experiencing substantial losses due to annual flood events along Leading Creek. The SDEIS should also discuss floodplain secondary impacts with regard to Executive Order 11988.

Page III-282. The combination of direct and secondary impacts to wildlife will result in the loss of nearly 31,500 acres of habitat, or nearly 2 percent of the available wildlife habitat (forest and farmland, Table III-46) in the project region (30 minute drive from Corridor H). This figure is probably low as secondary impacts to wetlands were not expected to occur. Additional forest land (15,987 acres) could be adversely affected by the edge effects of Line A. In terms of habitat units, Line A will result in over twice the loss of habitat units when compared to the IRA.

Page III-292. TABLE III-47. Cumulative Habitat Units Lost. Include the number of hectares/acres affected for each watershed as well as totals of hectares/acres and habitat units lost for project.

Page III-305. Impacts. Discussion of the secondary impacts to forest fragmentation associated with the development of nearly 31,500 acres of land, 80 percent of which is forested, should be strengthened.

Page III-378. Project-Specific Mitigation Requirements-West Virginia. The first line of this paragraph should note that the IRA, as well as Line A, will impact wetlands. The mitigation ratios proposed will only apply for the successful completion of upfront mitigation.

Page III-382. Conceptual Mitigation Plans. Discussion of these plans is premature in light of the failure to secure an agreement from the respective landowners for either site. We understand that the landowner of the Wilmoth Run site is not a willing seller and that a viable alternative site has not been selected.

Page III-404. Stream Assessment Methodology. The SDEIS states that water quality samples were taken during macroinvertebrate sampling. In addition, the Streams Technical Report, page 9, states that nitrate water samples were taken in areas where agricultural and non-point source pollution was suspected. A review of the Streams Technical Report, Appendices revealed that very few nitrate samples were taken. This is surprising

Mr. Billy R. Higginbotham

considering the level of concern by the resource agencies for non-point source pollution from the expanding poultry industry in the Potomac Drainage. We would appreciate an explanation for the lack of data on nitrates.

Page III-447. Figure III-66. Summary of Impacts by Watershed. Of the 630 miles of perennial streams in the project watershed nearly 5.3 miles and 2 miles of streams will be placed in enclosures or relocated, respectively. The destruction of nearly 7.3 miles of perennial streams in the project watershed is considered a significant adverse impact. Secondary and cumulative adverse effects are expected to cause degradation of numerous miles of streams in the project watersheds. The SDEIS details Best Management Practices (BMPs) as mitigation measures. During the construction of Corridor H between Buckhannon and Elkins, West Virginia, FWS biologists noted significant sediment erosion during construction despite implementation of BMPs. The proposed highway will cross many sensitive watersheds containing high quality warmwater and coldwater (trout) streams. The mitigative measures discussed will likely fail to prevent significant degradation to water quality and instream habitat.

Page III-478. Stream Channel Enhancement. A total of \$1.032 million dollars has been projected for stream channel enhancement in Table II-12. However, the text in Section III-478 essentially details BMPs. BMPs are required by State law. Mitigation in the form of avoidance and minimization of constructed related impacts by implementation of BMPs is expected. BMPs should be incorporated as a construction-related cost, not as mitigation. The Section 404 permit application (Public Notice CEORP-OR 94-95) shows detailed drawings of instream mitigative measures. These mitigative measures are not mentioned however in the SDEIS. A detailed plan of instream enhancement measures and where they will be utilized should be developed.

Page III-480. Fencing. We would like to see a table listing the areas to be fenced in order to properly assess the mitigative potential of the action.

Page III-489. Impacts. Line A will likely render the Shavers Fork ineligible for Scenic status under the National Wild and Scenic Rivers Act, Public Law 90-542.

ENDANGERED SPECIES COMMENTS

The alternatives described in this SDEIS have resulted in significant reductions from the previous SDEIS with regard to Federally-listed endangered, threatened, and candidate species. However, we have provided specific comments that

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should be addressed in the continuing Section 7 consultation process.

Page III-325 and exhibit III-47. The discussion states that, during field investigations, no populations of running buffalo clover, *Trifolium stoloniferum*, were discovered in potential habitat in the vicinity of the alternatives. However, the map shows the known population of the clover located on the west side of the Shavers Fork when it actually occurs on the east side near Line A. Discussions with the consultant have acknowledged the error in the map. Recent location reviews of West Virginia Natural Heritage Data Base's map indicates the population is located 300 to 400 feet west of Line A. The population will be checked in the growing season to confirm its presence and exact location. If it still occurs at this site, WVDOT should formulate mitigation plans to protect the population, such as marking in a way to prevent disturbance or vandalism.

Page III-319, Table III-52 and Page III-325, 2. b. Existing Environment and Impacts. Discussions and tables relating to the Federal plant candidates for listing under provisions of the Endangered Species Act, the Kate's Mountain clover, *Trifolium virginicum*, and mountain pimpernel, *Taenidia montana*, are unnecessary. As we previously indicated, these species were listed as category 3C in Endangered and Threatened Wildlife and Plants; Review of Plant Taxa for Listing as Endangered or Threatened Species; Notice of Review (Federal Register/Vol. 55, No. 35/ Wednesday, February 21, 1990). 3C Taxa are those that have proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat. Listing pursuant to the Endangered Species Act, therefore, is not likely.

PAGE III-326, paragraph 2. Please reference the proposed rule, (Federal Register/Vol.59, No. 219/ Tuesday, November 15, 1994) Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species. According to the proposed Rule, the category 2 candidate, the New England cottontail, *Sylvilagus transitionalis*, has been redescribed in the project area to be referred to as the Appalachian cottontail, *Sylvilagus obscurus*.

The SDEIS states that no New England cottontails, a category 2 candidate were observed during the field studies, and makes the assumption that none of the alternatives would impact the species. However, it is nearly impossible to distinguish this species from the common cottontail, *Sylvilagus floridanus*, without examining the skull. Since the Appalachian cottontail occurs throughout the higher elevations of the project area,

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it occurs in close proximity to the alternatives and would be directly affected by habitat destruction and road mortality.

Page III-326. Surveys for the loggerhead shrike, *Lanius ludovicianus*, should be conducted in suitable habitat in West Virginia as well as Virginia. Shrikes are known to nest in Grant County. Two of the reasons for the decrease in shrike populations are thought to be habitat loss and mortality caused by vehioular collisions.

FISH AND WILDLIFE COORDINATION ACT COMMENTS

The SDEIS includes an application for a Section 404 (Clean Water Act) permit for the project from Elkins to the West Virginia-Virginia State line, the eastern limit of the Pittsburgh District's jurisdiction. A Section 404 permit will only be applied for the Virginia section after the Commonwealth of Virginia determines which alternative to carry forward. There is serious opposition to construction alternatives for the highway (84 percent of Virginians commenting at the January 1995 public hearings supported the No-build option). Therefore, it is likely that Virginia will not construct the 14 miles of the road needed to connect the West Virginia terminus with I-81, thereby defeating a primary purpose of the project to provide system linkage between I-79 and I-81. We note that in planning for this scenario the project purpose was changed in the Section 404 permit application to read "System linkage to ultimately complete the connection of I-79 in West Virginia to I-81 in Virginia".

The WVDOT has done a commendable job of designing both the IRA and Line A Alternatives to avoid and minimize impacts to wetland resources. The planned identified loss of 37.7 acres of wetlands for Line A is small relative to the project length (114 miles) and, wetland impacts for the IRA are 57 percent (21.4 acres) of Line A. The FWS has worked with the WVDOT, its consultant, and other resource agencies, to arrive at adequate mitigation ratios to replace the functions and values threatened by the construction of the roadway. However, we remain concerned about the loss of wetlands in a State where wetlands represent less than 1 percent of the cover type. The majority (53 percent) of the wetlands to be adversely affected are less than 1 acre and 91 percent are classified as headwater or isolated. Typically, these wetland resources are afforded a lesser degree of protection as their size and location typically qualify them for Nationwide General Permits with less stringent standards. The value that these small, isolated wetlands have to the dispersal of wetland dependent wildlife, such as migratory birds, amphibians and reptiles, is great. Further, the permit application is currently in error because the proposed purchase of mitigation land did not materialize. Therefore, the FWS's concurrence on the Section

Mr. Billy R. Higginbotham

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404 permit for the project will be dependent upon a new viable and adequate wetland mitigation plan.

SUMMARY COMMENTS

We commend the WVDOT and their consultant for the high level of cooperation in working to avoid and minimize adverse impacts to trust resources and their habitats. This process has led to a better understanding of the project's benefits as well as adverse impacts. However, it is this increased understanding of the extensive, unavoidable, and significant adverse direct and secondary impacts to terrestrial wildlife habitat and aquatic resources, including wetlands and floodplains, balanced against the uncertain economic benefits that leads the FWS to support the No-build Alternative. At this time the proposed mitigation for the unavoidable impacts is inadequate and fails to offset adverse impacts to high quality fish and wildlife resources associated with the Build Alternatives.

The Federal Highway Administration, WVDOT and the FWS will continue to work toward an acceptable resolution of these issues. The March 13, 1995 meeting between our agencies set a framework for their potential resolution. We understand that the WVDOT intends to produce a unified mitigation document to be made part of the project FEIS.

The completion of this document would be a significant step in resolving the FWS's concerns. Pursuant to the Council on Environmental Quality's regulations for the implementation of NEPA (40 CFR 1504.3), the WVDOT should also be advised that the environmental consequences of the preferred alternative, Line A, are currently of sufficient concern to raise the potential for our subsequent referral of the proposed action to the Council on Environmental Quality.

Sincerely,



Willie R. Taylor
Director, Office of Environmental
Policy and Compliance

H. K'roy Burch
Director



Administration
Natural Heritage
Planning & Recreation
Soil & Water Conservation
State Parks
Volunteerism & Constituent
Programs

Corridor H Final

COMMONWEALTH of VIRGINIA

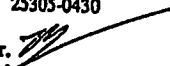
DEPARTMENT OF CONSERVATION AND RECREATION

203 Governor Street, Suite 302
TDD (804) 786-2121 Richmond, Virginia 23219-2010 (804) 786-6124 FAX: (804) 786-6141

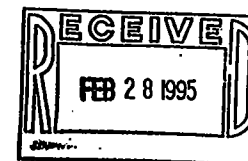
MEMORANDUM

DATE: January 19, 1995

TO: Mr. Randy Epperly
West Virginia Department of Transportation
Division of Highways
1900 Kanawha Boulevard East
Charleston, WV 25305-0430

FROM: John R. Davy, Jr. 
Planning Bureau Manager

SUBJECT: Draft EIS for Appalachian Corridor H, (Frederick and Shenandoah Counties In Virginia)



The Department of Conservation and Recreation (DCR) has reviewed the subject project and offers the following comments.

The Department of Conservation and Recreation (DCR) has searched its Biological and Conservation Data System (BCD) for occurrences of natural heritage resources from the area outlined on the sublined map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

DCR documents the presence of several significant caves in the Lebanon Church option area. Due to the distance to these resources, DCR does not anticipate that this project will adversely affect these known cave resources. However, several comments concerning the representative assessment of karst groundwater resources in the Lebanon Church and Clary areas are offered below:

The criteria used to identify private water wells within the "potential impact zone" of the proposed alignments (i.e. within 500 feet of construction limits; p. III-88) are not realistic in karst terrain, where surface water and groundwater are integrated via sinking streams, subsurface drainage networks, and springs. Virginia should ensure that private water supply sources and key recharge areas in the Lebanon Church and Clary communities are accurately mapped and characterized before selecting the route with the least overall impact.

The proposal to monitor private water wells located along the selected alignment (p. III-127) should include any springs and sinking streams within potential influence of the route. Due to the inherent variability of many karst waters, monitoring should occur before, during, and after construction (p. III-88) to facilitate the identification of natural versus induced changes in water quality and quantity.

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In addition to the karst resources mentioned above, DCR offers the following comments regarding rare and threatened species within the project corridor.

BCD documents the presence of the Potomac sculpin (*Cottus girardi*, G4/S3/NF/NS), a state rare fish species, from Cedar Creek in the project corridor. In addition, our records indicate the presence of the state threatened wood turtle (*Clemmys insculpta*, G4/S2/NF/LT) along the unnamed tributary to Paddy Run north of Vances Cove. Both of these species may be detrimentally impacted through habitat degradation as a result of construction activities.

While the wood turtle occupies a variety of habitats including forested floodplain and nearby slopes, fields, wet meadows, and farmland, the primary habitat requirement is the presence of water (Mitchell, 1994). The protection of water resources within the project corridor is important to the ecological niche of this species.

DCR recommends an inventory for the wood turtle in appropriate habitat along the project corridor. In addition, to the documented occurrence of the wood turtle in the vicinity of Paddy Run, the Virginia Department of Game and Inland Fisheries (VDGIF) recently conducted a survey in Shenandoah and Frederick Counties in the vicinity of the proposed Corridor H project. According to VDGIF's nongame office, an excellent wood turtle population was identified along Cedar Creek at the Route 55 bridge crossing. Please contact the VDGIF for additional information regarding this wood turtle survey. Because of the survey work VDGIF has done in the area, they would have a better knowledge of appropriate sites for survey. Therefore, DCR recommends coordinating specific survey locations with the Virginia Department of Game and Inland Fisheries.

Since the wood turtle overwinters in creeks and streams, DCR recommends considering a time of year restriction of November 1 through March 31 on instream work in those streams identified as having wood turtles. DCR further recommends strict adherence to erosion and sediment control standards throughout all phases of construction to protect the quality of the aquatic habitat.

DCR-Division of Natural Heritage biologists are qualified and available to conduct inventories for rare, threatened, and endangered species. Please contact Leslie D. Trew, Natural Heritage Inventory Manager, at (804) 786-7951 to discuss arrangements for field work. A list of other individuals who are qualified to conduct inventories may be obtained from the United States Fish and Wildlife Service (USFWS).

Any absence of data does not necessarily mean that other natural heritage resources do not occur on or adjacent to the project site, but rather that our files do not currently contain information to document their presence. New and updated information is continually added to BCD. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is used.

In the letter dated April 26, 1994 to the Virginia Department of Transportation (VDOT) from the Department of Conservation and Recreation (DCR), it was requested that adjacent landscapes and the variances in roadway width, vehicular speed and landscaping be considered to accommodate the existing scenic nature of the roadway. After reviewing the document, it is evident that these comparisons were not incorporated into the Improved Roadway Alternative (IRA). For an IRA to be feasible from a resource perspective, these alterations in design and issues need to be considered as part of the IRA concept.

The parkway concept is mentioned on page II-20 of the Supplemental Draft Environmental Impact Statement (SDEIS); however, it is not clear as to how this concept relates to the truck traffic projected for Route 55. One of the purposes of the roadway is to promote economic development which may necessitate increased commercial traffic; however, the SDEIS does not adequately address the tourism and recreation uses which exist in Virginia. These scenic and recreational resources are reliant on the retention of the

scenic and aesthetic character of the region. It would seem prudent to seriously consider a parkway concept in Virginia based on these important resources.

The IRA design criteria described on pages II-2 and II-3 of the SDEIS should mention the incorporation of scenic roadway enhancements. While this is addressed later in the document, reference should also be made to these scenic roadway considerations in this section. In this same section under "Special Bridge Structures Build Alternatives" on page II-14, all bridges in Virginia should be designed with open rail parapets. The bridge design shown in Exhibit II-4 is not an acceptable alternative for this scenic area of Virginia. The other bridges shown appear to be more aesthetically acceptable but should also include open rail parapets to allow views from the bridge.

The DCR agrees with the Virginia Citizens Advisory Committee (VCAC) that the issues presented by the Virginia Commonwealth Transportation Board which are mentioned on page VII-20 of the SDEIS have not been fully addressed in the document. This is particularly true in the development of an alternative which presents a parkway character.

On page III-41 reference is made to the numbers of jobs created as a result of Corridor H construction. It is not clear, however, if the job growth and development relates to permanent positions or are ones created as a result of the construction process which is temporary.

