



REPLY TO
ATTENTION OF:

CENCR-PD-P

DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004

GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

WITH PROGRAMMATIC ENVIRONMENTAL
IMPACT STATEMENT

VOLUME 1 OF 2
APPENDIXES A THRU C

SEPTEMBER 1987

SITE PLANS FOR COST-SHARED PROJECTS

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GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

APPENDIX A
SITE PLANS FOR COST-SHARED PROJECTS

TABLE OF CONTENTS

<u>Subject</u>	<u>Page</u>
SECTION 1 - INTRODUCTION	A-1
SECTION 2 - TYPICAL FACILITIES	A-2
SECTION 3 - COST-SHARED RECREATION PROJECTS	A-53
103.1 - Ledges State Park Improvements	A-54
104.1 - Beaver Bridge Canoe Access	A-57
105.2 - Upper River Gateway	A-60
106.1 - Dolliver State Park Improvements	A-63
107.1 - Boone Forks Outpost Boat Ramp	A-66
108.1 - Carlson Area Boat Ramp	A-68
108.2 - Carlson County Recreation Area Improvements	A-71
109.1 - Don Williams County Park Expansion	A-73
110.2 - Norton's Ford Boat Ramp	A-75
110.3 - Lower Fraser Boat Ramp	A-77
110.4 - Boone Waterworks Boat Ramp	A-80
112.2 - Brushy Creek Confluence Staging Area	A-82
114.1 - Dayton Mounds	A-84
201.1 - Jester County Park Improvements	A-86
202.1 - Big Creek State Park Improvements	A-89
203.1 - Big Creek Spillway Boat Ramp	A-92
203.2 - S&V Bridge Jetty	A-94
205.1 - Beaver Creek Park	A-96
206.1 - Upper Saylorville Rest Area	A-99
301.1 - River's Edge Pedestrian Walkway	A-102
301.2 - Downtown Riverfront Plaza	A-105
301.3 - Walnut Street Transit Mall Improvements	A-108
301.4 - Crivaro Park Improvements	A-110
301.5 - Recreational Rowing Marina	A-113
302.1 - Martin-Marietta Development	A-115
303.1 - Walnut Woods State Park Improvements	A-119
304.1 - Yellow Banks County Park Improvements	A-122
306.1 - Riverview Park Development	A-125
307.1 - West River Drive Riverfront Park Extension	A-128
308.1 - Botanical Center Riverfront Park	A-131
309.1 - Hubbell Naturalistic Park Improvements	A-134
310.1 - Easter Lake County Park Improvements	A-137
311.1 - Lighted Outdoor Sports and Athletic Complex	A-139

TABLE OF CONTENTS (Cont'd)

<u>Subject</u>	<u>Page</u>
314.1 - Des Moines River Boat Traffic	A-148
314.2 - Downtown Marina, Des Moines	A-151
401.1 - Elk Rock State Park Improvements	A-154
402.1 - Red Rock 340 Acre Park	A-157
403.1 - Marion County Park Improvements	A-163
404.1 - Runnells City Park Improvements	A-165
405.1 - Howard's Pond Subimpoundment	A-168
406.1 - Congregational Church Overlook	A-170
410.1 - Runnells Boat Ramp	A-173
413.1 - Harvey Boat Ramp	A-176
801.1 - Scenic Valley Road Route	A-179
802.1 - Greenbelt Multi-Purpose Trail	A-181
802.2 - Jester Park Trail	A-184
802.3 - Brown's Woods Trail	A-186
803.1 - Des Moines River Fishing Piers	A-188
803.2 - Kate Shelley Bridge Fishing Access	A-190
803.3 - Handicapped Fishing Piers	A-193
803.4 - Prospect Park Fishing Piers	A-195
803.5 - Scott Street Dam Fishing Access	A-197
803.6 - Red Rock Fishing Piers	A-200
805.5 - Bird Watching Stations	A-203
806.1 - Scenic View No. 1	A-205
806.2 - Scenic View No. 2	A-207
806.3 - Scenic View No. 3	A-209
806.4 - Scenic View No. 4	A-211
806.5 - Scenic View No. 5	A-213
806.6 - Scenic View No. 6	A-215
806.7 - Scenic View No. 7	A-217
806.8 - Scenic View No. 8	A-219
SECTION 4 - COST-SHARED ENVIRONMENTAL ENHANCEMENT PROJECTS	A-221
101.1 - Boone Forks Wildlife Management Area	A-222
102.1 - State Forest Acquisition and Development	A-225
207.1 - Saylorville Refuge Expansion	A-228
208.1 - Johnston Nursery	A-231
801.4 - Conservation Easements	A-233
804.1 - Native Plantings No. 1	A-235
804.2 - Native Plantings No. 2	A-237
804.3 - Reforestation No. 1	A-239
804.4 - Reforestation No. 2	A-241
804.5 - Reforestation No. 3	A-243
804.6 - Reforestation No. 4	A-245
804.7 - Reforestation No. 5	A-247
804.12 - Land Acquisition-Joe West Sr. Estate	A-249
804.13 - SE Riverfront Land Acquisition	A-251
804.14 - Tree Belt Below Lake Red Rock	A-253

TABLE OF CONTENTS (Cont'd)

<u>Subject</u>	<u>Page</u>
805.2 - Bald Eagle Nest Platform	A-255
805.3 - Heron Nest Structure-Saylorville Lake	A-257
805.4 - Heron Nest Structure-Lake Red Rock	A-260

SECTION 5 - COST-SHARED STREAMBANK STABILIZATION PROJECTS A-263

112.1 - Brushy Creek Bank Stabilization	A-264
305.1 - Prospect Park Riverbank Stabilization	A-266
314.3 - Des Moines and Raccoon River Levee Protection	A-268
314.4 - Reconstruction of West River Wall	A-271
801.2 - Kalo Road Bank Stabilization	A-273
801.3 - Route P73 Bank Stabilization	A-275
801.5 - Deception Hollow Bank Stabilization	A-277

List of Tables

<u>No.</u>	<u>Subject</u>	<u>Page</u>
A-1	Typical Facilities	A-2

List of Figures

<u>No.</u>	<u>Subject</u>	<u>Page</u>
A-1	Typical Facilities No. 1	A-5
A-2	Typical Facilities No. 2	A-6
A-3	Typical Facilities No. 3	A-7
A-4	Typical Facilities No. 4	A-8
A-5	Typical Facilities No. 5	A-9
A-6	Typical Facilities No. 6	A-10
A-7	Typical Facilities No. 7	A-11
A-8	Typical Facilities No. 8	A-12
A-9	Typical Facilities No. 9	A-13
A-10	Typical Facilities No. 10	A-14
A-11	Typical Facilities No. 11	A-15
A-12	Typical Facilities No. 12	A-16
A-13	Typical Facilities No. 13	A-17
A-14	Typical Facilities No. 14	A-18
A-15	Typical Facilities No. 15	A-19
A-16	Typical Facilities No. 16	A-20
A-17	Typical Facilities No. 17	A-21
A-18	Typical Facilities No. 18	A-22
A-19	Typical Facilities No. 19	A-23
A-20	Typical Facilities No. 20	A-24
A-21	Typical Facilities No. 21	A-25

TABLE OF CONTENTS (Cont'd)

List of Figures (Cont'd)

<u>No.</u>	<u>Subject</u>	<u>Page</u>
A-22	Typical Facilities No. 22	A-26
A-23	Typical Facilities No. 23	A-27
A-24	Typical Facilities No. 24	A-28
A-25	Typical Facilities No. 25	A-29
A-26	Typical Facilities No. 26	A-30
A-27	Typical Facilities No. 27	A-31
A-28	Typical Facilities No. 28	A-32
A-29	Typical Facilities No. 29	A-33
A-30	Typical Facilities No. 30	A-34
A-31	Typical Facilities No. 31	A-35
A-32	Typical Facilities No. 32	A-36
A-33	Typical Facilities No. 33	A-37
A-34	Typical Facilities No. 34	A-38
A-35	Typical Facilities No. 35	A-39
A-36	Typical Facilities No. 36	A-40
A-37	Typical Facilities No. 37	A-41
A-38	Typical Facilities No. 38	A-42
A-39	Typical Facilities No. 39	A-43
A-40	Typical Facilities No. 40	A-44
A-41	Typical Facilities No. 41	A-45
A-42	Typical Facilities No. 42	A-46
A-43	Typical Facilities No. 43	A-47
A-44	Typical Facilities No. 44	A-48
A-45	Typical Facilities No. 45	A-49
A-46	Typical Facilities No. 46	A-50
A-47	Typical Facilities No. 47	A-51
A-48	Typical Facilities No. 48	A-52

GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

APPENDIX A
SITE PLANS FOR COST-SHARED PROJECTS

SECTION 1 - INTRODUCTION

The Advisory Committee has recommended the development of cost-shared recreation, environmental enhancement and streambank stabilization projects. Cost-sharing would be conducted between the Corps of Engineers and a local governmental sponsor, such as a city, county or the State of Iowa. Upon completion of the project, the local sponsor will be responsible for operation, maintenance and replacement.

Site planning for each project started with an analysis of the conceptual master plan. In some cases, the local sponsors desired to cost-share facilities which are not allowable in accordance with current regulations (see Appendix G, Engineer Regulation 1165-2-400 (Extract)). Therefore, only facilities potentially eligible for cost-sharing were incorporated into the site plans.

In order to describe the level of development at Corps of Engineers projects, a typical facilities section has been included in the appendix. Table A-1 and figures A-1 through A-48 describe the typical facilities used in the site plans.

Individual site plans were produced for each cost-shared project. Site plans are labelled by a project number and name. The listings include the project purpose; local sponsor; location; description; operation, maintenance and replacement responsibility; economic justification; environmental impacts; real estate requirement; and an itemized cost estimate. Plate references are also included for a location map and site plan.

SECTION 2 - TYPICAL FACILITIES

Typical facilities are described in the appendix in order to establish a common understanding of the level of development for potentially cost-shared projects. Table A-1 lists the components and descriptions of recreational, environmental enhancement and streambank stabilization projects proposed by the local sponsors. Photographs of typical facilities are found as figures A-1 through A-48.

TABLE A-1

Typical Facilities
Des Moines Recreational River And Greenbelt

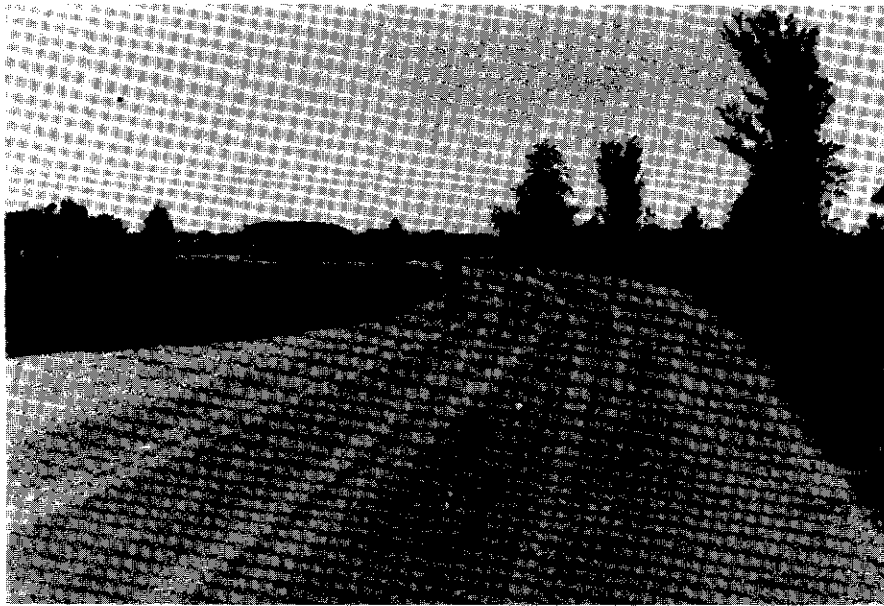
<u>Item</u>	<u>Figure No.</u>	<u>Description</u>
Access Road, crushed stone	A-1	16-foot wide with 2-foot shoulders.
Access Road, paved	A-1	22-foot width, two inches asphalt on six inches crushed stone base with crushed stone shoulder primed.
Amphitheatre	A-2	
Bank Stabilization	A-2	
Beach	A-3	
Bench	A-3, A-4	Steel supports, 8-foot wood slats.
Bicycle Rack	A-5	
Boat Ramp	A-5	Concrete, 12-foot width.
Bridge, trail	A-6, A-7	Steel arch, 10-foot wide, length variable.
Bulletin Board	A-8, A-9	4-foot by 8-foot wood posts, wood shingles.
Camping Spur	A-8, A-10	12-foot x 50-foot gravel surface; grub, 6-inch gravel, wood tie curbing.
Changehouse	A-12	
Deck, observation	A-12	
Dock, courtesy	A-13	Cement plank on structural steel frame and encased flotation system.
Dump Station	A-13, A-14	Concrete apron, water tower, with septic tank and absorption field.

TABLE A-1 (Cont'd)

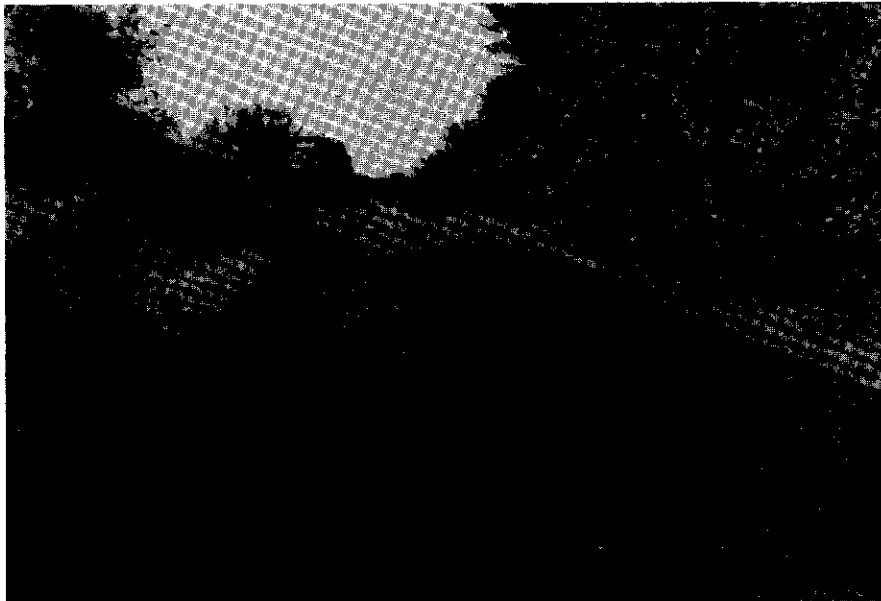
<u>Item</u>	<u>Figure No.</u>	<u>Description</u>
Electric: Spur Pedestal Transformer	A-15 A-15	Includes pad.
Fence, chain link	A-16	
Fence, wood	A-16, A-17	Treated wood post and rail.
Fire Ring	A-18	Cast iron.
Fish Cleaning Station	A-18, A-19	Cleaning table, asphalt shingle roof, 12-foot x 12-foot concrete slab.
Fishing Platform	A-20, A-21	Handicapped accessible
Fountain/Hydrant	A-20, A-22	Pressure system.
Gate, road	A-23, A-24	18-foot, welded steel pipe.
Gate, trail	A-23, A-25	9-foot, welded steel pipe.
Gatewall	A-26	
Grate/Grill	A-27, A-28	
Lift Station	A-27	
Lighting Standard	A-29	
Marsh Restoration	A-29	
Parking Barrier	A-30, A-31	Treated post and log barriers.
Parking Lot, asphalt	A-30	
Parking Lot, gravel	A-32	
Playground	A-32, A-33	Log delineators, swings, treehouse (etc.).
Pond	A-34	
Prairie Restoration	A-34, A-35	Seedbed preparation, seeding of prairie grasses.
Reforestation	A-35	Hand or machine planting of 6 inch - 12 inch seedlings with herbicide treatment, 8 inch x 8 inch spacing.

TABLE A-1 (Cont'd)

<u>Item</u>	<u>Figure No.</u>	<u>Description</u>
Shelter, large	A-36, A-37	Concrete slab, fireplace, split face concrete block, asphalt shingles.
Shelter, small	A-36, A-38	Concrete slab, wood posts, frame construction, asphalt shingle roof.
Sign, trail	A-39	Standard metal (as required), treated post.
Stairs/Steps	A-39	Concrete stairs cast on ground.
Table	A-40, A-41	
Toilet, flush	A-40, A-42, A-43	6 unit, split face concrete block, asphalt shingle roof.
Toilet, flush w/ shower	A-44	
Toilet, vault	A-45	Concrete vault, wood frame building, single unit.
Trail, paved	A-44, A-46	8-foot wide with 2-foot shoulders, grub 6-inch gravel, 2-inch asphalt.
Trail, unpaved	A-47	4-foot wide, gravel surface, grub, 6-inch gravel.
Trash Can	A-47, A-48	Galvanized steel with lid and holder.



Access Road, crushed stone



Access Road, paved

Figure A-1. Typical Facilities No. 1.

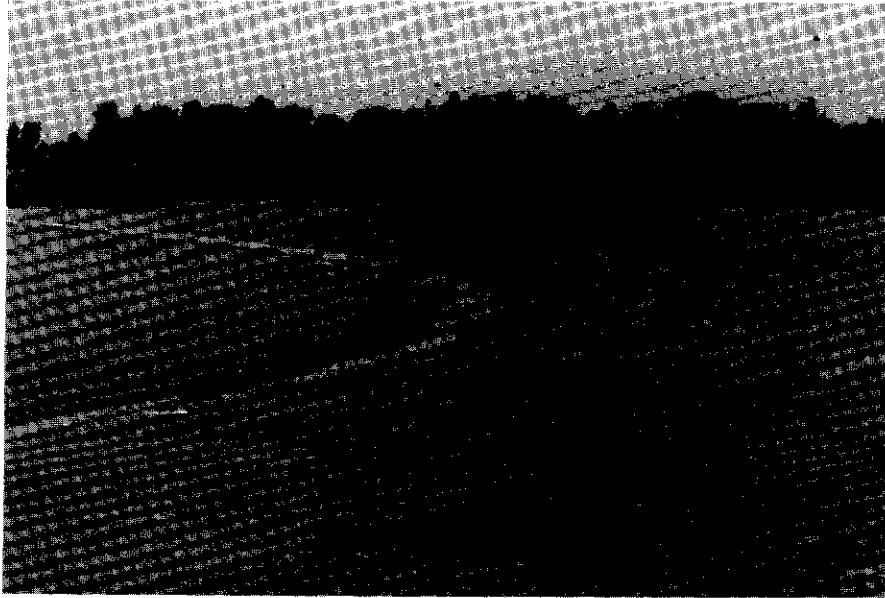


Amphitheatre

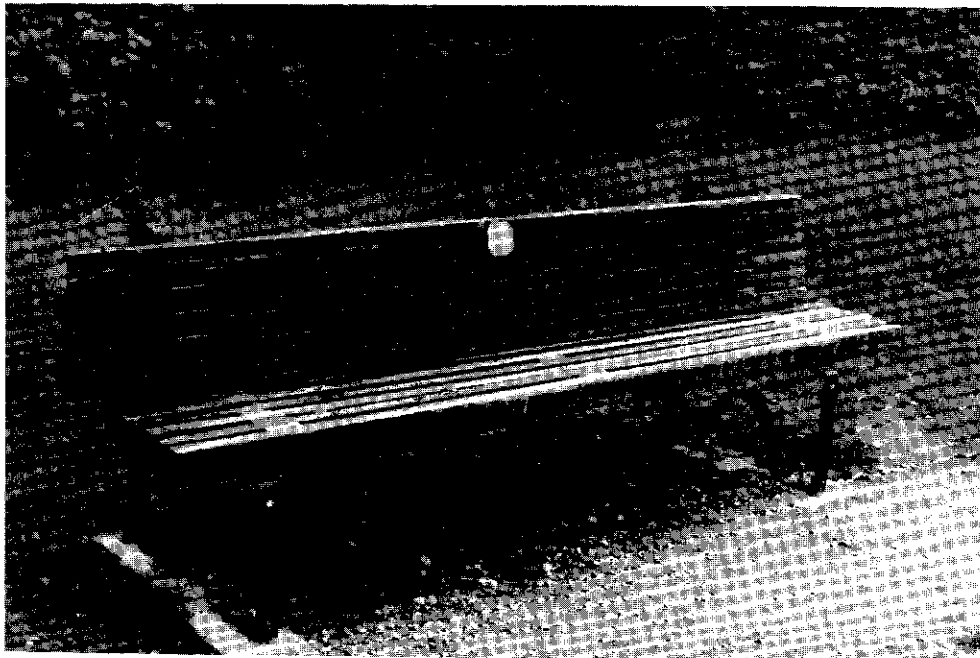


Bank Stabilization

Figure A-2. Typical Facilities No. 2.

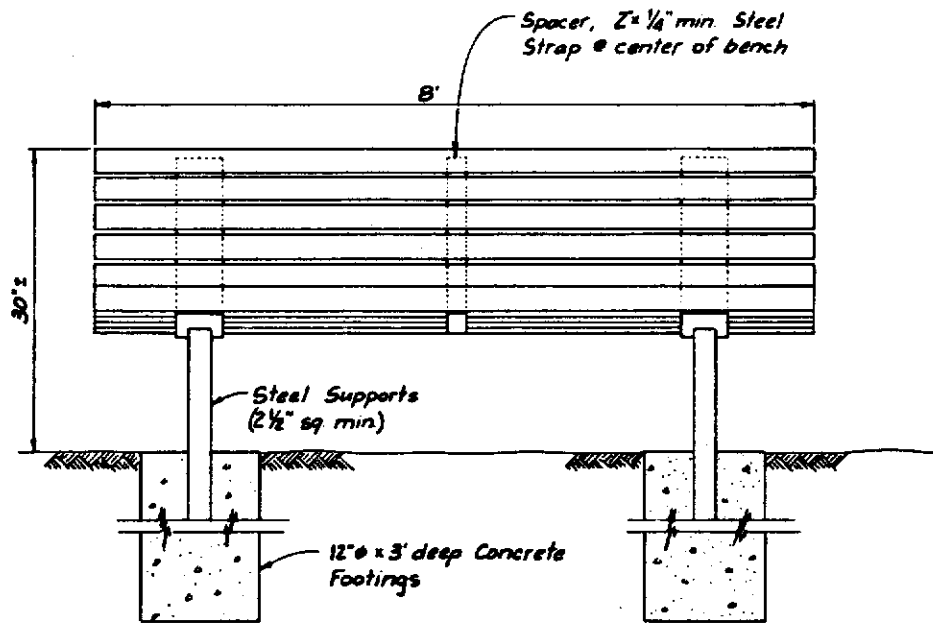


Beach

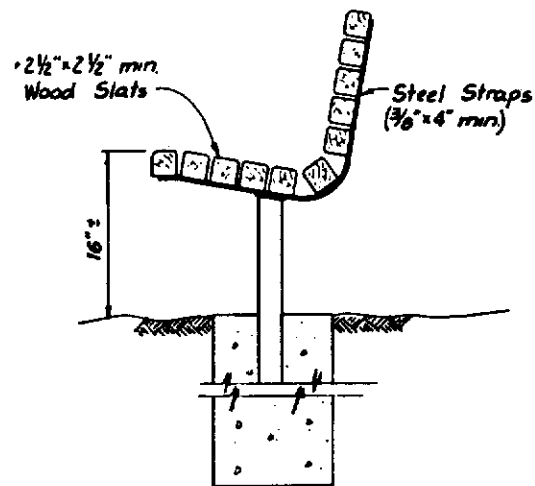


Bench

Figure A-3. Typical Facilities No. 3.



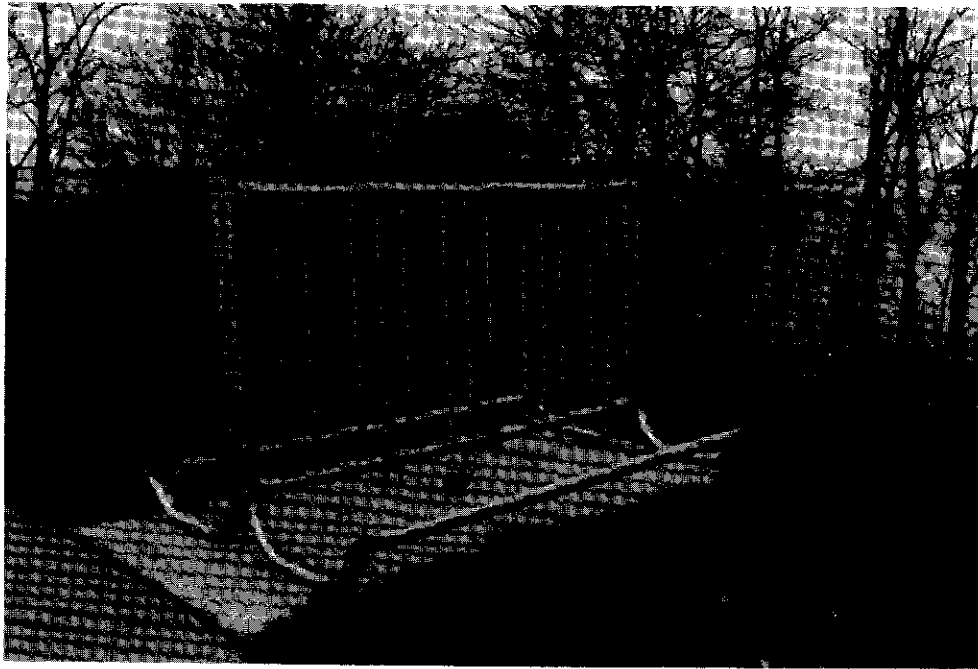
FRONT



END

BENCH

Figure A-4. Typical Facilities No. 4.



Bicycle Rack



Boat Ramp

Figure A-5. Typical Facilities No. 5.

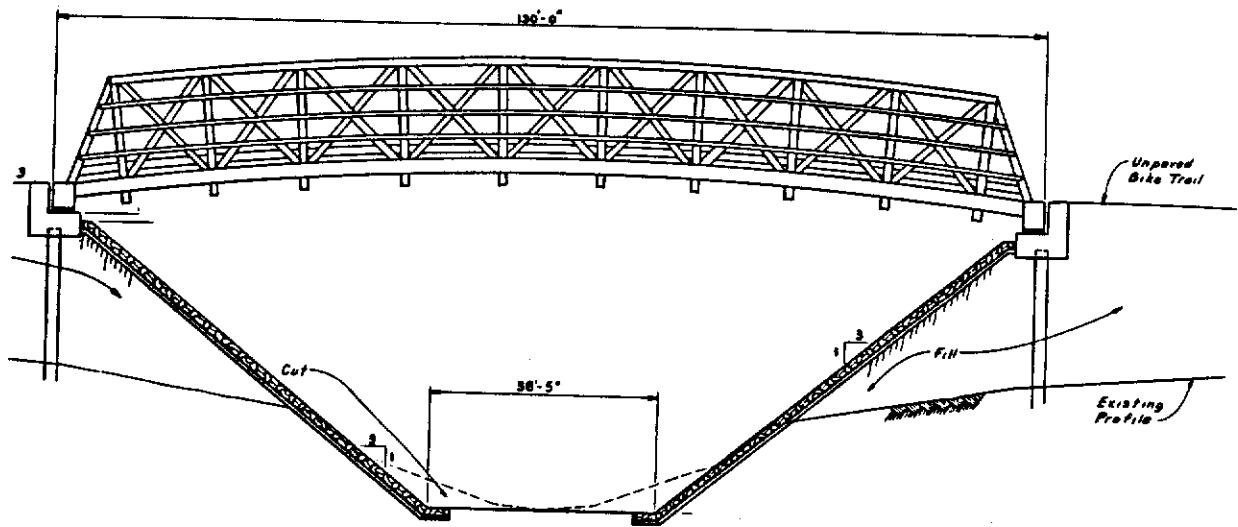


Bridge, trail



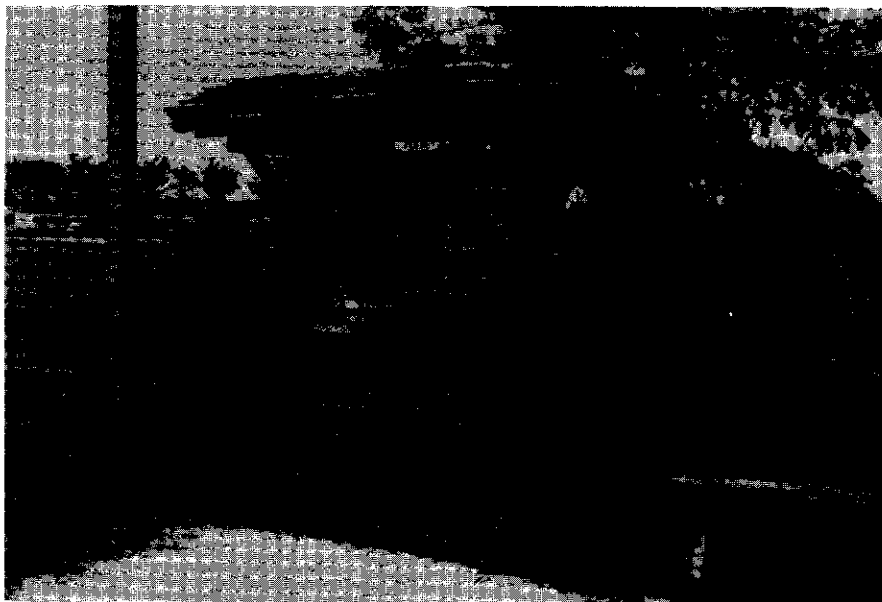
Bridge, trail

Figure A-6. Typical Facilities No. 6.



TRAIL BRIDGE

Figure A-7. Typical Facilities No. 7.

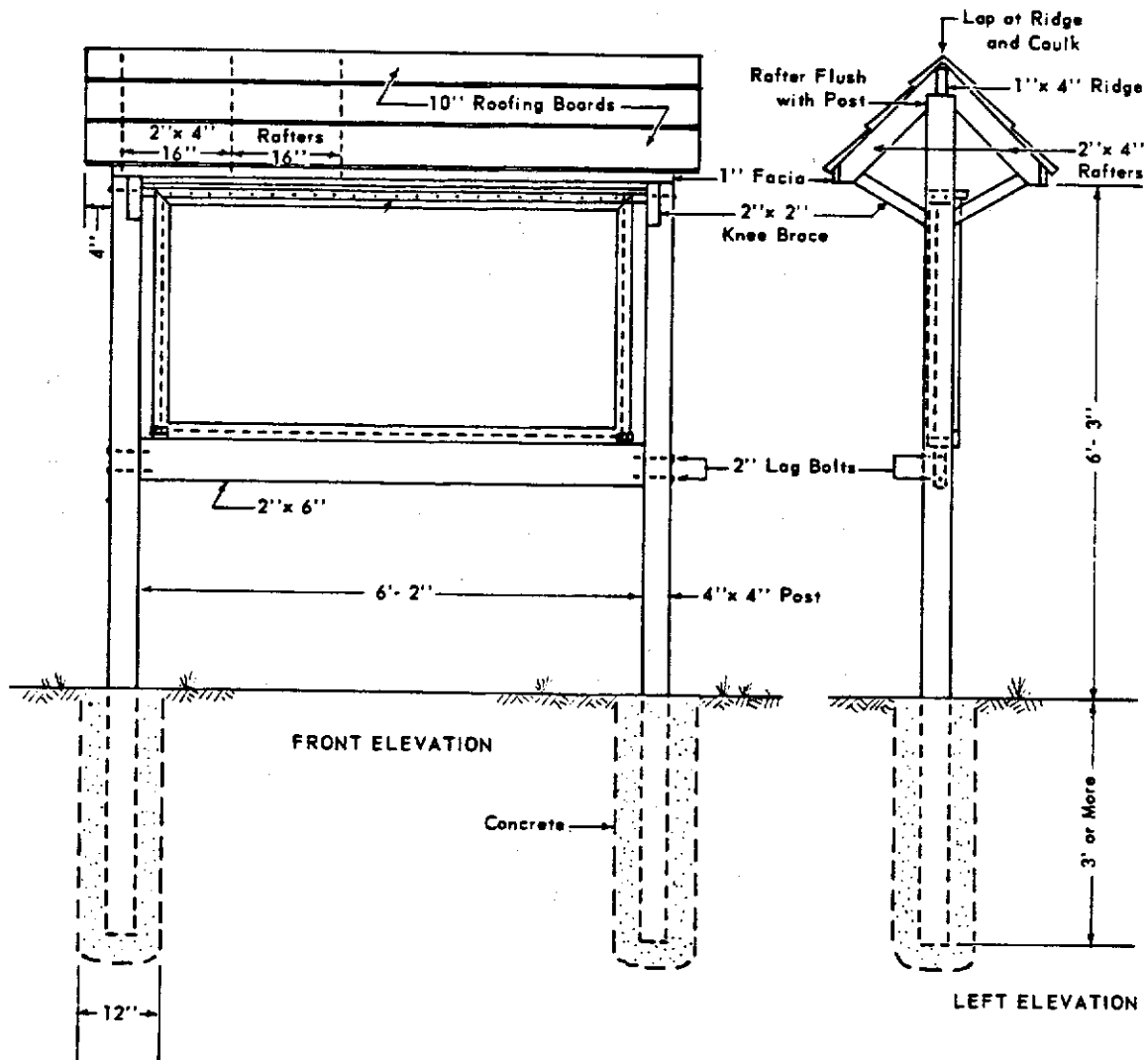


Bulletin Board



Camping Spur

Figure A-8. Typical Facilities No. 8.



SHELTERED BULLETIN BOARD

Figure A-9. Typical Facilities No. 9.

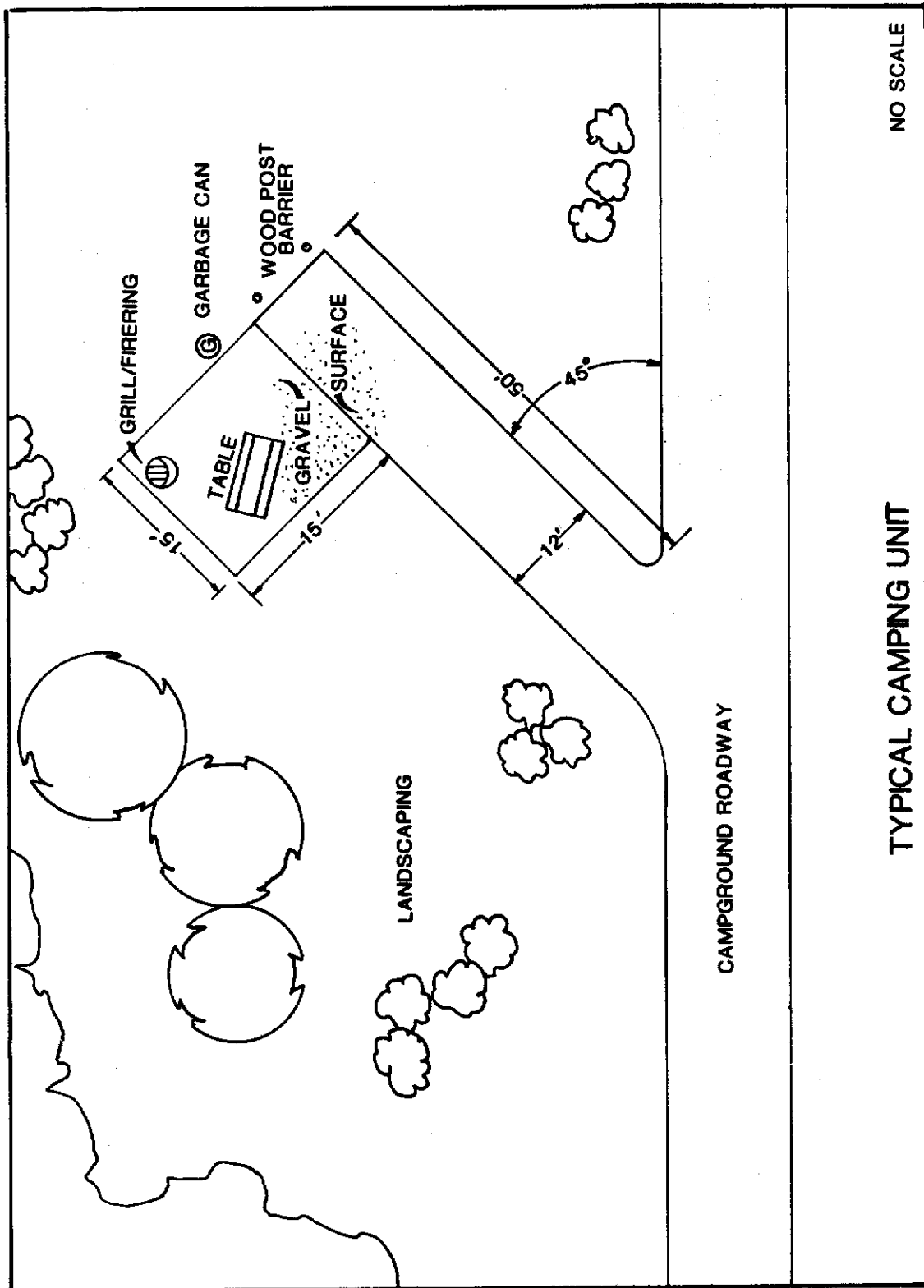
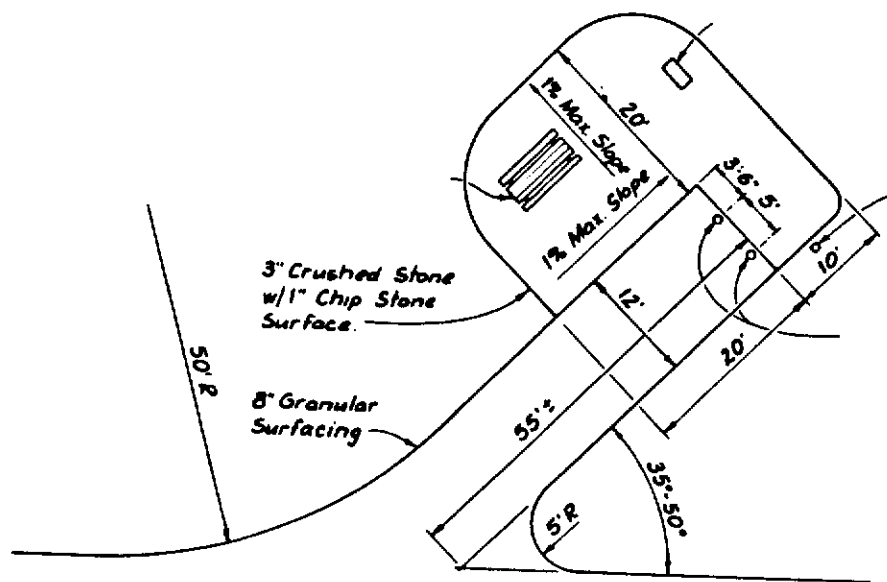
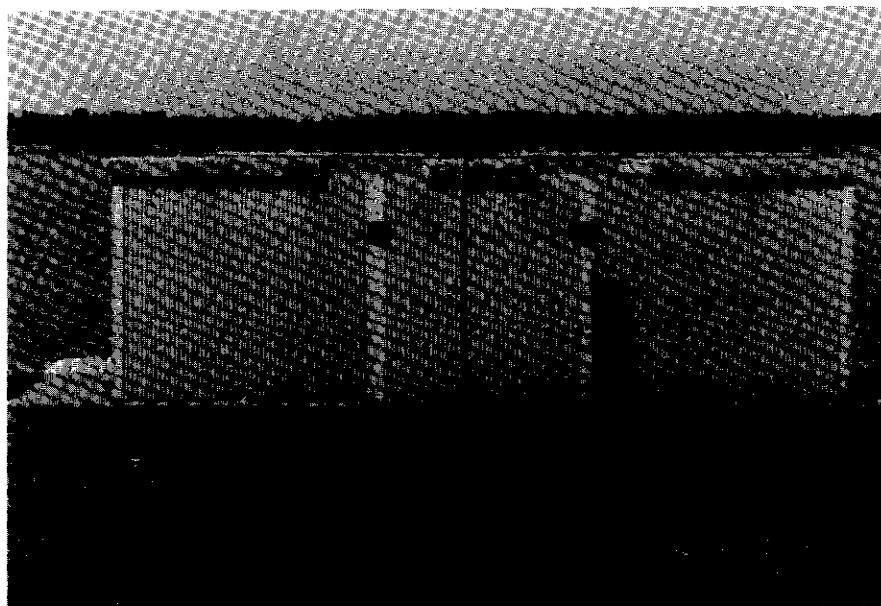


Figure A-10. Typical Facilities No. 10.

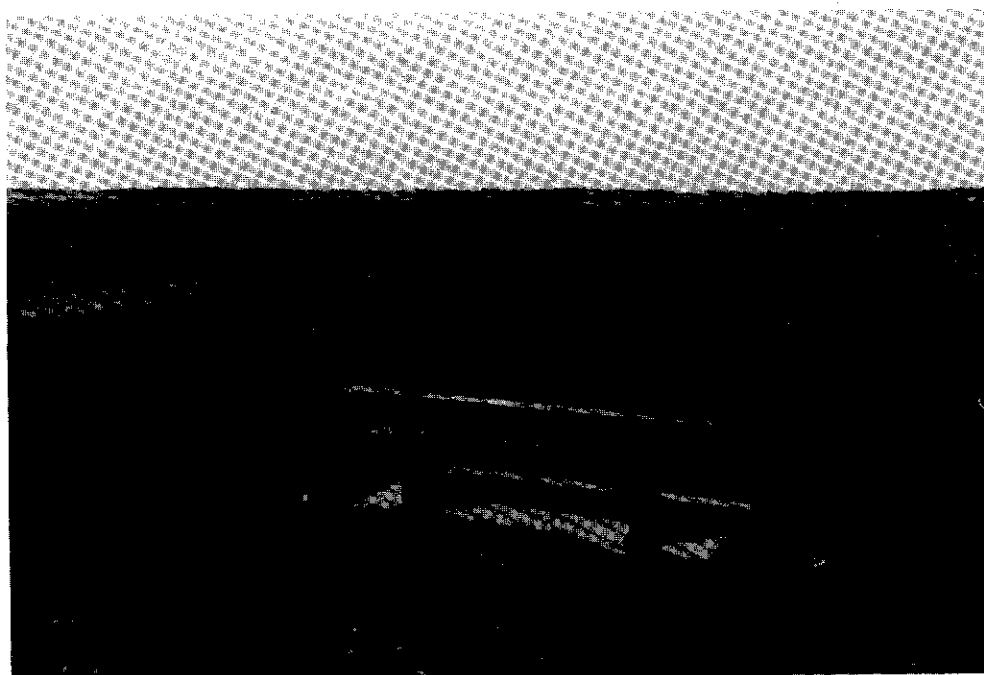


CAMPING SPUR

Figure A-11. Typical Facilities No. 11.

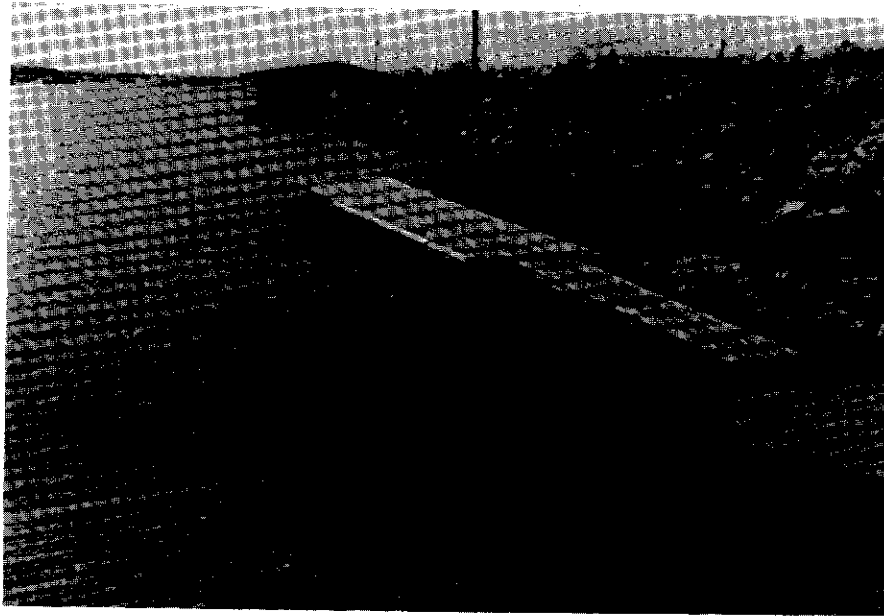


Changehouse

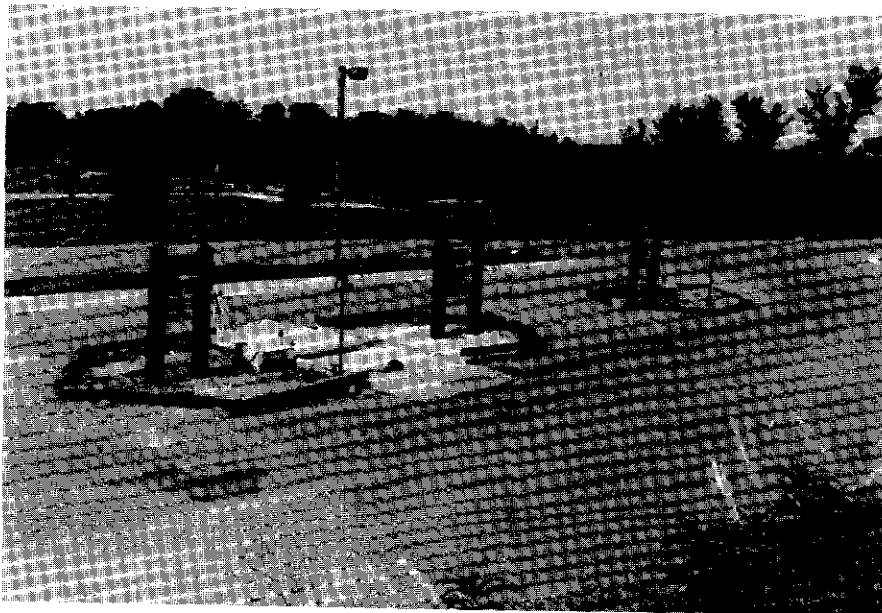


Deck, observation

Figure A-12. Typical Facilities No. A-12.

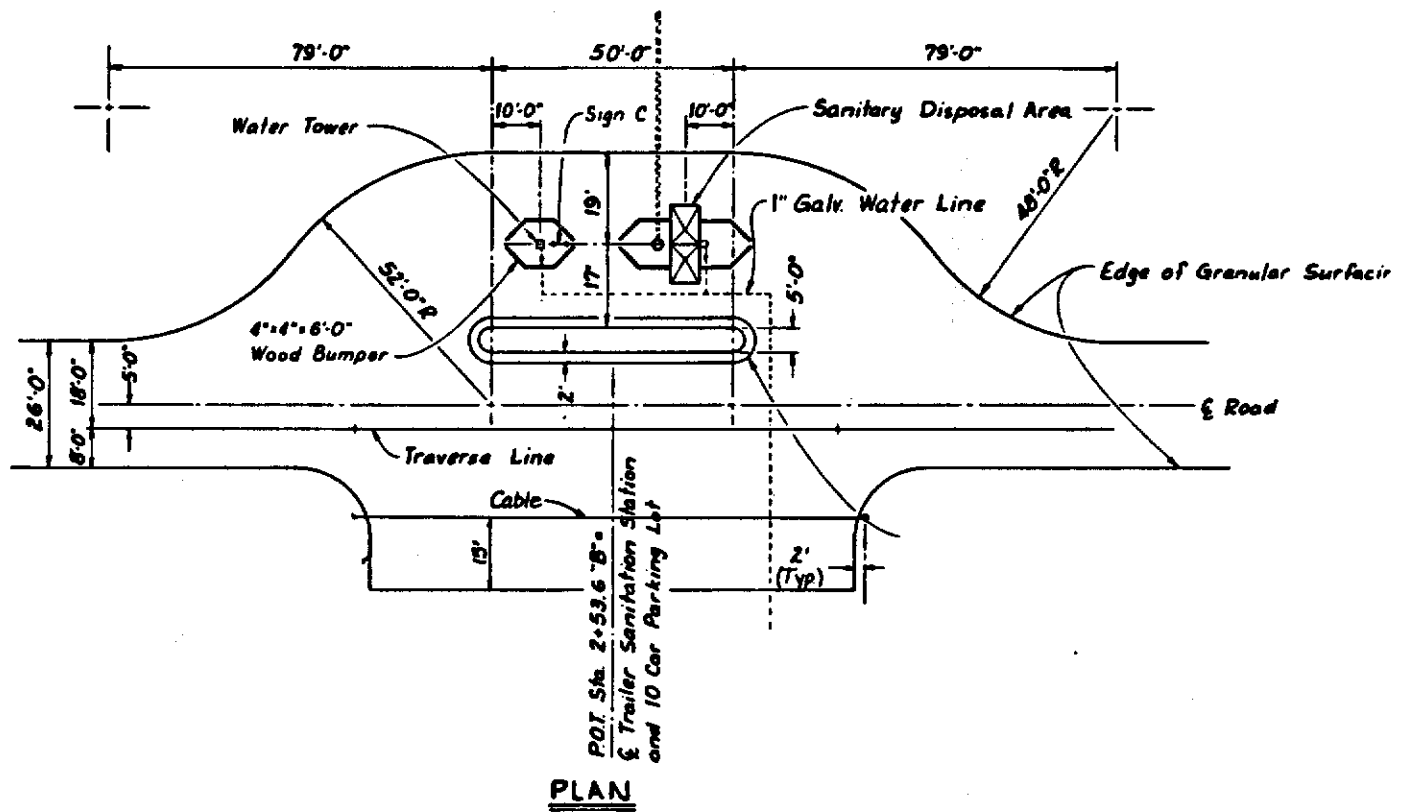


Dock, courtesy



Dump Station

Figure A-13. Typical Facilities No. 13.

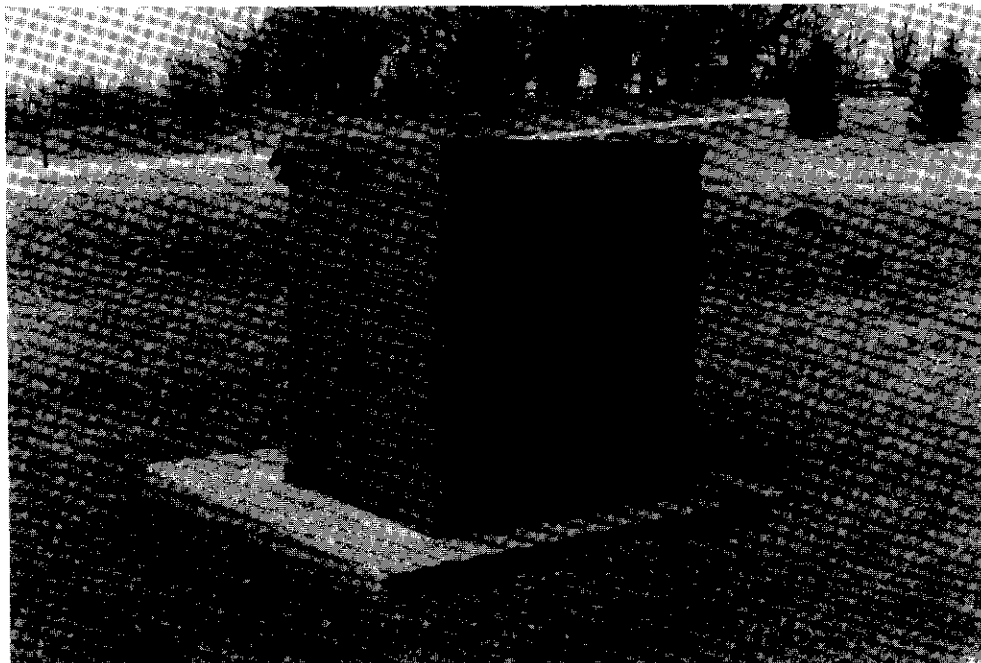


DUMP STATION

Figure A-14. Typical Facilities No. 14.



Spur Pedestal, electric

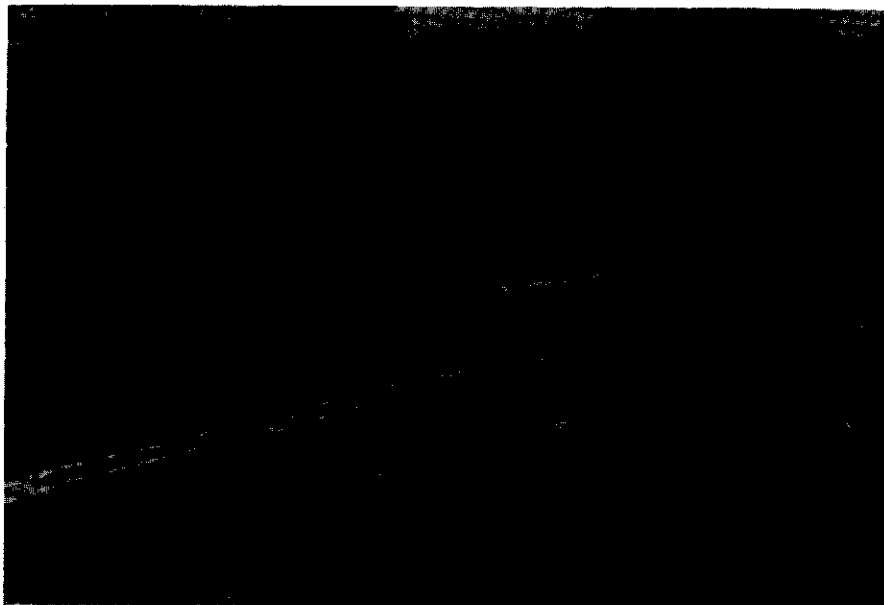


Transformer, electric

Figure A-15. Typical Facilities No. 15.

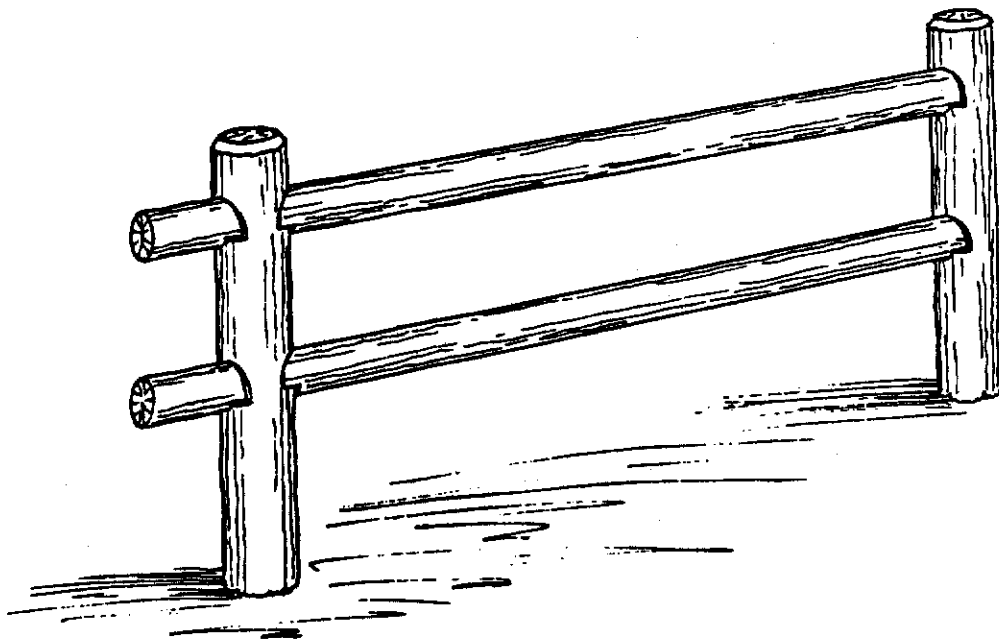


Fence, chain link



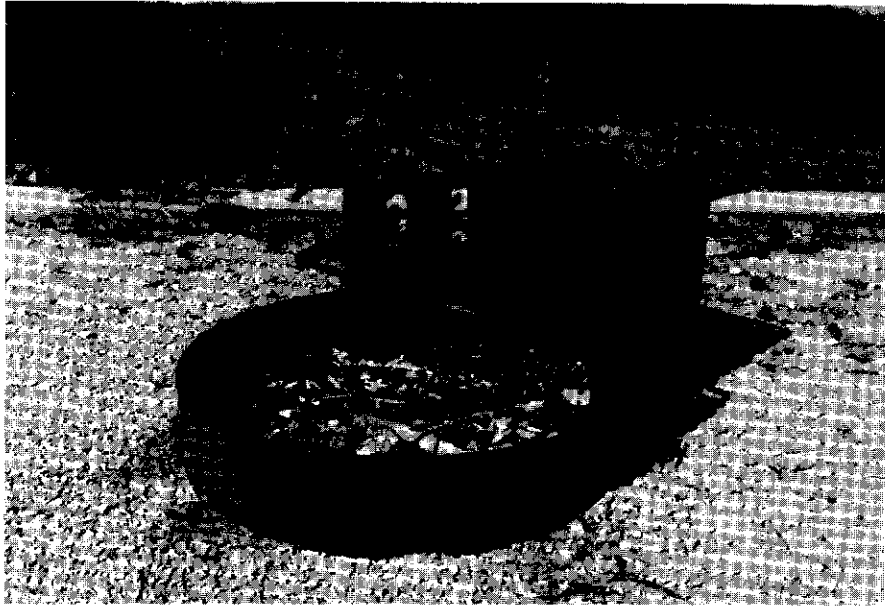
Fence, wooden

Figure A-16. Typical Facilities No. 16.



WOOD FENCE

Figure A-17. Typical Facilities No. 17.

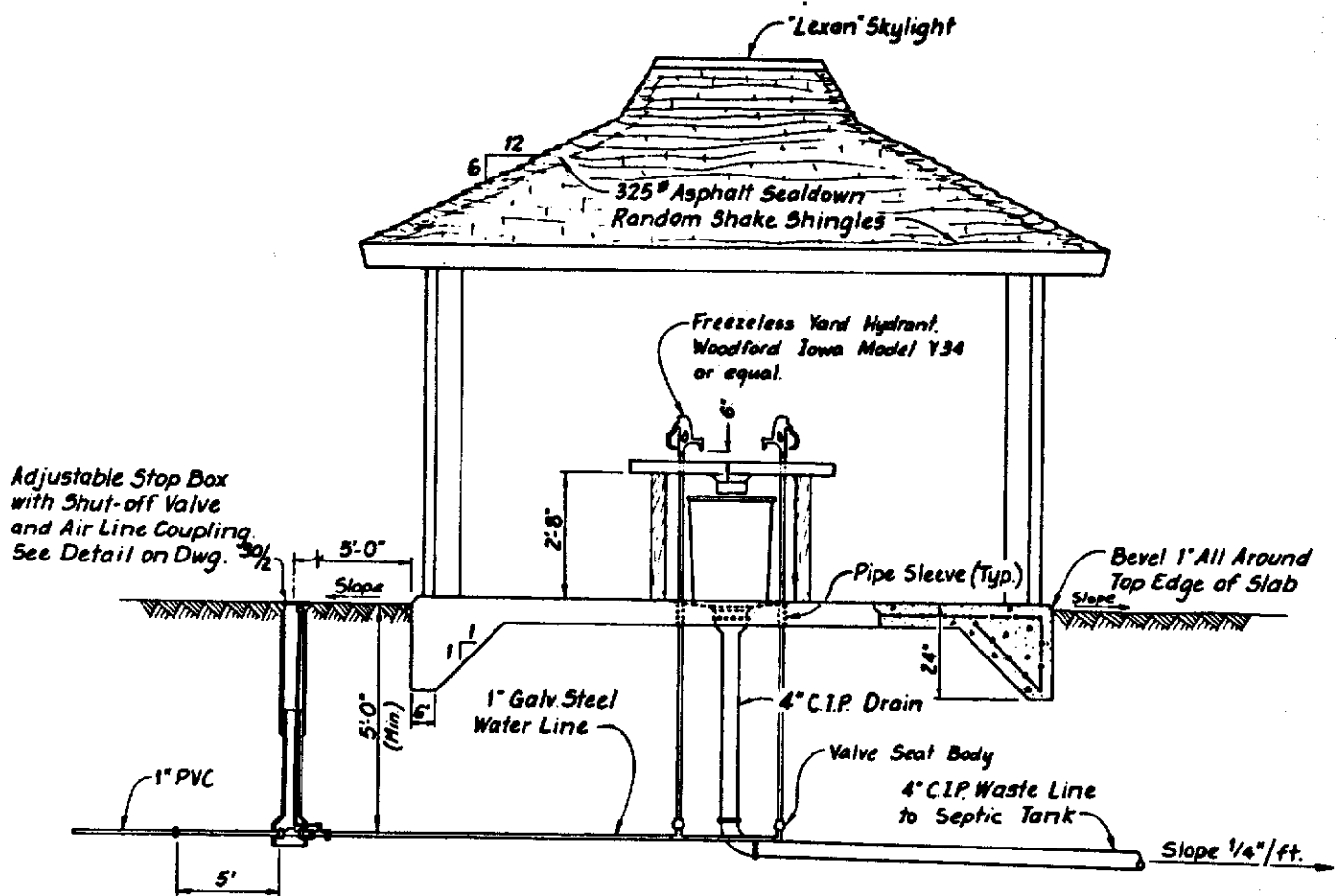


Fire Ring



Fish Cleaning Station

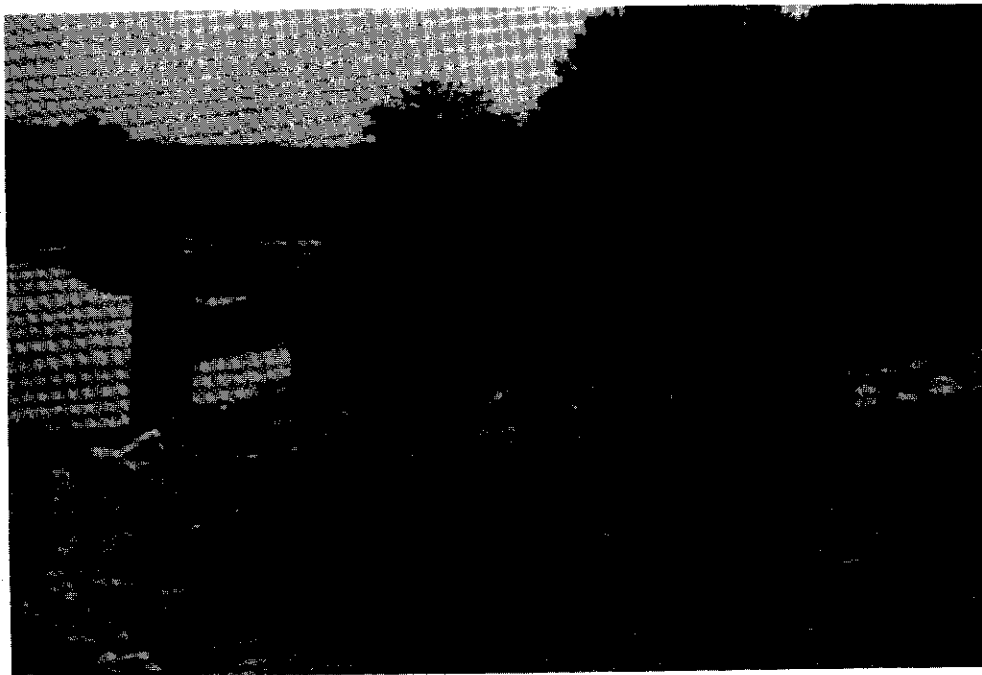
Figure A-18. Typical Facilities No. 18.



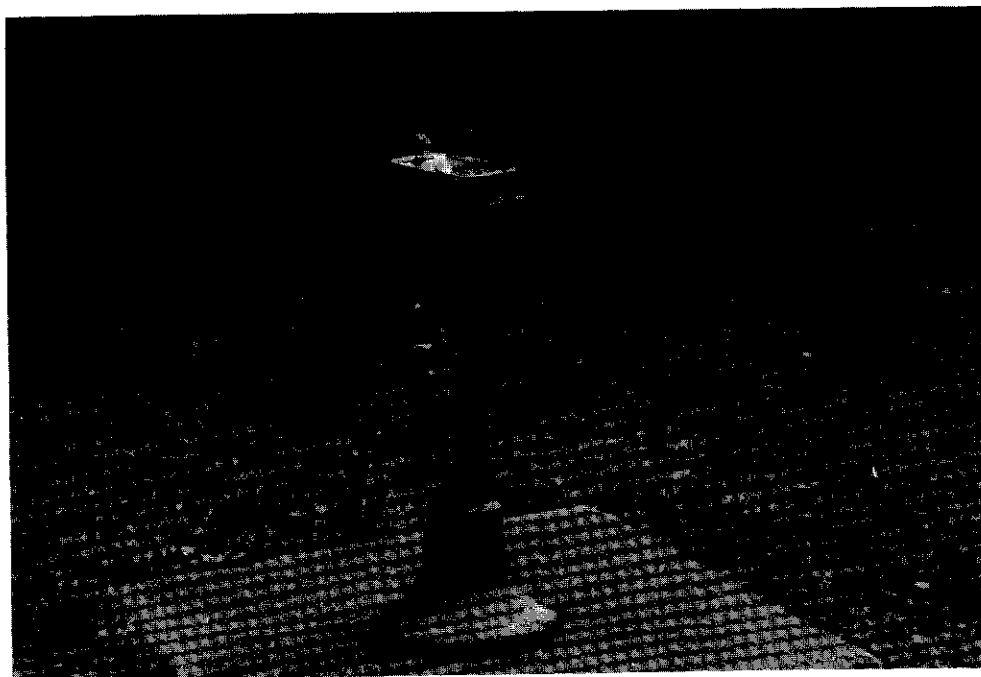
SECTIONAL ELEVATION

FISH CLEANING STATION

Figure A-19. Typical Facilities No. 19.