Route 55 was been evaluated in early 1994 by DCR and VDOT. Route 55 has been found to qualify as a Virginia Byway and designation is pending endorsement from the localities. The Summary of Visual Impact Mitigation Measures on page S-23 is confusing. The Improved Roadway Alternative (IRA) is not listed as an alternative which will require mitigation for visual impacts; however, this alternative as stated in Table S-3 has more lands converted from forested, agricultural, rangeland and urban than the build alternative. Based on this data, it would seem appropriate that mitigation measures must be planned for the IRA as well as the build alternative. The mitigation measures listed for the build alternative should include parkway-like design features along the entire roadway. Reference is made to the importance of the regional scenery in letters from the DCR to VDOT dated April 26, 1994 and July 23, 1993. In these earlier comments to VDOT, DCR pointed out the unique scenic and historic resources present in the Route 55 corridor.

Cedar Creek is mentioned as meriting evaluation as a Virginia Scenic River. Page III-490 states that neither the No-Build, the IRA or the Build Alternative will interfere with its designation to the Virginia Scenic Rivers System. While this may be true, designation will ultimately depend on the condition of the water body and the landscapes surrounding it. The bridge crossing and proposed development along the stream corridor could impact the eligibility of this water body as a Virginia Scenic River.

In previous comments the Department of Conservation and Recreation has noted the importance of the Big Blue Trail to the recreational resources of the region. Because the trail is located within the project area on the George Washington National Forest property, coordination with the U. S. Forest Service has been essential. The 1989 Virginia Outdoors Plan recognized the Potomac Appalachian Trail Club (PATC) as the group which develops, manages and maintains the trail. Because of this non-profit, private organization's involvement and interest in the trail, their comments dated March 29, 1994 and January 25, 1993 to Mr. R. T. Epperly of VDOT and December 30, 1994 should be referenced in the SDEIS. Also, the inclusion of the PATC as a member of the VCAC should be considered as further study of Route 55 is pursued in Virginia. The PATC has petitioned the Secretary of Agriculture to have the Big Blue Trail designated a national Recreation Trail under the provisions of the National Trails Systems Act.

The Big Blue Trail is of state and nationwide significance as a recreational trail and it is located on publicly owned property in the study corridor. A Section 4(f) Statement should be prepared. It appears that none of

Corridor H, Page 4

the previous alternatives were developed to mitigate impacts to the trail. The avoidance of impact to show there is no feasible and prudent alternative to the use of land must be fully addressed prior to preparing mitigation plans for the trail's relocation. Coordination of the Section 4(f) documentation requires the involvement of the property owner, the U. S. Forest Service. Additionally, DCR recommends consultation with the PATC due to their responsibility for the development, management and maintenance of the trail and by the PATC's prior agreement with the U. S. Forest Service.

Thank you for the opportunity to comment on this project.

cc: Bill Bushman, VCAC
Charles Graf, PATC
Alice Allen Grimes, COB
Rebecca Wadja, VDGIF
Mary Ann Boyer, EPA
Ray Fernald, VDGIF

Reference: Mitchell, J.C. 1994. The reptiles of Virginia. Smithsonian Institution Press.

JRD:elv



COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Peter W. Schmidt
Director

January 23, 1995

P.O. Box 10009
Richmond, Virginia 23240-0009
(804) 762-4000

Mr. Randolph T. Epperly, Jr.
Director, Roadway Design Division
WVDOT - Division of Highways
State Capitol Complex, Building Five
Charleston, West Virginia 25305

RE: Alignment Selection Supplemental Draft Environmental Assessment for the Appalachian Corridor H, Elkins to Interstate 81

Dear Mr. Epperly:

We have reviewed the alignment selection supplemental draft environmental impact statement (SDEIS) for the Appalachian Corridor H project from Elkins to Interstate 81. We commend the efforts demonstrated in the SDEIS to avoid and minimize impacts to streams and wetlands, and we encourage further efforts as the alignment is further refined.

We note that a preferred alignment has not been selected for the Virginia segment of the roadway. According to the SDEIS, if Line A is selected as the preferred alternative, 0.8 acres of wetland impacts are anticipated in Virginia. Stream impacts due to piping, culverting and relocation would total 2,050 linear feet.

The stream and wetland impacts could be further reduced by selecting the Duck Run Option Area Line D1, with stream impacts of 0.0 linear feet due to piping or culverting and wetland impacts of 0.36 acre, versus 450 linear feet and 0.52 acres, respectively, for Line A through this area. In terms of the Lebanon Church Option Area, Line A appears to offer fewer impacts.

As indicated in our previous correspondence, the impacts from the project will require the following permits:

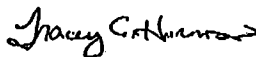
- Virginia Pollutant Discharge Elimination System (VPDES) Stormwater Permit for construction. Contact Mr. Kemper Loyd at our Valley Regional Office (703/828-2595) for more information regarding this permit.

Mr. Randolph T. Epperly, Jr.
Page 2

- Virginia Water Protection Permit (VWPP) for water quality impacts due to the discharge of dredge and fill. Contact me at (804) 527-5244 for more information regarding the VWPP.

We appreciate the opportunity to continue our involvement in this selection process and SDEIS review. If we can be of any further assistance, please feel free to contact me at (804) 527-5244.

Sincerely,



Tracey E. Harmon
Environmental Specialist Senior
Office of Water Resources Management

cc: Patricia S. Gasing, Michael Baker, Jr., Inc.
Bret Preston, DGIF
Janit Potter, DCR
Ron Stouffer, ACOE
Ken Wilkinson, VDOT
File



COMMONWEALTH of VIRGINIA

Department of Game and Inland Fisheries

January 24, 1995

Mr. Randolph T. Epperly, Jr.
Director, Roadway Design Division
West Virginia Department of Transportation
State Capitol Complex, Building 5
Charleston, West Virginia 25305

RE: Appalachian Corridor H, Elkins, WV
to I-81, Strasburg, VA
ESSLOG #1988

Dear Mr. Epperly:

We have reviewed the Supplemental Draft Environmental Impact Statement (SDEIS) for the referenced project, and offer the following comments and recommendations. The West Virginia Department of Transportation, in conjunction with the Virginia Department of Transportation and the Federal Highway Administration, is proposing to construct an approximately 114-mile divided, four-lane highway from Elkins, West Virginia to I-81 in Strasburg, Virginia. Approximately 14 miles of the proposed project would be located in Virginia. Construction of this project would complete the 145-mile Corridor H facility from I-79 in Weston, West Virginia to I-81 in Strasburg, Virginia.

In Virginia, the SDEIS indicates that the preferred alternative Build-Line A would impact 0.8 acres of wetlands, and would require 100 feet of stream relocations and several stream crossings within the Shenandoah River drainage. Instream impacts are expected for Duck Run, Cedar Creek, Turkey Run, and tributaries to Paddy Run and Mulberry Run. Duck Run and Paddy Run are designated wild trout streams. We recommend an October 1 through March 31 time-of-year restriction on instream construction activities in Duck Run and Paddy Run to minimize impacts upon the native brook trout populations during this critical spawning period. In addition, the state threatened wood turtle (*Clemmys insculpta*) has been documented in Cedar Creek at the Route 55 bridge crossing and in Paddy Run. While highly terrestrial, wood turtles overwinter on the bottom of streams, under streambanks, or in muskrat burrows. We recommend an October 15 through March 31 time-of-year restriction on instream construction activities to minimize impacts upon wood turtles during this period. Also, we recommend that wood turtle surveys be conducted immediately prior to clearing or commencement of construction activities within the approaches to any perennial stream crossing. If wood turtles are found, we recommend relocation to appropriate habitats upstream of the construction site. Mr. Mike Plnder, Aquatic Nongame Biologist, may be contacted for information on appropriate survey protocols. He may be reached in our Blacksburg office at (703) 552-6992.

Mr. Randolph T. Epperly, Jr.
January 24, 1995
Page 2

Thank you for the opportunity to comment on this proposed project. Please call me or Bret Preston at (804) 367-8999 if we may be of further assistance.

Sincerely,

Raymond T. Fernald, Manager
Environmental Services Section

RTF/BAP

cc: Ken Wilkinson, VDOT.
Mike Flinder

D-22

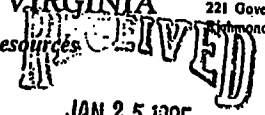


COMMONWEALTH of VIRGINIA

H. Alexander Wise, Jr., Director

Department of Historic Resources

221 Governor Street
Richmond, Virginia 23219



JAN 25 1995

ROADWAY DESIGN DIVISION
WV DIVISION OF HIGHWAYS

20 January 1995

Randolph T. Epperly, Jr.
Director, Roadway Design Division
West Virginia Department of Transportation
Division of Highways
State Capitol Complex, Building Five
Charleston, West Virginia 25305

Re: Appalachian Corridor H
Elkins to I-81
DHR project no. 90-988-F

Dear Mr. Epperly:

We have received the Alignment Selection Supplemental Draft Environmental Impact Statement (SDEIS) for Appalachian Corridor H. We appreciate the depth and scope of the SDBIS, and the inclusion of effects on cultural resources among other categories of effects.

We have also received the Appalachian Corridor H Draft Cultural Resources Technical Report, Volume 1, prepared by Cultural Resources Section, Michael Baker Jr., Inc. Patricia S. Gesing of Michael Baker Jr., Inc., states that the complete Cultural Resources Technical Report will be ready at the end of January 1995. The Virginia Department of Historic Resources will be able to review and comment on the survey findings when the final volumes of the Cultural Resources Technical Report are received. With this information, the Department will also be able to assess the likely effects of the undertaking on those resources determined eligible for listing on the National Register. This will allow the consulting

022995

Mr. Epperly
VDHR project no. 90-0988

20 January 1995
Page 2

agencies to determine appropriate measures for avoiding, reducing, or mitigating any adverse effects.

The West Virginia Department of Culture and History has provided extensive comments on the draft Cultural Resources Technical Report, and we understand that these comments have helped to shape the final report.

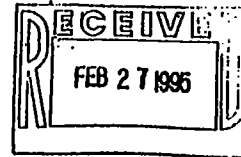
Please contact Cara H. Metz, archaeologist, or John E. Wells, architectural historian, if you have questions about our comments.

Sincerely,

David H. Dutton
Director, Division of Project Review

- c: Craig Lukesic, VDOT
- Jane Powell, DEQ
- Susan Pierce, WVDCH
- James Tumlin, FHWA
- Billy Higginbotham, FHWA
- MaryAnn Naber, Advisory Council on Historic Preservation
- Corridor H Alternatives
- Patricia S. Gesing, Michael Baker Jr., Inc.

D-23



GASTON CAPERTON
Governor

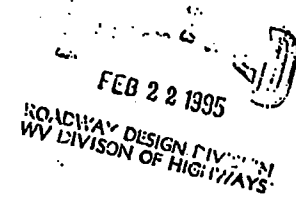


STATE OF WEST VIRGINIA
BUREAU OF COMMERCE
DIVISION OF NATURAL RESOURCES
State Capitol Complex
Building 3, Room 812
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305-0684
TDD 858-1489 TDD 1-800-584-8087
Telephone (304) 558-2771 Fax (304) 558-3147

CHARLES B. FELTON, JR.
Director

February 17, 1995

Mr. Randolph T. Epperly, Jr.
Director, Roadway Design Division
WV Department of Transportation
Division of Highways
State Capitol Complex Building
Charleston, WV 25305



Dear Mr. Epperly:

The West Virginia Division of Natural Resources (DNR) has completed a review of the Alignment Selection Supplemental Draft Environmental Impact Statement (SDEIS) for Corridor H between Elkins, West Virginia and Interstate 81 in Virginia (West Virginia segment only) and offers the following comments and recommendations. Comments are submitted pursuant to authorities of the Fish and Wildlife Coordination Act (as amended), the Federal Water Pollution Control Act/Clean Water Act (as amended), the Endangered Species Act of 1973 (as amended), and corresponding responsibilities proscribed in the laws of the State of West Virginia (WV Code, Chapter 20).

The DNR appreciates the opportunity to comment on this project and the cooperation provided by the West Virginia Division of Highways (DOH) and Michael Baker, Jr., Inc.

As indicated in past correspondence, the combined National Environmental Protection Act (NEPA) and Clean Water Act (Section 404) process has provided a methodical evaluation of this 114 mile project proposal. Concurrences to proceed to the DEIS development stage have been provided by the DNR based on information resulting from past evaluation processes. Revisiting previous concurrences is unnecessary since they have been adequately documented. Public hearings have been held, comments received and impacts assessed and addressed. The DNR has been involved throughout the process. Through extensive cooperation and coordination, impacts to National Resource Waters, high quality streams, wetlands, forested habitats and other fish and wildlife habitats have been avoided, minimized or finally compensated within project constraints.

It is impossible to construct 114 miles of new highway or upgrade existing roadways without significant environmental impacts. Avoiding, minimizing and compensating impacts greatly reduces overall environmental damage. Due to excellent interagency coordination and

Corridor H Final EIS

Mr. Randolph T. Epperly, Jr.
Page 2
February 17, 1995

cooperation, the DNR contends that a "build" or "improved roadway" alternative could be completed with significantly reduced adverse environmental impacts.

The DNR, has several general and specific comments.

GENERAL COMMENTS

The Habitat Evaluation Procedure (HEP) used to assess wildlife habitat impacts results in quantitative data for individual species chosen to be representative of the broad array of wildlife utilizing a site. A HEP evaluation, use Habitat Suitability Indexes (HSI) for individual species. The HSI methodology permits adjustments for regional differences in species habitat requirements. Our review of the HEP information raises questions relevant to some adjustments that were made in this assessment. To resolve this issue, the DNR recommends a team be established to review the assessment, particularly with regard to applicability of regional adjustments as they relate to West Virginia.

We understand that the Intermodal Surface Transportation Efficiency Act (ISTEA) allows mitigation for terrestrial impacts resulting from a project of this nature. In our review, we found significant effort expended to evaluate terrestrial impacts, but no mitigation applied (other than wetlands). Our review revealed a \$1.8 million allocation for land purchase in Tucker County associated with the Canaan Valley National Wildlife Refuge. If this sum is to be considered compensation for terrestrial habitat impacts, a detailed evaluation must be coordinated with the resource agencies and presented in the document.

The DEIS briefly discusses mitigating impacts associated with construction disturbances of certain geologic formations (i.e., coal). These disturbances may impact water quality by exposing potentially toxic materials which will allow subsequent production of toxic drainage. The recent construction of Corridor H from Heavener Acres to Elkins is an example of unabated acid drainage caused by road construction. Several locations on this road segment are currently contributing acid drainage to the Tygart River and some of its tributaries. Unabated acid drainage results in a violation of State Water Quality Standards.

The DNR cannot concur with construction alternatives which create acid drainage that results in degradation of waters and aquatic ecosystems of the state. We suggest that DOH prepare a plan to identify and mitigate acid drainage at all potential acid producing sites. The proposed mitigation strategies should be tested on the existing acid drainage sites on the Corridor H segment from Heavener Acres to Elkins.

The DNR was unable to locate (other than in the table entitled "Preliminary Cost Estimates" - SDEIS appendices) documentation of waste/borrow material disposal sites and the

Mr. Randolph T. Epperly, Jr.
Page 3
February 17, 1995

associated environmental impacts of this activity. Past projects have resulted in significant, undocumented and sometimes damaging waste/borrow area placement. In the past, this agency has been asked to recommend approval of these sites with little time and little information to evaluate impacts. Waste/borrow placement can result in significant undocumented impacts on projects of this magnitude. The DNR requests that the environmental impacts and necessary mitigation measures of all waste/borrow activities disjunct from the construction limits of the roadway be evaluated and incorporated into the NEPA process. The DNR does not currently have the resources to provide immediate waste site evaluations on projects of this magnitude. This issue should be addressed in the DEIS.

SPECIFIC COMMENTS - ALIGNMENT SDEIS

Page S-8, Section 8, Watershed Management Program

In August, 1993 federal and state funding was approved for the creation of a statewide watershed management program. The West Virginia Watershed Conservation and Management Program received \$98,000 in a U.S. Environmental Protection Agency grant augmented by \$24,000 in funds from the DNR. An initial goal of the Watershed Program was to build consensus for the conservation, management, and wise use of West Virginia's rivers and wetlands and to implement a comprehensive plan to care for the state's aquatic resources. During the Watershed Program's first year, a team of representatives from the DNR Division of Environmental Protection, and Division of Parks and Tourism, as well as 90 statewide stakeholder groups, began developing a 10-year strategic plan for managing the state's watersheds. The Watershed Program is based at the DNR's Operations Center in Elkins.

Page 111-325, Mountain Pimpernel and Kates Mountain Clover

These two species, Mountain Pimpernel (*Taenidia montana*) and Kates Mountain Clover (*Trifolium virginicum*) are no longer candidates for listing as threatened or endangered (TE).

Page 111-326, New England Cottontail

The New England cottontail (*Sylvilagus transitionalis*) has been renamed the Appalachian cottontail (*S. obscurus*). This species is a candidate for listing as TE with the U.S. Fish and Wildlife Service. It is noted in the SDEIS that "no New England cottontails were observed" during Baker's field work.

Mr. Randolph T. Epperly, Jr.
Page 4
February 17, 1995

Appalachian cottontails are distinguished from the Eastern cottontail (*S. floridana*) by skull characters. Since *S. obscurus* occurs in higher elevations, it is likely to be found within both roadway alignments and will be directly affected by habitat destruction and vehicular collisions.

Page 111-326, Brook Floater mussel

The Brook Floater mussel (*Alasmidonta varicosa*), also a candidate for listing as TE, occurs in the North Fork of Patterson Creek (0.5 miles above its confluence with Patterson Creek) and extends into Patterson Creek. The SDEIS stated that the Natural Heritage Program had not identified this location. This information was not available when the roadway alignments were reviewed. We now have the Patterson Creek population (one of the best remaining populations in the country) mapped and believe it would be impacted by the Improved Roadway Alternative (IRA). While a span bridge would reduce impacts at this site, siltation from roadway and bridge construction would be detrimental to the population.

Pages 111-326, Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus migrans*) is a candidate for listing as TE and should be addressed separately for West Virginia and Virginia. Although there are no known nesting sites within the proposed project area, shrikes have been known to nest near Martin and Petersburg in Grant County. Surveys should be conducted in appropriate habitats. Two probable reasons for the decrease in shrike populations are habitat loss and mortality caused by vehicular collisions.

Page 111-478 (6) Riparian Habitat

This section discusses impacts to riparian habitats and suggests mitigation in the form of a 75 foot buffer zone and wildlife plantings. The DNR concurs with this mitigation measure and requests it be placed in a final mitigation plan.

Page 111-479 (8) Fencing

Fencing to prevent livestock intrusion into riparian areas is encouraged by this agency. The DNR concurs with the implementation of this practice in

Mr. Randolph T. Epperly, Jr.
Page 5
February 17, 1995

conjunction with this project and requests it be included in a final mitigation plan.

SPECIFIC COMMENTS - Vegetation and Wildlife Technical Report

Page 85 (3) Running Buffalo Clover

Running Buffalo Clover (*Trifolium stoloniferum*) is improperly mapped. The population is located on the east side of Shavers Fork. This population should be verified to assure it will not be impacted by the highway.

Page 92, Table 30 Rare Species Omission

Two West Virginia species have been omitted from the document. Loesel's Twayblade (*Liparis loeselii*) is located at Lost River, and will be directly impacted by Line A and the IRA alignment. North of this site is a population of the Sundial Lupine (*Lupinus perennis*). This species will likely be impacted by the IRA alignment.

RECOMMENDATIONS AND ACTIONS

The DNR has, by this letter, provided comments relevant to the SDEIS for the alignment of Corridor H. Our comments relate to natural resources issues which were not adequately addressed, require clarification or additional emphasis in the SDEIS. This agency has placed significant emphasis on this project and coordinated with the DOH in realigning the proposed build alternative to avoid and minimize environmental impacts. We believe the impacts to wetlands, water resources and terrestrial habitats, although extensive, have been adequately documented, addressed, and mitigated.

The DNR concludes that proper clarification and the addition of information requested by this agency will result in our satisfaction of the NEPA/404 requirements regarding natural resource impacts.

The no build alternative will result in the least environmental impacts. The IRA alternative will result in less environmental impacts than the other construction alternative. The DNR is also aware that these alternatives, the no build and IRA, do not meet the project's purpose and need.

Mr. Randolph T. Epperly, Jr.
Page 6
February 17, 1995

Only one alternative meets this project's purpose and need, Build Line A. The DNR concurs with the selection of Line A, using alternative Line 15-A1 on sheets 7 and 8 and Alternative Line 5D on sheets 53 and 54, of the Alignment and Resources Location Plan. These are recent changes requested by the applicant.

The DNR is required to provide a decision regarding the Section 404 (Clean Water Act) permit. Our intentions are to request that a conditional state certification for Public Notice CEORP-OR 94-95 be issued for the construction of Line A using the previously listed deviation of Line 15-A1 and 5D as requested by the applicant. The DNR reserves a final certification decision contingent on the review of public comments received with the termination of the Public Notice comment period.

If issued, the final certification will contain, among other conditions, a requirement that the applicant prepare a site specific, detailed mitigation plan which will condense, combine, address and finalize, all aquatic and terrestrial impacts into one document for approval by the DNR before construction begins.

Again, we wish to thank the DOH for the opportunity to comment on this document. If you have questions concerning these comments, please contact Mr. Roger Anderson of my Blkins staff at (304)-637-0245.

Sincerely,


Charles B. Felton, Jr.
Director

CBF/rab



February 22, 1995

Norman Roush
Division of Highways
Building Five, Room 109
State Capitol Complex
Charleston, WV 25305

RE: Appalachian Corridor H

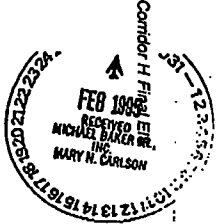
Dear Mr. Roush,

As you know, our office commented substantially upon the Draft EIS for the Appalachian Corridor H in our letters dated November 4, 1994, and October 25, 1994. It is our understanding based upon further correspondence and discussion of this project with your office that Michael Baker, Jr. Inc. is addressing the concerns outlined in those letters and hopes to provide a revised Technical Report by March 20. Therefore, at this time we have no additional formal comments to add prior to the end of the public comment period for the Draft EIS. We hope to continue consultation with your office and consultants to confirm eligibility of cultural resources and to assess effects of the project as required by the Section 106 review process.

I would also address your letter dated February 21, 1995 requesting our concurrence on the proposal to develop a Programmatic Agreement. As you know, members of your staff and Michael Baker, Jr. Inc. met with us yesterday to update our office on the status of the completion of the Section 106 review process. The general content and nature of a Programmatic Agreement was discussed. 36 CFR 800.13(2) states that a programmatic agreement is appropriate for a project when effects on historic properties cannot be fully determined prior to approval. The size and extent of the Corridor H project does meet the criteria for use of a programmatic agreement.

In addition, DOH has provided a substantial amount of information regarding cultural resources since the preliminary discussions regarding a programmatic agreement in Richmond, VA in October, 1993. DOH has written and tested an archaeological predictive model, begun the Phase I archaeological survey, completed a Phase I architectural survey and conducted a preliminary assessment of effects. Your staff has also indicated a commitment to leaving all options open for avoidance and mitigation.

THE CULTURAL CENTER • 1900 KANAWHA BOULEVARD, EAST • CHARLESTON, WEST VIRGINIA 25305-0300
TELEPHONE 304-558-0220 • FAX 304-558-2779 • TDD 304-558-0220



D-26

6/28/95

Page 2
 Norman Roush
 February 22, 1995

Based upon these considerations, our office has no objection to the development and consideration of a Programmatic Agreement as acceptable fulfillment of the Section 106 review process. It is our understanding that a draft will be provided to our office by March 17 and a tentative meeting date of March 27 has been set to discuss the draft.

We appreciate the opportunity to be of service. If you have any questions, please contact our office.

Sincerely,


 Susan M. Pierce
 Deputy State Historic Preservation Officer
 for Resource Protection

cc: Mary Ann Naber, ACHP
 Michael Baker, Jr. Inc.



DIVISION OF ENVIRONMENTAL PROTECTION
 1201 Greenbrier Street
 Charleston, WV 25311-1088

GASTON CAPERTON
 GOVERNOR

DAVID C. CALLAGHAN
 DIRECTOR

February 24, 1995

Mr. Randolph T. Epperly, Jr.
 Director, Roadway Design Division
 WV DOT-Division of Highways
 Capitol Complex, Building 8
 Charleston, West Virginia 25305-0430

Dear Mr. Epperly:

The West Virginia Division of Environmental Protection-Office of Water Resources (OWR) has completed its review of the Alignment Selection Supplemental Draft Environmental Impact Statement (SDEIS) for Corridor H between Elkins, West Virginia and Interstate 81 (West Virginia segment only) and provides the following comments.

SPECIFIC COMMENTS

Page III-35, Avoidance, Minimization, and Mitigation Measures - The discussion regarding construction activities and the use of practices as described in West Virginia Division of Transportation-Division of Highways' (DOH) Erosion and Sediment Control Handbook for Developing Areas in West Virginia should also include discussion of the Construction Stormwater NPDES permit required for disturbance of 3 acres or greater. Permit application packages may be obtained from the Office of Water Resources, 1201 Greenbrier Street, Charleston 25311-1088; telephone 304/658-2108.

Page III-326, 2, Federally-Listed Candidate Species, Second Paragraph - The brook floater mussel (*Alasmidonta varicosa*) was reported as occurring on North Fork of Patterson Creek. The SDEIS states that the Division of Natural Resources, Natural Heritage Program (WVNHP) had not identified this location. A staff member of the Division of Environmental Protection was party to the discovery of the North Fork/Patterson Creek site. It is apparent that the location had not been recorded at the time of the SDEIS preparation. However, WVNHP has now recorded and mapped this location and they have determined that impacts will occur with the Improved Roadway Alternative. WVNHP does not have every site that contains flora and fauna important or rare on a state level mapped and located. Full documentation of the existing environment and potential impacts necessitate that accounts of potentially rare or unique circumstances receive field investigation, particularly when WVNHP does not have that information recorded.

Mr. Gary L. Watson
Page Two
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Page III-374, (2) Additive Direct and Secondary Impact - The SDEIS states that "Proper design of the wetland replacement site should replace and possibly enhance lost functions and values." Development of a wetland mitigation plan, subsequent agency review and approval will be a requirement of the State 401 Certification, if issued. The mitigation plan will be required to provide extensive detail on the replacement site, proposed methodology, long-term monitoring, provisions for maintenance, etc.

Page III-403, 1. Methodology, a. Stream Identification and Classification - High quality streams were identified in the SDEIS using the *West Virginia High Quality Streams*, fifth edition. The criteria for inclusion of a stream on the High Quality Streams list are: 1) the stream is stocked with trout or contains native trout populations or 2) the stream is over 5 miles in length. The West Virginia Environmental Quality Board (Board) defines high quality waters as "those waters whose quality is equal to or better than the minimum levels necessary to achieve the national water quality goal uses. Included are those streams or stream segments which receive annual stockings of trout but which do not support year-round populations." The Board's legislative rules governing water quality standards place the *West Virginia High Quality Streams* list as a category in the Special Waters of the State classification. While many and possibly most of the streams identified in *West Virginia High Quality Streams* list meet the Board's definition of high quality waters, other waters in the state which meet the Board's high quality waters definition are not included on the list due to their length or lack of stocked or native trout. Further, under the Board's current rules, waters with native trout populations are classified as National Resource Waters. This classification mandates a higher level of protection than does the High Quality Waters classification.

Page III-423, d. South Branch of the Potomac River, paragraph five - Reference is made to "High Quality (non-impaired) streams" relative to Clifford Hollow and the upper portions of Walnut Bottom Run. It is unclear as to whether the SDEIS is referring to the regulatory category of high quality or if this statement is based on excellent water quality and high diversity of sensitive benthic macro-invertebrates. The definition of high quality waters contained in the Board's rules does not necessarily exclude streams that exhibit some level of impairment. The key factor is whether or not the waters are of sufficient quality to maintain water quality use goals as established by the Federal Clean Water Act.

Page III-462 (1) Erosion and Sedimentation - The SDEIS discusses several adverse impacts as a result of sedimentation and suspended particulate matter. However, discussion does not include potential impacts such as increased nutrient levels, reduced availability of aquatic food sources, dissolved pesticides that have been transported on silt and sediment particles, reduced photosynthetic activity due to interference with light penetration, or stimulation of photosynthetic activity as a result of increased nutrient availability. Further, the SDEIS does not address potential impacts to dissolved oxygen concentrations.

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This section discusses impacts to fish from sediment clogging gill filaments as well as abrasion damage to gills from sediment concentrations as low as 200 ppm. Similar impacts occur in mollusks as well. Potential silt and sediment impacts to resident mussel populations should also be evaluated.

Page III-475, c. Avoidance and Minimization of Secondary Impacts, (1) Bridges - The SDEIS mentions various methods to reduce impacts to aquatic and riparian resources during construction of bridges. Each of the methods must be acceptable and included in an application to OWR for a NPDES Construction Stormwater permit, if applicable.

Page III-475, (6) Riparian Habitat - OWR fully supports management of riparian zones which will be within the acquired right-of-way. Revegetation of buffers presently composed of disturbed or agricultural lands with the objective of creating forested buffer zones will improve streamside management as well as potentially mitigate water quality impacts from highway runoff.

Page III-479, (7) Stream Channel Enhancement - Areas revegetated following disturbance should include reestablishment of a forested riparian ecosystem consistent with that found in the project watershed.

Materials used for stream enhancement structures should be located so as not to create streambank erosion downstream of the structure and should mimic the natural conditions found elsewhere in the watershed.

Page III-479, (8) Fencing - OWR agrees with the proposal to fence streams within 150 feet of proposed construction to restrict livestock access. The distance from the stream should be a minimum of 95 feet. Additional width should be added based on soil and site characteristics. If the areas are currently agricultural, a forested zone should be reestablished in the first 75 feet from the water's edge. The remaining area may be managed as grassland. Final mitigation plans should include management to be conducted on fenced riparian buffers.

Page III-492, a. Shavers Fork, b. South Branch, c. Cacapon River - Although this section discusses impacts to potential designation under the Wild and Scenic Rivers Act. The final conclusion on impacts from bridge crossings of the above rivers is that no mitigation will be required. It is unclear as to the reason for the determination that mitigation would not be necessary. While there may not be a need to mitigate for impacts to eligibility status, there may well be a need to mitigate water quality and aquatic resource impacts. Clarification should be provided.

Page III-509, 509, b. Avoidance, Minimization and Mitigation Measures - During coordination with the DOH regarding construction of Corridor H from Buckhannon to Elkins, resource and regulatory agencies, including OWR, expressed concern about the potential for acid drainage occurring from exposing coal seams in highway cuts. Although field verification has not been conducted by OWR, it would appear that acid drainage has been produced

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along the Buckhannon to Elkins section. Although this was an extensively discussed topic of concern, OWR is not aware of any effort to quantify or abate acid drainage on this highway segment.

The roadway segment under study in the SDEIS also has potential to produce acid drainage. Acid drainage results in significant and long-term impairment of water quality and aquatic resources and such drainage is a significant problem in West Virginia. The OWR has no desire to see additional sources of acid drainage created that go untreated or result in perpetual treatment obligations. The OWR recommends that a thorough evaluation be conducted to more adequately characterize and quantify expected production of acid drainage. A mitigation plan should be prepared to address, more specifically, avoidance, minimization and finally mitigation (i.e., treatment) of acid drainage.

Furthermore, OWR recommends that the DOH investigate drainage along the existing section of Corridor H from Buckhannon to Elkins to determine the extent of acid drainage and to develop measures to treat the acid drainage prior to entering waters of the State.

Page III-529, 3. Water Quality - The citation of the West Virginia Administrative Regulations, State Water Resources Board, Chapter 20, Articles 5 and 5A need correction. The State Water Resources Board is now the State Environmental Quality Board. Chapter 22B, Article 1, Section 5 replaces provisions of the Board formerly found under Chapter 20, Article 5 and Chapter 22, Article 11, the Water Pollution Control Act, replaces the former provisions found in Chapter 20, Article 5A.