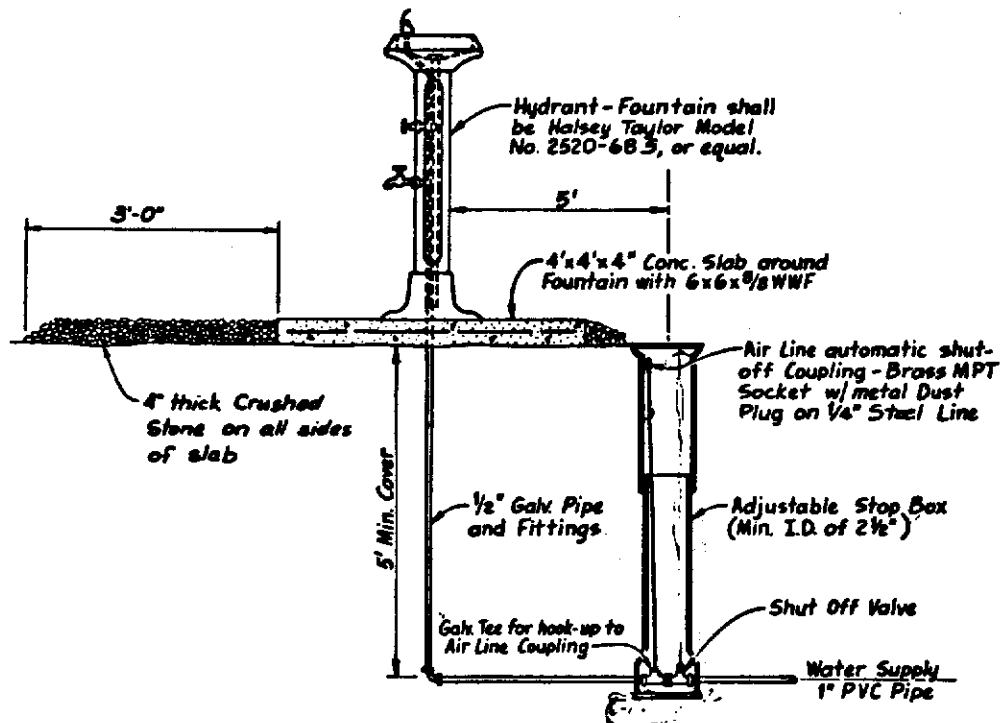


Fishing Platform



Fountain/Hydrant

Figure A-20. Typical Facilities No. 20.



FOUNTAIN/HYDRANT

Figure A-22. Typical Facilities A-22.

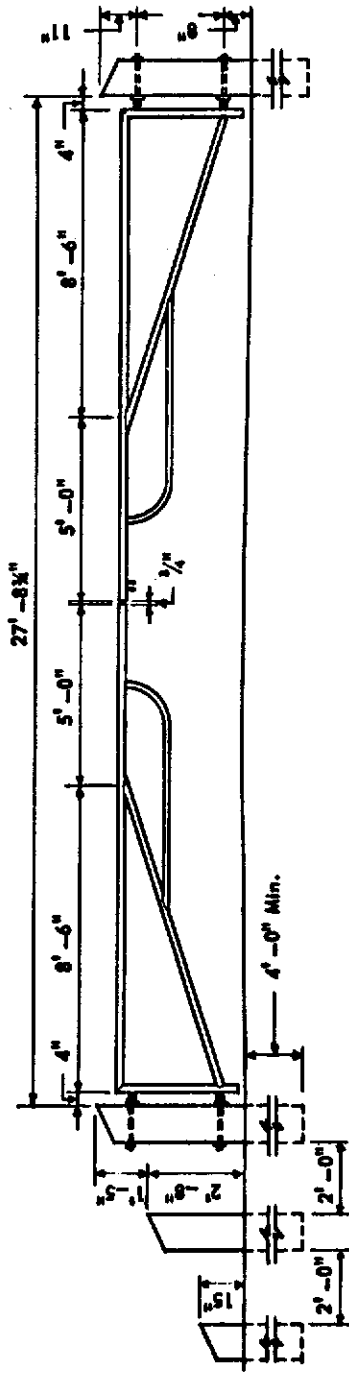


Gate, road



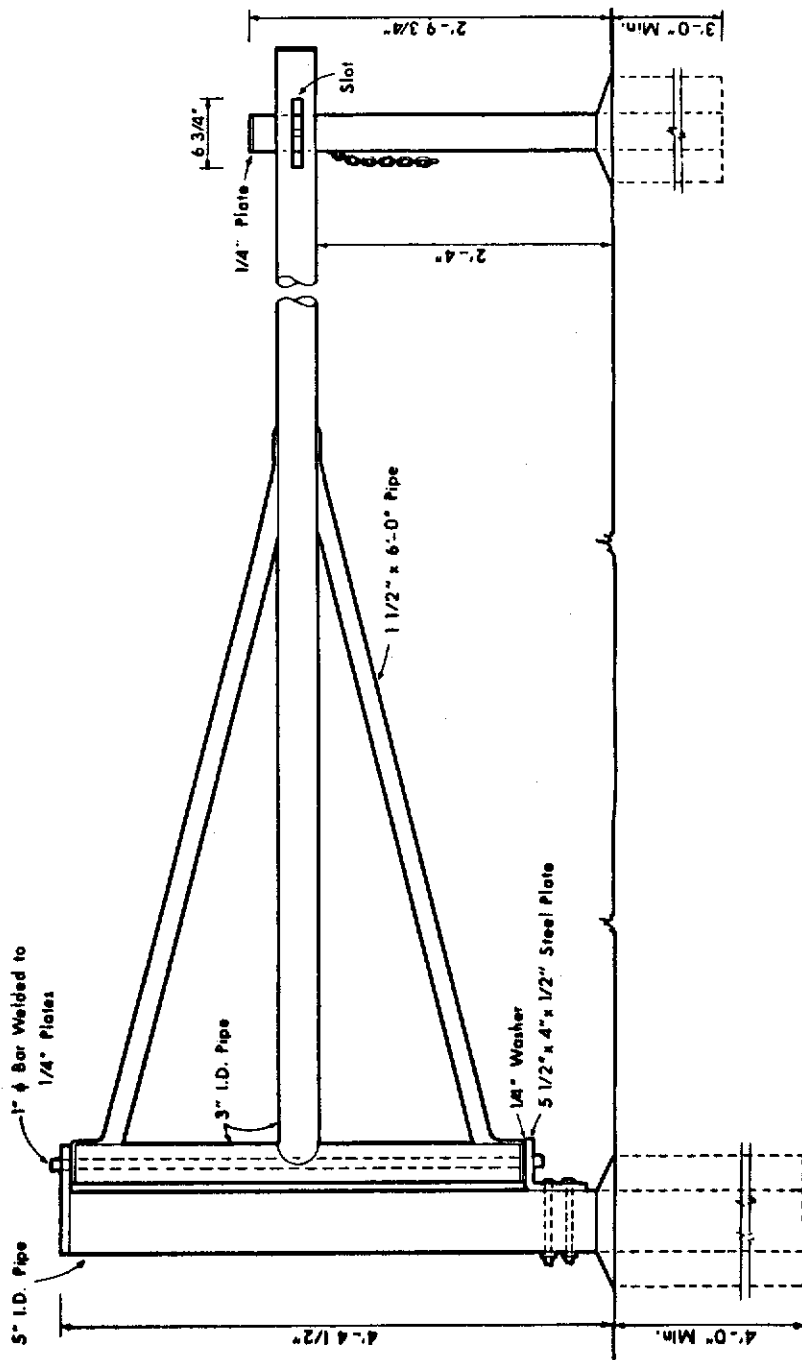
Gate, trail

Figure A-23. Typical Facilities No. 23.



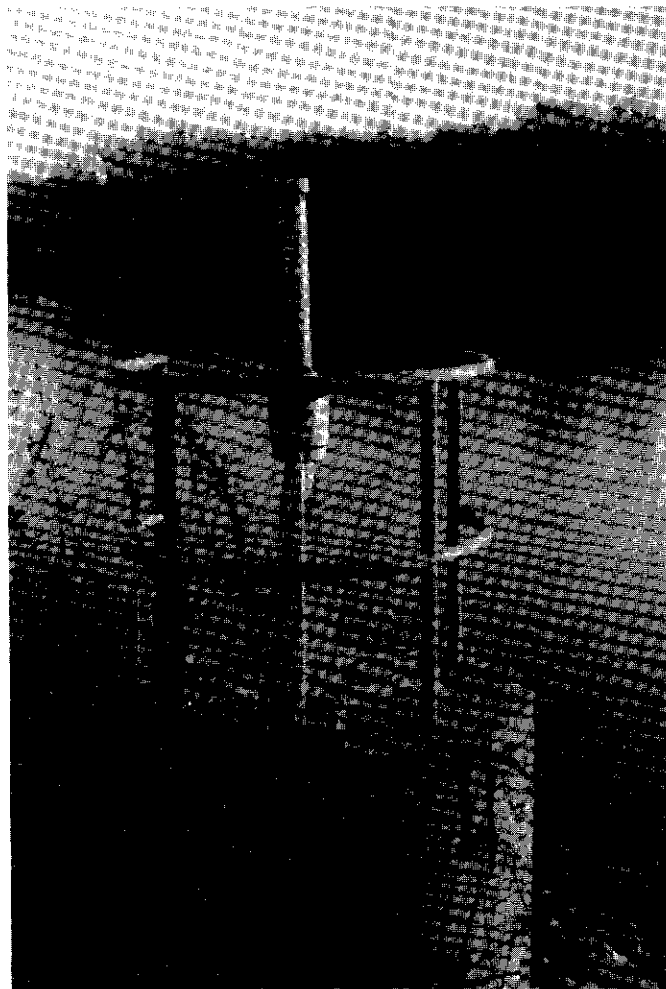
GATE(ROAD)

Figure A-24. Typical Facilities No. 24.



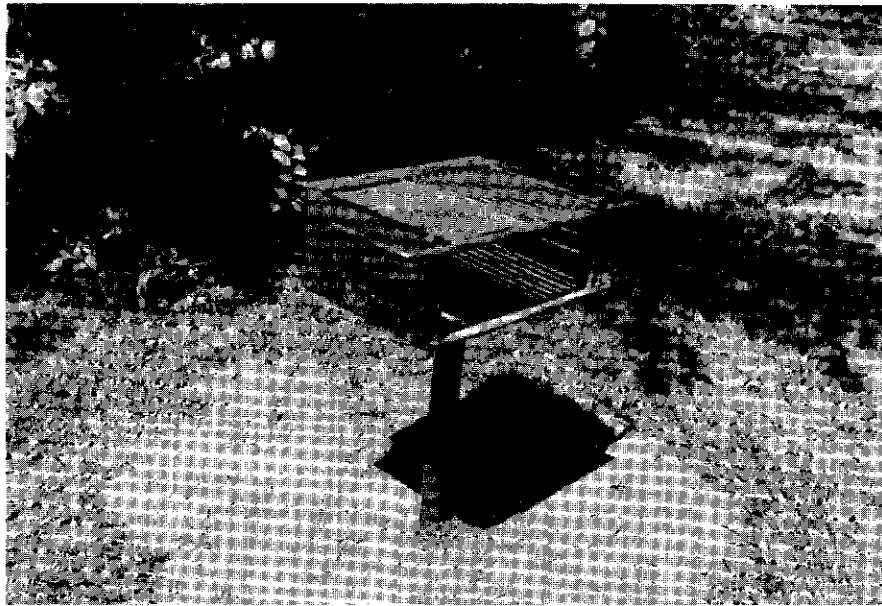
GATE(TRAIL)

Figure A-25. Typical Facilities No. 25.



Gatewell

Figure A-26. Typical Facilities No. 26.

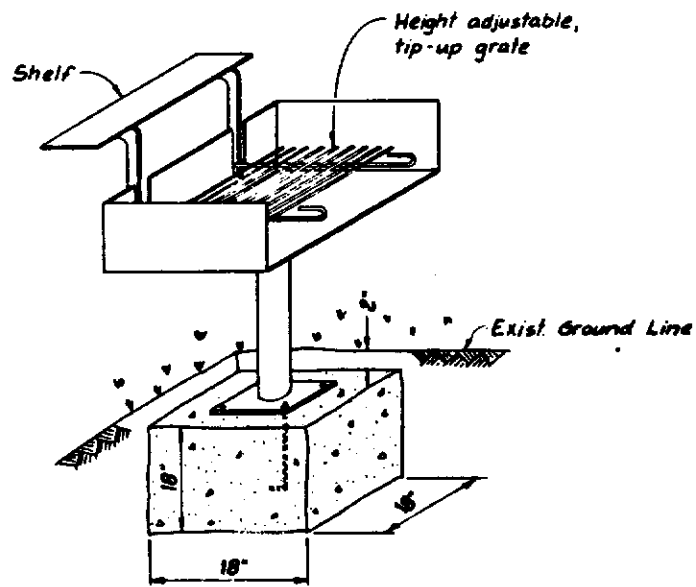


Grate/Grill



Lift Station

Figure A-27. Typical Facilites No. 27.



GRATE/GRILL

Figure A-28. Typical Facilities No. 28.



Lighting Standard

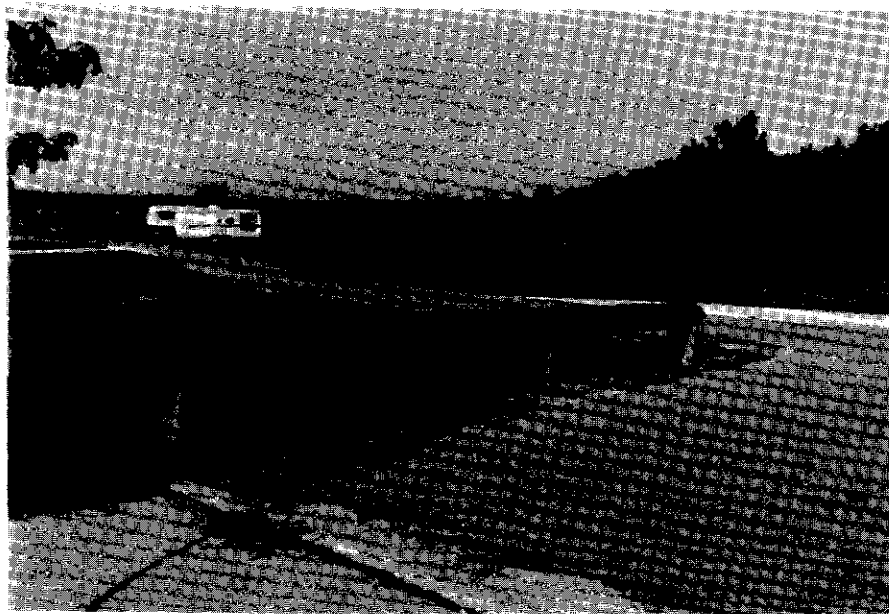


Marsh Restoration

Figure A-29. Typical Facilities No. 29.

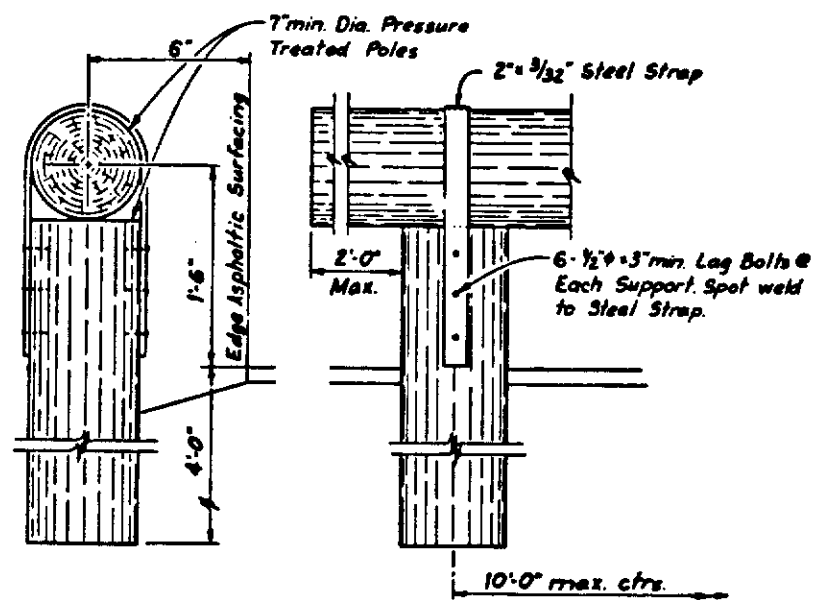


Parking Barrier



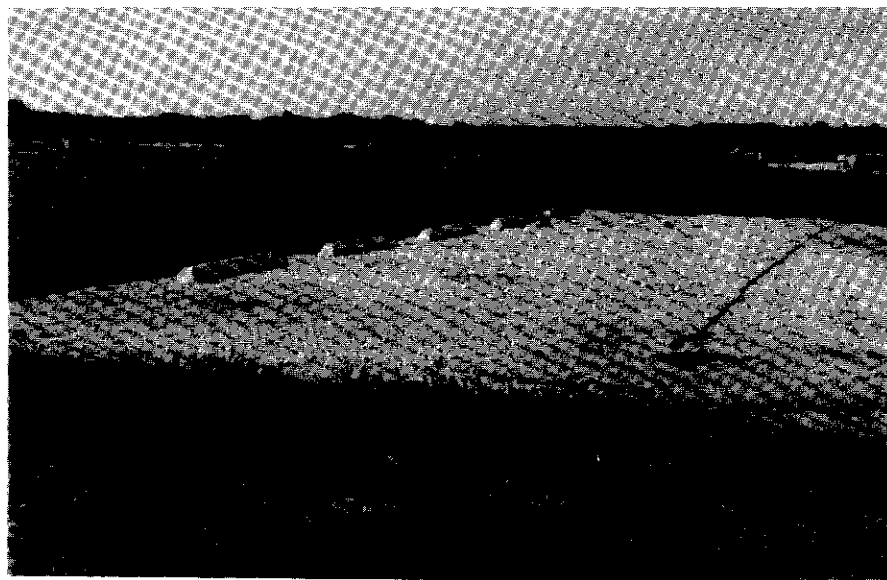
Parking Lot, asphalt

Figure A-30. Typical Facilities No. 30.

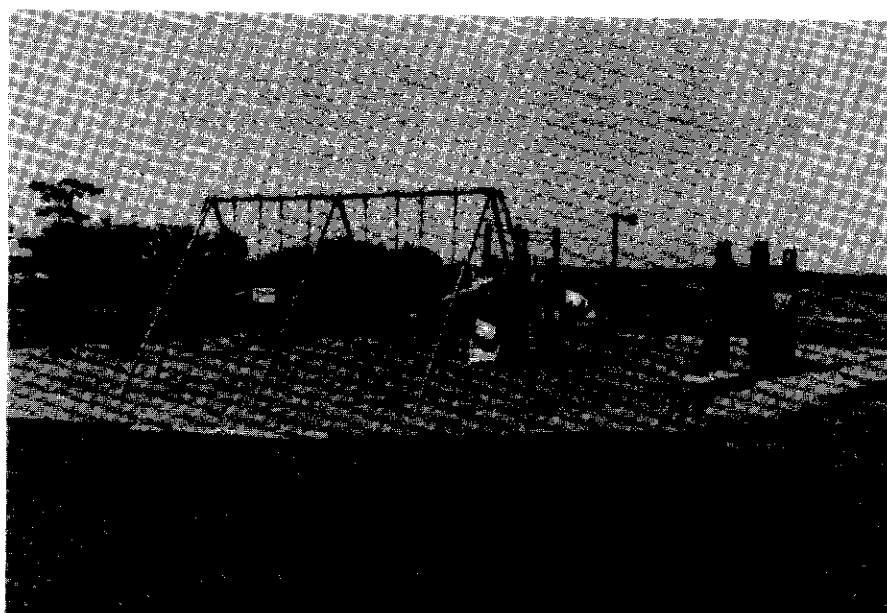


PARKING BARRIER

Figure A-31. Typical Facilities No. 31.

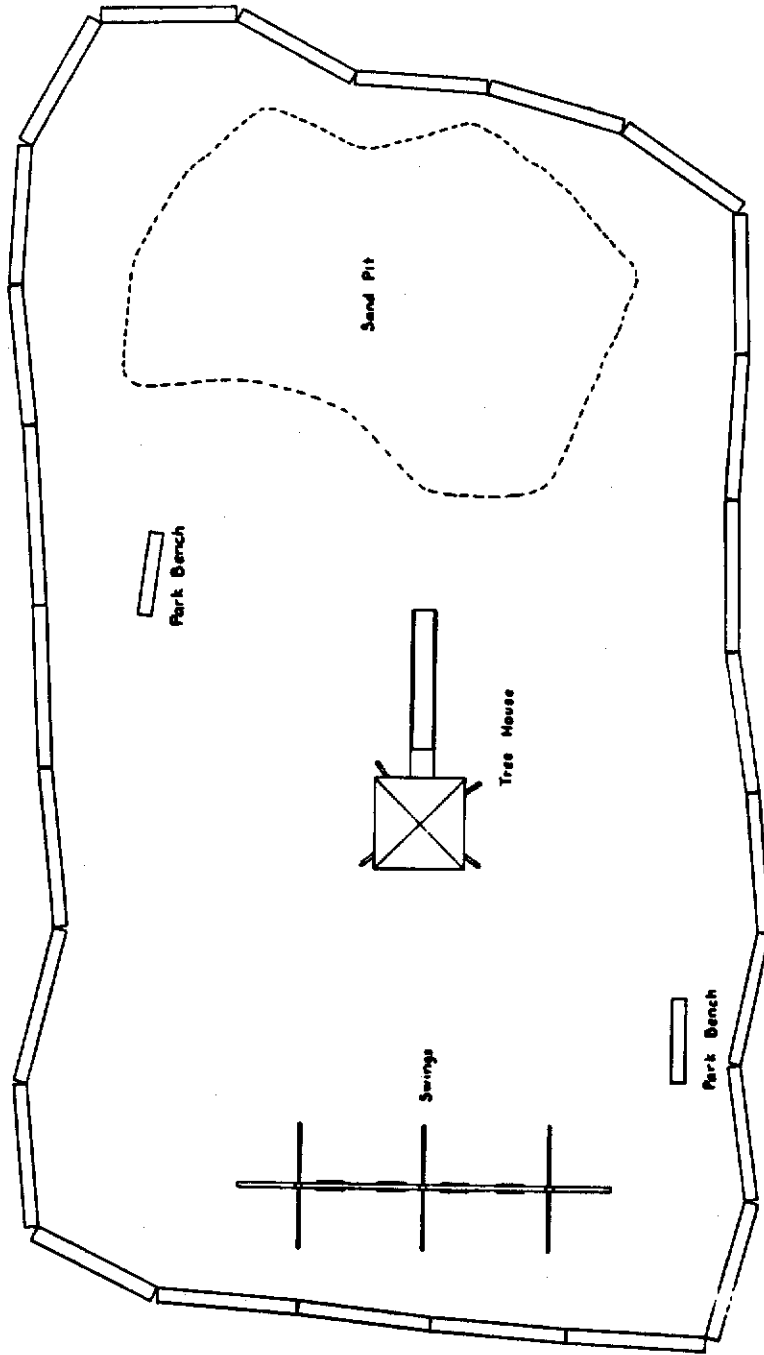


Parking Lot, gravel



Playground

Figure A-32. Typical Facilities No. 32.



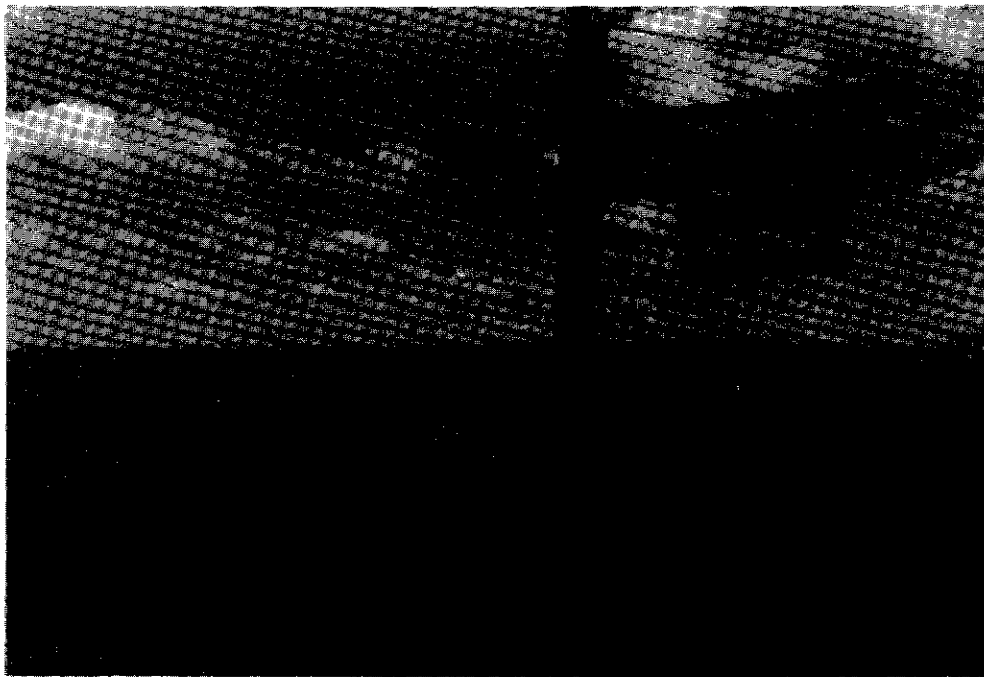
PLAN

PLAYGROUND

Figure A-33. Typical Facilities No. 33.



Pond



Prairie Restoration

Figure A-34. Typical Facilities No. 34.

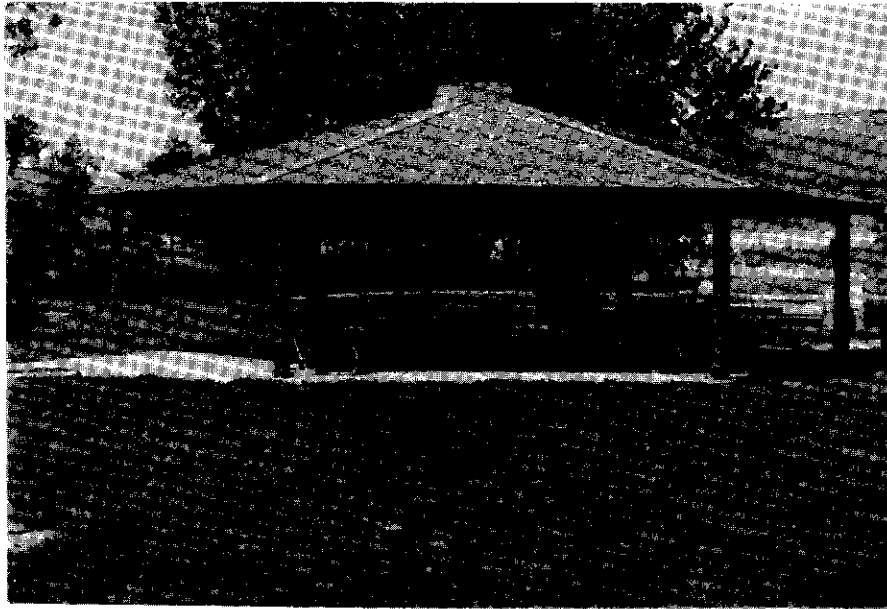


Prairie Restoration

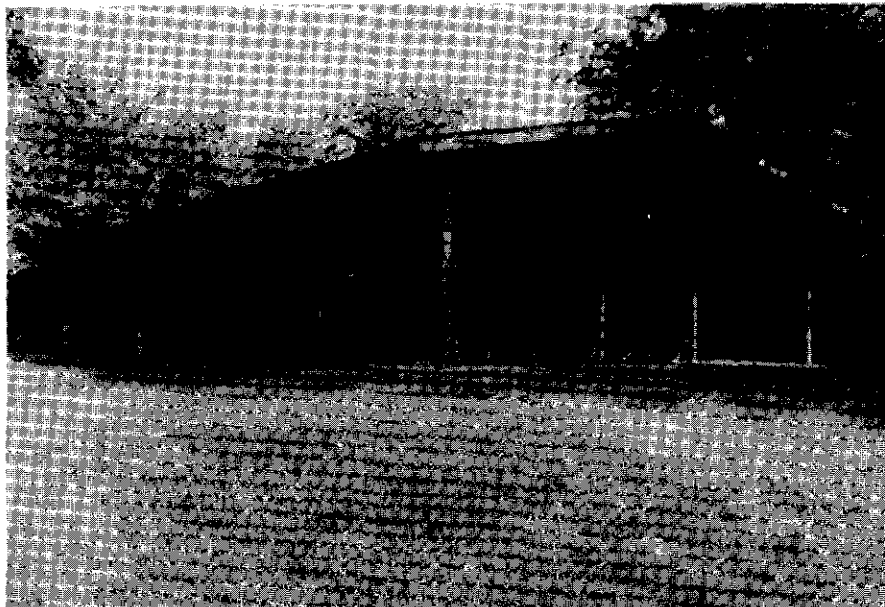


Reforestation

Figure A-35. Typical Facilities No. 35.

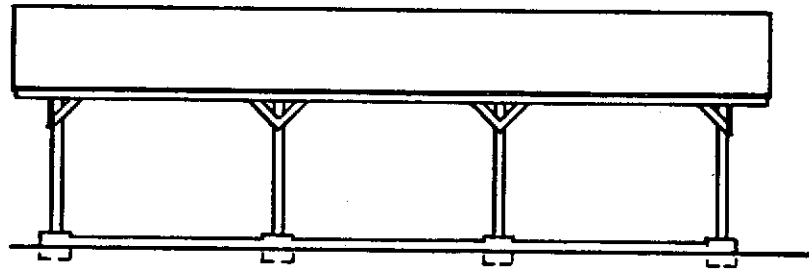


Shelter, large

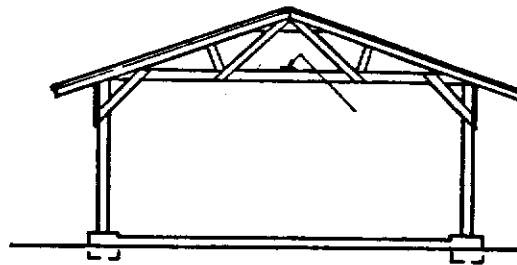


Shelter, small

Figure A-36. Typical Facilities No. 36.



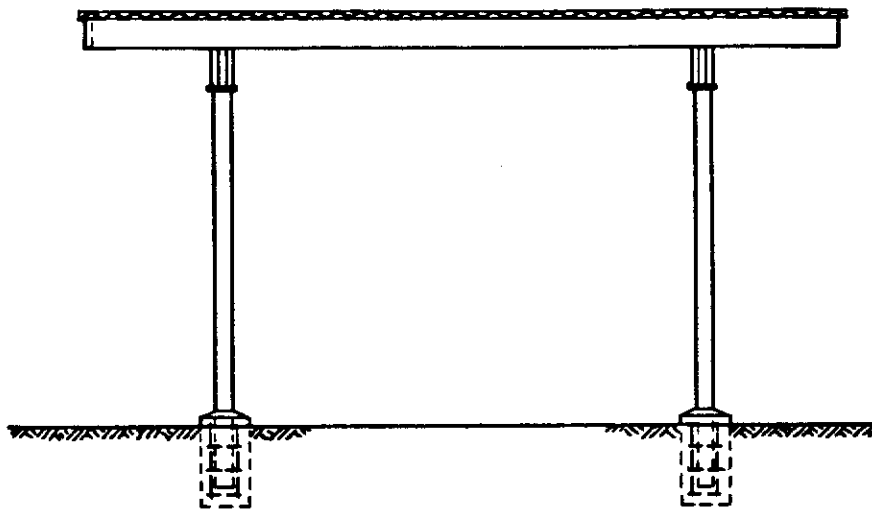
SIDE ELEVATION



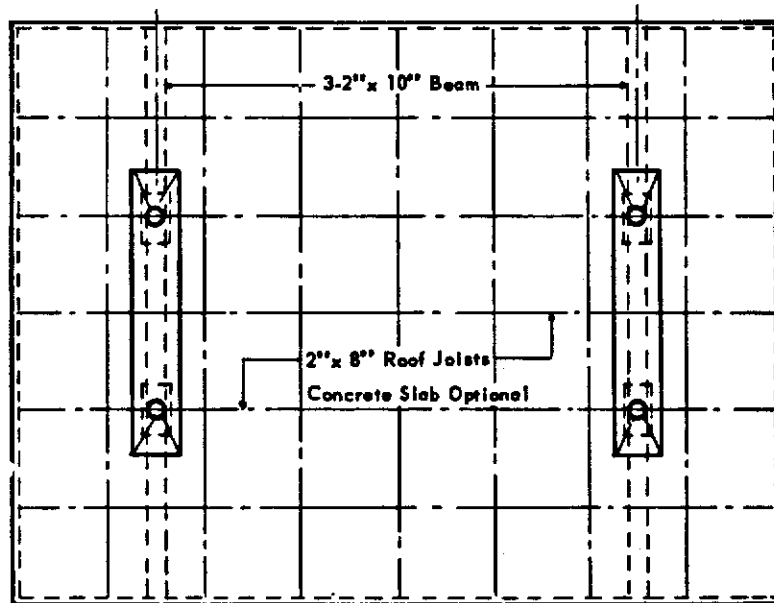
END ELEVATION

LARGE SHELTER

Figure A-37. Typical Facilities No. 37.