Page III-530, 6. Pollution Control - Limited discussion is made concerning haul roads and borrow/disposal areas. These impacts must be identified and conditions developed to eliminate, minimize or mitigate impacts in the final design. There has been inadequate information provided in the SDEIS to assess potential impacts from these activities.

GENERAL COMMENTS

Mitigation - Mitigation for various impacts to water quality, wetlands, stream channels, terrestrial resources, etc., is distributed throughout the document and is extremely difficult to follow. OWR recommends that mitigation be compiled into one document that also addresses specific plans for carrying out mitigation. While the decision regarding State 401 Certification cannot be made until such time as the closing of the Public Notice review process and compilation of comments has occurred, any potential certification will have to address a comprehensive mitigation plan for all impacts over the entire length of the selected alignment.

State 401 Certification - State Certification will only be considered and evaluated after the public comment period. Following closure of the public comment period, comments relevant to State 401 Certification will be reviewed and considered in the decision making

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process. If issued, State Certification will contain requirements relative to construction, water quality maintenance and monitoring, construction stormwater and mitigation.

The opportunity to review this document is appreciated. Please contact Barbara Taylor at our Beckley office at 304/266-6850 should you have any questions regarding our comments.

Sincerely,

OFFICE OF WATER RESOURCES

Mark A. Scott

Mark A. Scott, Chief

MAS/pte

cc: U.S. Army Corps of Engineers
Pittsburgh District
U.S. Fish and Wildlife Service
WVDNR-Wildlife Resources Section
Charleston - Elkins
WVDEP-Office of Water Resources
PMTS-Beckley
Regulatory Review Program



DIVISION OF ENVIRONMENTAL PROTECTION
10 McJunkln Road
Nitro, WV 26143-2608

DAVID C. CALLAGHAN
DIRECTOR

GASTON CAPERTON
GOVERNOR

March 16, 1995

RECEIVED
MAR 23 1995
ROADWAY DESIGN
DIVISION OF

Mr. Charles L. Miller
Cabinet Secretary
Department of Transportation
State Capitol Complex
Building 5, Room 109
Charleston, West Virginia 25305-0440

Dear Secretary Miller:

As we have discussed, the general alignment for Corridor H transverse a number of abandoned surface and underground mines, particularly in the area east of Parsons. These abandoned mines, which were active as much as 100 years ago, are major contributors of acid mine drainage that has caused significant water quality deterioration.

The construction of Corridor H presents a unique opportunity to reclaim and eliminate these acid producers and to make major scenic and water quality improvements. We look forward to meeting with your engineers and formulating specific plans and objectives as soon as possible.

Your interest and assistance are appreciated.

Sincerely,

David C. Callaghan
David C. Callaghan
Director

DCC:jrb

RECEIVED

MAR 31 1995

DEPT. OF TRANSPORTATION

D-30

6/20/95



United States Department of the Interior

FISH AND WILDLIFE SERVICE

West Virginia Field Office
Post Office Box 1278
Martinsburg, West Virginia 26124

March 23, 1986

Colonel Richard B. Polin
District Engineer
U.S. Army Corps of Engineers
Federal Building
1000 Liberty Avenue
Pittsburgh, Pennsylvania 15222

Dear Colonel Polin:

The U.S. Fish and Wildlife Service (Service) has completed its review of CEQA/OR Public Notice No. 84-88, dated November 22, 1985. The applicant, the West Virginia Department of Transportation (WVDOT), proposes to construct 100 miles of partially controlled limited access four-lane highway known as Corridor H. The proposed project would start at Aggregates in Randolph County and terminate at the Virginia/West Virginia state line near Wardenville, Hardy County, West Virginia.

The public notice identifies a total of 37.7 acres of wetland impacts from 132 wetland encroachments, 18 channel relocations totaling 1.8 miles, and 11.7 miles of intermittent or perennial streams would be enclosed in pipes or culverts, channelized, or lost to road cuts.

This report is prepared in accordance with the requirements of the Fish and Wildlife Coordination Act (16 U.S.C. 801-857a) and is to be used in your determination of 404(b)(1) Guidelines compliance (40 CFR 230) and in your public interest review (33 CFR 320.4) as they relate to the protection of fish and wildlife resources.

Fish and Wildlife Service Review and Investigations

Service biologists have worked extensively with the applicant, their project consultants, and the reviewing agencies since the project was re-initiated in 1980. Service biologists participated in all field and office meetings on the project. This effort resulted in the avoidance of project impacts to threatened and endangered species and substantial minimization of adverse impacts to wetlands and other high quality terrestrial and aquatic resources. Adverse impacts remain, however, and are discussed below.

This project is being reviewed under an integrated National Environmental Policy Act (NEPA) and Clean Water Act Section 404 permit review process. We understand a Section 404 permit for the project will not be issued until a Final Environmental Impact Statement (FEIS) and Record of Decision is completed.

The Service has provided comments on the Alignment Selection Supplemental Draft Environmental Impact Statement (AS-DEIS) to the WVDOT via the U.S. Department of Interior. Service comments reflected agency concerns regarding the AS-DEIS's discussion of mitigation for

riparian/stream impacts and terrestrial wildlife as well as the impacts associated with the disposal of some 60+ million cubic yards of waste fill and related mitigation measures.

In West Virginia, highway contractors typically dispose of waste fill by construction of valley fills. As such, the potential exists for associated losses of wetland, floodplain, instream, riparian, and upland wildlife habitat from spoil disposal, yet these impacts have not been identified. Such impacts could well exceed the direct project losses associated with highway construction.

The identified loss of 27.7 acres of wetlands for Line A is small relative to the 100 mile project length. However, we believe the AS-DEIS underestimates the potential impact to wetland from secondary development, stating there is sufficient raw land that wetland should not be developed. Wetlands represent less than one percent of the land area in West Virginia and are critically important to numerous fish and wildlife species. Compensatory mitigation for unavoidable wetland losses is required. Further, the AS-DEIS and the public notice incorrectly identified compensatory wetland mitigation sites for these unavoidable impacts. The Womoth Run site is not available and the identification of suitable replacement sites is proceeding slowly.

Mitigation for instream and riparian impacts are only cursorily discussed in the AS-DEIS and the permit application. The mitigation measures discussed are an incorporation of Best Management Practices (BMP) and brief descriptions of instream structures. The AS-DEIS and permit application lack a mitigation plan detailing the number and location of mitigation measures to be installed. A detailed plan is required for mitigating all identified losses including stream and riparian impacts.

Impacts to wetlands and other aquatic resources are likely to result from the disturbance of acid-bearing materials by highway construction in Grant and Tucker Counties. In 1981, the WVDOT argued it could not choose an alternative that avoided 80 percent of the wetlands associated with the Corridor H project between Blaine and Buckhannon because to do so would create perpetual acid sources. The likelihood of perpetual treatment and the consequences of treatment failure on the aquatic ecosystem from the proposed project should now be taken into consideration. The AS-DEIS must adequately address these impacts and propose sound mitigative measures. Currently proposed wetland compensatory mitigation would be inadequate if it is again necessary to fill wetlands to avoid perpetual acid sources.

On March 13, 1986 Service biologists met with representatives from the Federal Highways Administration, the WVDOT and Michael Belar, Jr., Inc. to discuss concerns regarding waste fill disposal, acid drainage, and the adequacy of mitigation. The WVDOT advised that the amount of waste fill may be reduced by 80 to 90 percent. Preliminary plans of estimated earthwork for 4 of the 18 project sections show a combined 73 percent reduction in waste fill. We now understand the WVDOT intends to further minimize adverse impacts by identifying, on project plans, those areas containing sensitive natural resources (wetlands, perennial streams, floodplains, etc.) that are off limits for waste fill disposal.

The WVDOT also plans to identify acid drainage potential by utilizing stratigraphic mapping and acid-base accounting of core drilling samples. For any potential, significant acid sources the WVDOT plans to develop practicable mitigation measures.

Finally, the WVDOT plans to develop a comprehensive mitigation document to be made part of the FEIS. As a result of our March 13th meeting this plan is expected to detail riparian areas to be fenced, provide a station by station stream habitat improvement plan, detail avoidance and minimization of upland wildlife habitat, and detail upland wildlife habitat compensatory mitigation.

The March 13th meeting discussions laid the foundation for identification of potentially significant adverse impacts to fish and wildlife habitat and required mitigation for riparian, stream, wetland, and upland wildlife habitat not identified in the AS-DEIS. The WVDOT plans to provide this

Information as a mitigation report for agency review with the FWS. The completion of this document and satisfactory resolution of these issues would be a significant step in resolving the Service's concerns. It is the Service's opinion, however, that the project, as it is presently advertised, may represent a substantial and unacceptable adverse impact to wetlands and other aquatic resources of national importance (ANNI) as defined in paragraph one, Part IV(2)(d) of the Clean Water Act § 404(d) Memorandum of Agreement signed December 21, 1982 between the Department of the Army and the Department of the Interior. Mitigation of adverse impacts to wetlands, streams, riparian, and terrestrial impacts remains incomplete.

The Service will continue working with the applicant, their consultant, and the reviewing agencies to develop an acceptable mitigation plan to offset project impacts. We anticipate that our resource concerns will be fully addressed in the FEM. Please contact John Schmidt of my staff at (304) 626-8888 if you have any questions.

Christopher M. Clovier
Christopher M. Clovier
Supervisor



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107-4431

APR 07 1995

Mr. M. Raymond Beringer
Chief, Regulatory Branch
U.S. Army Corps of Engineers, Pittsburgh District
Federal Building, 1000 Liberty Avenue
Pittsburgh, Pennsylvania 15222-4186

Re: Public Notice CEQRP-OR-94-98; West Virginia Department of
Transportation; Appalachian Corridor R, partially-
controlled limited access four-lane highway.

Dear Mr. Beringer:

The Environmental Protection Agency (EPA) has completed its review of the subject Public Notice. EPA submitted comments on the supplemental draft environmental impact statement (sDEIS) for this proposal on March 24, 1995, in accordance with our responsibilities and obligations under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. A copy of that letter is enclosed for your information. Portions of the letter that relate to Section 404 of the Clean Water Act are repeated here.

The project will result in over 100 stream crossings or modifications in 6 major watersheds. Impacts associated with these kinds of stream alterations include direct loss of aquatic and associated riparian habitat, simplification of the stream environment, increased rates of sedimentation, loss of diversity, and reduced water quality and quantity. Moreover, four rivers listed on the National Rivers Inventory will be crossed. Shavers Fork will lose its eligibility for scenic designation due to several bridge crossings. Some streams will need to assimilate several alterations within a short stretch of river including pipes, stream reallocation, box culverts and bridging. For instance, Patterson Creek, a State Designated high quality stream, will be affected by ten stream alterations including five pipes and two culverts, and three bridge crossings.

The Public Notice and sDEIS do not contain adequate information relating to the overburden and adverse impacts that may result from the disposal of the overburden. Appendix A of the sDEIS identifies 81,389,918 and 8,889,511 cubic yards of waste fill from road construction in West Virginia and in Virginia, respectively. This represents a potentially significant threat to aquatic habitats in the region. The document does not disclose information on the location and feasibility of potential disposal areas, thus failing to evaluate potential impacts that may result.

As stated in our sDEIS comment letter, EPA believes that the success of this project is dependant upon the development and implementation of corrective measures as part of a strong commitment to a comprehensive mitigation strategy. This strategy should encompass both short-term and long-term aquatic mitigation measures. Short-term mitigation measures are those that minimize impacts during and shortly after construction and include such measures as the following:

- designing and siting adequate temporary stormwater detention basins and facilities for water quality;
- employing methods of bridge pier construction that minimize in-water activity; and
- for stream crossings, sequencing construction activity toward the stream rather than beginning at the stream, leaving natural riparian buffers in place to aid stormwater and sedimentation management; the stream crossing would then be the final phase of construction for that segment.

Long-term mitigation measures are those that minimize impacts post-construction over the life of the project. These measures would include both an engineering design that fully incorporates environmental considerations and habitat compensation within and outside the right of way. Mitigation in engineering design would include such measures as the following:

- employing means of conveying water off structures into stormwater facilities rather than using scuppers that allow direct discharge of road runoff into aquatic habitats;
- maximizing the use of structures and minimizing approach fills in aquatic habitats;
- using equalizer pipes in wetland areas;
- limiting clearing to the limits of construction rather than the right of way, particularly in aquatic habitats;
- incorporating stormwater management facilities that are adequately designed, located, and maintained over the life of the project;
- identifying and preserving disposal areas to receive clean-outs from stormwater facility maintenance; and
- using steeper bank grades to minimize the footprint of the fill in aquatic habitats.

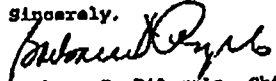
The comprehensive mitigation package for habitat compensation should include such measures as providing in-stream habitat

enhancement, including deflectors, low-water channels, and large boulders. In addition, the current wetlands mitigation plan could be improved in terms of the overall habitat benefits. The proposed highway would impact 145 individual wetlands. The ecotone between these individual wetlands and the adjacent uplands represents a significantly large habitat component not well factored into the currently proposed compensation plans. While we recognize that consolidating wetlands compensation has many benefits such as easier introduction and maintenance of the correct amount of hydrology, less expensive construction costs, and easier wetlands monitoring, we recommend that a balance be struck with the habitat advantages of several smaller sites. The sites currently recommended for wetlands compensation can be significantly expanded to provide several upland inclusions within the wetlands complex to form a wetlands mosaic. The habitat value of this resulting mosaic of wetlands and uplands can be maximized through the use of the habitat evaluation procedure detailed in the sDEIS and the application of the best professional judgement of wildlife and wetlands professionals.

To ensure the success of the design and implementation of all these short-term and long-term mitigation measures, we recommend that the applicant convene a series of interagency meetings throughout the remaining planning process. These meetings should address the development of a comprehensive habitat compensation package for the project and incorporation of mitigation measures throughout the development of the detailed plans and specifications of highway design, including the value engineering phase. Meetings should be held at various completion stages of plans and specifications (percent completions). Moreover, the highway design consultants should be present at the meetings for the sections of highway for which they will be developing the detailed plans and specifications. In this way, the feasibility of mitigation recommendations, such as specific sitings and designs of stormwater management facilities, can be discussed and settled during the meeting.

EPA stands ready to continue working with the applicant in completing the extensive but important mitigation work that lies ahead for this project. Should you have any questions regarding these comments, our point of contact is John Foxren, who can be reached at (215) 597-3361.

Sincerely,

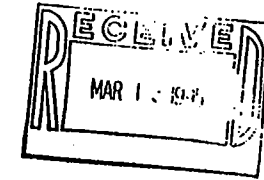

Barbara Z. D'Angelo, Chief
Wetlands Protection Section

LAW OFFICES
Michael and Kupco
228 COURT STREET
CLARKSBURG, WEST VIRGINIA 26301

JOSEPH T. MICHAEL
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FAX 304/623-1027

February 22, 1995



VIA FEDERAL EXPRESS

U.S. Army Corps of Engineers
1000 Liberty Avenue
Pittsburgh, PA 15222-4186

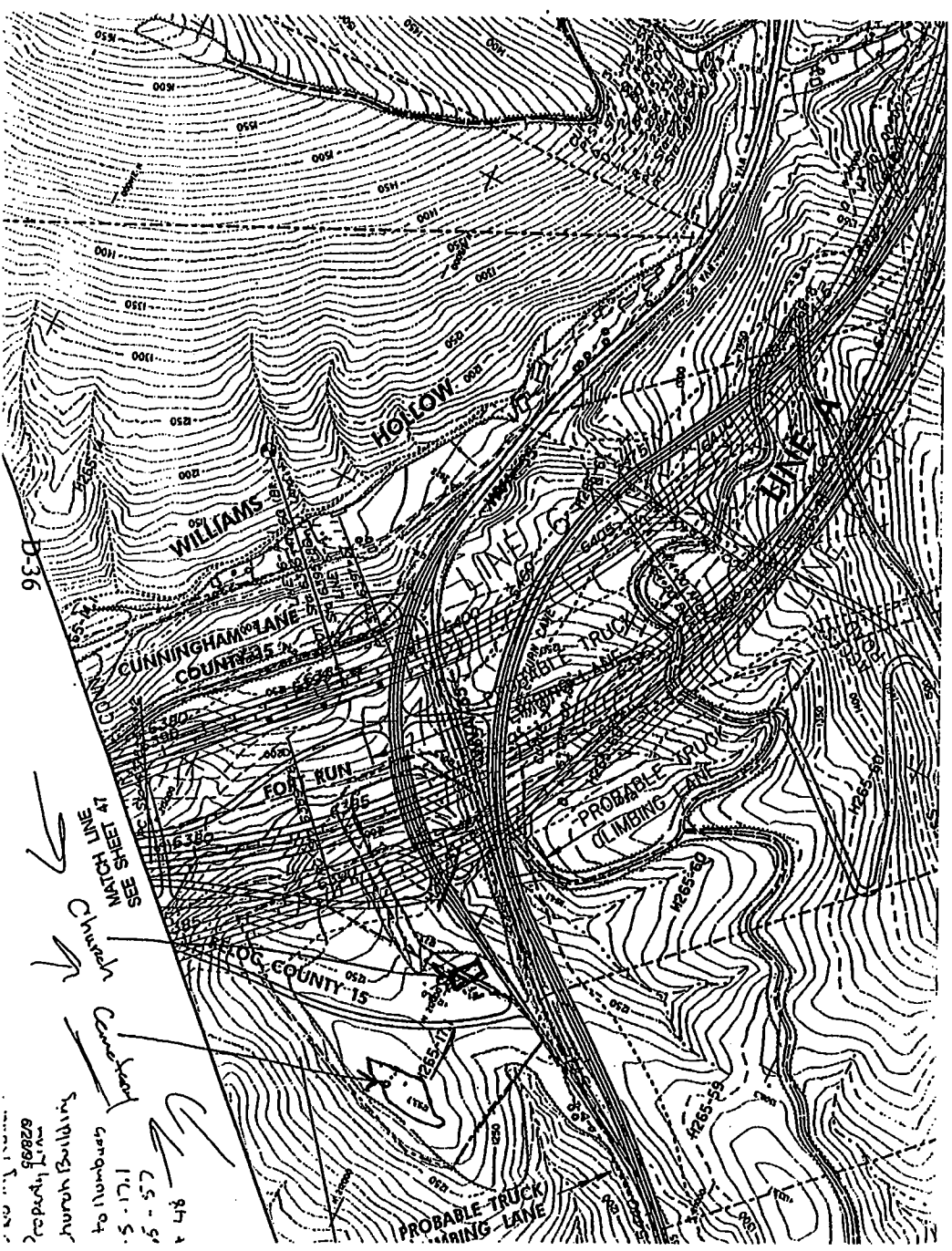
Re: Appalachian Corridor H
Section 404 Permit Application

Dear Sir or Madam:

I represent the Corridor H Alternatives (CHA), a non-profit coalition of citizens and citizens groups with chapters in northern, central, and eastern West Virginia and Virginia, formed to promote sound transportation planning with respect to the proposed Appalachian Corridor H. This letter is being submitted as the formal comment of CHA upon the pending §404 permit application.

The alternative with the least impact was not analyzed. The pending permit application does not meet the Section 404(b)(1) Guidelines. 40 CFR §230.10. The Guidelines prohibit a discharge if there is a practicable alternative which would have a less adverse impact on the aquatic ecosystem. In the present case, there is such an alternative, but it was not analyzed in the Alignment Selection Supplemental Draft Environmental Impact Statement. (SDEIS). The missing alternative is the improvement of the existing network of roads. Instead of considering this alternative, the SDEIS proposes two new alignments. Although one of these, the Improved Roadway Alternative, uses existing roads to some extent, it also involves much wholly new construction. It is a given that the construction of either of these new alignments will be more adverse to the environment than would be a project which improves and upgrades the existing road network.

The report of Dr. Henry B. R. Beale, enclosed, explains in detail that the improvement of existing roads is a practicable alternative which was not considered in the SDEIS. He also explains that the so-called "Improved Roadway Alternative" does not in reality consist of improvements to existing roads. (p. 34).



D-36

MATCH LINE
SEE SHEET AT

Chimney

Compost

to Humboldt
8474
65-57
5-17.1

repair building
66220
66220

PROBABLE TRUCK
CLIMBING LANE

The stated purpose for the construction of Corridor H is to serve as a linkage between Interstate 79 and Interstate 81. The recent action of the Virginia Commonwealth Transportation Board, which rejected the proposed Corridor H in Virginia, makes this goal practically unachievable. The corollary purpose has always been the promotion of economic growth and development in the mountain region. Certainly, the improvement of the existing network of roads is a practicable means of achieving economic growth and should have been considered in the SDEIS.

Furthermore, the action of the State of Virginia has now created another impact which was not considered in the SDEIS. That is, the creation of safety and traffic problems in Virginia by the construction of a four lane highway in West Virginia which terminates at the Virginia border.

Therefore, the §404 permit cannot be granted because there is an alternative to the proposed discharge which will have a less adverse impact on the environment. 40 CFR §230.10(a). The NEPA documents do not consider the alternatives required by the Guidelines and must be supplemented before consideration can be given to issuing a permit. Id. at (a)(4).

NEPA deficiencies. Furthermore, the SDEIS is deficient in terms of NEPA standards. As such the SDEIS cannot be adopted by the Corps. The Corps could prepare a Supplemental Draft EIS, pursuant to 33 CFR §230.21, or the Corps could require the applicant to do the necessary supplementation.

There are serious unanswered questions concerning the impacts of the proposed permit on streams and wetlands. These include the questions of acidic drainage, excess waste, the Wardensville spring, karst terrain, groundwater impacts, stream degradation and wetlands. Other areas of concern include the issues of mitigation and the Wild and Scenic Rivers Act.

Acidic drainage. Richard diPreto, is a geologist with experience in the prediction of acid mine drainage. His comment concludes that the proposed alignment will likely cause acidic drainage. However, the SDEIS gives only brief and conclusory attention to this serious environmental problem. As anyone familiar with the problems of coal mining in this area of West Virginia knows, once acidic drainage is created it requires chemical treatment of the water for generations.

Mr. diPreto points out that many of the assumptions and statements in the SDEIS have no scientific basis. Further, the SDEIS does not contain the evidence needed to make a rational analysis of the impact of acidic drainage. Specifically, Mr. diPreto notes that there is insufficient testing of in stream water chemistry and no testing of groundwater chemistry. The SDEIS does not even contain an acid-base account, which is the accepted method of predicting acidic drainage. The discussion of mitigation is clearly inadequate, given the fact that the cost of

long term treatment for generations could be enormous. Cumulative impacts are not discussed in the SDEIS.

The comment of Rick Webb, Research Scientist, notes the high probability that acidic drainage will be generated from borrow and fill areas involving the geologic formation in the proposed alignment area. Acidic drainage problems have been caused by other road construction in these formations.

A further explanation of the inadequacy of the SDEIS on this subject is contained in the comment of Jim Kotcon, Ph.D., who notes the historic failure of the West Virginia State agencies to control acidic drainage caused by highway construction. (Kotcon comment, Nos. 6-11, 48).

If acidic seeps are created, each one would be a point source requiring an NPDES permit and perpetual treatment to meet the effluent limits of the permit.

Excess Waste. As noted in the comment of Pamela C. Merritt (No. 22) the cost estimates in the Appendix detail 60.3 million cubic yards of excess waste. It cannot be determined from the SDEIS how it is proposed to dispose of this waste. If it will be used to fill streams and wetlands, this impact needs to be discussed. If any of the excess waste is toxic (i.e., generating acidic drainage) then it cannot be disposed of in a fill without extensive, costly treatment to prevent acidic drainage. This is not recognized or discussed in the SDEIS as a potentially severe environmental impact.

Wardensville Spring. The authors of the SDEIS were clearly aware of the necessity to determine the impact of highway construction on the Wardensville Spring. Unfortunately, the attempt to obtain evidence about the potential impact failed. The comment of Eberhard Werner, geologist, notes that the authors of the SDEIS relied on a dye test which is in fact unreliable. Mr. Werner explains in detail the further work which must be done to collect the data necessary to form a valid conclusion.

T.E. Shufflebarger, Jr., retired geologist, has commented on the extensive linear features which complicate consideration of the recharge systems in the Wardensville Spring area.

Karst Terrain. Mr. Werner's comment also points out that the incorrect definition of "karst" contained in the SDEIS has caused an understatement of the impact of highway construction in areas of potential karst terrain. This is a potentially serious error as demonstrated by the experience with the Bowden Trout Hatchery.

Dr. Kotcon also notes that the assumption in the SDEIS that ground water impacts would be limited to within 500 feet of construction is not valid in karst terrain. The proposed mitigation for sinkhole impacts is unproven. The classification of karst recharge units implies that degradation of groundwater in

sparsely populated areas is acceptable. There is no basis for this assumption in NEPA or the West Virginia Groundwater Protection Act, West Virginia Code §22-12-1, et seq. which expresses a policy of protecting the existing quality of groundwater. (Kotcon comment, Nos. 12, 16, 17).

At the Moorefield Public Hearing, Mr. Abe Evans stated that the SDEIS did not address mitigation for sinkhole impacts near Greenland Gap.

A Memorandum from the Virginia Department of Conservation and Recreation (hereinafter "DCR Memo") also raises concerns about the impacts on karst waters.

Other Groundwater Impacts. Dr. Kotcon's comment also discusses other groundwater related flaws in the SDEIS. (Nos. 13, 14, 15, 18). Here, as elsewhere in the SDEIS, indirect and cumulative impacts are not adequately addressed, if they are discussed at all.

A comment from Doug R. Veach describes the impact on the Toombs Hollow Spring. The impact on this spring, and the feasibility of mitigation, are not discussed in the SDEIS.

Stream Degradation. The comment of Jack Spadaro, Engineer, points out the failure of the SDEIS to adequately assess the impact of sedimentation on stream quality. The problems noted by Mr. Spadaro include inadequate sedimentation control during construction, inadequate analysis of the sedimentation from storm water run off, inadequate assessment of the impacts of landslides, and a complete failure to adequately discuss the necessary mitigation efforts needed to control the impact of sedimentation after construction.

Dr. Kotcon also comments on the inadequate treatment of sedimentation impacts. (Nos. 48, 64-66).

The EPA's National Water Quality Inventory Report to Congress (1992) indicates that stormwater runoff from highways is a source of stream pollution. Yet the SDEIS does not recognize that treatment of this pollution source will probably be required. Instead the SDEIS "anticipates" that not quite enough traffic will use the road to make a measurable impact. However, the probable high use of de-icers on the higher elevations of the proposed highway is not factored into the analysis. (p. III-465). The mere statement that such pollution should be minimized does not qualify as rational analysis of the impact. (Secondary and Cumulative Impacts Technical Report, p. 54).

The SDEIS notes that Virginia's stormwater regulations will serve to protect the receiving streams from the adverse effects of stormwater run-off. Such regulations do not exist in West Virginia. (Secondary and Cumulative Impacts Technical Report, p. 54). Nonetheless, the adverse effects of stormwater run-off on

receiving streams should be mitigated by applying the Virginia standards in West Virginia.

Although the SDEIS expresses a preference for using bridges to cross streams as a method of minimizing environmental impacts, there is no discussion of the effect on streams and aquatic wildlife during bridge construction.

Pamela C. Merritt comments on the acute sediment loading problem in Mill Run. The impact of additional sediment on this stream from the highway should be discussed in the SDEIS. (No. 23).

Dr. Kotcon notes the lack of detailed discussion of mitigation for the loss of riparian habitat. (NO. 67).

Wetlands. The construction of Corridor H between Weston and Elkins destroyed wetlands and this destruction has not been mitigated. This failure to mitigate should be addressed in the SDEIS.

As noted by Pamela C. Merritt, the impact on Big Run Bog Research Natural Area is not adequately addressed in the SDEIS. (NO. 23).

Dr. Kotcon notes that the SDEIS fails to recognize Big Run Bog, Elder Swamp, and Mudhole Bog/Vance's Cove as Wetlands Special Areas. (No. 63).

Mitigation. Throughout the SDEIS mitigation measures are discussed as actions which may be taken. However, the FHWA regulations provide that necessary mitigation measures are to be "incorporated into the action". 23 CFR §771.105(d). A determination of the cost of the mitigation and whether it is a "reasonable public expenditure" is required. *Id.* Furthermore, mitigation measures are to be stated as "commitments in the environmental documents". 23 CFR §771.109(b). These requirements have not been met in the SDEIS. The public has not had the opportunity to comment on the impact of mitigation measures which will be carried out, or on mitigation which will be deemed too expensive and therefore not carried out.

Wild and Scenic Rivers Act. As noted in the comment of Pamela C. Merritt (No. 21) the Wild and Scenic Rivers Act requires "continuing consideration" of the eligibility and suitability of rivers for inclusion in the Wild and Scenic Rivers system in the planning stages of all development. This requirement applies to all Federal agencies. 16 USC §1276(d). The SDEIS relies on a preliminary "study" by the MNF to avoid further consideration of Shavers Fork. Likewise the SDEIS relies on an old study of the Cacapon by the Department of the Interior to avoid continuing consideration of that river. To the knowledge of the undersigned, no study has ever been performed for Cedar Creek (See DCR Memo) or the affected segment of the South Branch. In sum, the SDEIS does

not fulfill the obligation to give continuing consideration to the eligibility and suitability of these rivers under the Act. Complete, comprehensive, and up to date studies of all four streams are required.

Need for additional supplementation. Of course, you should consider not only to this letter, but also each of the individual comments enclosed, which have only been summarized herein, and which are adopted in full by Corridor II Alternatives.

The CEQ regulations provide that the response to comments shall be in the Final EIS. 40 CFR §1503.4(a). However, many of the enclosed comments point out defects in the analysis contained in the SDEIS. Other comments raise issues concerning impacts that were not considered in the SDEIS. Accordingly, it will be necessary to "supplement, improve or modify" the analyses, and to collect additional data to "make factual corrections". Id. Specific comments, like those enclosed, must receive a specific response. Conclusory responses do not suffice. Van Abbema v. Fornell, 807 F.2d 633, 639 (7th Cir. 1986).

It is our position that the new information provided by these comments is significant and relevant, and that the preparation of a new Supplemental Draft EIS is required. For example, much work needs to be done to address the acidic drainage impacts. New dye testing is necessary in the Wardensville area. The impact of the rejection of the project by the State of Virginia must be analyzed. In these circumstances, the regulations require that the SDEIS "shall be supplemented". 40 CFR §1502.9(c)(1)(ii); 23 CFR §771.130(a)(2). An agency must take a hard look at newly proffered information. Marsh v. Oregon Natural Resources Council, 490 US 360, 385 (1989). New information which presents a seriously different picture of the environmental impacts of the project mandates the preparation of a Supplemental Draft EIS. Hickory Neighborhood Defense League v. Skinner, 893 F.2d 58 (4th Cir. 1990).

Conclusion. The permit cannot be issued because the 404(b) Guidelines have not been followed. The least damaging alternative, improvement of the existing road network, was not considered. Further, the analysis of environmental impacts under NEPA is flawed. Many impacts were not considered at all, such as the potential for acidic drainage. The analysis of other impacts is incomplete, lacking in detail, and unscientific. The SDEIS fails to detail the mitigation which will be required. The necessary Wild and Scenic Rivers studies have not been completed. The permit cannot be issued until these problems are corrected in another Supplemental Draft EIS.