ELEVATION



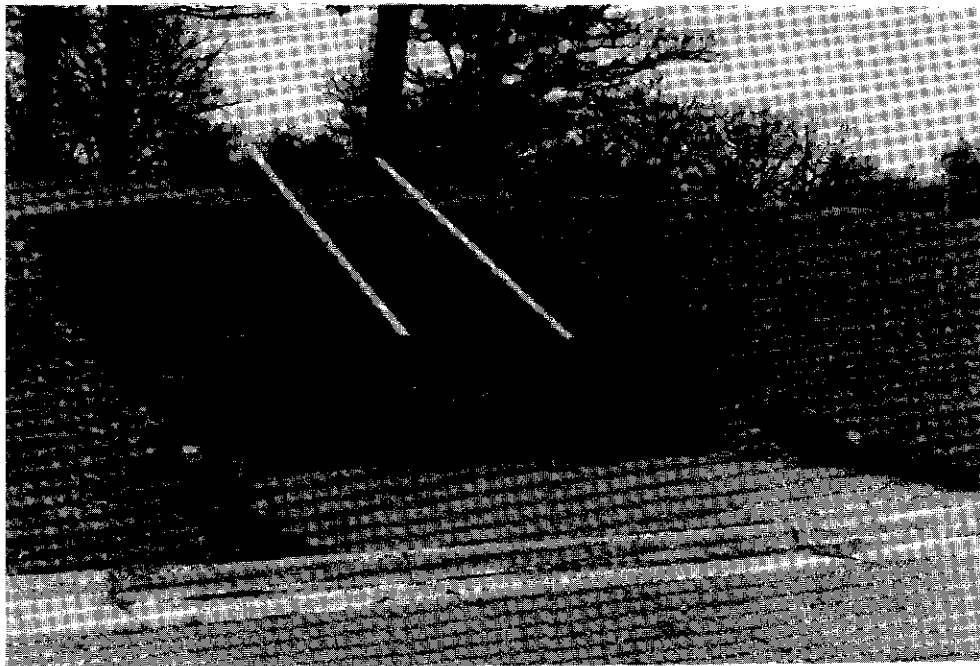
PLAN

SMALL SHELTER

Figure A-38. Typical Facilities No. 38.

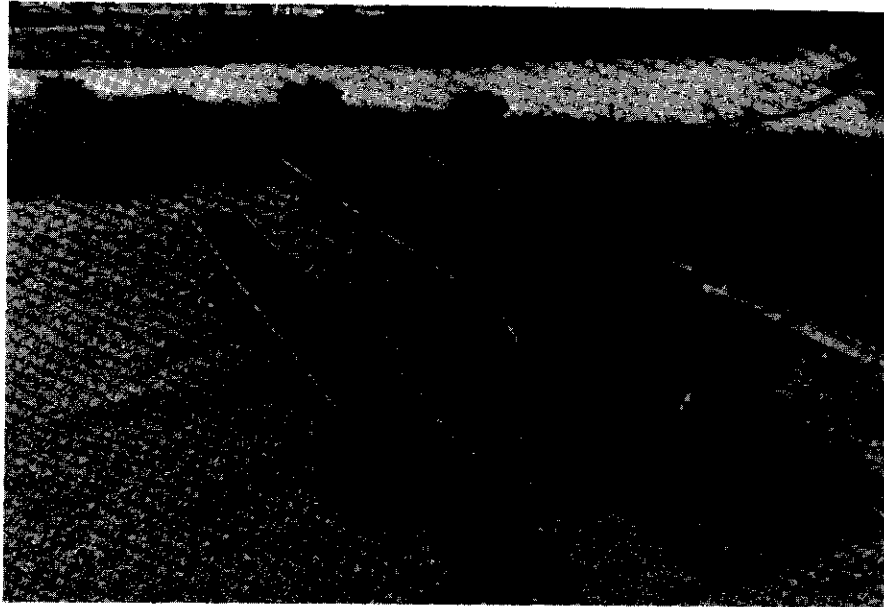


Sign, trail

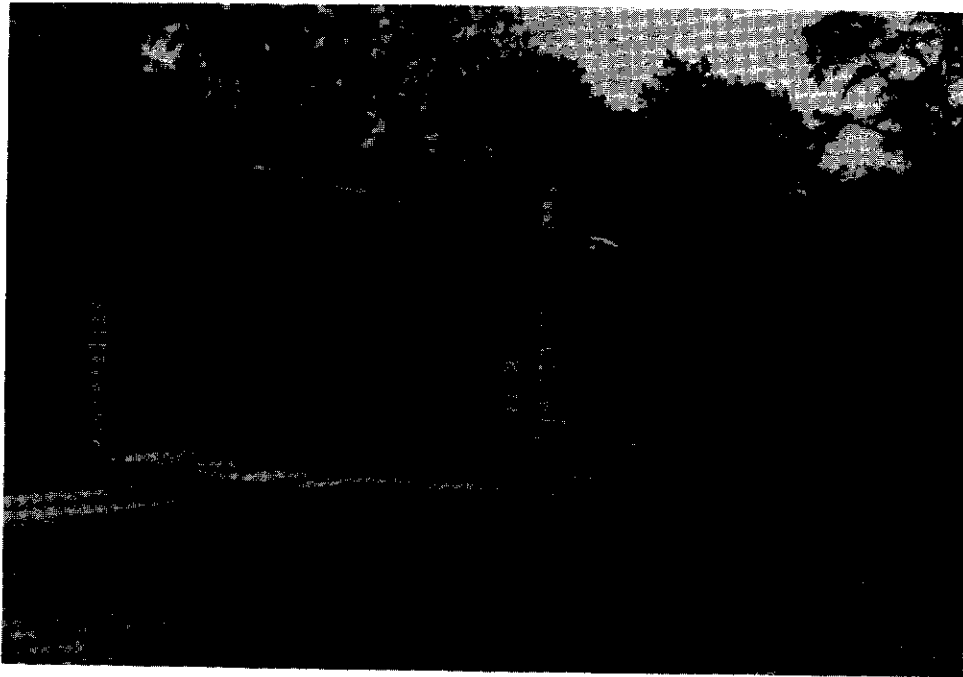


Stairs/Steps

Figure A-39. Typical Facilities No. 39.

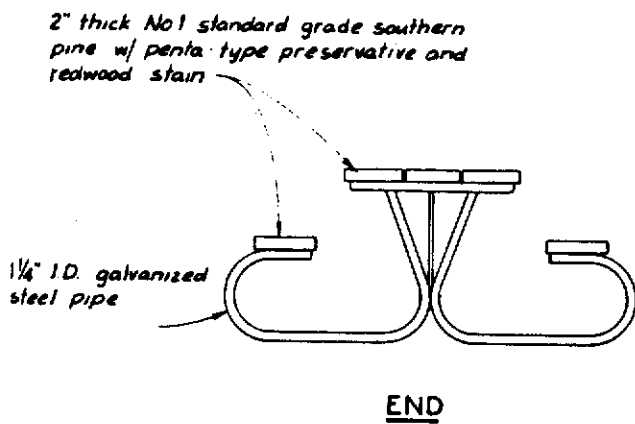
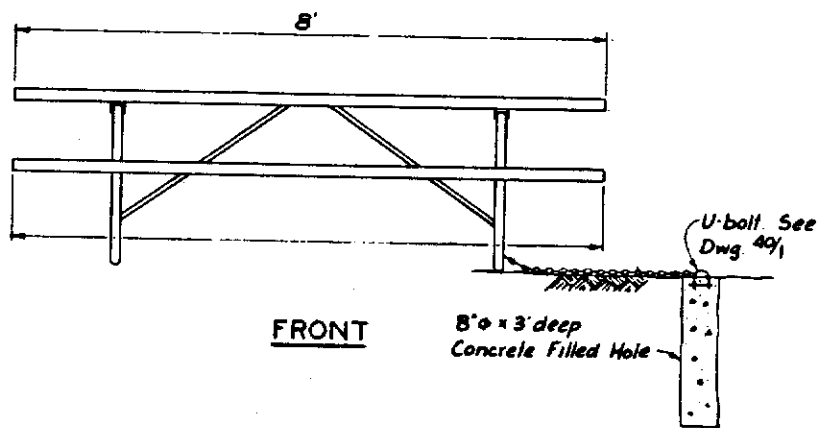


Table



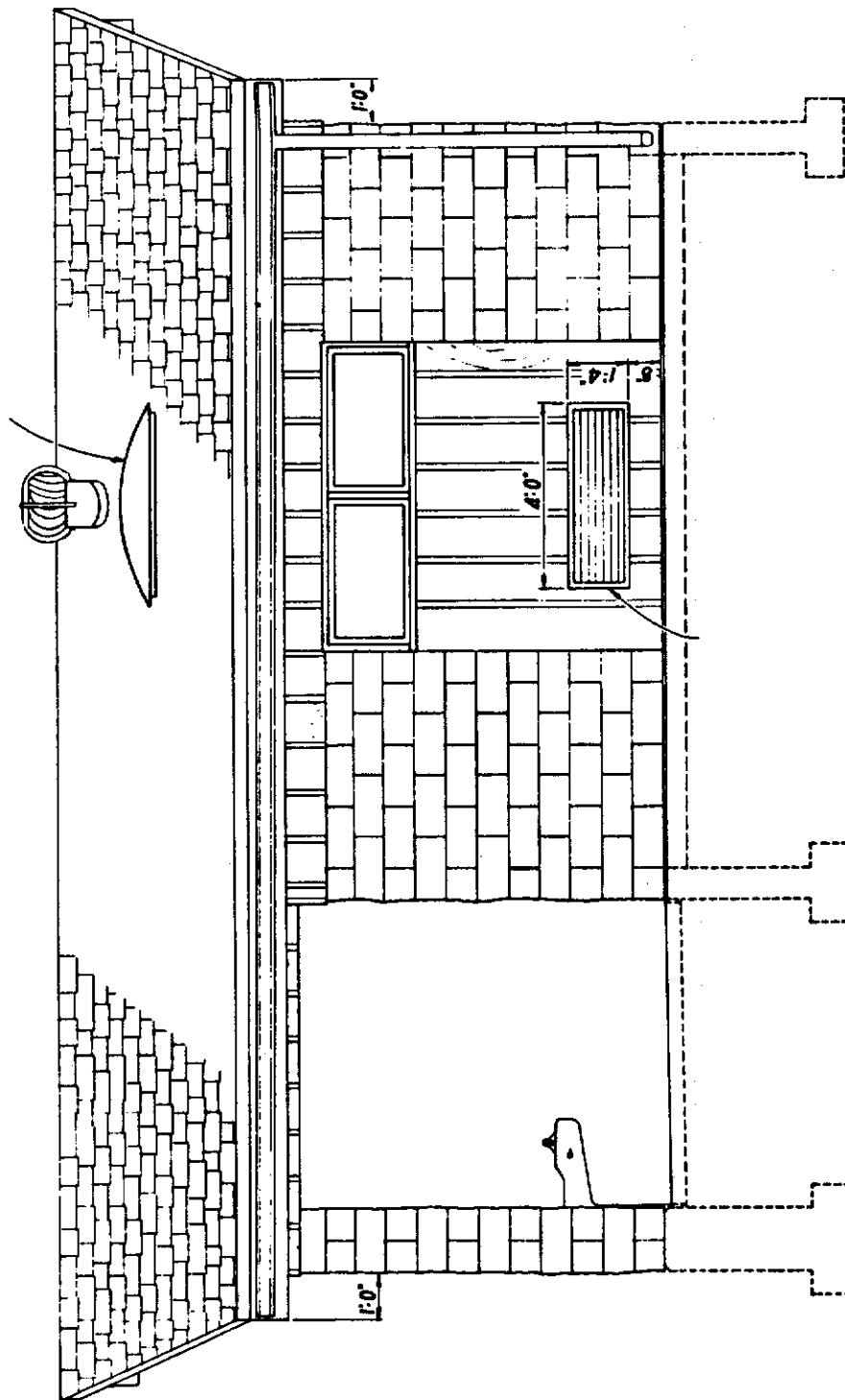
Toilet, flush

Figure A-40. Typical Facilities No. 40.



TABLE

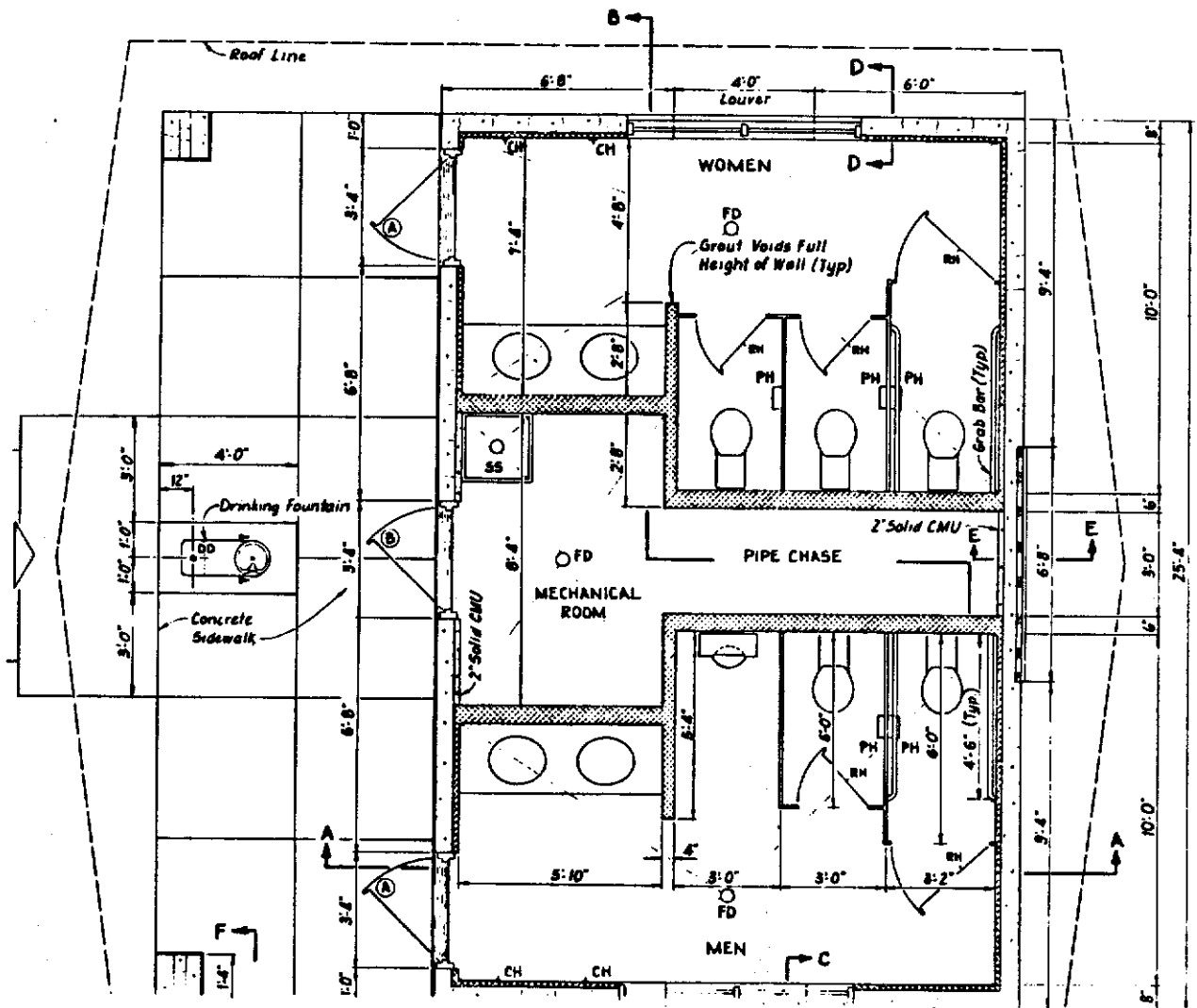
Figure A-41. Typical Facilities No. 41.



ELEVATION B

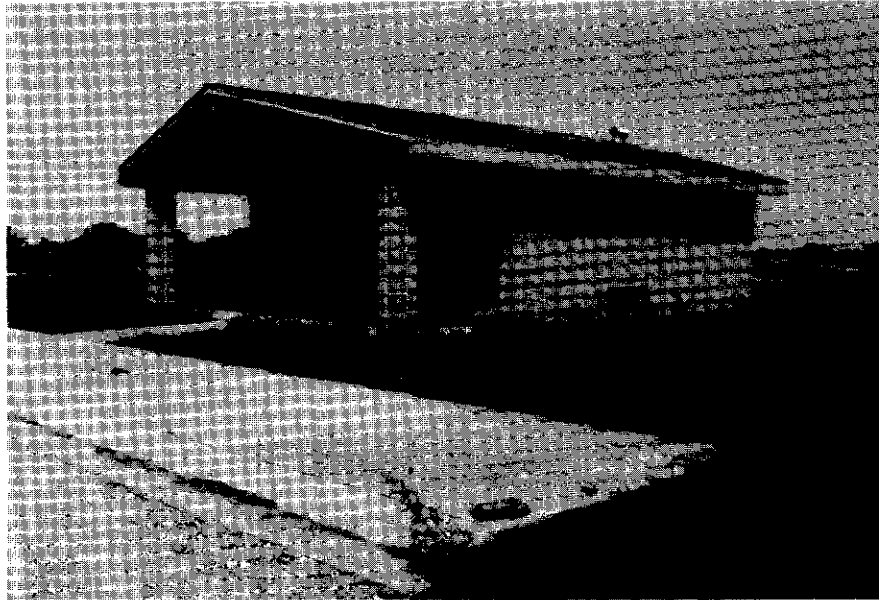
FLUSH TOILET

Figure A-42. Typical Facilities No. 42.



FLUSH TOILET

Figure A-43. Typical Facilities No. 43.

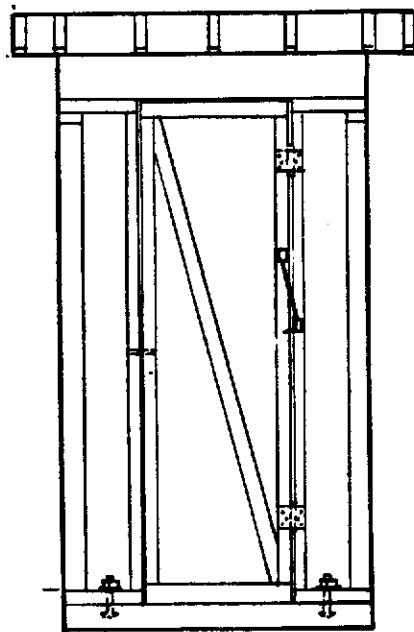


Toilet, flush w/shower

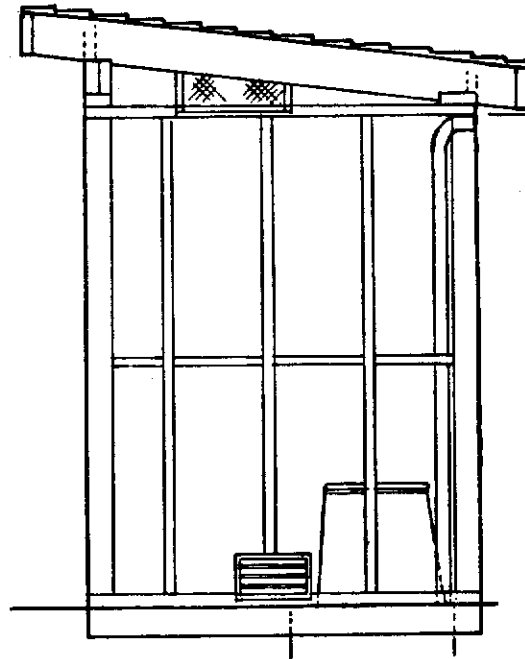


Trail, paved

Figure A-44. Typical Facilities No. 44.



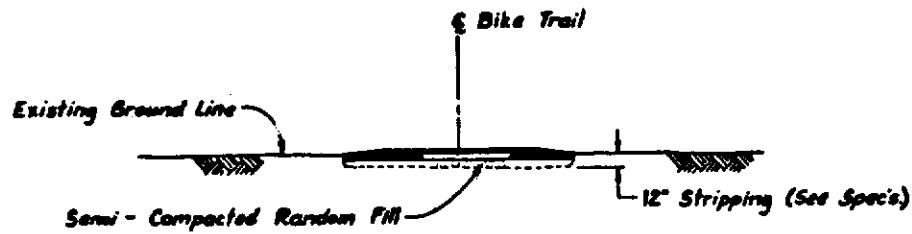
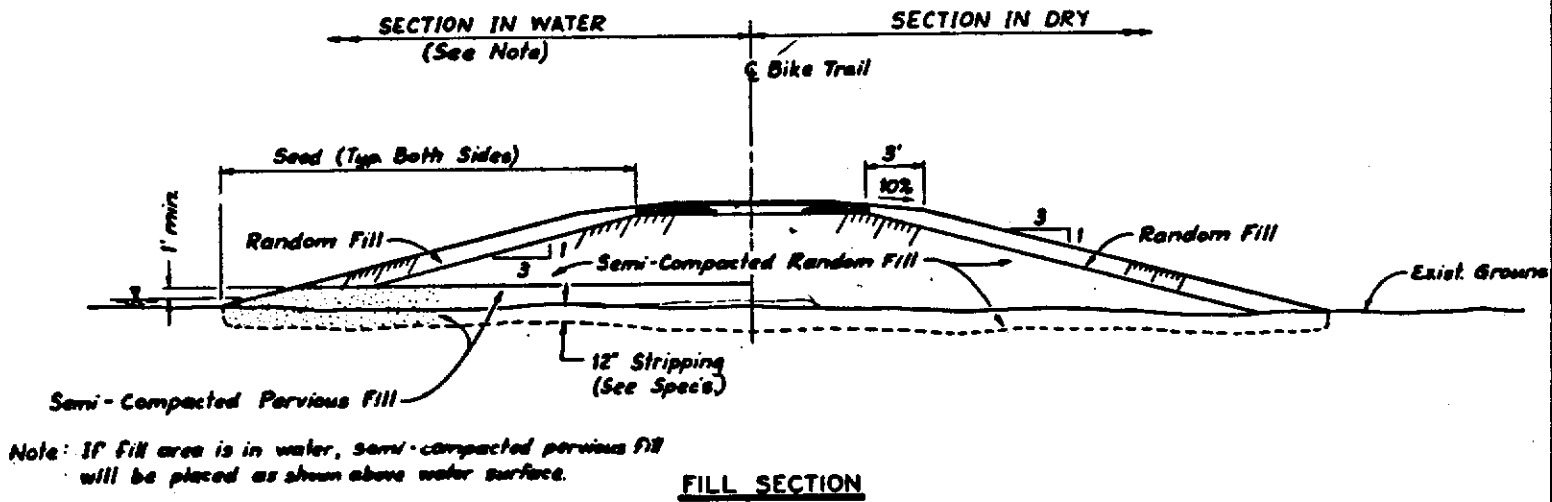
FRONT ELEVATION



SECTION

VAULT TOILET

Figure A-45. Typical Facilities No. 45.



SECTION ON EXISTING GROUND

TYPICAL SECTIONS

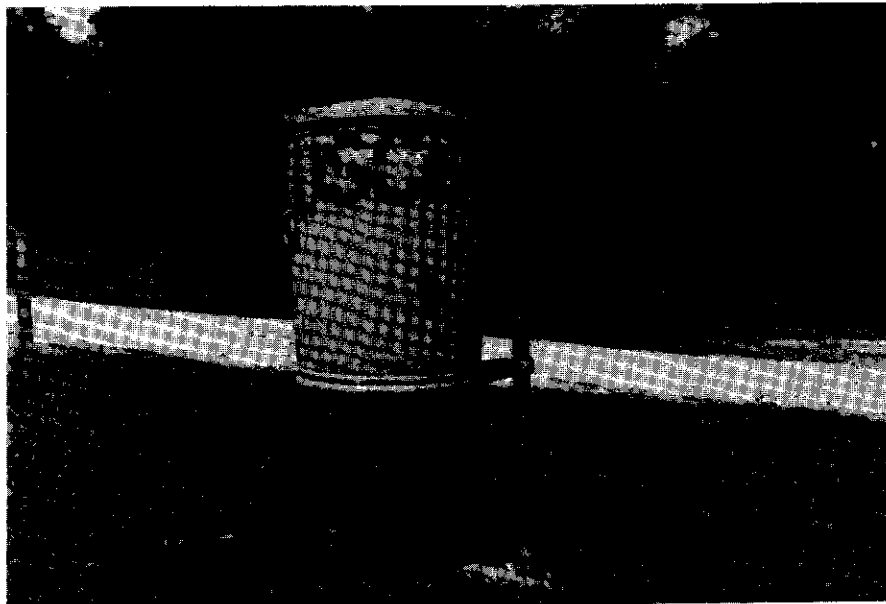
No Scale

PAVED TRAIL

Figure A-46. Typical Facilities No. 46.

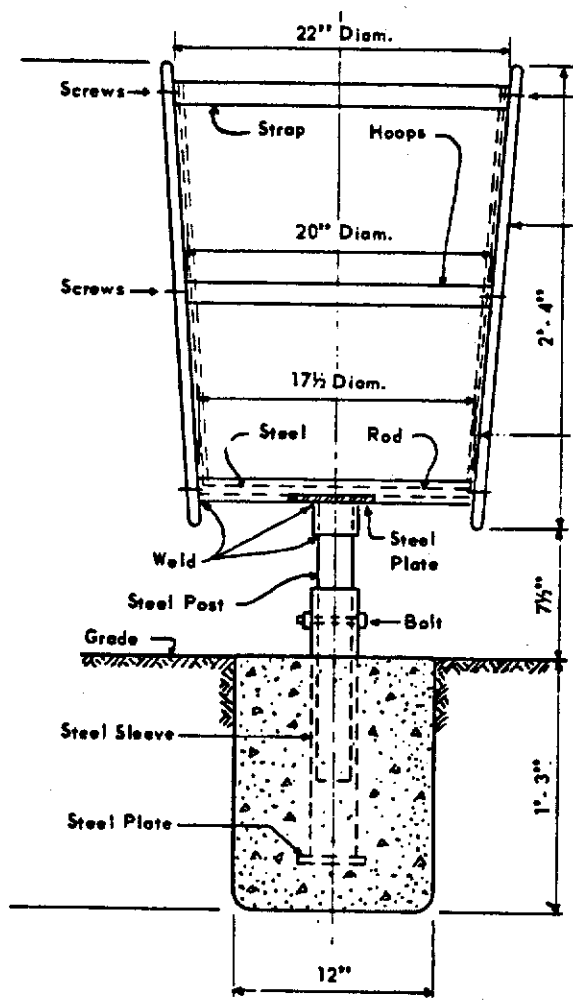


Trail, unpaved



Trash Can

Figure A-47. Typical Facilities No. 47



SECTION

TRASH CAN

Figure A-48. Typical Facilities No. 48.

COST-SHARED RECREATION PROJECTS

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Project Number: 103.1

Project Title: Ledges State Park Improvements

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Ledges State Park near the city of Boone

See Plate(s) Number: 90, 91, 116, 117, 118, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247

Project Description: The project involves the expansion of the park through major land acquisition. Park improvements would include the addition of a flush toilet, vault toilets, sewer and water, and 4 picnic shelters in the lower area and addition of three picnic shelters in the upper area. Other improvements would include unpaved trails, 3 trail bridges, a boat ramp, bank stabilization, jetties, a small animal park, and a large animal park for elk and buffalo.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide some benefits to recreation resources and aesthetic values by providing additional facilities and renovating existing facilities. The projects would help fulfill a portion of the recreational needs of the general public. Short-term impacts during construction phase could include minor temporary increases in business activity, and employment, and minor temporary degradation of air and water quality. Some displacement of farms and/or people may occur and some tax revenues from privately-owned land may be lost. Developments within existing recreation areas should not result in significant impacts to natural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Most measures will require cultural resources survey. Cultural sites in or near the project area: 13 BN (5, 6, 201, 263). Section 404 permit may be required for boat launch facilities and shoreline protection.

Real Estate Requirement: 31,000 acres to be acquired by the local sponsor. The tract starts near the city of Boone and ends south of Ledges State Park.

Ledges State Park Improvements (Cont'd)

Itemized Cost Estimate:

a. Jetties: riprap, 200 ft * 4.4 tn/lf * 6 jetties * \$22.00/tn =	116,200
5 ft high, 1:1 slopes, 3 foot top	
b. Fishing access	
1. Access road: crushed stone, 200 ft * \$15.00/lf =	3,000
2. Parking lot: gravel, 10 cars * \$120.00/car =	1,200
c. Jetty: riprap, 650 ft * 4.4 tn/lf * \$22.00/tn =	62,900
5 ft high, 1:1 slopes, 3 foot top	
d. Fishing Access	
1. Access road: crushed stone, 300 ft * \$15.00/lf =	4,500
2. Parking lot: gravel, 10 cars * \$120.00/car =	1,200
e. Fishing access: unpaved trail, 1500 ft * \$2.25/lf =	3,400
f. Jetty: riprap, 500 ft * 4.4 tn/lf * \$22.00/tn =	48,400
5 ft high, 1:1 slopes, 3 foot top	
g. Jetty: riprap, 500 ft * 4.4 tn/lf * \$22.00/tn =	48,400
5 ft high, 1:1 slopes, 3 foot top	
h. Large shelter: 7 shelters 8 \$35,000.00/shelter =	245,000
i. Vault toilets: 2 toilets * \$4000.00/toilet =	8,000
j. Bank stabilization: riprap, 950 ft * \$50.00/lf =	47,500
k. Boat ramp	
1. Boat ramp, concrete	35,000
2. Access road: crushed stone, 350 ft * \$15.00/lf =	5,300
l. Trail bridge: 10 ft * 50 ft = 500 sf * \$55.00/sf =	27,500
m. Trail bridge: 10 ft * 50 ft = 500 sf * \$55.00/sf =	27,500
n. Trail bridge: 10 ft * 50 ft = 500 sf * \$55.00/sf =	27,500
o. Trail: unpaved, 6000 ft * \$2.25/lf =	13,500
p. Small animal park	?
q. Large animal park	
1. Elk fence: 37,000 ft * \$10.00/lf =	370,000
2. Parking lot: gravel, 50 cars * \$120.00/car =	6,000
3. Observation deck:	
10 ft * 30 ft = 300 sf * \$25.00/sf =	7,500
r. Land acquisition: 31,000 ac * \$600.00/ac =	18,600,000

Subtotal -	\$19,710,000
Contingencies (25%) -	\$ 4,928,000

Subtotal -	\$24,638,000
Engineering and Design (7%) -	\$ 1,725,000
Supervision and Administration (5.5%) -	\$ 1,355,000

Total -	\$27,718,000

ENVIRONMENTAL EVALUATION CHECKLIST
Ledges State Park Improvements

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise			T		
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues				P	
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement					P
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources		P			
b. Natural Resources			P		
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 104.1

Project Title: Bever Bridge Canoe Access

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Section 31, Independence township, Hamilton County

See Plate(s) Number: 80, 119

Project Description: The project would involve the acquisition of 5 acres of land and the construction of a parking lot and canoe access.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in some benefits to recreation resources and public facilities/services by upgrading an existing facility and ensuring its continued availability for public use. Short-term impacts during construction could include minor temporary increases in business activity and employment, and minor temporary degradation of air and water quality. Because the project is located in an existing recreation area, no significant impacts to natural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Cultural resources survey could be required. A Section 404 permit may be required if placement of fill in water is involved.

Real Estate Requirement: 5 acres to be acquired by the local sponsor. This tract is on the east bank of the Boone River and south of a county road. The site is wooded and moderately sloping. It appears to have 500 feet of river frontage.

Bever Bridge Canoe Access (Cont'd)

Itemized Cost Estimate:

a. Land acquisition, 5 ac * \$300.00/ac =	1,500
b. Parking lot: gravel, 20 cars * \$120.00/car =	2,400
c. Trail: unpaved, 200 ft * \$2.25/lf =	500

Subtotal -	\$4,400
Contingencies (25%) -	\$1,100

Subtotal -	\$5,500
Engineering and Design (7%) -	\$ 400
Supervision and Administration (5.5%) -	\$ 300

Total -	\$6,200

ENVIRONMENTAL EVALUATION CHECKLIST
Bever Bridge Canoe Access

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 105.2

Project Title: Upper River Gateway

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: North of Kalo, Webster Co.

See Plate(s) Number: 77, 120

Project Description: Campground, picnic area and boat ramp at planned U.S. Highway 520 interchange.

Operation, Maintenance, and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Environmental impacts are unknown at this time. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands will be in the ownership of the local sponsor as part of the U.S. Highway 520 project.