Yours truly,


Thomas R. Michael

xc: West Virginia Division of Environmental Protection
Office of Water Resources

Enclosures:

Henry B.R. Beale (undated)
Resume of Henry B.R. Beale
Richard S. diPretoro 02/15/95
Resume of Richard S. diPretoro
Rick Webb 03/03/93
Jim Kotcon, Ph.D.
Pamela C. Merritt 02/19/95
Eberhard Werner (undated)
Resume of Eberhard Werner
Virginia Dept. of Conservation and Recreation 01/19/95
Doug R. Veach 01/17/95
Jack Spadaro 01/28/95
Resume of Jack Spadaro

UNITED STATES
DEPARTMENT OF
AGRICULTURE

NATURAL RESOURCES
CONSERVATION
SERVICE

75 High Street Rm 301
Morgantown, WV 26505

May 18, 1995

Willard C. McCartney
Chief Environmental Technical Services
Michael Baker Jr., Inc.
770 Lynnhaven Parkway, Suite 120
Virginia Beach, VA 23452

Dear Mr. McCartney:

I am writing in response to a letter dated April 6, 1995 sent by Susan Manes-Harrison Concerning a farmland conversion impact rating for the Appalachian Corridor H: Alignment Selection Final EIS.

I and others in NRCS have been in contact with you company since 1991 to provide information and interpretations for implementing all provisions of the Farmland Protection Policy Act of 1984 {7CFR Part658}. The farmland evaluation activities up to this time does constitute completion of the process and compliance with the Farmland Protection Policy Act. Furthermore, you have been following my recommendation provided in a letter to Susan Manes-Harrison, dates October 2, 1991.

With the selection of a proposed corridor, further evaluation of the farmland conversion impact rating should now proceed. Please contact Mr. Roy Pyle, Soil Scientist, Buckhannon, WV at 304-472-0884 who is our liaison for completing the rating. Roy will arrange a meeting location, and based upon information provided by you, complete sections II, IV, and V of the Farmland Conversion Impact Rating for Corridor Type Projects.

Sincerely,

Richard D. Heaslip
State Resource Conservationist

cc: Roy Pyle, Soil Scientist, NRCS, Buckhannon, WV
Susan Manes-Harrison, St. Evt. Planner, Michael Baker Inc.
Richmond, VA




RECEIVED
MICHAEL BAKER JR.
INC.
MARY K. CARLSON



U.S. Department of
Transportation
Office of the Secretary
of Transportation

Memorandum

Subject: Supplemental Draft EIS, Corridor "H"
U.S. 33, Elkins WV to I-81, Strasburg, VA Date: JAN 6 1995
FHWA-WV-EIS-92-01-80

From: Donald R. Trilling  Reply to
Director, Office of Environment, Energy, and Safety Attn. of

To: Eugene W. Cleckley
Chief, Environmental Operations
Division (HEP-30)

We have reviewed the second supplemental draft EIS (alignment section) for Corridor H through northeastern West Virginia and northwestern Virginia. Overall, the EIS reflects substantial coordination and a concerted effort to minimize adverse environmental impacts. We have the following specific comments:

Historic Resources

The SDEIS reflects significant work to identify historic resources; however, most of the Section 106 process has not been completed. Similarly, evaluations that may be required for historic sites under Section 4(f) are at a very preliminary stage. Although completion of 106 and 4(f) is not necessary before issuing a DEIS, it is useful for these processes to be at a similar stage as those for addressing other environmental resources.

Visual Impacts

The SDEIS noted that impacts to Hanging Rock and the Baughman House will be unavoidable. The FEIS should include a more detailed discussion as to why alternatives to avoid or mitigate these impacts are not feasible or prudent.

Wildlife Habitats

The SDEIS notes that a considerable number or percentage of habitat units will be lost from the Shenandoah River, Back Creek, and Opequon Creek watersheds. The FEIS should include a more specific discussion as to why these losses cannot be avoided.

Endangered Species

The build alternative largely avoids potential habitat for the Cheat Mountain Salamander. However, the FEIS should reflect the final outcome of consultations with the U.S. Fish and Wildlife Service regarding potential impacts.

We appreciate the opportunity to comment on this SDEIS.

APPENDIX E

Agency Comment Letters - Mitigation Document

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

SUBJECT: Appalachian Corridor H Mitigation
Document

DATE: 6-30-95

FROM: Susan McDowell, Acting Chief
Environmental Planning and Assessment Section

TO: Bill McCartney, Phd.
Michael Baker Jr., Inc

Ben Hark
WV Division of Highways

The following represent preliminary comments on the draft Mitigation document for the Appalachian Corridor H highway project.

- 1) EPA requests that WV DOH provide a commitment to the mitigation sequence of avoidance, minimization, compensation for all future design work leading to construction. We would request that the mitigation document clearly state this in the introduction and reiterate this commitment throughout the document, as appropriate.
 - 2) Likewise, we recommend that the document state that commitments made by WV DOH will be included in the Record of Decision over FHWA's signature.
 - 3) Part I, Section A, goal 4: Please add to end of sentence "...and provide a means to track the implementation and success of mitigation activities.
 - 4) Part I, Section C: To provide clarity for the justification of a WV DOH employee as the environmental monitor, a brief description of the role of the monitor would be helpful, i.e. the environmental monitor would have the ability to direct contractors and shut down the job if standards and commitments are not being met.
 - 5) Part I, Section D: Please indicate that construction monitoring will occur throughout and downstream of the project area and will begin prior to the onset of construction.
- 6) corrective action plan should be included which states that corrective actions should be taken based on both visual assessments and monitoring results.

5) Part I, Section E: Please clarify the level of "hands on" involvement that WV DOH will have. We recommend that WV DOH work with the affected counties/communities to address development issues and/or provide the resources for conservation planning assistance.

6) Part II, Section B: EPA believes that the approach to ascertain the extent of mitigation required for stream impacts based on linear feet can be substantially improved by incorporating habitat-based assessment. We would suggest that enhancement ratios be utilized rather than the 1:1 ratio described here. The linear foot approach cannot fully mitigate for stream impacts in a comprehensive manner.

7) Part II, Section C: We would request that the document clearly state that all temporary and permanent stormwater facilities be specified and reviewed.

Is crown vetch needed in the seed mixture?

Seeding operations should also include staging areas, temporary access points and roads.

Water quality maintenance activities should be more explicitly documented by example. For instance, no tracked vehicles should be allowed in the stream in the absence of cofferdams.

8) Part II, Section D: We would like to see a commitment that clearing will be prohibited beyond the limits of construction.

Temporary and final reclamation should result in 80% cover. The 50% standard is insufficient and can be increased by mulching the areas.

Ground level photomonitoring points should be supplemented with remotely sensed photographs, as well. Consequently these photomonitoring points can serve to monitor for other conditions including changes in water quality (e.g. turbidity, sedimentation, etc.).

9) Part II, Section E: Areas unsuitable for the placement of excess fill should include both perennial and intermittent streams and associated riparian areas, intact/high quality wildlife habitat including mature hardwoods, in particular mast producing species.

We recommend rewording of paragraph 1, page 24 to state: Contractors will submit to WV DOH all areas proposed by contractors for borrowing and excess excavation disposal for review and approval. WV DOH will investigate these submittals for the presence of any areas deemed unacceptable.

Will some form of monitoring be conducted for the success of mitigation for the excess excavation and borrow sites?

In general, EPA would like to see documented commitments by WV DOH to a) clearly delineate contractor work limits on all design drawings, b) require that contractors submit plans for construction offices, parking areas, temporary access roads, laydown/storage areas, etc. for review and approval prior to construction.

10) Part II, Section G: Terrestrial mitigation should incorporate the results of the HEP analysis by developing a strategy which serves to mitigate impacts using the most ecologically relevant approach. Recovery of habitat units represents just one component of a comprehensive mitigation plan. EPA would like to see efforts to seek out areas to protect/purchase which contribute to the extent and/or integrity of high quality ecosystems/wilderness areas which will further enhance or protect these ecosystem functions and values. This effort should not be limited to "unique habitats" (although how "unique" is defined is unclear).

Purchase or otherwise longterm conservation agreements of land representing a mosaic of ecosystems/habitat should be given high priority, especially if these areas are adjacent to already existing protected areas. While there has been limited discussion regarding the Canaan Valley Wildlife Refuge related lands, these decisions should take into consideration ecological context and need, as well as, convenience.

The above represent our preliminary comments regarding the mitigation document. As more information becomes available and commitments are refined, we will be happy to provide with additional remarks at that time.

Please contact me at 215/597-1196 should you have any questions.

United States
Department of
Agriculture

Natural Resources
Conservation
Service

HC 85, Box 301
Industrial Park
Moorefield, WV 26836

Mr. Wm. C. McCartney
Michael Baker Jr., Inc.
770 Lynnhaven Parkway, Suite 120
Virginia Beach, Virginia 23452

June 30, 1995

Dear Bill:

I forwarded the draft Corridor H FEIS Mitigation Document to appropriate NRCS staff in West Virginia and have discussed its content with Mr. Roger L. Bensey, state conservationist. We concur with the intent of the proposed mitigation strategy and the contents of the document as presented.



Edward A. Kesecker
District Conservationist

cc: RBensey
SFindley
RHeaslip

RECEIVED

AUG 3 1995

W. VA. DEPT. OF HIGHWAYS
CHIEF ENGINEER DEVELOPMENT



WEST VIRGINIA DIVISION OF
CULTURE AND HISTORY

August 1, 1995

RECEIVED

AUG - 3 1995

Norman Roush
Division of Highways
Building Five, Room 109
State Capitol Complex
Charleston, WV 25305

ROADWAY DESIGN DIVISION
WV DIVISION OF HIGHWAYS

RE: Corridor H FEIS Mitigation Document

Dear Mr. Roush,

During our recent consultation with your staff regarding the Corridor H Programmatic Agreement Ben Hark provided my office with a copy of the 6/28/95 draft of the Corridor H FEIS Mitigation Document. There are several problems with the references regarding cultural resources.

First, our agency and the Advisory Council on Historic Preservation are not even referenced on page 2. This page states that "DOH has developed a process that will integrate the natural and cultural resource agencies into the mitigation development process as the various design sections move through the design process and into construction (Figure 1)." If DOH intends to implement this process of field reviews, it should consult with our office before it commits to it.

The description of mitigation commitments on page 2 and the following figure do not adequately address the steps of the Section 106 review process. Figure 1 indicates that programmatic agreement review will occur after final design engineering and preliminary plans. This is too late. This diagram does not demonstrate how avoidance will be considered. Consultation with our office must occur immediately after the Record of Decision before conceptual plans or design engineering eliminate alternatives.

Page 6 is equally weak. Two steps of the process are included: identification and mitigation. It leaves out consultation. The NEPA process stresses mitigation and this document reflects that orientation. The presentation of the Section 106 review needs to be sensitive to the differences inherent in the NHPA process.

Page 2
Norman Roush
August 1, 1995

I would encourage you to amend the presentation of this information to reflect the spirit of the draft programmatic agreement. Thank you for your cooperation.

Sincerely,


Susan M. Pierce

Deputy State Historic Preservation Officer
for Resource Protection

APPENDIX F

Keeper of National Register of Historic Places - Letters concerning Battlefields



United States De

NATION/

P.O.

Washington, D.C. 20013-2144

IN REPLY REFER TO:

H3Q(2280)

DEC 15 1995

Mr. Dale E. Bender
Division Administrator
Region 3, West Virginia Division
Federal Highway Administration
550 Eagan Street, Suite 300
Charleston, West Virginia 25301

Dear Mr. Bender:

Thank you for your September 25, 1995, letter requesting a determination of eligibility for the Corricks Ford and Moorefield Civil War battlefields in Randolph and Hardy counties, West Virginia. We have carefully reviewed the material included in your request and in supplemental information provided by your office, Corridor H Alternatives, and other interested parties. A site visit to West Virginia was of great assistance in evaluating the integrity of both battlefields.

We have concluded that the Corricks Ford Battlefield is eligible for listing in the National Register under Criteria A and B, with boundaries as shown on the enclosed USGS map. In its *Official Records of the War of the Rebellion*, the War Department identified Rich Mountain and Corricks Ford as two of the most important events of the Campaign in West Virginia. This campaign ensured Union control of western Virginia and largely eliminated the Confederate threat to the Baltimore and Ohio railroad. It also played a critical role in elevating George B. McClellan to the command of what would become under his leadership the Army of the Potomac. Although the death of General Robert S. Garnett cut short his involvement in the Civil War, his role as overall commander of the Confederate forces at the battles of Rich Mountain and Corricks Ford is significant enough in the context of the West Virginia campaign to justify eligibility under Criterion B for association with him as well. At present, there is insufficient evidence to support significance of the site under Criterion D, although the proposed remote sensing may yield enough information for a later claim of archeological significance.

The boundaries drawn on the attached map include Kalars Ford. The historical record indicates that the Union troops were closely pursuing Garnett's forces in a running rear-guard action from the moment they encountered Confederate pickets around mid-day on July 13. Each side was well aware of being in the presence of the enemy. The area around Kalars Ford and the east side of Shavers Fork between Kalars Ford and the town of Parsons appears to have changed little since the mid-19th Century. On the other hand, the buildings around the small community of Portarwood, the large modern Kingsford charcoal plant, and the adjacent berm construction in the river itself have compromised the integrity of the west side of the valley.

The northern boundary of the Corricks Ford site has been set at the southern limit of development for Parsons. On the east it follows the 1800' contour line, which should include the position held by the 23rd Virginia Infantry and its artillery. It is highly unlikely that artillery could have been moved to any position higher than that elevation during a

running retreat, given the lack of feasible access. In addition, a position higher than 1800' would not be consistent with contemporary accounts of the battle. On the south, the boundaries are drawn to include the area at Kalars Ford and that portion of Pleasant Run that has retained its integrity. The western boundary is set, first, along the east side of the modern road, which would not have been in existence at the time of the war and which roughly defines the high ground enclosing the valley on that side. At the community of Porterwood, the boundary crosses the river and proceeds along the east bank north to Parsons.

We believe that the Moorefield Battlefield is eligible for listing in the National Register under Criterion A. The humiliating Confederate defeat at Moorefield essentially destroyed the capability of McCausland's forces. Because of this Jubal Early lost any confidence he may once have had in his cavalry, ensuring his defeat in the Shenandoah Valley in the autumn of 1864 and contributing to the reelection of Abraham Lincoln in November. Early himself described the battle as having a "very damaging effect upon my cavalry for the rest of the campaign." We cannot make a final determination on the battlefield until we receive additional information on the boundaries, however.

The Civil War Sites Advisory Commission's assessment of Moorefield is clearly correct. Changes to the valley landscape that have occurred since 1864 have, indeed, fragmented the battlefield. The area around and to the north of the historic ford over the South Branch of the Potomac River has been particularly impacted by bridge building, road realignment, and the construction of residences, barns, and chicken houses dating from the late 19th century to the present. In addition, the historical record is unclear as to the exact location of troop movements and positions. On the other hand, the area around Willow Wall, the McNeill house that served as Johnson's headquarters, and Buena Vista, where Gilmor stayed, was the location of the most decisive action in the battle and has retained a high degree of integrity. A boundary that includes both of these resources with their associated acreage should be able to convey the significance of the battle.

Both Willow Wall and Buena Vista Farm are already listed in the National Register, but on very small portions of their original land holdings. Further research is needed to determine the extent of both of these properties at the time of the Civil War. Depending on the size of the two farms and their relationship to the battle, it may be appropriate to use the extent of the farms at the time of the war as the basis for establishing boundaries for the battlefield. Once appropriate boundaries have been established, that information should be submitted to us to make the final determination of eligibility.

We appreciate your interest in the evaluation of these battlefields.