Upper River Gateway (Cont'd)

Itemized Cost Estimate:

CAMPGROUND

a. Camping spurs: 50 spurs * \$1,400.00/spur =	70,000
b. Tent pads: 50 pads * \$400.00/pad =	20,000
c. Grate/grill: 50 grills * \$300.00/grill =	15,000
d. Tables: 50 tables * \$275.00/table =	13,800
e. Trash cans: 50 cans \$130.00/can =	6,500
f. Access road: paved, 4000 ft * \$52.00/lf =	208,000
g. Flush toilet: 2 toilets * \$95,000.00/toilet =	190,000
h. Shelter: small, 4 shelters * \$12,000.00/shelter =	48,000
i. Bulletin board: sheltered, 4 boards * \$250.00/board =	1,000
j. Amphitheatre	6,000

PICNIC AREA

k. Tables: 30 tables * \$275.00/table =	8,300
l. Shelter, large	35,000
m. Shelters: small, 3 shelters * \$12,000.00/shelter =	36,000
n. Fountain/hydrant	500
o. Flush toilet	95,000
p. Access road: paved, 2,000 ft * \$52.00/lf =	110,000
q. Parking lot: paved, 30 cars * \$500.00/car =	15,000
r. Bulletin board: sheltered, 4 boards * \$250.00/board =	1,000

BOAT RAMP

s. Boat ramp, concrete	35,000
t. Parking lot: gravel, 10 car * \$120.00/car =	1,200
u. Access road: crushed stone, 400 ft * \$15.00/lf	6,000

Subtotal - \$ 921,300

Contingencies (25%) - \$ 230,300

Subtotal - \$1,151,600

Engineering and Design (7%) - \$ 80,600

Supervision and Administration (5.5%) - \$ 63,300

Total - \$1,295,500

ENVIRONMENTAL EVALUATION CHECKLIST
Upper River Gateway

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources		X			
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 106.1

Project Title: Dolliver State Park Improvements

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Dolliver State Park in Webster County near Lehigh

See Plate(s) Number: 78, 121, 122

Project Description: The project will involve the construction of park improvements to include the construction of a box culvert to replace the existing ford, paving access roads, flush toilet, toilet/shower building, picnic shelter, water line and land acquisition.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide some benefits to recreation resources by fulfilling a portion of the recreational needs of the general public. Short-term impacts during construction phase could include minor temporary increases in employment and business activity, and minor temporary degradation of air and water quality. Because most development will be within existing recreation areas, no significant impacts to natural resources endangered and threatened species, prime and unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Most measures will require cultural resources survey. Section 10/404 requirements are not applicable.

Real Estate Requirement: The tract appears to be cropland on a gentle slope. This is an addition to an existing park area. Sand and gravel pits in the area influence the value of this site. The fee value is estimated at \$12,000 for the 20-acre site.

Dolliver State Park Improvements (Cont'd)

Itemized Cost Estimate:

a. Access road: paved, 700 ft * \$52.00/lf =	36,400
b. Land acquisition, 20 ac * \$600.00/ac =	12,000
c. Water line: 2 inch, 3000 ft * \$12.00/lf =	36,000
d. Access road: paved, 1800 ft * \$52.00/lf =	93,600
e. Shower/flush toilet	125,000
f. Access road: paved, 700 ft * \$52.00/lf =	36,400
g. Culvert: 48 inch, 30 ft * \$65.00/lf =	2,000
h. Access road: paved, 1800 ft * \$52.00/lf =	93,600
i. Large shelter	35,000
j. Flush toilet	95,000

Subtotal -	\$565,000
Contingencies (25%) -	\$141,300

Subtotal -	\$706,300
Engineering and Design (7%) -	\$ 49,400
Supervision and Administration (5.5%) -	\$ 38,800

Total -	\$794,500

ENVIRONMENTAL EVALUATION CHECKLIST
Dolliver State Park Improvements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues			P		
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			T		
b. Natural Resources					T
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 107.1

Project Title: Boone Forks Outpost Boat Ramp

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Near the confluence of the Des Moines and Boone Rivers in Webster County

See Plate(s) Number: 83, 123

Project Description: The project involves the acquisition of 5 acres and the construction of a boat ramp and parking lot.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist.

Real Estate Requirement: 5 acres to be acquired by the local sponsor. The tract is on the west bank of the Des Moines River. It is level river bottom which is approximately 4 acres of woods and 1 acre of cropland. There appears to be approximately 800 feet of river frontage. It appears as though there is access from a county road.

Itemized Cost Estimate:

a. Land acquisition: 5 ac * \$340.00/ac =	1,700
b. Boat ramp, concrete	35,000
c. Parking lot: gravel, 10 car * \$120.00/car =	1,200
d. Access road: crushed stone, 1800 ft * \$15.00/lf =	27,000

Subtotal -	\$64,900
Contingencies (25%) -	\$16,200

Subtotal -	\$81,100
Engineering and Design (7%) -	\$ 5,700
Supervision and Administration (5.5%) -	\$ 4,500

Total -	\$91,300

ENVIRONMENTAL EVALUATION CHECKLIST
Boone Forks Outpost Boat Ramp

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 108.1

Project Title: Carlson Area Boat Ramp

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Section 27, Hardin Township, Webster County

See Plate(s) Number: 85, 124

Project Description: The project is for the construction of a boat ramp and parking lot.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in benefits to recreation resources and public facilities/services by providing additional facilities and dulling portion of recreation needs of the general public. Short-term impacts during construction could include minor temporary increases in business activity and employment, and minor temporary degradation of air and water quality. Riprap placement could provide some benefit to aquatic resources. Clearing and conversion of previously undeveloped areas could adversely affect natural resources through loss of vegetation and habitat. No significant impacts to endangered and threatened species, prime or unique farmland, wild and scenic river, or social and economic concerns are anticipated. Cultural resources survey could be required. A section 10/404 permit may be required.

Real Estate Requirement: 5 acres to be acquired by the local sponsor.

Carlson Area Boat Ramp (Cont'd)

Itemized Cost Estimate:

a. Land acquisition: 5 ac * \$200.00/ac =	1,000
b. Boat ramp, concrete	35,000
c. Parking lot: gravel, 5 car * \$120.00/car =	600
d. Access road: crushed stone, 1500 ft * \$15.00/lf =	22,500

Subtotal -	\$59,100
Contingencies (25%) -	\$14,800

Subtotal -	\$73,900
Engineering and Design (7%) -	\$ 5,200
Supervision and Administration (5.5%) -	\$ 4,100

Total -	\$83,200

ENVIRONMENTAL EVALUATION CHECKLIST
Carlson Area Boat Ramp

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 108.2

Project Title: Carlson County Recreation Area Improvements

Project Purpose: Recreation

Local Sponsor: Webster County

Project Location: 5 miles southeast of Dayton south of State Highway 175

See Plate(s) Number: 85, 125

Project Description: The project would involve the construction of a 12-unit campground and streambank stabilization on the Des Moines River.

Operation, Maintenance, and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by protecting existing facilities from flooding and siltation. Short-term impacts during construction could include minor temporary degradation of air and water quality. Because the project is located in an existing recreation area, no significant impacts to natural resources, endangered and threatened species, prime or unique farmland, wild and scenic river, or economic and social analysis are anticipated. Cultural resources survey could be required. A section 404 permit may be required.

Real Estate Requirement: All lands are owned by Webster County

Itemized Cost Estimate:

a. Camping spurs: 12 spurs * \$1,400.00 spur =	16,800
b. Tent pads: 12 pads * \$400.00/pad =	4,800
c. Fire rings: 12 rings * \$150.00/ring =	1,800
d. Tables: 12 tables * \$275.00/table =	3,300
e. Trash cans: 12 cans * \$130.00/can =	1,600
f. Access road: crushed stone, 600 ft * \$15.00/lf =	9,000
g. Bank stabilization: 250 ft * \$50.00/lf =	12,500

Subtotal -	\$49,800
Contingencies (25%) -	\$12,500

Subtotal -	\$62,300
Engineering and Design (7%) -	\$ 4,400
Supervision and Administration (5.5%) -	\$ 3,400

Total -	\$70,100

ENVIRONMENTAL EVALUATION CHECKLIST
Carlson County Recreation Area Improvements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values					P
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					T
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 109.1

Project Title: Don Williams County Park Expansion

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Don Williams County Park, Boone County

See Plate(s) Number: 234, 236

Project Description: The project involves 2,000 acres of land acquisition.

Operation, Maintenance, and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Environmental impacts are unknown at this time. Section 10/404 requirements are not applicable.

Real Estate Requirement: 2,000 acres to be acquired by the local sponsor.

Itemized Cost Estimate:

a. Land acquisition: 2,000 ac * \$800.00/ac =	1,600,000
	Contingencies (25%) - \$400,000

	Subtotal - \$2,000,000
	Engineering and Design (7%) - \$ 140,000
	Supervision and Administration (5.5%) - \$ 110,000

	Total - \$2,250,000

ENVIRONMENTAL EVALUATION CHECKLIST
Don Williams County Park Expansion

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People				P	
c. Aesthetic Values	X				
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues				P	
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement					P
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources		P			
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 110.2

Project Title: Norton's Ford Boat Ramp

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Section 10, Pilot Mound Township, Boone County

See Plate(s) Number: 86, 126

Project Description: The project involves the construction of a boat ramp and parking lot.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in benefits to recreation resources and public facilities/services by providing additional facilities and dulling portion of recreation needs of the general public. Short-term impacts during construction could include minor temporary increases in business activity and employment, and minor temporary degradation of air and water quality. Riprap placement could provide some benefit to aquatic resources. Clearing and conversion of previously undeveloped areas could adversely affect natural resources through loss of vegetation and habitat. No significant impacts to endangered and threatened species, prime or unique farmland, wild and scenic river, or social and economic concerns are anticipated. Cultural resources survey could be required. A section 404 permit may be required.

Real Estate Requirement: All lands are owned by Boone County.

Itemized Cost Estimate:

a. Boat ramp, concrete	35,000
b. Parking lot: gravel, 10 car * \$120.00/car =	1,200

Subtotal -	\$36,200
Contingencies (25%) -	\$ 9,100

Subtotal -	\$45,300
Engineering and Design (7%) -	\$ 3,200
Supervision and Administration (5.5%) -	\$ 2,500

Total -	\$51,000

ENVIRONMENTAL EVALUATION CHECKLIST
Norton's Ford Boat Ramp

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources				T	
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 110.3

Project Title: Lower Fraser Boat Ramp

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Section 2, Yell Township below the Fraser Dam, Boone County

See Plate(s) Number: 87, 127

Project Description: The project involves the construction of a boat ramp and parking lot.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in benefits to recreation resources and public facilities/services by providing additional facilities and dulling portion of recreation needs of the general public. Short-term impacts during construction could include minor temporary increases in business activity and employment, and minor temporary degradation of air and water quality. Riprap placement could provide some benefit to aquatic resources. Clearing and conversion of previously undeveloped areas could adversely affect natural resources through loss of vegetation and habitat. No significant impacts to endangered and threatened species, prime or unique farmland, wild and scenic river, or social and economic concerns are anticipated. Cultural resources survey could be required. Known archaeological/historic sites: 13 BN (43, 210, 211). A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Lower Fraser Boat Ramp (Cont'd)

Itemized Cost Estimate:

a. Boat ramp, concrete	35,000
b. Parking lot: gravel, 10 car * \$120.00/car =	1,200
c. Access road: crushed stone, 200 ft * \$15.00/lf =	3,000

Subtotal -	\$39,200
Contingencies (25%) -	\$ 9,800

Subtotal -	\$49,000
Engineering and Design (7%) -	\$ 3,400
Supervision and Administration (5.5%) -	\$ 2,700

Total -	\$55,100

ENVIRONMENTAL EVALUATION CHECKLIST
Lower Fraser Boat Ramp

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 110.4

Project Title: Boone Waterworks Boat Ramp

Project Purpose: Recreation

Local Sponsor: Boone County

Project Location: Boone County Road E-26 at the Des Moines River

See Plate(s) Number: 88, 128

Project Description: The project involves the construction of a single lane concrete boat ramp, crushed stone access road and 10-car gravel parking lot at the Boone Waterworks Park.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional launching facilities. Short-term impacts during construction could include minor increases in employment and business activity, and minor temporary degradation of water quality. Some loss of habitat could occur in construction is located outside of existing developed areas. No significant impacts to endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic or social concerns are anticipated. Previous archaeological investigations disclosed no significant cultural resources which would be affected by the project. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the local sponsor

Itemized Cost Estimate:

a. Boat ramp, concrete,	35,000
b. Access road: crushed stone, 500 ft * \$15.00/1f =	7,500
c. Parking lot: gravel, 10 car * \$120.00/car =	1,200

Subtotal -	\$43,700
Contingencies (25%) -	\$10,900

Subtotal -	\$54,600
Engineering and Design (7%) -	\$ 3,800
Supervision and Administration (5.5%) -	\$ 3,000

Total -	\$61,400

ENVIRONMENTAL EVALUATION CHECKLIST
Boone Waterworks Boat Ramp

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 112.2

Project Title: Brushy Creek Confluence Staging Area

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: South of Brushy Creek State Recreation Area on Brushy Creek

See Plate(s) Number: 82, 130

Project Description: The project involves the construction of a day use area and bike trail access.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Environmental impacts are unknown at this time. Section 10/404 requirements are unknown at this time.

Real Estate Requirement: 5 acres to be acquired by the local sponsor.

Itemized Cost Estimate:

a. Access road: crushed stone, 3,500 ft * \$15.00/lf =	52,500
b. Parking lot: gravel, 10 cars * \$120.00/car =	1,200
c. Vault toilet: 2 toilets * \$4,000.00/toilet =	8,000
d. Bulletin board: sheltered, 2 boards * \$250.00/board =	500
e. Shelter, small	12,000
f. Fountain/hydrant	500
g. Water line: 2 in, 8000 ft * \$12.00/lf =	96,000
h. Fish cleaning station	10,000
i. Land acquisition: 5 ac * \$___/ac =	2,000

Subtotal -	\$183,200
Contingencies (25%) -	\$ 45,800

Subtotal -	\$229,000
Engineering and Design (7%) -	\$ 16,900
Supervision and Administration (5.5%) -	\$ 12,600

Total -	\$257,600

ENVIRONMENTAL EVALUATION CHECKLIST
Brushy Creek Confluence Staging Area

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 114.1

Project Title: Dayton Mounds

Project Purpose: Recreation

Local Sponsor: Webster County

Project Location: Southeast of Dayton, Section 16, T86N, R27W

See Plate(s) Number: 84, 131

Project Description: The project involves the acquisition of a 35-acre site to provide access to prehistoric conical and linear Indian burial mounds. Improvements would include a parking lot and unpaved trail.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project could benefit recreation and cultural resources by preserving a significant archaeological site (13 WB 1) and making it accessible to the public. No significant impacts to natural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, air or water quality, or economic and social concerns are anticipated for this project. Any actions taken in this area would need to be coordinated with the SHPO, OSA, and other organizations or entities as appropriate. A section 404 permit is not required.

Real Estate Requirement: 35 acres to be acquired by the local sponsor. This tract is very steep wooded land and appears to have access to a county road.

Itemized Cost Estimate:

a. Land acquisition: 35 ac * \$345.00/ac =	12,000
b. Parking lot: gravel, 10 cars * \$120.00/car =	1,200
c. Trail, unpaved, 2500 ft * \$2.25/lf =	5,600
d. Sheltered bulletin board	300
e. Open bulletin board: 3 boards * \$150.00/board =	500

Subtotal -	\$19,600
Contingencies (25%) -	\$ 4,900

Subtotal -	\$24,500
Engineering and Design (7%) -	\$ 1,700
Supervision and Administration (5.5%) -	\$ 1,300

Total -	\$27,500

ENVIRONMENTAL EVALUATION CHECKLIST
Dayton Mounds

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical		P			
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 201.1

Project Title: Jester County Park Improvements

Project Purpose: Recreation

Local Sponsor: Polk County

Project Location: Northwest corner of Jester County Park where NW 128th Street meets Saylorville Lake. Section 29 and 30, T81N, R25W

See Plate(s) Number: 96, 97, 132, 133, 134

Project Description: The project involves the construction of 5 major improvements: (1) the extension of NW. 128th Street and the construction of two boat ramps and parking areas; (2) swimming beach; (3) 5-acre nursery, (4) 32-unit campground with shower/toilet building; and (5) 70-acre day use area including land acquisition.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. The project would result in benefits to recreation resources and aesthetic values by providing additional facilities and reducing overcrowding at the sites. Because most development will be on open, previously disturbed areas with the park, no significant impacts to natural resources, cultural resources, endangered or threatened species, prime and unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. A Section 404 permit may be required for the placement of sand or other beach material into the water.

Real Estate Requirement: 70 acres to be acquired by the local sponsor. The tract is presently used as cropland.

Jester County Park Improvements (Cont'd)

Itemized Cost Estimate:

NW 128TH STREET DEVELOPMENT

a. Access road: crushed stone, 2000 ft * \$15.00/lf =	30,000
b. Boat ramp: concrete, 2 ramps * \$35,000.00/ramp =	70,000
c. Parking lot: gravel, 30 cars * \$120.00/car =	3,600
d. Parking lot: gravel, 10 cars * \$120.00/car =	1,200

CAMPGROUND AND SWIMMING BEACH ADDITION

e. Beach: 400 ft * 200 ft = 80,000 sf * \$0.75/sf =	60,000
f. Changehouse building	29,000
g. Parking lot: gravel, 200 cars * \$120.00/car =	24,000

NURSERY

h. Reforestation: 5 ac * \$1,400.00/ac =	7,000
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CAMPGROUND ADDITION

i. Shower/toilet building	125,000
j. Access road: crushed stone, 1700 ft * \$15.00/lf =	25,500
k. Camping spur: 32 spurs * \$1,400.00/spur =	44,800
l. Tent pads: 32 pads * \$400.00/pad =	12,800
m. Conductor: 2000 ft * \$3.50/lf =	7,000
n. Fountain/hydrant: 3 fountains * \$500.00/fountain =	1,500

SIGLIN DAY USE

a. Land acquisition: 70 ac * \$1215.00/ac =	85,000
b. Large shelter: 2 shelters * \$35,000.00/shelter =	70,000
c. Softball field: 2 fields * \$20,000.00/field =	40,000
d. Reforestation: 4 ac * \$1,400.00/ac =	5,600
e. Access road: crushed stone, 1500 ft * \$15.00/lf =	22,500
f. Parking lot: gravel, 40 cars * \$120.00/car =	4,800
g. Flush toilet	95,000

Subtotal - \$ 764,300

Contingencies (25%) - \$ 191,100

Subtotal - \$ 955,400

Engineering and Design (7%) - \$ 66,900

Supervision and Administration (5.5%) - \$ 52,500

Total - \$1,074,800

ENVIRONMENTAL EVALUATION CHECKLIST
Jester County Park Improvements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values					T
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 202.1

Project Title: Big Creek State Park Improvements

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Big Creek State Park, Polk County

See Plate(s) Number: 95, 97, 135, 136, 137, 138, 139

Project Description: The project will involve the construction of a picnic shelter, playground sets, boat ramps, siltation basins, native plantings, trails, reforestation and extensive bank stabilization.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide some benefits to recreation resources by providing additional facilities at the site. The project would help fulfill a portion of the recreational needs of the general public. Short-term impacts during construction phase could include minor temporary increases in business activity and employment, some increase in noise levels, and minor temporary degradation of air and water quality. Because most development will be within existing recreation areas, no significant impacts to natural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, and economic and social concerns are anticipated. One archaeological site (13 PK 129) is located in or near the project area. Most measures will require cultural resources survey. A Section 404 permit may be required for boat ramps and shoreline protection.

Real Estate Requirement: All lands are owned by the State of Iowa or are owned by Corps of Engineers and outgranted to the State of Iowa

Big Creek State Park Improvements (Cont'd)

Itemized Cost Estimate:

a. Siltation basin: riprap, 400 ft * 4.4 tn/ft * \$22.00/tn =	38,700
5 ft high, 1:1 slopes, 3 ft top	
b. Bank stabilization: riprap, 450 ft * \$50.00/lf =	22,500
c. Bank stabilization: riprap, 750 ft * \$50.00/lf =	37,500
d. Bank stabilization: riprap, 350 ft * \$50.00/lf =	17,500
e. Bank stabilization: riprap, 450 ft * \$50.00/lf =	22,500
f. Boat ramp	
1. Boat ramp, concrete	35,000
2. Parking lot: gravel, 10 car * \$120.00/car =	1,200
3. Access road: crushed stone, 1900 ft * \$15.00/lf =	28,500
g. Bank stabilization: riprap, 800 ft * \$50.00/lf =	40,000
h. Bank stabilization: riprap, 1600 ft * \$50.00/lf =	80,000
i. Bank stabilization: riprap, 700 ft * \$50.00/lf =	35,000
j. Siltation basin: riprap, 750 ft * 4.4 tn/ft * \$22.00/tn =	72,600
5 ft high, 1:1 slopes, 3 ft top	
k. Native plantings: 600 ft * 700 ft = 9.6 ac * \$275.00/ac =	2,600
l. Reforestation: 500 ft * 500 ft = 5.7 ac * \$1400.00/ac =	8,000
m. Bank stabilization: riprap, 1700 ft * \$50.00/lf =	85,000
n. Playground set	13,000
o. Bank stabilization: riprap, 300 ft * \$50.00/lf =	15,000
p. Bank stabilization: riprap, 300 ft * \$50.00/lf =	15,000
q. Bank stabilization: riprap, 600 ft * \$50.00/lf =	30,000
r. Boat ramp	
1. Boat ramp, concrete	35,000
2. Parking lot: gravel, 20 car * \$120.00/car =	2,400
s. Bank stabilization: riprap, 650 ft * \$50.00/lf =	32,500
t. Bank stabilization: riprap, 350 ft * \$50.00/lf =	17,500
u. Large shelter	35,000
v. Bank stabilization: riprap, 400 ft * \$50.00/lf =	20,000
w. Bank stabilization: riprap, 900 ft * \$50.00/lf =	45,000
x. Bank stabilization: riprap, 350 ft * \$50.00/lf =	17,500
y. Playground set: 3 sets * \$13,000.00/set =	39,000
z. Bank stabilization: riprap, 1100 ft * \$50.00/lf =	55,000
aa. Shoreline fishing trails	
1. Trail: unpaved, 22,500 ft * \$2.25/lf =	50,600
2. Steps:	
3 ft nose * 40 steps * 12 sets * \$15.00/lf nose =	21,600

	Subtotal - \$ 970,700
	Contingencies (25%) - \$ 242,700

	Subtotal - \$1,213,400
	Engineering and Design (7%) - \$ 84,900
	Supervision and Administration (5.5%) - \$ 66,700

	Total - \$1,365,000

ENVIRONMENTAL EVALUATION CHECKLIST
Big Creek State Park Improvements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					P
c. Air Quality					T
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 203.1

Project Title: Big Creek Spillway Boat Ramp

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Big Creek State Park, Polk County

See Plate(s) Number: 97, 140

Project Description: Construct a 1-lane boat ramp near the Big Creek Spillway

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. The proposed project would result in benefits to recreation by providing additional facilities. Short-term impacts during the construction phase could include minor increases in business activity and employment and minor degradation of air and water quality. Because of the disturbed nature of the project site, no significant impacts to natural resources, cultural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, or economic-social concerns are anticipated. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State of Iowa

Itemized Cost Estimate:

a. Boat ramp	
1. Boat ramp, concrete	35,000
2. Parking lot: gravel, 20 car * \$120.00/car =	2,400

	Subtotal - \$37,400
	Contingencies (25%) - \$ 9,400

	Subtotal - \$46,800
	Engineering and Design (7%) - \$ 3,300
	Supervision and Administration (5.5%) - \$ 2,600

	Total - \$52,700

ENVIRONMENTAL EVALUATION CHECKLIST
Big Creek Spillway Boat Ramp

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 203.2

Project Title: S&V Bridge Jetty

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Saylorville Lake near west end of the S&V Bridge, Polk County

See Plate(s) Number: 141

Project Description: Construct jetty south of present boat ramp to protect it from prevailing southerly winds.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. The proposed project would result in benefits to recreation by enhancing use of the present ramp. Short-term impacts during the construction phase could include minor increases in business activity and employment and minor degradation of air and water quality. No significant impacts to natural resources, cultural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. A Section 10/404 permit may be required.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State

Itemized Cost Estimate:

a. Riprap, 100 ft * 35 tn/lf * \$22.00/tn =	269,500
6 ft high head, 21 foot high foot,	
3 foot top, 1:1 slopes	
	Contingencies (25%) - \$ 67,400

	Subtotal - \$336,900
	Engineering and Design (7%) - \$ 23,600
	Supervision and Administration (5.5%) - \$ 18,500

	Total - \$379,000

ENVIRONMENTAL EVALUATION CHECKLIST
S&V Bridge Jetty

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 205.1

Project Title: Beaver Creek Park

Project Purpose: Recreation

Local Sponsor: Polk County

Project Location: SW 1/4, Section 17, T79N, R25W, Saylor Township, Polk County

See Plate(s) Number: 100, 146, 147

Project Description: This project calls for the dredging of this 99 acres of swampy backwater into a 40 acre recreational lake. The area, would be developed for intensive day-use recreation with picnicking, fishing, and boating being the main facilities.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional facilities. The project would also destroy a large amount of scarce wetland habitat and could have significant adverse impacts on habitat and natural resources. Short-term impacts during construction could include minor increases in employment, and minor temporary degradation of air and water quality. Long-term impacts to water quality are not known. While the project site has low potential for containing significant archaeological or historical properties, cultural resources survey of dredge disposal sites would be required. No significant impacts to endangered or threatened species, prime or unique farmland or wild and scenic rivers are anticipated. A Section 404 permit may be required.

The project, as currently proposed, could potentially cause significant environmental problems. A revised plan designed to enhance the quality of the existing wetland habitat, using selective dredging and low-intensity

Real Estate Requirement: All lands are owned by the Corps of Engineers.

Beaver Creek Park (Cont'd)

Itemized Cost Estimate:

a. Dredging: 1320 ft * 1320 ft * 10 ft = 645,300 cy * \$4.00/CY =	2,581,200
b. Gatewell	15,000
c. Small shelter: 2 shelters * \$12,000.00/shelter =	24,000
d. Tables: 10 tables * \$275.00/table =	2,800
e. Grate/grill: 5 grills * \$300.00/grill =	1,500
f. Trash cans: 10 cans * \$130.00/can =	1,300
g. Boat ramp, concrete	35,000
h. Parking lot: gravel, 5 car * \$120.00/car =	600
i. Access road: crushed stone, 2000 ft * \$15.00/lf =	30,000
j. Parking lot: crushed stone, 100 car * \$120.00/car =	12,000

Subtotal -	\$2,703,400
Contingencies (25%) -	\$ 675,900

Subtotal -	\$3,379,300
Engineering and Design (7%) -	\$ 236,600
Supervision and Administration (5.5%) -	\$ 185,900

Total -	\$3,801,800

ENVIRONMENTAL EVALUATION CHECKLIST
Beaver Creek Park

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values		P			
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues					P
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources				P	
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 206.1

Project Title: Upper Saylorville Rest Area

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Section 11, Des Moines Township in the Saylorville Wildlife Management Area, Dallas County

See Plate(s) Number: 94, 148

Project Description: The project would involve the construction of 15-unit campground and a boat ramp.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. The proposed project would result in benefits to recreation by providing additional facilities. Short-term impacts during the construction phase could include minor increases in business activity and employment and minor degradation of air and water quality. No significant impacts to natural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, or social and economic concerns are anticipated. Cultural resources survey could be required. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State of Iowa

Upper Saylorville Rest Area (Cont'd)

Itemized Cost Estimate:

a. Camping spurs: 15 spurs * \$1,400.00/spur =	21,000
b. Tent pads: 15 pads * \$400.00/pad =	6,000
c. Tables: 15 tables * \$275.00/table =	4,100
d. Fire ring: 15 rings * \$150.00/ring =	2,300
e. Trash cans: 15 cans * \$130.00/can =	2,000
f. Vault toilet: 2 toilets * \$4,000.00/toilet =	8,000
g. Access road: crushed stone, 2,000 ft * \$15.00/lf =	30,000
h. Bulletin board: open, 2 boards * \$150.00/board =	300
i. Boat ramp, concrete	35,000
j. Parking lot: crushed stone, 5 cars * \$120.00/car =	600

Subtotal -	\$109,300
Contingencies (25%) -	\$ 27,300

Subtotal -	\$136,600
Engineering and Design (7%) -	\$ 9,600
Supervision and Administration (5.5%) -	\$ 7,500

Total -	\$153,700

ENVIRONMENTAL EVALUATION CHECKLIST
Upper Saylorville Rest Area

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 301.1

Project Title: River's Edge Pedestrian Walkway

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Downtown Des Moines

See Plate(s) Number: 101, 102, 151, 152, 153

Project Description: The project involves the construction of a paved walkway adjacent to the existing historic ballustrade extending along the west side of the river from Sec Taylor Stadium to the proposed marina site, and along the east side from the Court Avenue Bridge to the Armory Building. In the vicinity of the Armory Building it will join up with the existing bike trail and continue to the Botanical Center. Single globe lights will be mounted on each of the main piers of the ballustrade extending south to the Scott Street Bridge on the east and south to wrap around the fork with the Raccoon on the west.

Pedestrian underpasses will be restored on the east end of the Walnut Street, Locust Street and Grand Avenue Bridges. Underpasses are still in place on the west side of the bridges. Access steps leading down to the promenade will be constructed adjacent to Sec Taylor Stadium and on both sides of the river at each of the 4 main downtown bridges-Court, Walnut, Locust and Grand. Handicapped access to the promenade will be provided on both sides of the river. In addition, benches and landscaping will be provided along the walkway.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. The project would provide some benefits to recreation and aesthetic values within the city. Because construction and repair will take place in an intensively developed urban area, no adverse impacts to natural or cultural resources, threatened or endangered species, prime or unique farmland, or wild and scenic rivers are anticipated. No significant impacts to water quality are anticipated. Some short-term impacts to noise or air quality could occur during construction, but these impacts are not expected to be significant. Development of pedestrian walkway would make adjacent property more attractive as a site for new commercial businesses. Increased commercial activity would likely result in more employment opportunities. No significant impacts to other environmental, social or economic concerns are expected to occur as a result of this project. Section 10/404 requirements are not applicable.

River's Edge Pedestrian Walkway (Cont'd)

Real Estate Requirement: All lands are owned by the city of Des Moines

Itemized Cost Estimate:

a. Trail: paved, east component, 4,000 ft * \$40.00/lf =	160,000
b. Trail: paved, west component, 3,300 ft * \$40.00/lf =	132,000
c. Lighting, single globe and metal post: 312 lights * \$2,625.00/light =	819,000
d. Trash cans: 16 cans * \$130.00/can =	2,100
e. Fountain/hydrant: 6 fountains * \$500.00/fountain =	3,000
f. Benches: 30 benches * \$300.00/bench =	9,000
g. Trees: 500 trees * \$50.00/tree =	25,000
h. Shrubs: 300 shrubs * \$15.00/shrub =	4,500
i. Handicap ramps, 1H:12V slope, 6 ea, 1. Sidewalk: concrete, 120 ft/ramp * \$11.00/lf * 6 ramps =	7,900
2. Handrail: 120 ft/ramp * 2 rails/ramp * 6 ramps * \$26.00/lf =	37,400
j. Steps, concrete, 15 ea, 1. Steps: 7 ft nose * 20 steps * 15 sets * \$15.00/lf nose =	31,500
2. Handrail: 17 ft * 2 rails/step * 15 sets * \$26.00/lf =	13,300
k. Steps: concrete, 2 ea, 1. Steps: 50 ft nose * 20 steps * 2 sets * \$15.00/lf nose =	30,000
2. Handrail: 17 ft * 2 rails/step * 2 sets * \$26.00/lf =	1,800
l. Historic marker: 4 markers * \$1,500.00/marker =	6,000
m. Signs: 20 signs * \$25.00/sign =	500
n. Handrail: steel, east component, 4,000 ft * \$26.00/lf =	104,000
o. Handrail: steel, west component, 3,300 ft * \$26.00/lf =	85,000
p. Bridge underpass, 3 ea. 1. Excavation: 500 cy * \$4.00/cy =	2,000

	Subtotal - \$1,474,000
	Contingencies (25%) - \$ 368,500

	Subtotal - \$1,842,500
	Engineering and Design (7%) - \$ 129,000
	Supervision and Administration (5.5%) - \$ 101,300

	Total - \$2,072,800

ENVIRONMENTAL EVALUATION CHECKLIST
River's Edge Pedestrian Walkway

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues			P		
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			P		
k. Business/Industry Activity			P		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 301.2

Project Title: Downtown Riverfront Plaza

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Downtown Des Moines

See Plate(s) Number: 101, 152

Project Description: The project will provide a multi-component urban riverfront plaza for downtown Des Moines. The urban plaza will include paved areas, folding floodwalls, seating areas, drinking fountains, extensive landscaping, lighting, and will provide access for the handicapped to the river promenade and be integrated with the river promenade.

The west component will provide for an extension of cultural functions associated with the library - an addition to accommodate an outdoor reading court with a plaza and landscaping which terraces down to the river's edge. The east component will be designed for ice skating in the winter and outdoor events in the summer, such as concerts, fireworks and festivals. The connecting component will be mid-river with a pedestrian link from Walnut Transit Mall on the west side to Locust Street on the east side.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis. The project analysis will require additional data on trail use within the city of Des Moines.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional facilities. Short-term impacts during construction could include minor increases in employment and business activity, and minor temporary degradation of air and water quality. Because the project is located in a developed urban area, no significant impacts to natural or cultural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines

Downtown Riverfront Plaza (Cont'd)

Itemized Cost Estimate:

a. Lights, single globe and metal post, 75 lights * \$2,625.00/light =	196,900
b. Trash cans: 10 cans * \$130.00/can =	1,300
c. Fountain/hydrant: 4 fountains * \$500.00/fountain =	2,000
d. Multiple purpose court, west, 250 ft * 150 ft * 6 in = 695 cy * \$325.00/cy =	225,900
e. Multiple purpose court, east, 250 ft * 150 ft * 6 in = 695 cy * \$325.00/cy =	225,900
f. Benches: 36 benches * \$300.00/bench =	10,800
g. Trees: 100 trees * \$50.00/tree =	5,000
h. Shrubs: 100 shrubs * \$15.00/shrub =	1,500
i. Table: 20 tables * \$275.00/table =	5,500
j. Bike rack: 4 racks * \$475.00/rack =	1,900
k. Open bulletin boards: 2 boards * \$150.00/board =	300
l. Historic marker: 2 markers * \$1,500.00/marker =	3,000
m. Folding floodwall: east, 250 ft * 5 ft * \$250.00/sf =	312,500
n. Folding floodwall: west, 250 ft * 5 ft * \$250.00/sf =	312,500

Subtotal -	\$1,305,000
Contingencies (25%) -	\$ 326,000

Subtotal -	\$1,631,000
Engineering and Design (7%) -	\$ 114,000
Supervision and Administration (5.5%) -	\$ 90,000

Total -	\$1,835,000

ENVIRONMENTAL EVALUATION CHECKLIST
Downtown Riverfront Plaza

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues			P		
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 301.3

Project Title: Walnut Street Transit Mall Improvements

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Downtown Des Moines

See Plate(s) Number: 101, 152

Project Description: The project would provide a connection between the Walnut Street Transit Mall and the Des Moines River. Improvements would include light fixtures, benches, and street trees.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities. Short-term impacts during construction could include minor increases in employment and business activity, and minor temporary degradation of air and water quality. Because the project is located in a developed urban area, no significant impacts to natural or cultural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines

Itemized Cost Estimate:

a. Benches: 5 benches * \$300.00/bench =	1,500
b. Trees: 25 trees * \$50.00/tree =	1,300
c. Bike rack	500
d. Lighting, single globe and metal post, 16 lights * \$2,625.00/light =	42,000
e. Trash cans: 4 cans * \$130.00/can =	500

	Subtotal - \$45,800
	Contingencies (25%) - \$11,500

	Subtotal - \$57,300
	Engineering and Design (7%) - \$ 4,000
	Supervision and Administration (5.5%) - \$ 3,200

	Total - \$64,500

ENVIRONMENTAL EVALUATION CHECKLIST
Walnut Street Transit Mall Improvements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues			P		
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 301.4

Project Title: Crivaro Park Improvements

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Downtown Des Moines

See Plate(s) Number: 101, 152

Project Description: The project involves the redesign and rehabilitation of an existing park. Improvements would include paved walkways, landscaping, benches and picnic tables, drinking fountain, bike rack, and trash receptacles.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional facilities. Short-term impacts during construction could include minor increases in employment and business activity, and minor temporary degradation of air and water quality. Because the project is located in a developed urban area, no significant impacts to natural or cultural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines

Crivaro Park Improvements (Cont'd)

Itemized Cost Estimate:

a. Sidewalk: 700 ft * \$11.00/lf =	7,700
b. Trees: 30 trees * \$50.00/tree =	1,500
c. Shrubs: 100 shrubs * \$15.00/shrub =	1,500
d. Benches: 4 benches * \$300.00/bench =	1,200
e. Table: 4 tables * \$275.00/table =	1,100
f. Fountain/hydrant	500
g. Bike rack	500
h. Garbage can: 4 cans * \$130.00/can =	500
i. Folding floodwall: 250 ft * 5 ft * \$250.00/sf =	312,500
j. Light, single globe with metal pole, 10 lights * \$2,625.00/light =	26,300

Subtotal -	\$353,300
Contingencies (25%) -	\$ 88,300

Subtotal -	\$441,600
Engineering and Design (7%) -	\$ 30,900
Supervision and Administration (5.5%) -	\$ 24,300

Total -	\$496,800

ENVIRONMENTAL EVALUATION CHECKLIST
Crivaro Park Improvements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
Noise					T
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues			P		
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 301.5

Project Title: Recreational Rowing Marina

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Downtown Des Moines

See Plate(s) Number: 101, 152

Project Description: The project would provide a facility for recreational boating on the Des Moines and Raccoon Rivers. Improvements would include a boat ramp, lights, tables, shelters and a flush toilet.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. The construction of the marina facilities would result in long-term benefits to recreation resources and related public facilities. Short-term impacts during the construction phase could include minor increases in business activity and employment and minor degradation of air and water quality. The site of the proposed project is along the highly developed water front of the city of Des Moines and no significant impacts to natural resources, cultural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers or economic-social concerns are not anticipated. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the local sponsor.

Itemized Cost Estimate:

a. Boat ramp, concrete	35,000
b. Small shelter 2 shelters * \$12,000.00/shelter =	24,000
c. Tables: 8 tables * \$275.00/table =	2,200
d. Lights: single globe and metal post, 12 lights * \$2,625.00/light =	31,500
e. Flush toilet	95,000

	Subtotal - \$187,700
	Contingencies (25%) - \$ 46,900

	Subtotal - \$234,600
	Engineering and Design (7%) - \$ 16,400
	Supervision and Administration (5.5%) - \$ 12,900

	Total - \$263,900

ENVIRONMENTAL EVALUATION CHECKLIST
Recreational Rowing Marina

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 302.1

Project Title: Martin-Marietta Development

Project Purpose: Recreation

Local Sponsors: city of West Des Moines, Polk County, and the Iowa Department of Natural Resources

Project Location: Southwest West Des Moines adjacent to the Raccoon River near Walnut Woods State Park

See Plate(s) Number: 103, 154, 155, 156, 157

Project Description: The project involves major land acquisition and the construction of a recreational complex. Improvements would include paved access roads, softball fields, soccer fields, parking lots, picnic areas, 25-unit campground, beach, marsh restoration, boat ramps, fishing piers and landscaping.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. The project would provide some benefits to recreation resources by providing additional facilities. Short-term impacts during construction could include minor temporary increases in business activity and employment, and temporary degradation of air and water quality. Development of facilities could have some effect on natural resources. Developments in previously disturbed areas would be anticipated to have no significant effect on natural resources, endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns. Cultural resources survey could be required. Section 10/404 requirements are not applicable.

Real Estate Requirement: 703 acres to be acquired by the local sponsor. This tract contains the first and second river bottom land and lakes located on the north bank of the Raccoon River in West Des Moines. A large sand and gravel operation located on the tract has nearly depleted its exploitation of marketable gravel.

Martin-Marietta Development (Cont'd)

Itemized Cost Estimate:

West Des Moines Component

a. Land acquisition: 40 ac * \$10,000/ac =	400,000
73 ac * \$3,000/ac =	219,000
b. Access road: paved, 4200 ft * \$52.00/lf =	218,400
c. Softball field w/backstop: 4 fields * \$20,000.00/field =	80,000
d. Lighting: 4 fields * 4 lights/field * \$1,700.00/light =	27,200
e. Soccer field: 4 fields * \$6,000.00/field =	96,000
f. Lighting: 4 fields * 6 lights/field * \$5,000.00/light =	120,000
g. Parking lot: paved, 80 cars * \$500.00/car =	40,000
h. Parking lot: paved, 80 cars * \$500.00/car =	40,000
i. Picnic area	
1. Large shelter	35,000
2. Flush toilet	95,000
3. Playground set	13,000
i. Flush toilet	95,000
j. Landscaping	
1. Trees: 600 trees * \$50.00/tree =	30,000
2. Shrubs: 400 shrubs * \$15.00/shrub =	6,000
k. Picnic area	
1. Shelter: large, 2 shelters * \$35,000.00/shelter =	70,000
2. Playground set: 2 sets * \$13,000.00/set =	26,000
3. Grate/grill: 25 grills * \$300.00/grill =	7,500
4. Tables: 25 tables * \$275.00/table =	6,900
5. Trash cans: 10 cans * \$130.00/can =	1,300
6. Flush toilet	95,000
7. Parking lot: paved, 200 cars * \$500.00/car =	100,000
l. Shower/flush toilet	125,000
m. Fishing pier: 10 ft * 20 ft = 200 sf * \$25.00/sf =	5,000
n. Campground	
1. Camping spur: 25 spurs * \$1,400.00/spur =	35,000
2. Tent pad: 25 pads * \$400.00/pad =	10,000
3. Table: 25 tables * \$275.00/table =	6,900
4. Fire ring: 25 rings * \$150.00/ring =	3,800
5. Trash can: 25 cans * \$130.00/can =	3,300
6. Flush toilet	95,000
7. Access road: paved, 3,000 ft * \$52.00/lf =	156,000
o. Marsh restoration, 55 acres	
1. Dike: 6,200 ft * \$24.00/lf =	148,800
2. Water pump	35,000
p. Beach	
1. Changehouse	29,000
2. Flush toilet	95,000

Subtotal - \$1,881,400
Contingencies (25%) - \$ 470,400

Martin-Marietta Development (Cont'd)

	Subtotal -	\$2,351,800
	Engineering and Design (7%) -	\$ 164,600
	Supervision and Administration (5.5%) -	\$ 129,400

	Total -	\$2,645,800

Iowa DNR Component

a. Access road: paved, 7000 ft * \$52.00/lf =	364,000	
b. Land acquisition: 600 ac * \$770.00/ ac =	462,000	
c. Boat ramp		
1. Boat ramp, concrete	35,000	
2. Access road: paved, 850 ft * \$52.00/lf =	44,200	
3. Parking lot: paved, 15 cars * \$500.00/car =	7,500	
4. Flush toilet	95,000	
e. Boat ramp		
1. Boat ramp, concrete	35,000	
2. Parking lot: paved, 15 car * \$500.00/car =	7,500	
3. Access road: paved, 650 ft * \$52.00/lf	33,800	
4. Flush toilet	95,000	

	Subtotal -	\$1,179,000
	Contingencies (25%) -	\$ 294,800

	Subtotal -	\$1,473,800
	Engineering and Design (7%) -	\$ 103,200
	Supervision and Administration (5.5%) -	\$ 81,100

	Total -	\$1,658,100

ENVIRONMENTAL EVALUATION CHECKLIST
Martin-Marietta Development

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth			P		
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 303.1

Project Title: Walnut Woods State Park Improvements

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Walnut Woods State Park, Polk County

See Plate(s) Number: 103, 158

Project Description: The project involves the construction of a 25-unit campground with a shower/flush toilet building and a dump station, and the installation of 2 flush toilets and 4 shelters.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide some benefits to recreation resources by providing additional facilities. Short-term impacts during construction phase could include minor temporary increases in business activity and employment, and minor temporary degradation of air and water quality. Campground development could have some effect on natural resources. Developments within existing recreation areas would be anticipated to have no significant effect on natural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, or economic and social concerns. Although no known archaeological or historic sites are located within the project area, most measures would require cultural resources survey. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands owned by the State of Iowa

Walnut Woods State Park Improvements (Cont'd)

Itemized Cost Estimate:

a. Campground	
1. Camping spur: 25 spurs * \$400.00/spur =	35,000
2. Trash cans: 25 cans * \$130.00/can =	3,300
3. Tent pads: 25 pads * \$400.00/pad =	10,000
4. Fire rings: 25 rings * \$150.00/ring =	3,800
5. Tables: 25 tables * \$275.00/table =	6,900
6. Access road: crushed stone, 1500 ft * \$15.00/lf =	22,500
7. Spur pedestal: 15 pedestals * \$400.00/pedestal =	6,000
8. Transformer, electric	3,500
9. Conductor: electric, 1250 ft * \$3.50/ft =	4,100
b. Shower/flush toilet	125,000
c. Dump station	12,000
d. Flush toilet	95,000
e. Flush toilet	95,000
f. Small shelter	12,000
g. Small shelter	12,000
h. Small shelter	12,000
i. Small shelter	12,000

	Subtotal - \$470,100
	Contingencies (25%) - \$117,500

	Subtotal - \$587,600
	Engineering and Design (7%) - \$ 41,100
	Supervision and Administration (5.5%) - \$ 32,300

	Total - \$661,000

ENVIRONMENTAL EVALUATION CHECKLIST
Walnut Woods State Park Improvements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					P
c. Air Quality					T
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 304.1

Project Title: Yellow Banks County Park Improvements

Project Purpose: Recreation

Local Sponsor: Polk County

Project Location: Southeast of Yellow Banks County Park, Sections 24 and 25, R23W, T78N, Polk County

See Plate(s) Number: 105, 159, 160

Project Description: The project would involve land acquisition and the construction of a 50-unit campground, land acquisition for a scenic bluff addition, and a breakwater at the boat ramp.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources, public facilities/services by providing additional recreation facilities and protecting sensitive natural areas. No significant impacts to endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Cultural resources survey would be required. Known sites in or adjacent to the project area: 13PK11. Section 10/404 permit may be required.

Real Estate Requirement: 160 acres to be acquired by the local sponsor. The tract for the campground expansion adjoins the park on the east side. It contains 40-acres of which 16 appear to be cropland and 24 appear to be rolling pasture. The tract for the scenic bluff addition is east of the park. It contains approximately 120-acres of which 12 appear to be cropland, 45 appear to be woodland and 63 appear to be pasture. There are improvements on this tract that were not valued.

Yellow Banks County Park Improvements (Cont'd)

Itemized Cost Estimate:

SCENIC BLUFF ADDITION

a. Land acquisition, 120 ac * \$835.00/ac =	100,000
b. Trail: unpaved, 2000 ft * \$2.25/ft =	4,500
c. Scenic overlook areas, 2 sites,	
1. Tree and brush removal: 1 ac * 2 sites * \$1,350.00/ac =	2,700
2. Tables: 3 tables * 2 sites * \$275.00/table =	1,700
3. Grate/grill: 1 grill * 2 sites * \$300.00/grill =	600
4. Trash cans: 1 can * 2 sites * \$130.00/can =	300

BOAT RAMP BREAKWATER

e. Riprap: 100 ft * 2 tn/lf * \$22.00/tn =	4,400
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CAMPGROUND ADDITION

f. Land acquisition: 40 ac * \$1,000.00/ac =	40,000
g. Access road: crushed stone, 2000 ft * \$15.00/lf =	30,000
h. Camping spur: 50 spurs * \$1,400.00/spur =	70,000
i. Tent pads: 50 pads * \$400.00/pad =	20,000
j. Fire rings: 50 rings * \$150.00/ring =	7,500
k. Tables: 50 tables * \$275.00/table =	13,800
l. Flush toilet	95,000
m. Playgroundset: 2 sets * \$13,000.00/set =	26,000
n. Transformer, electric	3,500
o. Spur pedestal: 50 pedestal * \$400.00/pedestal =	20,000
p. Conductor: 5000 ft * \$3.50/lf =	17,500

Subtotal - \$457,500

Contingencies (25%) - \$114,400

Subtotal - \$571,900

Engineering and Design (7%) - \$ 40,000

Supervision and Administration (5.5%) - \$ 31,500

Total - \$643,400

ENVIRONMENTAL EVALUATION CHECKLIST
Yellow Banks County Park Improvements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues					P
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 306.1

Project Title: Riverview Park Development

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Former Riverview Amusement Park site located at Corning Avenue

See Plate(s) Number: 100, 162

Project Description: This project provides for the redevelopment and renovation of the former 30-acre Riverview Amusement Park as a city park. The project would involve construction of day use facilities, landscaping, dredging the lagoon and installation of a trail bridge.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional facilities. Short-term impacts during construction could include minor increases in employment and business activity, and minor temporary degradation of air and water quality. Because the project is located in a developed urban area, no significant impacts to natural or cultural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. A Section 404 permit may be required.

Real Estate Requirement: The project site is owned by the city of Des Moines.

Riverview Park Development (Cont'd)

Itemized Cost Estimate:

a. Small shelters: 6 shelters * \$12,000.00/shelter =	72,000
b. Tables: 50 tables * \$275.00/table =	13,800
c. Grate/grill: 35 grills * \$300.00/grill =	10,500
d. Trash cans: 40 cans * \$130.00/can =	5,200
e. Flush toilet	95,000
f. Lighting, security, lamp and wooden post, 12 lights * \$2,625.00/light =	31,600
g. Trees: 100 trees * \$50.00/tree =	5,000
h. Shrubs: 100 shrubs * \$15.00/shrub =	1,500
i. Signs: 10 signs * \$25.00/sign =	300
j. Fencing: wooden, 2200 ft * \$6.00/lf =	13,200
k. Playground set: 2 sets * \$13,000.00/set =	26,000
l. Reforestation: 5 ac * \$1,400.00/ac =	7,000
m. Dredging: 9 ac * 6 ft = 87,100 cy * \$6.00/cy =	523,000
n. Trail bridge: 300 ft * 10 ft = 3,000 sf * \$55.00/sf =	165,000
o. Land acquisition: 1 ac * \$___/ac =	12,000
p. Parking lot: paved, 75 cars * \$500.00/car =	37,500
q. Bike rack: 4 racks * \$500.00/rack =	2,000

Subtotal -	\$1,022,000
Contingencies (25%) -	\$ 255,500

Subtotal -	\$1,278,000
Engineering and Design (7%) -	\$ 89,500
Supervision and Administration (5.5%) -	\$ 70,300

Total -	\$1,438,000

ENVIRONMENTAL EVALUATION CHECKLIST
Riverview Park Development

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues			P		
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 307.1

Project Title: West River Drive Riverfront Park Extension

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: West bank of the Des Moines River, city of Des Moines

See Plate(s) Number: 102, 163

Project Description: This project provides for the continued upgrading and beautification of the levee and riverfront areas on the west side of the river from University Avenue north to Second Avenue. A paved access road would be constructed on top of the widened levee and limited day use facilities and fishing piers would be located between the levee and the river.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Aesthetic values, public services and recreation would benefit from the proposed projects. Adjacent properties are also likely to benefit with possible slight increases in property values and tax revenues. Short-term impacts during the construction phase could include minor increases in employment and business activity, and minor degradation of air and water quality. Major development (i.e., road construction on the existing levee) would take place on already disturbed areas and no significant impacts to natural resources, cultural resources, endangered and threatened species, prime and unique farmland, wild or scenic rivers, and economic-social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the local sponsor.

West River Drive Riverfront Park Extension (Cont'd)

Itemized Cost Estimate:

a. Tree and brush removal: 24 ac * \$1,350.00/ac =	32,400
b. Trees: 20 trees * \$50.00/tree =	1,000
c. Signs: 10 signs * \$25.00/sign =	250
d. Small shelters: 3 shelters * \$12,000.00/shelter =	36,000
e. Tables: 20 tables * \$275.00/table =	5,500
f. Trash cans: 20 cans * \$130.00/can =	2,600
g. Grate/grill: 10 grills * \$300.00/grill =	3,000
h. parking lot: paved, 25 cars * \$500.00/car =	12,500
i. Fishing piers: 20 ft * 20 ft * 3 piers =	
1,200 sf * \$25.00/sf =	30,000
j. Access road:	
1. Access road: paved, 3,700 ft * \$52.00/lf =	192,000
2. Fill: 3700 ft * 10 cy/lf = 37,000 cy * \$6.00/cy =	222,000
8 ft high, 3H:1V, 35 ft wide	
3. Crushed stone: 3700 ft * 45 ft * 6 in =	
3,100 cy * \$20.00/cy =	62,000
4. Seeding: 3700 ft * 12 ft = 1 ac * \$500.00/ac =	500

	Subtotal - \$600,000
	Contingencies (25%) - \$150,000

	Subtotal - \$750,000
	Engineering and Design (7%) - \$ 52,000
	Supervision and Administration (5.5%) - \$ 41,000

	Total - \$843,000

ENVIRONMENTAL EVALUATION CHECKLIST
West River Drive Riverfront Park Extension

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values					P
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 308.1

Project Title: Botanical Center Riverfront Park

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: East bank of Des Moines River in front of the Botanical Center

See Plate(s) Number: 101, 102, 151

Project Description: The project involves the construction of a picnic park and the installation of a courtesy dock along the Des Moines River at the Botanical Center.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional facilities. Short-term impacts during construction could include minor increases in employment and business activity, and minor temporary degradation of air and water quality. Because the project is located in a developed urban area, no significant impacts to natural or cultural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the local sponsor.

Botanical Center Riverfront Park (Cont'd)

Itemized Cost Estimate:

a. Tables: 5 tables * \$275.00/table =	1,400
b. Trash cans: 5 cans * \$130.00/can =	700
c. Trees: 25 trees * \$50.00/tree =	1,300
d. Shrubs: 50 shrubs * \$15.00/shrub =	800
e. Benches: 5 benches * \$300.00/bench =	1,500
f. Lights, single globe with metal post 6 lights * \$2,625.00/light =	15,800
g. Wooden deck: 20 ft * 20 ft = 400 sf * \$25.00/sf =	10,000
h. Historic marker	1,500
i. Courtesy dock: 30 ft * 5 ft = 150 sf * \$25.00.sf =	3,800
j. Small shelter: 3 shelters * \$12,000.00/shelter =	36,000
k. Bike rack	500

Subtotal - \$	73,300
Contingencies (25%) - \$	18,300

Subtotal - \$	91,600
Engineering and Design (7%) - \$	6,400
Supervision and Administration (5.5%) - \$	5,000

Total - \$	103,000

ENVIRONMENTAL EVALUATION CHECKLIST
Botanical Center Riverfront Park

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues			P		
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 309.1

Project Title: Hubbell Naturalistic Park Improvements

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: SE corner of the city of Des Moines

See Plate(s) Number: 104, 164

Project Description: This project provides for the redevelopment of the 107-acre Hubbell Park adjacent to the Des Moines River at SE. Brooks Drive. Park improvements would include day use facilities, boat ramp, fishing piers and native plantings.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional facilities. Some benefits to natural resources could result from enhancement of wildlife habitat. Because much of the project area has been extensively disturbed in the past, no significant adverse impacts to endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Cultural resources survey could be required for undisturbed portions of the project area. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines

Hubbell Naturalistic Park Improvements (Cont'd)

Itemized Cost Estimate:

a. Access road: crushed stone, 3,500 ft * \$15.00/lf =	52,500
b. Trail, unpaved, 5000 ft * \$2.25/lf =	11,300
c. Parking lot: unpaved, 20 cars * \$120.00/car =	2,400
d. Native plantings: 10 ac * \$275.00/ac =	2,800
e. Signs: 25 signs * \$25.00/sign =	700
f. Boat ramp, concrete	35,000
g. Parking lot, gravel: 5 cars * \$120.00/car =	600
h. Fishing platforms: 5 ft * 20 ft = 100 sf * 2 platforms * \$25.00/sf =	5,000
i. Tables: 5 tables * \$275.00/table =	1,400
j. Grate/grill: 5 grills * \$300.00/grill =	1,500
k. Trash cans: 5 cans * \$130.00/can =	700
l. Vault toilet: 2 toilets * \$4,000.00/toilet =	8,000

Subtotal -	\$121,800
Contingencies (25%) -	\$ 30,500

Subtotal -	\$152,300
Engineering and Design (7%) -	\$ 10,700
Supervision and Administration (5.5%) -	\$ 8,400

Total -	\$171,400

ENVIRONMENTAL EVALUATION CHECKLIST
Hubbell Naturalistic Park Improvements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues			P		
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 310.1

Project Title: Easter Lake County Park Improvements

Project Purpose: Recreation

Local Sponsor: Polk Co.

Project Location: Easter Lake Park

See Plate(s) Number: 104, 165

Project Description: The project involves the construction of a 20-unit campground.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Environmental impacts are unknown at this time. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the local sponsor

Itemized Cost Estimate:

a. Camping spur: 20 spurs * \$1,400.00/spur =	28,000
b. Tent pad: 20 pads * \$400.00/pad =	8,000
c. Tables: 20 tables * \$275.00/table =	5,500
d. Fire ring: 20 rings * \$150.00/ring =	3,000
e. Trash can: 20 cans * \$130.00/can =	2,600
f. Access road: paved, 3,000 ft * \$52.00/lf =	156,000
g. Flush toilet	95,000
h. Bulletin board: sheltered, 2 boards * \$250.00/board =	500
i. Amphitheatre	6,000

Subtotal	- \$303,600
Contingencies (25%)	- \$ 75,900

Subtotal	- \$379,500
Engineering and Design (7%)	- \$ 26,600
Supervision and Administration (5.5%)	- \$ 20,900

Total	- \$427,000

ENVIRONMENTAL EVALUATION CHECKLIST
Easter Lake County Park Improvements

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			X		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 311.1

Project Title: Lighted Outdoor Sports and Athletic Complex

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Saylorville corridor lands on the west bank of the Des Moines River

See Plate(s) Number: 100, 166

Project Description: This project provides for the development of a day and night use outdoor sports complex on Saylorville Lake downstream corridor lands north of Euclid Avenue and east of Harding Road. Improvements would include multi-purpose courts, softball fields, multi-purpose fields, roads and parking areas and a flush toilet building.

Reference: Recreation Master Plan, Des Moines River, Saylorville Lake, Downstream Corridor, Design Memorandum No. 6B, Supplement No. 2, May 1981, U.S. Army Corps of Engineers, Rock Island District

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. See the environmental assessment for the referenced report.

Real Estate Requirement: All lands are owned by the Corps of Engineers except for the access road. See the referenced report.

Itemized Cost Estimate: See attached sheets

18-04. SPORTS COMPLEX

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Amount</u>
<u>Multi-Purpose Courts</u>				
Grading	1	job	sum	\$ 600
Stabilized Aggregate	112	ton	18.50	2,072
Filter Course	168	ton	15.00	2,520
Asphalt, 2 1/2" thick	672	s.y.	7.50	5,040
Painting	1	job	sum	150
Net w/posts	1	ea.	1,250.00	<u>1,250</u>
		Subtotal		11,632
		10 Courts		116,320
Fence (10 ft high)	1,236	1.f.	37.00	<u>45,732</u>
		Subtotal		162,052
		Contingencies		<u>23,948</u>
		TOTAL		\$ 186,000
 <u>Softball Diamonds</u>				
Surface Preparation	1	job	sum	2,500
Back Stop	1	job	sum	750
Seeding	1.5	ea.	600.00	<u>900</u>
		Subtotal		4,150
		6 Diamonds		24,900
		Contingencies		<u>3,100</u>
		TOTAL		28,000
 <u>Multi-purpose Field</u>				
Surface Preparation	1	job	sum	3,100
Goal Posts	2	ea.	1,000.00	2,500
Seeding	1	job	sum	<u>1,850</u>
		Subtotal		7,450
		5 Fields		37,250
		Contingencies		<u>5,750</u>
		TOTAL		43,000

SPORTS COMPLEX (Cont'd)

Miscellaneous

Concrete sidewalk (4 ft wide)	5,600	1.f.	6.00	33,600
Benches	10	ea.	500.00	5,000
Primitive Nature Trail Clearing	1,800	1.f.	1.25	2,250
Interpretive Signs	1	job	sum	600
Landscaping	1	job	sum	<u>4,300</u>
		Subtotal		45,750
		Contingencies		<u>7,250</u>
				53,000

TOTAL SPORTS COMPLEX

\$ 1,279,000

Land Acquisition

Entrance Rd	1	job	sum	1,500
RR X-ing	1	job	sum	250
Misc. Acquisition Fees	1	job	sum	<u>1,000</u>
				2,750

TOTAL SPORTS COMPLEX (w/land)

\$ 1,281,750

Project Number: 312.1

Project Title: Birdland Marina Improvements

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Birdland Marina on east bank of Des Moines River at Birdland/Union Park

See Plate(s) Number: 101, 102, 167

Project Description: The project provides for the complete renovation of Birdland Marina at Birdland Park. Improvements would include dredging the harbor, day use facilities, boat ramp and bank stabilization.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. The proposed project would result in benefits to recreation resources and related public facilities. Short-term impacts during construction could include minor increases in business activity and employment and minor degradation of air and water quality. Because most work would be rehabilitation of existing facilities, no significant impacts to natural resources, cultural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, or economic-social concerns are anticipated. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the city of Des Moines

Birdland Marina Improvements (Cont'd)

Itemized Cost Estimate:

a. Dredging: 400 ft * 200 ft * 3 ft = 8,888 cy * \$6.00/cy =	53,300
b. Fence: chainlink, 5 ft high, 1,000 ft * \$7.10 lf =	7,100
c. Parking lot: paved, 100 cars * \$500.00/car =	50,000
d. Boat ramp, concrete	35,000
e. Flush toilet	95,000
f. Playground set: 2 sets * \$13,000.00/set =	26,000
g. Trees: 40 trees * \$50.00/tree =	2,000
h. Shrubs: 40 shrubs * \$15.00/shrub =	600
i. Bank stabilization: riprap, 500 ft * \$500.00/lf =	25,000

Subtotal -	\$276,000
Contingencies (25%) -	\$ 69,000

Subtotal -	\$345,000
Engineering and Design (7%) -	\$ 24,000
Supervision and Administration (5.5%) -	\$ 19,000

Total -	\$388,000

ENVIRONMENTAL EVALUATION CHECKLIST
Birdland Marina Improvements

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 313.1

Project Title: Des Moines Waterworks Park Boat Ramp

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Waterworks Park, city of Des Moines on the Raccoon River

See Plate(s) Number: 101, 168

Project Description: The project is for the construction of a concrete boat ramp and a gravel parking lot.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional facilities. Short-term impacts include minor increases in employment, and minor temporary degradation of air and water quality. Previous cultural resources surveys disclosed no sites which would be affected by the project. Because the project would be located within an existing recreation area, no significant impacts to natural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic or social concerns are anticipated. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the city of Des Moines

Itemized Cost Estimate:

a. Boat ramp, concrete	35,000
b. Parking lot: gravel, 10 car * \$120.00/car =	1,200
c. Access road: crushed stone, 200 ft * \$15.00/lf =	3,000

	Subtotal - \$39,200
	Contingencies (25%) - \$ 9,800

	Subtotal - \$49,000
	Engineering and Design (7%) - \$ 3,400
	Supervision and Administration (5.5%) - \$ 2,700

	Total - \$55,100

ENVIRONMENTAL EVALUATION CHECKLIST
Des Moines Waterworks Park Boat Ramp

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues		P			
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 314.1

Project Title: Des Moines River Boat Traffic

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Des Moines River between Saylorville Lake and Lake Red Rock

See Plate(s) Number: 223

Project Description: This project involves opening the Des Moines River from Saylorville Lake to Lake Red Rock to boaters, rowers and canoers for continuous travel between these two existing recreation areas and for direct access to downtown Des Moines. Improvements would include selective channel dredging, construction of wing dams and a lock and dam, and the removal of several existing dams on the Des Moines River.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project is not likely to be economically justified.

Environmental Impacts: See the attached environmental evaluation checklist. While the project will provide recreational benefits, impacts to natural resources are likely to be significant. No design details are available at this time and specific impacts cannot be addressed. The construction of new dams would affect fish migration and water level changes would impact the existing stream ecology as well as adjacent bottomland habitat. Water quality would be affected during initial dredging. Dredge spoil, depending on its placement location, may have significant impacts. Further studies and details would be required on this project. A Section 404 permit may be required.

Real Estate Requirement: ___ acres to be acquired by the local sponsor for dredge material disposal sites

Des Moines River Boat Traffic (Cont'd)

Itemized Cost Estimate:

a. Channel dredging: selective, __ cy * \$6.00/cy =	?
b. Wing dams	?
c. Remove Scott Street Dam: 500 cy * \$200.00/cy =	100,000
d. Remove Center Street Dam: 2,000 cy * \$200.00/cy =	400,000
e. Construct new lock and dam	30,000,000
f. Modifications to Des Moines levees and sewers	5,000,000
g. Bank stabilization, as required	1,000,000
h. Fish and Wildlife mitigation	500,000

Subtotal -	\$37,000,000
Contingencies (25%) -	\$ 9,250,000

Subtotal -	\$46,250,000
Engineering and Design (7%) -	\$ 3,238,000
Supervision and Administration (5.5%) -	\$ 2,544,000

Total -	\$52,032,000

ENVIRONMENTAL EVALUATION CHECKLIST
Des Moines River Boat Traffic (Cont'd)

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					P
b. Displacement of People	X				
c. Aesthetic Values					P
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources				P	
c. Air Quality					P
d. Water Quality				P	
e. Threaten/Endangered Species					P
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 314.2

Project Title: Downtown Marina, Des Moines

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Downtown Des Moines

See Plate(s) Number: 101, 152

Project Description: This project consists of the construction of a marina which will provide dock space for approximately 250 boats. Improvements will include land acquisition, excavation and construction of a harbor site, boat ramp, fishing pier and an asphalt parking lot.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project is not likely to be economically justified.