Sincerely,

(Sgd) Carol D. Shull

Carol D. Shull
Keeper of the National Register of Historic Places
National Register, History and Education

Enclosure

cc: Susan Pierce, WV SHPO

American Battlefield Protection Program

**Bonnie McKaown, President
Corridor H Alternatives
P. O. Box 11
Kerans, WV 26278**

**Stephen G. Smith
114 North Elm Street
Moorefield, WV 26936**

**W. Hunter Lesser
Route 2 Box 191-A
Elkins, WV 26241**

**Robert K. Edmiston
Director of Real Estate
Association for the Preservation of Civil War Sites, Inc
305 Charlotte Street
Fredericksburg, VA 22401**

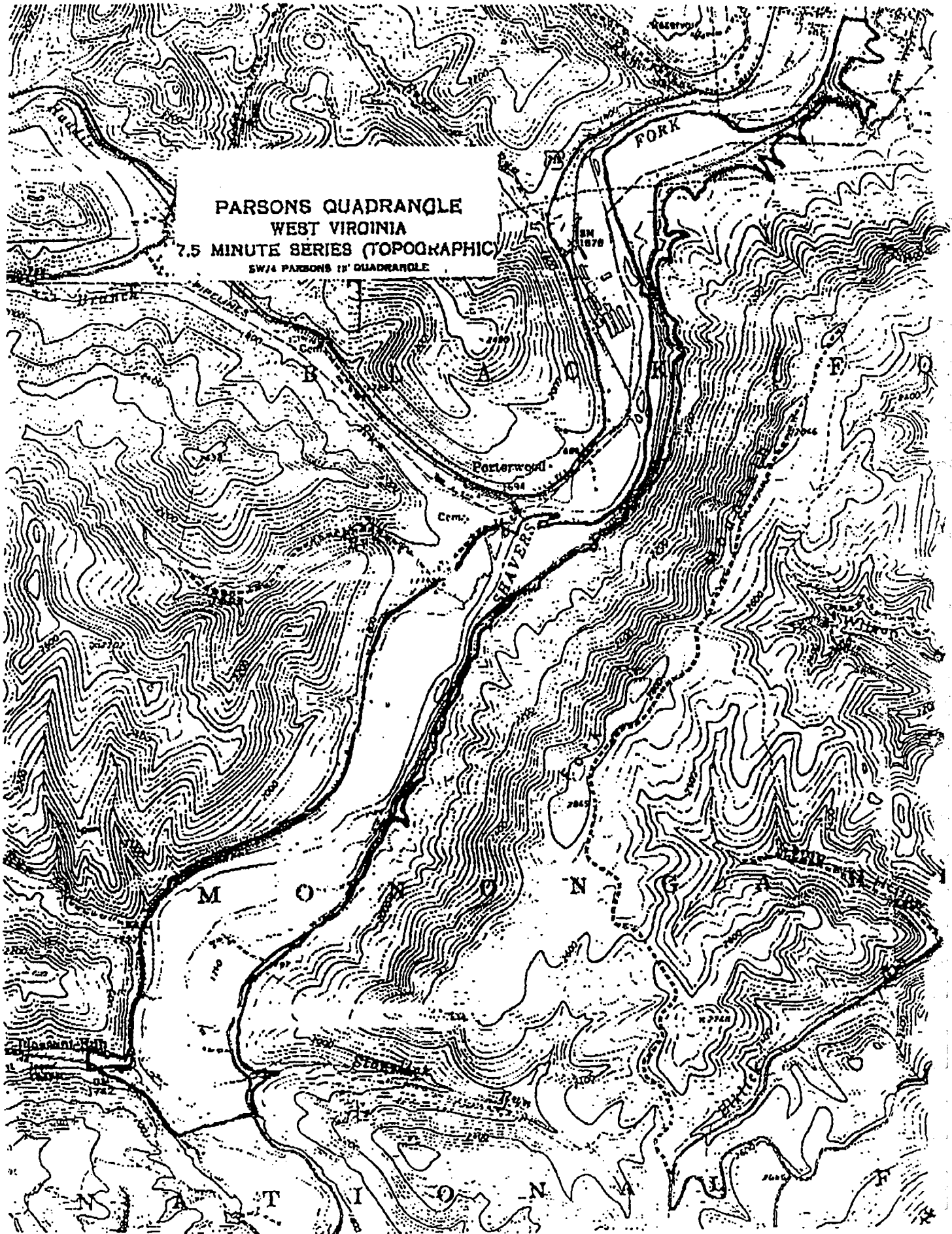
**South Trimble Lynn, Jr
Kennedy Farm
2406 Chestnut Grove Road
Sharpsburg, MD 21782**

**Peter Comtois
298 West Old Cross Road
New Market, VA 22844**

**Terry A. Del Bene
P. O. Box 352
Rock Springs, WY 82802**

**Bill Malley
Cutler and Stanfield
700 14th Street, NW
Washington, DC 20005**

PARSONS QUADRANGLE
WEST VIRGINIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW/4 PARSONS 15' QUADRANGLE





United States Department of the Interior

NATIONAL PARK SERVICE
P.O. Box 37127
Washington, D.C. 20013-7127



IN REPLY REFER TO:

H32(2280)

APR 5 1996

Mr. Dale E. Bender
Division Administrator
Region 3, West Virginia Division
Federal Highway Administration
550 Egan Street, Suite 300
Charleston, West Virginia 25301

Dear Mr. Bender:

We have carefully reviewed the material you submitted to us with your letter of February 20, 1996, recommending appropriate boundaries for the Moorefield Civil War battlefield, in Hardy County, West Virginia. In our December 14 letter to you, we requested information on the acreage associated with the Willow Wall and Buena Vista farms in the 1860s. Both of these farms have documented associations with the battle of Moorefield. We hoped that the extent of the farms at the time of the war could serve as the basis for establishing boundaries for the battlefield. Your letter delineated an area that combined the agricultural land associated with the two farms and concluded that that area also appropriately conveyed the historical significance of the Moorefield battle. We agree that many of the important actions in the battle took place within the boundaries you have proposed. There are two areas of activity, however, that lie outside the Willow Wall and Buena Vista properties. We have, therefore, expanded the boundary to include those areas. The revised boundary is shown on the attached USGS maps.

The first added area is west of the old Romney Road and north of the Willow Wall property. Because the proposed boundary is based on the acreage associated with Willow Wall, it does not reflect the topography. The 800 foot contour line on the USGS map clearly delineates high ground to the east of the road. This ridge provides a good view of the approach to Moorefield from the north--the road Brig. Gen. William Averell's troops were following--and would have been an ideal location for a picket line. The ridge continues across the road to the west, however. Any picket line would have been posted on this westward extension as well. We have drawn the boundary in this area to follow the 800 foot contour until it intersects an existing roadway. It then follows the roadway until it intersects the 900 foot contour line, then follows that line to your proposed western boundary for Willow Wall.

The second area which needs to be added in order for the boundaries to accurately reflect the significance of the battle of Moorefield lies to the south of the Willow Wall and Buena Vista properties. In Brig. Gen. Bradley Johnson's report on the battle he defines the extent of his camp along the Romney Road--"my outside regiment four miles and a half from Moorefield, my nearest three-fourths of a mile from General McCausland, who was three miles from that town" (United States War Department, *The War of the Rebellion, Official Records of the Union and Confederate Armies*, Series I, Vol. 43, Part 1, p. 5). While the northern portion of Johnson's camp is clearly included within the proposed boundaries, the southern part is not. The report submitted immediately after the battle by General Averell confirms the importance of events occurring in the southern portion of Johnson's camp. Averell reports that he found the "rebel General Bradley Johnson's brigade . . . posted in line of battle on both sides of the road, one mile north of the

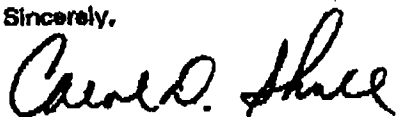
South Branch of the Potomac River" (*Official Records*, p. 494). According to this account, the most decisive action of the battle, the beginning of the rout that continued with only brief moments of organized resistance until the withdrawal of the scattered units of McCausland's and Johnson's commands into the mountains, occurred very close to what Johnson identified as the southern limit of his camp. This area is located about one-third of a mile below the southern boundary of Willow Wall. In order to include that area within the boundaries of the Moorefield battlefield, we have drawn the boundary along the 800 foot contour line from its intersection with the proposed western boundary of the Willow Wall property south to a point where it intersects a line parallel to and almost exactly 2000 feet south of the proposed southern boundary of Willow Wall. It follows that line east to the west bank of the South Branch of the Potomac, then turns north to connect with the Willow Wall boundary. This revision includes all of Johnson's camp and the action described by Brig. Gen. Averall, while excluding areas where relatively recent changes have compromised the battlefield's integrity.

In your letter of September 25, 1996, you also asked our opinion concerning the historic significance of the November 27-28, 1864, battle in the vicinity of Moorefield. We agree with your consultant's report which concluded that this engagement, classified as a skirmish in the *Official Records*, was not historically significant. A small reconnaissance party from Lt. Col. Rufus E. Fleming's Fifth West Virginia Cavalry was sent across the South Branch of the Potomac to ascertain the strength of Confederate forces at Moorefield. Encountering units of Maj. Gen. Thomas Rosser's brigade and heavily outnumbered, Fleming's unit was driven back with relatively heavy losses. Although this skirmish was followed by the loss of the Union's New Creek (WV) supply depot later on the 28th, the outcome of the Moorefield skirmish was a foregone conclusion in view of the disparity of forces involved and is unlikely to have affected the outcome of the New Creek affair.

The significance of the Moorefield Battlefield is based solely on the battle of August 7, 1864. As we stated in our letter of December 15, the battlefield is eligible for listing in the National Register under Criterion A because of the effect of this defeat on the subsequent course of the Shenandoah Valley campaign. We have concluded that the battlefield is also significant under Criterion B for its association with the careers of Confederate Generals Bradley Johnson and John McCausland and Union General William Averall. Each of these commanders played key roles in the decisions that determined the outcome of this important battle.

We appreciate your interest in the evaluation of these battlefields.

Sincerely,

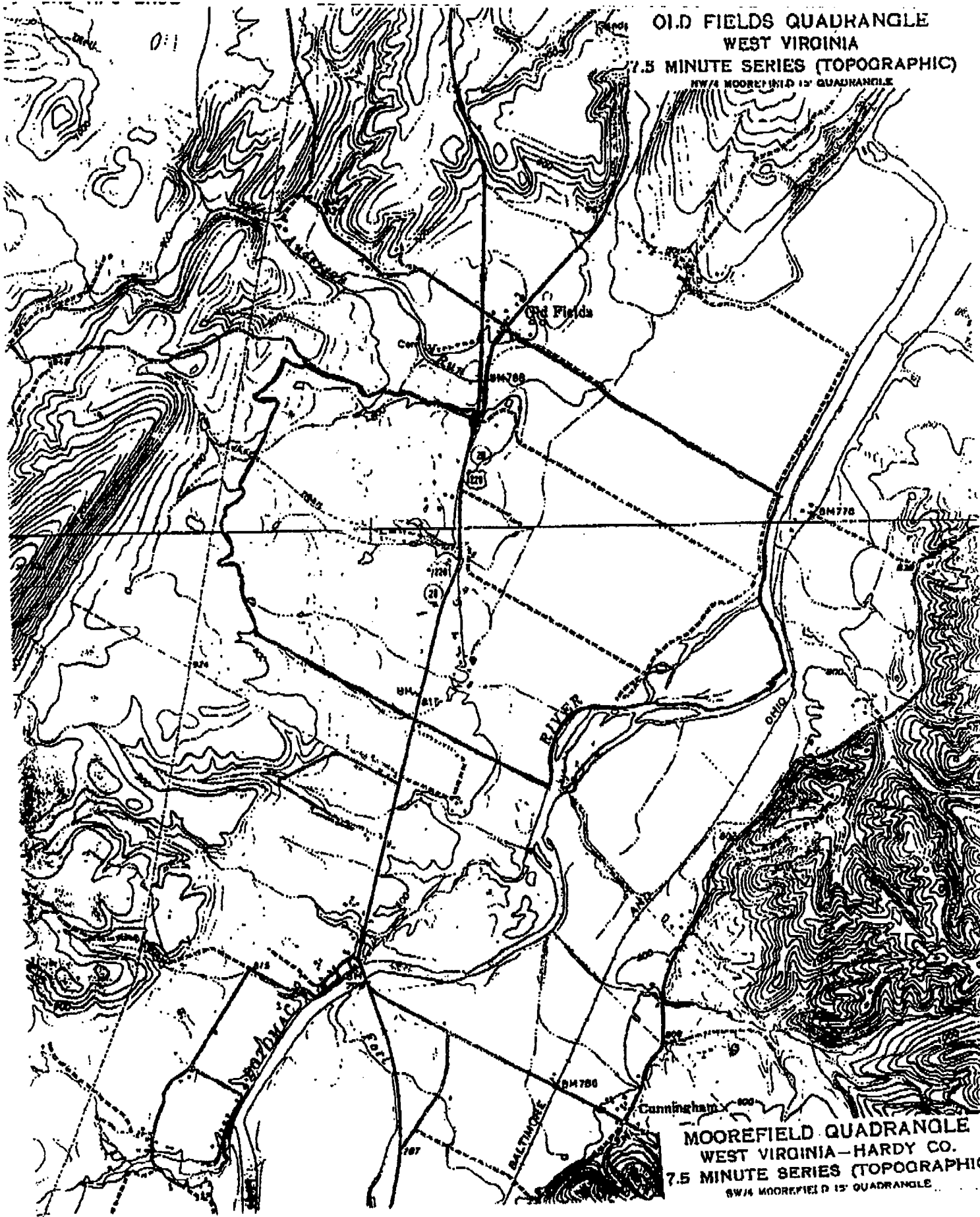


Carol D. Shull
Keeper of the National Register of Historic Places
National Register, History and Education

Enclosures

011

OLD FIELDS QUADRANGLE
WEST VIRGINIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW 1/4 MOOREFIELD 15' QUADRANGLE

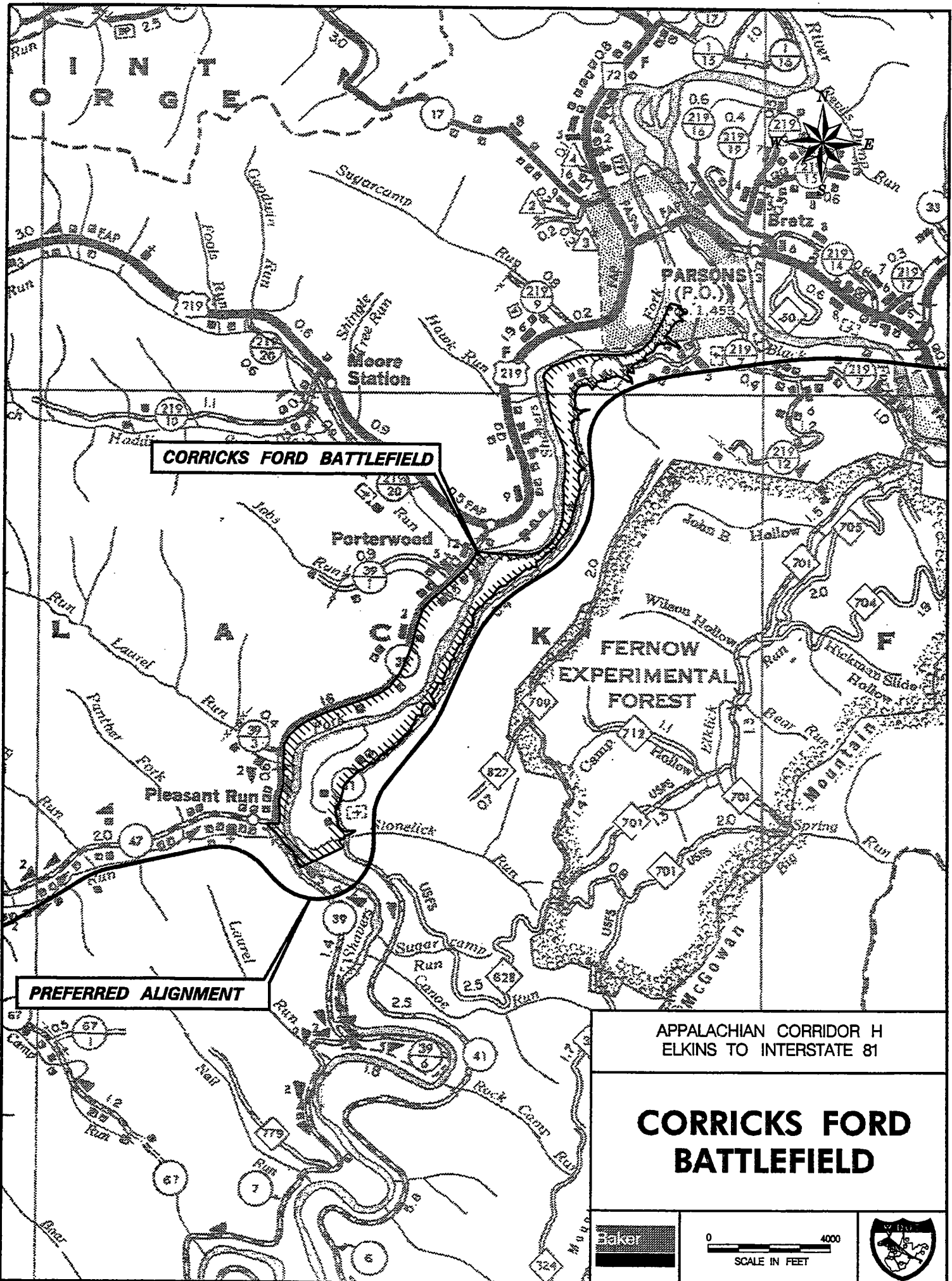


MOOREFIELD QUADRANGLE
WEST VIRGINIA—HARDY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW 1/4 MOOREFIELD 15' QUADRANGLE