Environmental Impacts: See the attached environmental evaluation checklist. The proposed project would result in benefits to recreation by providing additional facilities. Short-term impacts during the construction phase could include minor increases in business activity and employment and minor temporary degradation of air and water quality. Construction would take place within a heavily developed area and no significant impacts to natural resources, cultural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, or social and economic concerns are anticipated. A Section 404 permit may be required.

Real Estate Requirement: 5.5 acres to be acquired by the local sponsor. The tract is presently a power substation.

Downtown Marina, Des Moines (Cont'd)

Itemized Cost Estimate:

a. Excavation:	
500 ft * 250 ft * 16 ft = 74,070 cy * \$4.00/cy =	296,300
b. Lighting standards: 25 standards * \$2,625.00/standard =	65,600
c. Trash cans: 10 cans * \$130.00/can =	1,300
d. Fountain/hydrant: 2 fountains * \$500.00/fountain =	1,000
e. Benches: 10 benches * \$300.00/bench =	3,000
f. Trees: 10 trees * \$50.00/tree =	500
g. Shrubs: 10 shrubs * \$15.00/shrub =	200
h. Bulletin board: 3 boards * \$250.00/board =	800
i. Signs: 6 signs * \$25.00/sign =	200
j. Fence: chain link, 5 ft high, 750 ft * \$7.10/lf	5,300
k. Flush toilet	95,000
l. Fishing pier: 20 ft * 20 ft = 400 sf * \$25.00/sf =	10,000
m. Dump station	12,000
n. Boat ramp, concrete	35,000
o. Land acquisition: 5.5 ac * \$45,450.00/ac =	250,000
p. Parking lot: asphalt, 50 cars * \$500.00/car =	25,000
q. Concrete wall:	
500 ft * 15 ft * 2 ft = 555 cy * 325.00/cy =	180,400

	Subtotal - \$ 981,600
	Contingencies (25%) - \$ 245,400

	Subtotal - \$1,227,000
	Engineering and Design (7%) - \$ 85,900
	Supervision and Administration (5.5%) - \$ 67,500

	Total - \$1,380,400

ENVIRONMENTAL EVALUATION CHECKLIST
Downtown Marina, Des Moines

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues			P		
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 401.1

Project Title: Elk Rock State Park Improvements

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Elk Rock State Park, Marion County

See Plate(s) Number: 107, 108, 109, 110, 172, 173, 174, 175, 176, 177, 178, 179

Project Description: The project involves the construction of a beach, observation decks, an observation tower, day use facilities, bank stabilization, paved access roads and a 25-unit campground.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in benefits to recreation resources and aesthetic values by providing additional facilities and reducing overcrowding at the site. Short-term impacts during construction phase could include minor temporary increases in business activity and employment, and minor temporary degradation of air and water quality. Because most development will be within existing recreation areas, no significant impacts to natural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Most measures will require cultural resources survey. Cultural sites in or near the project area: 13 MA (444, 445, 219, 2, 80, 270, 159, 137, 157, 158, 36). A Section 404 permit may be required for boat launch facilities and shoreline protection.

Real Estate Requirement: All lands owned by the Corps of Engineers and outgranted to the State of Iowa

Elk Rock State Park Improvements (Cont'd)

Itemized Cost Estimate:

a. Beach: 400 ft * 200 ft = 80,000 ft ² * \$0.75/sf =	60,000
b. Observation deck: 10 ft * 20 ft = 200 sf * \$25.00/sf =	5,000
c. Observation deck: 10 ft * 20 ft = 200 sf * \$25.00/sf =	5,000
d. Observation tower	
1. Steel spiral stairway, 180 risers * \$180.00/riser =	32,400
2. Top platform, 2,000 sf * \$25.00/sf =	50,000
3. Viewing ports, 3 ports * \$1,000.00/port =	3,000
4. Entryway at base	10,000
e. Playground set	13,000
f. Large shelter	35,000
g. Boat ramp	
1. parking lot: gravel, 20 cars * \$120.00/car =	2,400
2. Access road: paved, 800 ft * \$52.00/ft =	41,600
h. Bank stabilization, riprap, 2500 ft * \$50.00/ft =	125,000
i. Bank stabilization, riprap, 3500 ft * \$50.00/ft =	175,000
j. Dump station	12,000
k. Boat ramp	
1. parking lot, gravel, 20 cars * \$120.00/car =	2,400
2. Access road, paved, 2300 ft * \$52.00/ft =	119,600
l. Access road, paved, 10,200 ft * \$52.00/ft =	530,400
m. Access road, paved, 14,400 ft * \$52.00/ft =	748,800
n. Parking lot, gravel, 20 cars * \$120.00/car =	2,400
o. Amphitheatre	6,000
p. Lift station	22,000
q. Campground	
1. Camping spur: 25 spurs * \$400.00/spur =	35,000
2. Trash cans: 25 cans * \$130.00/can =	3,300
3. Tent pads: 25 pads * \$400.00/pad =	10,000
4. Fire rings: 25 rings * \$150.00/ring =	3,800
5. Tables: 25 tables * \$275.00/table =	6,900
6. Access road: crushed stone, 1500 ft * \$15.00/lf =	22,500
7. Transformer	3,500
8. Spur pedestal, 25 pedestals * \$400.00/pedestal =	10,000
9. Conductor, 4250 feet * \$3.50/lf =	14,900

	Subtotal - \$2,111,000
	Contingencies (25%) - \$ 528,000

	Subtotal - \$2,639,000
	Engineering and Design (7%) - \$ 185,000
	Supervision and Administration (5.5%) - \$ 145,000

	Total - \$2,969,000

ENVIRONMENTAL EVALUATION CHECKLIST
Elk Rock State Park Improvements

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 402.1

Project Title: Red Rock 340 Acre Park

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Lake Red Rock, Marion County

See Plate(s) Number: 110, 111, 180

Project Description: The project involves the construction of a recreation area.

Reference: Red Rock Dam and Lake Red Rock, Des Moines River, Iowa, Supplement No. 1 to Resource Master Plan, Design Memorandum No. 24b, Coal Creek Bay Recreation Site, July 1979, U.S. Army Corps of Engineers, Rock Island District

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Unknown until specific actions are proposed. Known archaeological sites in or adjacent to project area: 13 MA (282, 101, 281, 286, 234, 283, 287, 285, 1, 102, 427, 25). Section 10/404 requirements are unknown at this time.

Real Estate Requirement: 10 acres to be acquired by the local sponsor

Itemized Cost Estimate: See attached sheets

DETAILED COST ESTIMATE 1/
INITIAL DEVELOPMENT

RED ROCK DAM RECREATION AREA
COAL CREEK BAY SITE 7

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
ADDITIONAL LANDS	10 ac.	L.S.	\$ 20,000.00	\$ 20,000.00
RECREATIONAL FACILITIES				
Roads & Parking Area				
Bituminous Roadway (22' width)	.6	mile	110,000.00	66,000.00
Bituminous Roadway (12'width)	.7	mile	60,000.00	42,000.00
Walks & Trails				
Foot Trails	10,500	L.F.	2.00	21,000.00
Camping Units (Primitive)				
Tent Pad	14	each	80.00	1,120.00
Picnic Table	14	each	250.00	3,500.00
Fire Ring	14	each	90.00	1,260.00
Trash Containers	4	each	125.00	500.00
Waste Water Drain	4	each	250.00	1,000.00
Water Distribution Facilities				
Water Line	7,300	L.F.	4.50	32,850.00
Drinking Fountain	2	each	600.00	1,200.00
Building				
Vault Toilet (Type II)	4	each	2,500.00	10,000.00
Landscape Planting	90 ac.	L.S.	30,000.00	30,000.00
Miscellaneous Items				
Signs	1	L.S.	1,500.00	1,500.00
Courtesy Dock	2	each	10,000.00	20,000.00

INITIAL DEVELOPMENT (Cont'd)

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
SUBTOTAL				231,930.00
Contingencies at <u>+15%</u>				<u>34,770.00</u>
TOTAL RECREATION FACILITIES				\$266,700.00
TOTAL (LANDS & FACILITIES)				\$286,700.00

1/ Unit costs based on 1 November 1977 prices, FDM 24c, dated Jan 78.

DETAILED COST ESTIMATE 1/
FUTURE DEVELOPMENT

RED ROCK DAM RECREATION AREA
COAL CREEK BAY SITE 7

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
RECREATIONAL FACILITIES				
Improve Existing County Road	.9	mile	\$100,000.00	\$90,000.00
Roads & Parking Area				
Bituminous Roadway (12'width)	.3	mile	60,000.00	18,000.00
Bituminous Parking Area	600	S.Y.	8.50	5,100.00
Walks & Trails				
Foot Trails	1,000	L.F.	2.00	2,000.00
Camping Units (Primitive)				
Tent Pad	6	each	80.00	480.00
Picnic Table	6	each	220.00	1,320.00
Fire Ring	6	each	90.00	540.00
Trash Containers	2	each	125.00	250.00
Waste Water Drain	2	each	250.00	500.00
Picnic Units				
Picnic Table	16	each	220.00	3,520.00
Fire Ring	2	each	90.00	180.00
Trash Container	4	each	125.00	500.00
Fireplace	7	each	150.00	1,050.00
Building				
Vault Toilet (Type II)	4	each	2,500.00	10,000.00
Picnic Shelter	1	each	30,000.00	30,000.00
Water Distribution Facilities				
Water Line	1,000	L.F.	4.50	4,500.00
Drinking Fountain	2	each	600.00	1,200.00
Electrical Distribution System				
Electric Line	3,000	L.F.	5.00	15,000.00

FUTURE DEVELOPMENT (Cont'd)

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
Electric Line (Secondary)	1,500	L.F.	3.00	4,500.00
Transformer and Pad	1	each	4,000.00	4,000.00
Area Light	4	each	600.00	2,400.00
Miscellaneous Items				
Signs	1	L.S.	750.00	750.00
Playground	1	each	15,000.00	15,000.00
SUBTOTAL				\$210,790.00
Contingencies at + 15%				<u>18,110.00</u>
TOTAL RECREATION FACILITIES				\$228,900.00

1/ Unit Costs based on 1 November 1977 prices, FDM 24c, dated Jan 78.

ENVIRONMENTAL EVALUATION CHECKLIST
Red Rock 340 Acre Park

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 403.1

Project Title: Marion County Park Improvements

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Marion County Park near Knoxville

See Plate(s) Number: 112, 186

Project Description: The project involves the expansion of the existing campground by 15 units.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Environmental impacts are unknown at this time. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the local sponsor.

Itemized Cost Estimate:

a. Camping spur: 15 spurs * \$1,400.00/spur =	21,000
b. Camping pad: 15 pads * \$400.00/pad =	6,000
c. Table: 15 tables * \$275.00/table =	4,100
d. Fire ring: 15 rings * \$150.00/ring =	2,300
e. Trash can: 15 cans * \$130.00/can =	2,000
f. Access road: crushed stone, 1,500 ft * \$15.00/lf =	22,500

Subtotal -	\$57,900
Contingencies (25%) -	\$14,500

Subtotal -	\$72,400
Engineering and Design (7%) -	\$ 5,100
Supervision and Administration (5.5%) -	\$ 4,000

Total -	\$81,500

ENVIRONMENTAL EVALUATION CHECKLIST
Marion Co. Park Improvements

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 404.1

Project Title: Runnells City Park Improvements

Project Purpose: Recreation

Local Sponsor: city of Runnells

Project Location: city of Runnells

See Plate(s) Number: 106, 187

Project Description: The project involves the construction of a 15-unit campground.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. The light camping and sanitation facilities would provide additional recreation benefits, while the tree plantings would have a positive effect on aesthetic values as well as providing shade to an area that is mown, open field. Short-term impacts during the construction phase may include minor temporary increases in business activity and employment and in minor temporary degradation of air and water quality. No significant impacts to natural resources, threatened or endangered species, prime or unique farmland, wild and scenic rivers, or social-economic concerns are anticipated. Cultural resources survey could be required. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Runnells.

Runnells City Park Improvements (Cont'd)

Itemized Cost Estimate:

a. Trees: 150 trees * \$50.00/tree =	7,500
b. Flush toilet	95,000
c. Camping, 15 units	
1. Camping spur: 15 spurs * \$1,400.00/spur =	21,000
2. Tent pads: 15 pads * \$400.00/pad =	6,000
3. Tables: 15 tables * \$275.00/table =	4,200
4. Fire rings: 15 rings * \$150.00/ring =	2,300
5. Trash cans: 15 cans * \$130.00/can =	2,000
d. Access road: crushed stone, 1300 ft * \$15.00/lf =	19,500

	Subtotal - \$157,400
	Contingencies (25%) - \$ 39,400

	Subtotal - \$196,800
	Engineering and Design (7%) - \$ 13,800
	Supervision and Administration (5.5%) - \$ 10,800

	Total - \$221,400

ENVIRONMENTAL EVALUATION CHECKLIST
Runnells City Park Improvements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			T		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					T
c. Air Quality					T
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 405.1

Project Title: Howard's Pond Subimpoundment

Project Purpose: Recreation

Local Sponsor: city of Runnells

Project Location: Southeast of the city of Runnells in the Lake Red Rock flood pool

See Plate(s) Number: 106, 188, 189

Project Description: The project involves the construction of a dike to establish a pond.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal.

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Unknown at this time. If construction or permanent inundation is proposed, cultural resources survey would be required. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Itemized Cost Estimate:

a. Dike:	
14,000 ft * 4.5 cy/lf * \$6.00/cy fill =	378,000
5 feet high, 3H:1V slopes, 10 ft top	
b. Gatewell	15,000
c. Parking lot: gravel, 20 cars * \$120.00/car =	2,400

	Subtotal - \$395,400
	Contingencies (25%) - \$ 98,900

	Subtotal - \$494,300
	Engineering and Design (7%) - \$ 34,600
	Supervision and Administration (5.5%) - \$ 27,200

	Total - \$556,100

ENVIRONMENTAL EVALUATION CHECKLIST
Howard's Pond Subimpoundment

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services	X				
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources		P			
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 406.1

Project Title: Congregational Church Overlook

Project Purpose: Recreation

Local Sponsor: city of Runnells

Project Location: city of Runnells

See Plate(s) Number: 106, 190

Project Description: The project involves the construction of an observation area adjacent to the Congregational Church. The church has historic significance since it's beginning is documented back to the early statehood days of Iowa.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services. Historic site would require evaluation for National Register eligibility. Short-term impacts during construction could include minor increases in employment, temporary elevations in noise levels, and minor temporary degradation of air quality. No significant impacts to endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: Less than 1 acre to be acquired by the local sponsor by donation.

Congregational Church Overlook (Cont'd)

Itemized Cost Estimate:

a. Small shelter	12,000
b. Observation deck: 20 ft * 20 ft = 400 sf * \$25.00/sf =	10,000
c. Steps:	
5 ft nose * 20 steps * \$15.00 lf nose =	1,500
d. Sheltered bulletin board	300

Subtotal -	\$23,800
Contingencies (25%) -	\$ 6,000

Subtotal -	\$29,800
Engineering and Design (7%) -	\$ 2,100
Supervision and Administration (5.5%) -	\$ 1,600

Total -	\$33,500

ENVIRONMENTAL EVALUATION CHECKLIST
Congregational Church Overlook

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion		P			
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues			P		
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 410.1

Project Title: Runnells Boat Ramp

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Section 3, T77N, R22W, just south of Runnells, Polk County

See Plate(s) Number: 106, 191

Project Description: The project involves the construction of a boat ramp and a gravel parking lot.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in benefits to recreation resources and public facilities/services by providing additional facilities and meeting a portion of recreation needs of the general public. Short-term impacts during construction could include minor temporary increases in business activity and employment, and minor temporary degradation of air and water quality. Riprap placement could provide some benefit to aquatic resources. Clearing and conversion of previously undeveloped areas could adversely affect natural resources through loss of vegetation and habitat. No significant impacts to endangered and threatened species, prime or unique farmland, wild and scenic river, or social and economic concerns are anticipated. Cultural resources survey could be required. Previous cultural resources surveys disclosed no sites in or near the project area; consequently, no impacts to cultural resources are anticipated. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State

Runnells Boat Ramp (Cont'd)

Itemized Cost Estimate:

a. Boat ramp, concrete	35,000
b. Parking lot: gravel, 5 cars * \$120.00/car =	600
c. Access road, crushed stone, 5000 ft * \$15.00/lf =	75,000

Subtotal -	\$110,600
Contingencies (25%) -	\$ 27,700

Subtotal -	\$138,300
Engineering and Design (7%) -	\$ 9,700
Supervision and Administration (5.5%) -	\$ 7,600

Total -	\$155,600

ENVIRONMENTAL EVALUATION CHECKLIST
Runnells Boat Ramp

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 413.1

Project Title: Harvey Boat Ramp

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Section 12, Clay Township, Marion County

See Plate(s) Number: 114, 216

Project Description: The project involves the construction of a concrete boat ramp and gravel parking lot.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in benefits to recreation resources and public facilities/services by providing additional facilities and meeting a portion of recreation needs of the general public. Short-term impacts during construction could include minor temporary increases in business activity and employment, and minor temporary degradation of air and water quality. Riprap placement could provide some benefit to aquatic resources. Clearing and conversion of previously undeveloped areas could adversely affect natural resources through loss of vegetation and habitat. No significant impacts to endangered and threatened species, prime or unique farmland, wild and scenic river, or social and economic concerns are anticipated. Cultural resources survey could be required. A Section 404 permit may be required.

Real Estate Requirement: 5 acres to be acquired by the local sponsor

Harvey Boat Ramp (Cont'd)

Itemized Cost Estimate:

a. Land acquisition: 5 ac * \$500.00/ac =	2,500
b. Boat ramp, concrete	35,000
c. Parking lot: gravel, 5 car * \$120.00/car =	600
d. Access road, crushed stone, 3500 ft * \$15.00/lf =	52,500

Subtotal -	\$ 90,600
Contingencies (25%) -	\$ 22,700

Subtotal -	\$113,300
Engineering and Design (7%) -	\$ 7,900
Supervision and Administration (5.5%) -	\$ 6,200

Total -	\$127,400

ENVIRONMENTAL EVALUATION CHECKLIST
Harvey Boat Ramp

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					T
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 801.1

Project Title: Scenic Valley Road Route

Project Purpose: Recreation

Local Sponsor: Multiple

Project Location: Entire Greenbelt

See Plate(s) Number: See Section 3-Trails Maps for Appendix D

Project Description: Establish a scenic road route along existing county and state roads for viewing points of interest along the Des Moines River. Construction would involve the placement of distinctive road signs.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing an established scenic route for visitors to the Greenbelt. Possible negative impacts could include an increase in fugitive dust emissions and increased maintenance and repair needs along the route. Because the project would involve existing roadways and construction would primarily involve signage and establishment of overlook areas, no significant impacts to natural or cultural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the local sponsors.

Itemized Cost Estimate:

a. Signs: __ road signs * \$25.00/sign =		?
	Subtotal - \$	
	Contingencies (25%) - \$	

	Subtotal - \$	
	Engineering and Design (7%) - \$	
	Supervision and Administration (5.5%) - \$	

	Total - \$	

ENVIRONMENTAL EVALUATION CHECKLIST
Scenic Valley Road Route

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					P
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 802.1

Project Title: Greenbelt Multi-Purpose Trail

Project Purpose: Recreation

Local Sponsor: Boone
Carlisle
Dayton
Des Moines
Fort Dodge
Fraser
Johnston
Lehigh
Madrid
Pleasant Hill
Runnells
Stratford
Webster City
West Des Moines

Boone County
Hamilton County
Marion County
Polk County
Warren County
Webster County

Iowa Department of Natural Resources

Project Location: Entire Greenbelt corridor

See Plate(s) Number: See Section 3-Trails Maps for Appendix D

Project Description: Construction of a multi-purpose trail throughout the entire Greenbelt corridor.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis. More extensive data gathering will be required for this analysis.

Greenbelt Multi-Purpose Trail (Cont'd)

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional trail facilities. Short-term impacts during construction could include minor increases in employment, and business activity, and minor temporary degradation of air and water quality. Construction in undeveloped areas could result in some loss of habitat. While property values in areas adjacent to the trail alignment could increase, some loss of tax revenues could result from public acquisition of land for the project. No significant impacts to other social or economic concerns, endangered and threatened species, or wild and scenic rivers would be anticipated. Some conversion of prime or unique farmland could result from this action. Cultural resources survey would be required. A Section 10/404 permit may be required.

Real Estate Requirement: ___ acres of lands, easements and rights-of-way to be acquired by the local sponsor. Some lands are owned by the Corps of Engineers, State of Iowa, and local governmental bodies.

Itemized Cost Estimate: See appendix D, Trail Plans

ENVIRONMENTAL EVALUATION CHECKLIST
Greenbelt Multi-Purpose Trail

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement					P
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources		P			
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland					P
h. Wild and Scenic Rivers	X				

Project Number: 802.2

Project Title: Jester Park Trail

Project Purpose: Recreation

Local Sponsor: Polk County

Project Location: Jester County Park, Polk County

See Plate(s) Number: 276, 277, 278

Project Description: The project involves the construction of a trail at Jester County Park.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional trail facilities. Short-term impacts during construction could include minor increases in employment, and business activity, and minor temporary degradation of air and water quality. Construction in undeveloped areas could result in some loss of habitat. While property values in areas adjacent to the trail alignment could increase, some loss of tax revenues could result from public acquisition of land for the project. No significant impacts to other social or economic concerns, endangered and threatened species, or wild and scenic rivers would be anticipated. Some conversion of prime or unique farmland could result from this action. Cultural resources survey would be required. A Section 10/404 permit may be required.

Real Estate Requirement: All lands are owned by the local sponsor

Itemized Cost Estimate:

a. Trail: unpaved, 15,000 ft * \$2.25/1f =	33,800
Contingencies (25%) - \$	8,500

Subtotal -	\$42,300
Engineering and Design (7%) -	\$ 3,000
Supervision and Administration (5.5%) -	\$ 2,300

Total -	\$47,600

ENVIRONMENTAL EVALUATION CHECKLIST
Jester Park Trail

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement					P
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources		P			
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					T
g. Prime and Unique Farmland					P
h. Wild and Scenic Rivers	X				

Project Number: 802.3

Project Title: Brown's Woods Trail

Project Purpose: Recreation

Local Sponsor: Polk County

Project Location: Brown's Woods County Forest

See Plate(s) Number: 286

Project Description: The project involves the construction of a trail in Brown's Woods County Forest.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Proposed project would benefit recreation resources and public facilities/services by providing additional facilities. Short-term impacts during construction could include minor increases in employment, and minor temporary degradation of air and water quality. Construction of trail could also result in some loss of habitat. No significant impacts to endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the local sponsor

Itemized Cost Estimate:

a. Trail: unpaved, 7,000 ft * \$2.25/lf =	15,800
	Contingencies (25%) - \$ 4,000

	Subtotal - \$19,800
	Engineering and Design (7%) - \$ 1,400
	Supervision and Administration (5.5%) - \$ 1,100

	Total - \$22,300

ENVIRONMENTAL EVALUATION CHECKLIST
Brown's Woods Trail

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force				T	
k. Business/Industry Activity				T	
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 803.1

Project Title: Des Moines River Fishing Piers

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Along the Des Moines River

See Plate(s) Number:

Project Description: Locate approximately 10 handicap-accessible fishing piers at convenient locations, preferably in conjunction with other recreation facility developments.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional facilities. Short-term impacts during construction could include minor temporary increases in employment, and minor temporary degradation of air and water quality. No significant impacts to natural farmland, wild and scenic rivers, or economic and social concerns are anticipated. Cultural resources survey could be required. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the local sponsor.

Itemized Cost Estimate:

a. Fishing pier: 10 piers * \$75,000.00/pier =	750,000
	Contingencies (25%) - \$ 187,500

	Subtotal - \$ 937,500
	Engineering and Design (7%) - \$ 65,600
	Supervision and Administration (5.5%) - \$ 51,600

	Total - \$1,055,000

ENVIRONMENTAL EVALUATION CHECKLIST
Des Moines River Fishing Piers

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion	X		P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 803.2

Project Title: Kate Shelley Bridge Fishing Access

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Saylorville Wildlife Area, Boone County

See Plate(s) Number: 89, 195

Project Description: The purpose of this project is to develop a parking lot and foot path for fishing access adjacent to the Des Moines River in Boone County.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in some benefits to recreation resources by providing public access to the river by vehicle in this area. Short-term impacts during construction could include minor temporary increases in business activity and employment, and minor temporary degradation of air and water quality. Clearing and conversion of presently undeveloped areas could have some adverse effect on natural resources through loss of vegetation and habitat. No significant impacts to endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Cultural resources survey would be required. Two known archaeological sites (13BN176 and 13BN143) are located near the proposed location. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State

Kate Shelley Bridge Fishing Access (Cont'd)

Itemized Cost Estimate:

a. Trail: unpaved, 200 ft * \$2.25/lf =	500
b. Parking lot: gravel, 5 car * \$120.00/car =	600

Subtotal -	\$1,100
Contingencies (25%) -	\$ 300

Subtotal -	\$1,400
Engineering and Design (7%) -	\$ 100
Supervision and Administration (5.5%) -	\$ 100

Total -	\$1,600

ENVIRONMENTAL EVALUATION CHECKLIST
Kate Shelley Bridge Fishing Access

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources				T	
b. Natural Resources					P
c. Air Quality				T	
d. Water Quality				T	
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 803.3

Project Title: Handicapped Fishing Piers

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: city of Des Moines

See Plate(s) Number:

Project Description: This project provides for the construction of handicapped fishing piers extending over the riverbank at various riverfront sites throughout the city. These would be provided with suitable wheelchair ramps and walkways so that non-ambulatory persons could have fishing access at the river's edge.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by providing additional facilities. Short-term impacts during construction could include minor increases in employment, and minor temporary degradation of air and water quality. No significant impacts to natural or cultural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the local sponsor.

Itemized Cost Estimate:

a. Handicapped fishing pier: 10 piers * \$75,000.00/pier = 750,000

Contingencies (25%) - \$ 188,000

Subtotal - \$ 938,000

Engineering and Design (7%) - \$ 66,000

Supervision and Administration (5.5%) - \$ 52,000

Total - \$1,056,000

ENVIRONMENTAL EVALUATION CHECKLIST
Handicapped Fishing Piers

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources					T
c. Air Quality					T
d. Water Quality			P		
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 803.4

Project Title: Prospect Park Fishing Piers

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: Prospect Park adjacent to the west bank of the Des Moines River upstream of the 6th Avenue bridge.

See Plate(s) Number: 101, 161

Project Description: The project involves the construction of 5 fishing piers.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities. Short-term impacts during construction could include minor increases in employment and business activity, and minor temporary degradation of air and water quality. Because the project is located in a developed urban area, no significant impacts to natural or cultural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. A Section 10/404 permit may be required.

Real Estate Requirement: All lands are owned by the Corps of Engineers and are outgranted to the city of Des Moines.

Itemized Cost Estimate:

a. Fishing platforms,	
1. Platform:	
20 ft * 20 ft = 400 sf * 5 platforms * \$25.00/sf =	50,000
2. Sidewalk:	
40 ft * 5 sidewalks * \$11.00/lf =	2,200
b. Small shelter	13,000

	Subtotal - \$65,200
	Contingencies (25%) - \$16,300

	Subtotal - \$81,500
	Engineering and Design (7%) - \$ 5,700
	Supervision and Administration (5.5%) - \$ 4,500

	Total - \$91,700

ENVIRONMENTAL EVALUATION CHECKLIST
Prospect Park Fishing Piers

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 803.5

Project Title: Scott Street Dam Fishing Access

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Scott Street Dam, city of Des Moines

See Plate(s) Number: 102, 196

Project Description: The project involves the construction of fishing access near the Scott Street Dam in Des Moines. Facilities would consist of two small gravel parking lots, a stairway and handicapped-accessible ramp from each parking lot, and a concrete walkway/fishing pad along the river bank.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in some benefits to recreation resources by providing public access to the river by vehicle in this area. Short-term impacts during construction could include minor temporary increases in business activity and employment, and minor temporary degradation of air and water quality. Clearing and conversion of presently undeveloped areas could have some adverse effect on natural resources through loss of vegetation and habitat. No significant impacts to endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. No significant impacts to cultural resources would be anticipated. Two known archaeological sites (13BN176 and 13BN143) are located near the proposed location. A Section 404 permit could be required if placement of fill within the channel would be involved.

Real Estate Requirement: 1 acre to be acquired by the local sponsor. There are two pieces to this tract. One is on the east bank and the other is on the west bank of the Des Moines River. The land is currently parking lots.

Scott Street Dam Fishing Access (Cont'd)

Itemized Cost Estimate:

a. Parking lot: gravel, 10 cars * 2 lots * \$120.00/car =	2,400
b. Stairs, 2 sets,	
1. Steps:	
3 ft nose * 40 steps * 2 sets * \$15.00/ lf nose =	3,600
2. Handrail: 30 ft * 4 rails * \$26.00/lf =	1,600
d. Ramp (sidewalk), 10H:1V slope,	
1. Ramp: 300 ft * 2 ramps * \$11.00/lf =	6,600
2. Handrail: 300 ft * 4 rails * \$26.00/lf =	31,200
e. Fishing pad (sidewalk): 300 ft * 2 sets * \$11.00/lf =	6,600
f. Land acquisition: 1 ac * \$10,000.00/ac =	10,000

	Subtotal - \$62,000
	Contingencies (25%) - \$15,500

	Subtotal - \$77,500
	Engineering and Design (7%) - \$ 5,400
	Supervision and Administration (5.5%) - \$ 4,300

	Total - \$87,200

ENVIRONMENTAL EVALUATION CHECKLIST
Scott Street Dam Fishing Access

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 803.6

Project Title: Red Rock Fishing Piers

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: Below the Lake Red Rock dam, Marion County

See Plate(s) Number: 111, 197

Project Description: Construct two handicapped fishing piers below the dam, one on each side of the river. Construct a walkway over the riprapped banks to provide safe fishing access down to and along the river bank.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in some benefits to recreation resources and public facilities/services by providing additional facilities and access for handicapped individuals. Short-term impacts during construction phase could include minimal increases in business activity and employment during the construction phase and minor temporary degradation in water quality. Because construction will take place along riprapped banks directly down stream of the dam, no significant impacts to natural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, or economic and social concerns, or cultural resources are anticipated. A Section 10/404 permit would be required for this action.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Red Rock Fishing Piers (Cont'd)

Itemized Cost Estimate:

a. Trail: paved, 500 ft * \$40.00/lf =	20,000
b. Fishing platform: 20 ft * 20 ft = 400 sf * \$25.00/sf =	10,000
c. Trail: paved, 500 ft * \$40.00/lf =	20,000
d. Fishing platform, 20 ft * 20 ft = 400 sf * \$25.00/sf =	10,000

Subtotal -	\$60,000
Contingencies (25%) -	\$15,000

Subtotal -	\$75,000
Engineering and Design (7%) -	\$ 5,300
Supervision and Administration (5.5%) -	\$ 4,100

Total -	\$84,400

ENVIRONMENTAL EVALUATION CHECKLIST
Red Rock Fishing Piers

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 805.5

Project Title: Bird Watching Stations

Project Purpose: Recreation

Local Sponsor: Iowa Department of Natural Resources

Project Location: To be determined

See Plate(s) Number:

Project Description: The project involves the construction of bird watching stations.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Proposed project would benefit recreation resources by providing additional opportunities for passive recreation. Specific sites have not yet been determined; however, no significant impacts to environmental, cultural, economic or social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: To be determined

Itemized Cost Estimate: To be determined

ENVIRONMENTAL EVALUATION CHECKLIST
Bird Watching Stations

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 806.1

Project Title: Scenic View No. 1

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: city of Des Moines

See Plate(s) Number: 100, 162

Project Description: This project provides for the development of a scenic overlook and improvements will include brush clearing and landscaping.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources, aesthetic values and public facilities/services by enhancing existing facilities and providing additional opportunities for passive recreation. Some benefits to natural resources could result from plantings; however, some existing urban wildlife habitat could be lost through clearing of brush and dead trees. No significant impacts to endangered and threatened species, cultural resources, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines.

Itemized Cost Estimate:

a. Scenic View # 1

1. Tree and brush removal: 1/2 ac * \$1,350/ac =	700
2. Trees: 10 trees * \$50.00/tree =	500
3. Shrubs: 10 shrubs * \$15.00/shrub =	200

Subtotal - \$1,400

Contingencies (25%) - \$ 400

Subtotal - \$1,800

Engineering and Design (7%) - \$ 100

Supervision and Administration (5.5%) - \$ 100

Total - \$2,000

ENVIRONMENTAL EVALUATION CHECKLIST
Scenic View No. 1

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 806.2

Project Title: Scenic View No. 2

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: city of Des Moines

See Plate(s) Number: 101, 220

Project Description: This project provides for the development of a scenic overlook and improvements will include brush clearing and landscaping.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources, aesthetic values and public facilities/services by enhancing existing facilities and providing additional opportunities for passive recreation. Some benefits to natural resources could result from plantings; however, some existing urban wildlife habitat could be lost through clearing of brush and dead trees. No significant impacts to endangered and threatened species, cultural resources, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines.