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APPENDIX G

Boundaries of Corricks and Moorefield Battlefields



O I R N G T E

CORRICKS FORD BATTLEFIELD

PREFERRED ALIGNMENT

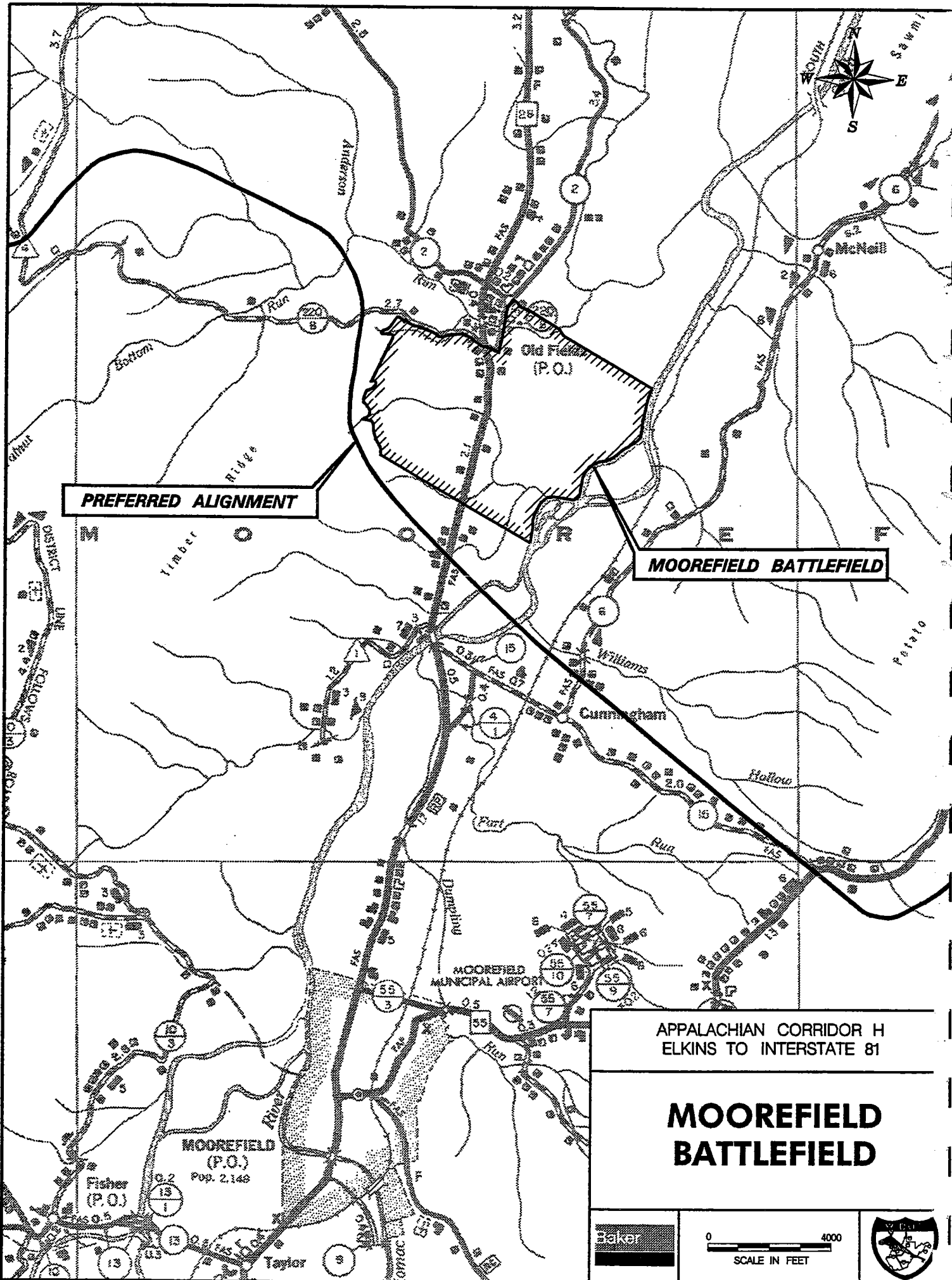
APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

**CORRICKS FORD
BATTLEFIELD**

Baker

0 4000
SCALE IN FEET





PREFERRED ALIGNMENT

MOOREFIELD BATTLEFIELD

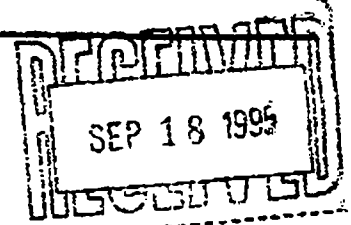
APPALACHIAN CORRIDOR H
ELKINS TO INTERSTATE 81

MOOREFIELD BATTLEFIELD



APPENDIX H

National Resources Conservation Service - Farmlands Forms



September 13, 1995

Marsh Zellhoefer
Ratcliffe Building, Suite 212
1602 Rolling Hills Drive
Richmond, VA 23229

Dear Marsh:

Enclosed is the final Farmland Conversion Impact Rating for
Corridor H.

Part II sub-section 3 is checked as **NO**. This is based upon the
Farmland Protection Policy Act (FPPA) amended in 1994 which
states that areas with LESA score of 160 or less are exempted
areas and are not "Farmland".

Sincerely,

Richard D. Heaslip
State Resource Conservationist

Enclosure

cc: w/Enclosure
Roy Pyle

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 6/2/95	4. Sheet 1 of 4
1. Name of Project Corridor H, Elkins to I-81		5. Federal Agency Involved FHWA	
Type of Project Roadway		6. County and State Hardy, WV	

PART II (To be completed by SCS)		1. Date Request Received By SCS 6/8/95	2. Person Completing Form Roy Pyle
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of the form.)		yes <input checked="" type="checkbox"/> no <input type="checkbox"/>	4. Acres Mapped None
5. Major Crops Corn		6. Farmable Land In Government Jurisdiction Acres: 42,430	7. Amount Of Farmland As Defined In FPPA Acres: 42,430
8. Name Of Land Evaluation System Used L.E.S.A.		9. Name of Local Site Assessment System None	10. Date Land Evaluation Requested By SCS 6/24/95

	Alternative Corridor For Segment			
	Line A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	1266.1			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	17.0			
C. Total Acres In Corridor	1283.1			

PART IV (To be completed by SCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	63.9			
B. Total Acres Statewide And Local Important Farmland	114.7			
C. Percentage Of Farmland In County Or Local Gov. Unit To Be Converted	0.004			
D. Percentage Of Farmland In Gov. Jurisdiction With Same Or Higher Relative Value	100			

PART V (To be completed by SCS) Land Evaluation Criterion Relative Value of Farmland to be Serviced or Converted (Scale of 0-100 Points)				
	200			

PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR §58.5(c))			Maximum Points			
1. Area In Nonurban Use	15	15				
2. Perimeter In Nonurban Use	10	10				
3. Percent Of Corridor Being Farmed	20	18				
4. Protection Provided By State And Local Government	20	0				
5. Size Of Present Farm Unit Compared To Average	10	10				
6. Creation Of Nonfarmable Farmland	25	0				
7. Availability Of Farm Support Services	5	3				
8. On-Farm Investments	20	4				
9. Effects Of Conversion On Farm Support Services	25	0				
10. Compatibility With Existing Agricultural Use	16	0				
TOTAL CORRIDOR ASSESSMENT POINTS	180	60				

PART VII (To be completed by Federal Agency)						
Relative Value Of Farmland (From Part V)	100					
Total Corridor Assessment (From Part VI above or a local site assessment)	180					
TOTAL POINTS (Total of above 2 lines)	280					

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>
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5. Reason For Selection:

Signature of Person Completing This Part: _____ DATE _____

NOTE: Complete a form for each segment with more than one Alternative Corridor.

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)

1. Name of Project: Corridor H, Elkins to I-81
 Type of Project: Roadway

2. Date of Land Evaluation Request: 6/2/95

3. Federal Agency Involved: FHWA

4. County and State: Tucker, WV

PART II (To be completed by SCS)

1. Date Report Received By SCS: 6/8/95

2. Report Completing Form: ROY P. 18

3. Does this corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form): Yes No

4. Acres Impaired: None Average Farm Size: 210 acres

5. Major Crops: CORN

6. Name of Land Evaluator System Used: L.E.S.A.

7. Amount Of Farmland As Defined In FPPA: Acres: 28,001 %: 10.4

8. Farmable Land in Government Jurisdiction: Acres: 28,001 %: 10.4

9. Name of Local Site Assessment System: None

10. Date Land Evaluator Received By SCS: 6/14/95

PART III (To be completed by Federal Agency)

	Alternative Corridor For Segment			
	Line A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	1033.0			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	66.0			
C. Total Acres In Corridor	1099.0			

PART IV (To be completed by SCS) Land Evaluation Information

A. Total Acres Prime And Unique Farmland	15.1
B. Total Acres Statewide And Local Important Farmland	129.2
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.0052
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	100
E. Percentage Of Farmland In Govt. Jurisdiction Criterion Relative Value of Farmland to Be Served or Converted (Scale of 0-100 Points)	0.4

PART V (To be completed by SCS) Land Evaluation Criterion Relative Value of Farmland to Be Served or Converted (Scale of 0-100 Points)

Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))	Maximum Points	
1. Area in Nonurban Use	15	15
2. Perimeter in Nonurban Use	10	10
3. Percent Of Corridor Being Farmed	20	9
4. Protection Provided By State And Local Government	20	0
5. Size Of Present Farm Unit Compared To Average	10	8
6. Creation Of Nonfarmable Farmland	25	0
7. Availability Of Farm Support Services	5	1
8. On-Farm Investments	20	3
9. Effects Of Conversion On Farm Support Services	25	0
10. Compatibility With Existing Agricultural Use	10	0
TOTAL CORRIDOR ASSESSMENT POINTS	100	46

PART VII (To be completed by Federal Agency)

Relative Value Of Farmland (From Part V)	100
Total Corridor Assessment (From Part VI above or a local site assessment)	100
TOTAL POINTS (Total of above 2 lines)	200

Corridor Selected: _____

2. Total Acres of Farmlands to be Converted by Project: _____

3. Date Of Selection: _____

4. Was A Local Site Assessment Used? YES NO

Reason For Selection: _____

Signature of Person Completing This Part: _____ DATE _____

Note: Complete a form for each segment with more than one Alternative Corridor.

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)

1. Name of Project: **Corridor H, Elkins to I-81 Federal Project**
 Type of Project: **Roadway**

3. Date of Land Evaluation Request: **6/2/95**

5. Federal Agency Involved: **FHWA**

8. County and State: **Grant, WV**

PART II (To be completed by SCS)

2. Person Completing Form: **Roy Fyle**

3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form.) **NO** YES NO

4. Acres Truncated: **None** Average Farm Size: **321**

5. Major Crops: **Corn**

6. Name of Land Evaluation System Used: **L.E.S.A.**

7. Amount of Farmland As Defined in FPPA: **Acres: 24,790** **8.0**

9. Name of Local Site Assessment System: **None**

10. Date Land Evaluation Requested By SCS: **6/14/95**

PART III (To be completed by Federal Agency)

	Alternative Corridor For Segment			
	Line A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	717.2			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	0.0			
C. Total Acres In Corridor	717.2			

PART IV (To be completed by SCS) Land Evaluation Information

A. Total Acres Prime And Unique Farmland	14.8
B. Total Acres Statewide And Local Important Farmland	46.1
C. Percentage Of Farmland In County Or Local Gov. Unit To Be Converted	0.0023
D. Percentage Of Farmland In Gov. Jurisdiction With Same Or Higher Relative Value Of Farmland To Be Serviced Or Converted (Scale Of 0 - 100 Points)	18

PART V (To be completed by SCS) Land Evaluation Criterion Relative Value Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))

Assessment Criteria	Maximum Points	Points
1. Area In Nonurban Use	15	15
2. Perimeter In Nonurban Use	10	10
3. Percent Of Corridor Being Farmed	20	18
4. Protection Provided By State And Local Government	20	0
5. Size Of Present Farm Unit Compared To Average	10	10
6. Creation Of Nonfarmable Farmland	25	0
7. Availability Of Farm Support Services	5	3
8. On-Farm Investments	20	4
9. Effects Of Conversion On Farm Support Services	25	0
10. Compatibility With Existing Agricultural Use	10	0
TOTAL CORRIDOR ASSESSMENT POINTS	160	60

PART VI (To be completed by Federal Agency)

Relative Value Of Farmland (From Part V)	100
Total Corridor Assessment (From Part VI above or a local site assessment)	160
TOTAL POINTS (Total of above 2 lines)	200

1. Corridor Selected:

2. Total Acres of Farmlands to be Converted by Project:

3. Date Of Selection:

4. Was A Local Site Assessment Used? **YES** **NO**

5. Reason For Selection:

Signature of Person Completing This Part: _____

DATE _____

NOTE: Complete a form for each segment with more than one Alternative Corridor.

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 6/2/95	4. Sheet 1 of 1
1. Name of Project Corridor H, Elkins to I-81 Federal Project APD-484(59)		5. Federal Agency Involved FHWA	
2. Type of Project Roadway		6. County and State Randolph, WV	
PART II (To be completed by SCS)		7. Date Report Received By SCS 6/8/95	8. Person Completing Form Roy Eyle
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		9. Acres Impacted (Average Farm Size) None 263	
4. Major Crops CORN, BEEF	5. Farmable Land In Government Jurisdiction Acres: 79,270 % 13.4	7. Amount Of Farmland As Defined In FPPA Acres: 79,270 % 13.4	
6. Name Of Land Evaluation System Used L.E.S.A.	8. Name of Local Site Assessment System None	10. Date Land Evaluation Reported By SCS 6/14/95	

PART III (To be completed by Federal Agency)	Alternative Corridor For Segment			
	Line A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	428.4			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	149.9			
C. Total Acres In Corridor	578.3			

PART IV (To be completed by SCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	11.9			
B. Total Acres Statewide And Local Important Farmland	89.8			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.0013			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	100			

PART V (To be completed by SCS) Land Evaluation Criterion Relative Values of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)	10			
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PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 698.5(c))		Maximum Points			
1. Area In Nonurban Use	15	15			
2. Perimeter In Nonurban Use	10	10			
3. Percent Of Corridor Being Farmed	20	12			
4. Protection Provided By State And Local Government	20	0			
5. Size Of Present Farm Unit Compared To Average	10	10			
6. Creation Of Nonfarmable Farmland	25	0			
7. Availability Of Farm Support Services	5	3			
8. On-Farm Investments	20	4			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	0			
TOTAL CORRIDOR ASSESSMENT POINTS	100	54			

PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)	100				
Total Corridor Assessment (From Part VI above or a local site assessment)	100				
TOTAL POINTS (Total of above 2 lines)	200				

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>
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5. Reason For Selection:

Signature of Person Completing This Part: _____ DATE _____

TE: Complete a form for each segment with more than one Alternative Corridor.

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