Itemized Cost Estimate:

a. Scenic View # 2

1. Tree and brush removal: 1/2 ac * \$1,350/ac =	700
2. Trees: 10 trees * \$50.00/tree =	500
3. Shrubs: 10 shrubs * \$15.00/shrub =	200

Subtotal - \$1,400

Contingencies (25%) - \$ 400

Subtotal - \$1,800

Engineering and Design (7%) - \$ 100

Supervision and Administration (5.5%) - \$ 100

Total - \$2,000

ENVIRONMENTAL EVALUATION CHECKLIST
Scenic View No. 2

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 806.3

Project Title: Scenic View No. 3

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: city of Des Moines

See Plate(s) Number: 101, 220

Project Description: This project provides for the development of a scenic overlook and improvements will include brush clearing and landscaping.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources, aesthetic values and public facilities/services by enhancing existing facilities and providing additional opportunities for passive recreation. Some benefits to natural resources could result from plantings; however, some existing urban wildlife habitat could be lost through clearing of brush and dead trees. No significant impacts to endangered and threatened species, cultural resources, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines.

Itemized Cost Estimate:

a. Scenic View # 3

1. Tree and brush removal: 1/2 ac * \$1,350/ac =	700
2. Trees: 10 trees * \$50.00/tree =	500
3. Shrubs: 10 shrubs * \$15.00/shrub =	200

Subtotal - \$1,400

Contingencies (25%) - \$ 400

Subtotal - \$1,800

Engineering and Design (7%) - \$ 100

Supervision and Administration (5.5%) - \$ 100

Total - \$2,000

ENVIRONMENTAL EVALUATION CHECKLIST
Scenic View No. 3

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 806.4

Project Title: Scenic View No. 4

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: city of Des Moines

See Plate(s) Number: 101, 221

Project Description: This project provides for the development of a scenic overlook and improvements will include brush clearing and landscaping.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources, aesthetic values and public facilities/services by enhancing existing facilities and providing additional opportunities for passive recreation. Some benefits to natural resources could result from plantings; however, some existing urban wildlife habitat could be lost through clearing of brush and dead trees. No significant impacts to endangered and threatened species, cultural resources, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines.

Itemized Cost Estimate:

a. Scenic View # 4

1. Tree and brush removal: 1/2 ac * \$1,350/ac =	700
2. Trees: 10 trees * \$50.00/tree =	500
3. Shrubs: 10 shrubs * \$15.00/shrub =	200

Subtotal - \$1,400

Contingencies (25%) - \$ 400

Subtotal - \$1,800

Engineering and Design (7%) - \$ 100

Supervision and Administration (5.5%) - \$ 100

Total - \$2,000

ENVIRONMENTAL EVALUATION CHECKLIST
Scenic View No. 4

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE		
		MAJOR	MINOR	MAJOR	MINOR	
1. SOCIAL/ECONOMIC IMPACTS						
a. Noise	X					
b. Displacement of People	X					
c. Aesthetic Values			P			
d. Community Cohesion			P			
e. Desirable Community Growth	X					
f. Property Values	X					
g. Tax Revenues	X					
h. Public Facilities/Services			P			
i. Desirable Regional Growth	X					
j. Employment/Labor Force			T			
k. Business/Industry Activity			T			
l. Farm Displacement	X					
m. Existing Land Use Plans	X					
2. ENVIRONMENTAL IMPACTS						
a. Recreation Resources			P			
b. Natural Resources			P			
c. Air Quality	X					
d. Water Quality	X					
e. Threaten/Endangered Species	X					
f. Archaeological/Historical	X					
g. Prime and Unique Farmland	X					
h. Wild and Scenic Rivers	X					

Project Number: 806.5

Project Title: Scenic View No. 5

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: city of Des Moines

See Plate(s) Number: 101, 222

Project Description: This project provides for the development of a scenic overlook and improvements will include brush clearing and landscaping.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources, aesthetic values and public facilities/services by enhancing existing facilities and providing additional opportunities for passive recreation. Some benefits to natural resources could result from plantings; however, some existing urban wildlife habitat could be lost through clearing of brush and dead trees. No significant impacts to endangered and threatened species, cultural resources, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines.

Itemized Cost Estimate:

a. Scenic View # 5

1. Tree and brush removal: 1/2 ac * \$1,350/ac =	700
2. Trees: 10 trees * \$50.00/tree =	500
3. Shrubs: 10 shrubs * \$15.00/shrub =	200

Subtotal - \$1,400

Contingencies (25%) - \$ 400

Subtotal - \$1,800

Engineering and Design (7%) - \$ 100

Supervision and Administration (5.5%) - \$ 100

Total - \$2,000

ENVIRONMENTAL EVALUATION CHECKLIST
Scenic View No.5

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 806.6

Project Title: Scenic View No. 6

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: city of Des Moines

See Plate(s) Number: 102, 167

Project Description: This project provides for the development of a scenic overlook and improvements will include brush clearing and landscaping.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources, aesthetic values and public facilities/services by enhancing existing facilities and providing additional opportunities for passive recreation. Some benefits to natural resources could result from plantings; however, some existing urban wildlife habitat could be lost through clearing of brush and dead trees. No significant impacts to endangered and threatened species, cultural resources, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines.

Itemized Cost Estimate:

a. Scenic View # 6

1. Tree and brush removal: 1/2 ac * \$1,350/ac =	700
2. Trees: 10 trees * \$50.00/tree =	500
3. Shrubs: 10 shrubs * \$15.00/shrub =	200

Subtotal - \$1,400

Contingencies (25%) - \$ 400

Subtotal - \$1,800

Engineering and Design (7%) - \$ 100

Supervision and Administration (5.5%) - \$ 100

Total - \$2,000

ENVIRONMENTAL EVALUATION CHECKLIST
Scenic View No. 6

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 806.7

Project Title: Scenic View No. 7

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: city of Des Moines

See Plate(s) Number: 102, 171

Project Description: This project provides for the development of a scenic overlook and improvements will include brush clearing and landscaping.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources, aesthetic values and public facilities/services by enhancing existing facilities and providing additional opportunities for passive recreation. Some benefits to natural resources could result from plantings; however, some existing urban wildlife habitat could be lost through clearing of brush and dead trees. No significant impacts to endangered and threatened species, cultural resources, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines.

Itemized Cost Estimate:

a. Scenic View # 7

1. Tree and brush removal: 1/2 ac * \$1,350/ac =	700
2. Trees: 10 trees * \$50.00/tree =	500
3. Shrubs: 10 shrubs * \$15.00/shrub =	200

Subtotal - \$1,400

Contingencies (25%) - \$ 400

Subtotal - \$1,800

Engineering and Design (7%) - \$ 100

Supervision and Administration (5.5%) - \$ 100

Total - \$2,000

ENVIRONMENTAL EVALUATION CHECKLIST
Scenic View No. 7

KEY:	NO EFFECT	BENEFICIAL		ADVERSE		
		MAJOR	MINOR	MAJOR	MINOR	
T = Temporary P = Permanent						
1. SOCIAL/ECONOMIC IMPACTS						
a. Noise	X					
b. Displacement of People	X					
c. Aesthetic Values			P			
d. Community Cohesion			P			
e. Desirable Community Growth	X					
f. Property Values	X					
g. Tax Revenues	X					
h. Public Facilities/Services			P			
i. Desirable Regional Growth	X					
j. Employment/Labor Force			T			
k. Business/Industry Activity			T			
l. Farm Displacement	X					
m. Existing Land Use Plans	X					
2. ENVIRONMENTAL IMPACTS						
a. Recreation Resources			P			
b. Natural Resources			P			
c. Air Quality	X					
d. Water Quality	X					
e. Threaten/Endangered Species	X					
f. Archaeological/Historical	X					
g. Prime and Unique Farmland	X					
h. Wild and Scenic Rivers	X					

Project Number: 806.8

Project Title: Scenic View No. 8

Project Purpose: Recreation

Local Sponsor: city of Des Moines

Project Location: city of Des Moines

See Plate(s) Number: 102, 196

Project Description: This project provides for the development of a scenic overlook and improvements will include brush clearing and landscaping.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources, aesthetic values and public facilities/services by enhancing existing facilities and providing additional opportunities for passive recreation. Some benefits to natural resources could result from plantings; however, some existing urban wildlife habitat could be lost through clearing of brush and dead trees. No significant impacts to endangered and threatened species, cultural resources, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the city of Des Moines.

Itemized Cost Estimate:

a. Scenic View # 8	
1. Tree and brush removal: 1/2 ac * \$1,350/ac =	700
2. Trees: 10 trees * \$50.00/tree =	500
3. Shrubs: 10 shrubs * \$15.00/shrub =	200

	Subtotal - \$1,400
	Contingencies (25%) - \$ 400

	Subtotal - \$1,800
	Engineering and Design (7%) - \$ 100
	Supervision and Administration (5.5%) - \$ 100

	Total - \$2,000

ENVIRONMENTAL EVALUATION CHECKLIST
Scenic View No. 8

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

COST-SHARED ENVIRONMENTAL ENHANCEMENT PROJECTS

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Project Number: 101.1

Project Title: Boone Forks Wildlife Management Area

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Boone River Corridor-Tunnel Mill to mouth, approximately 10 river miles, Hamilton County

See Plate(s) Number: 224, 225, 226, 227, 228, 229, 230, 231

Project Description: Acquire 25,000 acres of land along the Boone River from the Tunnell Mill Wildlife Area to its confluence with the Des Moines River. Timber land and associated cropland and pasture land would be acquired within the Greenbelt boundary on each side of the Boone River.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. The project would provide some benefits to the natural and recreational resources and to aesthetic values. Some benefits to endangered or threatened species could occur as a result of this action. No adverse impacts to cultural resources are anticipated. The project is compatible with existing land use plans. Some displacement of farms and/or people may occur and some tax revenues from privately-owned land may be lost. Acquisition is expected to be on a willing-seller basis. No irreversible conversion of prime or unique farmland will result from this action. Section 10/404 requirements are not applicable.

Real Estate Requirement: 25,000 acres to be acquired by the local sponsor. The land is located along the Boone River.

Boone Forks Wildlife Management Area (Cont'd)

Itemized Cost Estimate:

a. Land acquisition, 25,000 ac * \$600.00/ac =	15,000,000
b. Parking lot: gravel, 50 cars * \$120.00/car =	6,000
c. Signs: 25 signs * \$50.00/sign =	1,300
d. Fencing: wire fence, 132,000 ft * \$8.40/lf =	1,109,000

Subtotal -	\$16,116,000
Contingencies (25%) -	\$ 4,029,000

Subtotal -	\$20,145,000
Engineering and Design (7%) -	\$ 1,410,000
Supervision and Administration (5.5%) -	\$ 1,108,000

Total -	\$22,663,000

ENVIRONMENTAL EVALUATION CHECKLIST
Boone Forks Wildlife Management Area

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People					P
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues				P	
h. Public Facilities/Services		P			
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement					P
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers			P		

Project Number: 102.1

Project Title: State Forest Acquisition and Development

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Dodge and Yell Townships, Boone County

See Plate(s) Number: 232, 233, 234, 235, 236, 237

Project Description: Create a 10,000-acre State Forest and 40-unit campground near Fraser in Boone County, incorporating the present 333-acre Holst State Forest and 40-acre Barkley State Forest. The area would contain at least two units, one on each side of the Des Moines River, and would include a high percentage of very steep forested land.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. The project would provide some benefits to natural and recreation resources and to aesthetic values. Some benefits to Federal and State-listed endangered and threatened species could occur as a result of this action. Enhancement of forest and grass cover could result in some improvement in water quality through reducing erosion rates. No conflicts with existing land-use plans are anticipated. Some displacement of people and/or farms may occur and some tax revenue from privately-owned land may be lost. Acquisition is expected to be on a willing-seller basis. No significant impacts to other social or economic concerns are anticipated. No irreversible conversion of prime or unique farmland will result from the action. Acquisition would be expected to have some beneficial effect on cultural resources in the area if no construction or other land modification is proposed. Section 10/404 requirements are not applicable.

Real Estate Requirement: 10,000 acres to be acquired by the local sponsor. This tract is a designated area near Fraser. The average fee is estimated at \$750 per acre which is the value of a total farm buy-out and includes improvements.

State Forest Acquisition and Development (Cont'd)

Itemized Cost Estimate:

a. Land acquisition: 10,000 ac * \$750.00/ac =	7,500,000
b. Trails: unpaved, 185,000 ft * \$2.25/ft =	416,300
c. Camping spur: 40 spurs * \$1,400.00/spur =	56,000
d. Tent pads: 40 pads * \$400.00/pad =	16,000
e. Fire rings: 40 rings * \$150.00/ring =	6,000
f. Tables: 40 tables * \$275.00/table =	11,000
g. Trash can: 40 cans * \$130.00/can =	5,200
h. Access road: crushed stone, 24,000 ft * \$15.00/lf =	360,000

Subtotal - \$	8,370,500
Contingencies (25%) - \$	2,092,600

Subtotal - \$	10,463,100
Engineering and Design (7%) - \$	732,400
Supervision and Administration (5.5%) - \$	575,500

Total - \$	11,771,000

ENVIRONMENTAL EVALUATION CHECKLIST
State Forest Acquisition and Development

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People					P
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues				P	
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement					P
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality			P		
e. Threaten/Endangered Species			P		
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 207.1

Project Title: Saylorville Refuge Expansion

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Saylorville Wildlife Management Area, Sections 1, 2 and 12, T80N, R25W, Polk County

See Plate(s) Number: 98, 149

Project Description: The purpose of this project is to expand the current 551-acre waterfowl refuge near Polk City by developing a water control structure and dike along the abandoned portion of old Highway 415. This project would create approximately 50-75 additional acres of prime waterfowl habitat.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in some benefits to natural resources, recreation resources, and public facilities/services. Loss of terrestrial habitat would likely be offset by creation of additional aquatic habitat. Short-term impacts during construction could include minor temporary increases in employment, and minor temporary degradation of air and water quality. No significant impacts to threatened and endangered species, prime or unique farmland, wild and scenic rivers, and economic or social concerns are anticipated. Cultural resources survey would be required. One known site (13PK 32) is located in the project area. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State.

Saylorville Refuge Expansion (Cont'd)

Itemized Cost Estimate:

a. Gatewell	15,000
b. Dike: 7,250 ft * \$24.00/lf =	174,000
c. Water pump	20,000
d. Bank stabilization: 1,000 ft * \$50.00/lf =	50,000
d. Reforestation: 500 ft * 500 ft = 5.7 ac * \$1,400.00/ac =	8,000

Subtotal -	\$267,000
Contingencies (25%) -	\$ 66,800

Subtotal -	\$333,800
Engineering and Design (7%) -	\$ 23,400
Supervision and Administration (5.5%) -	\$ 18,400

Total -	\$375,600

ENVIRONMENTAL EVALUATION CHECKLIST
Saylorville Refuge Expansion

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 208.1

Project Title: Johnston Nursery

Project Purpose: Environmental Enhancement

Local Sponsor: city of Johnston

Project Location: 5400 block of NW Beaver Drive, Lot 3, B.L. Peters Plat No. 1, city of Johnston

See Plate(s) Number: 100, 150

Project Description: Develop a city nursery at the rear of Bomber's Field to provide for trees and shrubs in Greenbelt and park areas in the city.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Proposed project would benefit recreation resources, public facilities/services and aesthetic values by providing plantings for recreation and Greenbelt areas. No significant impacts to natural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Cultural resources survey would be required. Known sites in or adjacent to project area: 13 PK 437. Section 10/404 requirements are not applicable.

Real Estate Requirement: 2 acres to be acquired by the local sponsor.

Itemized Cost Estimate:

a. Land Acquisition: 2 ac * \$ _____/ac =	?
b. Reforestation: 2 ac * \$1,400.00/ac =	2,800

Contingencies (25%) - \$

Subtotal - \$

Engineering and Design (7%) - \$

Supervision and Administration (5.5%) - \$

Total - \$

ENVIRONMENTAL EVALUATION CHECKLIST
Johnston Nursery

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 801.4

Project Title: Conservation Easements

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Greenbelt-wide

See Plate(s) Number:

Project Description: Conservation easements of valuable wildlife habitat and scenic areas within the Greenbelt.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit natural and recreation resources by preserving wildlife habitat and scenic areas. No significant impacts to cultural resources, prime and unique farmland, wild and scenic rivers, or economic and social concerns would be anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: ___ acres of conservation easements to be acquired by the local sponsor. The extent of the conservation easements is unknown, and the value is subject to change depending on the restrictions in the easement.

Itemized Cost Estimate:

a. Conservation easement: ___ ac * \$100.00/ac = ?

	Subtotal - \$	
	Contingencies (25%) - \$	

	Subtotal - \$	
	Engineering and Design (7%) - \$	
	Supervision and Administration (5.5%) - \$	

	Total - \$	

ENVIRONMENTAL EVALUATION CHECKLIST
Conservation Easements

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services	X				
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.1

Project Title: Native Plantings No. 1

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Saylorville Wildlife Area, Polk and Dallas Counties

See Plate(s) Number: 92, 198

Project Description: The purpose of this project is to develop native prairie plantings at selected sites in upland areas of the Saylorville Wildlife Area.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide quality undisturbed nesting cover and secure winter cover for wildlife, and would result in some benefits to natural resources, recreation resources, public facilities/services, and aesthetic values. No significant impacts to air or water quality, endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Cultural resources survey may be required. Known sites in or near project areas: 13 PK (415, 414, 400, 424, 401, 402, 403, 406, 413). Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State.

Itemized Cost Estimate:

a. Native plantings #1, 1600 ft * 700 ft = 26 ac * \$350.00/ac =	9,100
Contingencies (25%) -	\$ 2,300

Subtotal -	\$11,400
Engineering and Design (7%) -	\$ 800
Supervision and Administration (5.5%) -	\$ 600

Total -	\$12,800

ENVIRONMENTAL EVALUATION CHECKLIST
Native Plantings No. 1

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.2

Project Title: Native Plantings No. 2

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Saylorville Wildlife Area, Polk and Dallas County

See Plate(s) Number: 93, 199

Project Description: The purpose of this project is to develop native prairie plantings at selected sites in upland areas of the Saylorville Wildlife Area.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide quality undisturbed nesting cover and secure winter cover for wildlife, and would result in some benefits to natural resources, recreation resources, public facilities/services, and aesthetic values. No significant impacts to air or water quality, endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Cultural resources survey may be required. Known sites in or near project areas: 13 PK (415, 414, 400, 424, 401, 402, 403, 406, 413). Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State.

Itemized Cost Estimate:

a. Native plantings #2, 600 ft * 400 ft = 5.5 ac * \$350.00/ac =	1,900
Contingencies (25%) - \$	500

Subtotal - \$	2,400
Engineering and Design (7%) - \$	200
Supervision and Administration (5.5%) - \$	100

Total - \$	2,700

ENVIRONMENTAL EVALUATION CHECKLIST
Native Plantings No. 2

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.3

Project Title: Reforestation No. 1

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Saylorville Wildlife Area, Polk and Dallas County

See Plate(s) Number: 94, 200

Project Description: The purpose of this project is for reforestation at selected sites in upland areas of the Saylorville Wildlife Area.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide quality undisturbed nesting cover and secure winter cover for wildlife, and would result in some benefits to natural resources, recreation resources, public facilities/services, and aesthetic values. No significant impacts to air or water quality, endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Cultural resources survey may be required. Known sites in or near project areas: 13 PK (415, 414, 400, 424, 401, 402, 403, 406, 413). Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State.

Itemized Cost Estimate:

a. Reforestation #1, 600 ft * 400 ft = 5.5 ac * \$1,400.00/ac =	7,700
Contingencies (25%) -	\$ 1,900
Subtotal -	\$ 9,600
Engineering and Design (7%) -	\$ 700
Supervision and Administration (5.5%) -	\$ 500
Total -	\$10,800

ENVIRONMENTAL EVALUATION CHECKLIST
Reforestation No. 1

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.4

Project Title: Reforestation No. 2

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Saylorville Wildlife Area, Polk and Dallas County

See Plate(s) Number 96, 201

Project Description: The purpose of this project is for reforestation at selected sites in upland areas of the Saylorville Wildlife Area.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide quality undisturbed nesting cover and secure winter cover for wildlife, and would result in some benefits to natural resources, recreation resources, public facilities/services, and aesthetic values. No significant impacts to air or water quality, endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Cultural resources survey may be required. Known sites in or near project areas: 13 PK (415, 414, 400, 424, 401, 402, 403, 406, 413). Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State.

Itemized Cost Estimate:

a. Reforestation #2,	
700 ft * 1,050 ft = 17 ac * \$1,400.00/ac =	23,800

Contingencies (25%) - \$	6,000

Subtotal - \$	29,800
Engineering and Design (7%) - \$	2,100
Supervision and Administration (5.5%) - \$	1,600

Total - \$	33,500

ENVIRONMENTAL EVALUATION CHECKLIST
Reforestation No. 2

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.5

Project Title: Reforestation No. 3

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Saylorville Wildlife Area, Polk and Dallas County

See Plate(s) Number: 96, 202

Project Description: The purpose of this project is for reforestation at selected sites in upland areas of the Saylorville Wildlife Area.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide quality undisturbed nesting cover and secure winter cover for wildlife, and would result in some benefits to natural resources, recreation resources, public facilities/services, and aesthetic values. No significant impacts to air or water quality, endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Cultural resources survey may be required. Known sites in or near project areas: 13 PK (415, 414, 400, 424, 401, 402, 403, 406, 413). Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State.

Itemized Cost Estimate:

a. Reforestation #3, 650 ft * 600 ft = 9 ac * \$1,400.00/ac =	12,600
Contingencies (25%) - \$	3,200

Subtotal - \$	15,800
Engineering and Design (7%) - \$	1,100
Supervision and Administration (5.5%) - \$	900

Total - \$	17,800

ENVIRONMENTAL EVALUATION CHECKLIST
Reforestation No. 3

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.6

Project Title: Reforestation No. 4

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Saylorville Wildlife Area, Polk and Dallas County

See Plate(s) Number: 96, 203

Project Description: The purpose of this project is for reforestation at selected sites in upland areas of the Saylorville Wildlife Area.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide quality undisturbed nesting cover and secure winter cover for wildlife, and would result in some benefits to natural resources, recreation resources, public facilities/services, and aesthetic values. No significant impacts to air or water quality, endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Cultural resources survey may be required. Known sites in or near project areas: 13 PK (415, 414, 400, 424, 401, 402, 403, 406, 413). Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State.

Itemized Cost Estimate:

a. Reforestation #4, 650 ft * 600 ft = 9 ac * \$1,400.00/ac =	12,600
Contingencies (25%) - \$	3,200

Subtotal - \$	15,800
Engineering and Design (7%) - \$	1,100
Supervision and Administration (5.5%) - \$	900

Total - \$	17,800

ENVIRONMENTAL EVALUATION CHECKLIST
Reforestation No. 4

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.7

Project Title: Reforestation No. 5

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Saylorville Wildlife Area, Polk and Dallas County

See Plate(s) Number: 99, 100, 204, 205

Project Description: The purpose of this project is for reforestation at selected sites in upland areas of the Saylorville Lake downstream corridor.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would provide quality undisturbed nesting cover and secure winter cover for wildlife, and would result in some benefits to natural resources, recreation resources, public facilities/services, and aesthetic values. No significant impacts to air or water quality, endangered or threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns is anticipated. Cultural resources survey may be required. Known sites in or near project areas: 13 PK (415, 414, 400, 424, 401, 402, 403, 406, 413). Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State.

Itemized Cost Estimate:

a. Reforestation #5,	
100 ac * \$1,400.00/ac =	140,000

Contingencies (25%) - \$	35,000

Subtotal - \$	175,000
Engineering and Design (7%) - \$	12,300
Supervision and Administration (5.5%) - \$	9,600

Total - \$	196,900

ENVIRONMENTAL EVALUATION CHECKLIST
Reforestation No. 5

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.12

Project Title: Land Acquisition-Joe West Sr. Estate

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Extreme northwest Marion County and southwest Jasper County

See Plate(s) Number: 106, 206

Project Description: Acquisition of 149 acres for wildlife habitat.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. The proposed project does not involve construction, modification or relocation; therefore, no adverse impacts to natural resources, recreation resources, or endangered and threatened species are anticipated. No rivers designated as wild or scenic are present in the project area. No people or forms will be displaced by the project. Some minor beneficial impacts to aesthetic values could result from the establishment of a buffer zone along the river. Although some loss of tax revenue could occur as a result from the establishment of public acquisition of the property, no significant impacts to this or other social or economic concerns are anticipated. Two recorded archaeological sites (13 MA 206 and 13 MA 38) are present in the project area and other unrecorded sites may also be present; however, no impacts are anticipated if no construction or other land modifications are proposed. Section 10/404 requirements are not applicable.

Real Estate Requirement: 149 acres to be acquired by the local sponsor. This tract is located in the uplands north of Lake Red Rock. It contains 149 acres of which 37 acres appears to be cropland and 112 acres appears to be woods.

Itemized Cost Estimate:

a. Land acquisition, 149 ac * \$335.00/ac =	50,000
Contingencies (25%) -	\$12,500

Subtotal -	\$62,500
Engineering and Design (7%) -	\$ 4,400
Supervision and Administration (5.5%) -	\$ 3,400

Total -	\$70,300

ENVIRONMENTAL EVALUATION CHECKLIST
Land Acquisition-Joe West Sr. Estate

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.13

Project Title: SE Riverfront Land Acquisition

Project Purpose: Environmental Enhancement

Local Sponsor: city of Des Moines

Project Location: Des Moines River corridor in SE portion of the city of Des Moines

See Plate(s) Number: 102, 207, 208, 209, 210

Project Description: This project provides for the acquisition and preservation of approximately 200 acres of riverfront lands in the Southeast Corridor which were previously deferred from the City of Des Moines' Riverfront Acquisition and Developments Project in 1982-1983.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Proposed project would benefit natural resources by preserving existing terrestrial and riparian habitat. Some loss of tax revenue or resources for commercial sand and gravel operations could result from this action. No significant impacts to recreation resources, cultural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns would be anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: 130 acres to be acquired by the local sponsor. This tract is located on the north bank of the Des Moines River. The area consists of gravel pit lakes and river bottom land that has grown up brush.

Itemized Cost Estimate:

a. Land acquisition: 130 ac * \$540.00/ac =	70,000
b. Reforestation: 40 acres * \$1,400.00/ac =	56,000

	Subtotal -\$126,000
	Contingencies (25%) - \$ 31,500

	Subtotal - \$158,000
	Engineering and Design (7%) - \$ 11,000
	Supervision and Administration (5.5%) - \$ 8,600

	Total - \$178,000

ENVIRONMENTAL EVALUATION CHECKLIST
SE Riverfront Land Acquisition

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force					P
k. Business/Industry Activity					P
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources		P			
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.14

Project Title: Tree Belt Below Lake Red Rock

Project Purpose: Environmental Enhancement

Local Sponsor: Iowa Department of Natural Resources

Project Location: Between Red Rock Dam and State Highway 92

See Plate(s) Number: 111, 113, 114, 211, 212, 213, 214, 215, 216, 217

Project Description: Purchase a strip several hundred feet wide on each side of the river from Red Rock Dam to Highway 92 and plant it with trees in separate park like areas.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit natural resources and aesthetic values. Some loss of tax revenue could occur as a result of public land acquisition. No irreversible conversion of farmland would be involved. No significant impacts to endangered and threatened species, prime or unique farmland, wild and scenic river, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: 413 acres to be acquired by the local sponsor. This is a proposed shoreline acquisition of the land on both sides of the Des Moines River below the Red Rock Dam. The tract is composed of cropland, woodland, and sand and gravel operations. Consideration is given to land value only.

Itemized Cost Estimate:

a. Land acquisition: 250 ft * 36,000 ft * 2 banks, 413 ac * \$600.00/ac =	247,800
b. Reforestation, 50 ac * \$1,400.00/ac =	70,000

	Subtotal - \$317,800
	Contingencies (25%) - \$ 79,500

	Subtotal - \$397,300
	Engineering and Design (7%) - \$ 27,800
	Supervision and Administration (5.5%) - \$ 21,900

	Total - \$447,000

ENVIRONMENTAL EVALUATION CHECKLIST
Tree Belt Below Lake Red Rock

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues					P
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 805.2

Project Title: Bald Eagle Nest Platform

Project Purpose: Environmental Enhancement

Local Sponsor: IDNR

Project Location: Lake Red Rock, Marion County

See Plate(s) Number:

Project Description: Provide potential nesting structures for federally endangered Bald Eagle. Platforms can be constructed in such a manner that they also provide day-time perching sites. The platform can be located in areas to ensure the safety of the Eagles, but also provide Recreational Viewing opportunities for the public. Bald Eagle days are held in the area and are increasingly popular. Keokuk Bald Eagle Days attracted 6,000 people in 1986.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit federally endangered species by providing stable nesting platforms and perching sites. If sufficient care is taken to ensure that platforms are protected, no adverse impacts to the species should result. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Itemized Cost Estimate:

a. Eagle platform: ___ platforms * \$100.00/platform	?
Subtotal - \$	
Contingencies (25%) - \$	

Subtotal - \$	
Engineering and Design (7%) - \$	
Supervision and Administration (5.5%) - \$	

Total - \$	

ENVIRONMENTAL EVALUATION CHECKLIST
Bald Eagle Nest Platform

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species		P			
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 805.3

Project Title: Heron Nest Structures-Saylorville Lake

Project Purpose: Environmental Enhancement

Local Sponsor: IDNR

Project Location: Saylorville Lake

See Plate(s) Number: 96, 218

Project Description: Construct and locate three Heron nest structures at the Upper end of Saylorville Reservoir. Each Structure will consist of Eight nest platforms to provide secure rest sites for Great Blue Herons, Great Egrets, and Double-Crested Cormorants. Specific structure placement will be determined during a field investigation.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. The proposed project would have some benefit to natural resources by providing additional nesting sites to herons, egrets and cormorants. No impacts to cultural resources, prime and unique farmland, wild and scenic rivers, or air and water quality are anticipated. The project could provide some opportunity for passive recreation (bird-watching). No significant cultural resources will be affected. No impacts to social or economic concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State

Heron Nest Structures-Saylorville Lake (Cont'd)

Itemized Cost Estimate:

- a. Heron platform #1, ___ platforms * \$100.00/platform = ?
b. Heron platform #2, ___ platforms * \$100.00/platform = ?

	Subtotal - \$	
	Contingencies (25%) - \$	-----
	Subtotal - \$	
	Engineering and Design (7%) - \$	
	Supervision and Administration (5.5%) - \$	-----
	Total - \$	

ENVIRONMENTAL EVALUATION CHECKLIST
Heron Nest Structures-Saylorville Lake

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species			P		
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 805.4

Project Title: Heron Nest Structures-Lake Red Rock

Project Purpose: Environmental Enhancement

Local Sponsor: IDNR

Project Location: Lake Red Rock

See Plate(s) Number: 107, 219

Project Description: Construct and locate three Heron nest structures at the Upper end of Red Rock Reservoir. Each Structure will consist of Eight nest platforms to provide secure rest sites for Great Blue Herons, Great Egrets, and Double-Crested Cormorants. Specific structure placement will be determined during a field investigation.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. The proposed project would have some benefit to natural resources by providing additional nesting sites to herons, egrets and cormorants. No impacts to cultural resources, prime and unique farmland, wild and scenic rivers, or air and water quality are anticipated. The project could provide some opportunity for passive recreation (bird-watching). No significant cultural resources will be affected. No impacts to social or economic concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers and outgranted to the State

Heron Nest Structures-Lake Red Rock (Cont'd)

Itemized Cost Estimate:

- a. Heron platform #1, ___ platforms * \$100.00/platform = ?
- b. Heron platform #2, ___ platforms * \$100.00/platform = ?

Subtotal - \$

Contingencies (25%) - \$

Subtotal - \$

Engineering and Design (7%) - \$

Supervision and Administration (5.5%) - \$

Total - \$

ENVIRONMENTAL EVALUATION CHECKLIST
Heron Nest Structures-Lake Red Rock

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species			P		
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

COST-SHARED STREAMBANK STABILIZATION PROJECTS

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Project Number: 112.1

Project Title: Brushy Creek Bank Stabilization

Project Purpose: Streambank Stabilization

Local Sponsor: Iowa Department of Natural Resources

Project Location: Section 3, Webster Township, Brushy Creek State Recreation Area

See Plate(s) Number: 79, 129

Project Description: Riprap approximately 300 feet of Brushy Creek's bank to prevent erosion of picnic area roadway.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by protecting existing facilities. Short-term impacts could include minor temporary degradation of water quality. Riprap placement could result in some long-term benefits to aquatic resources by increasing substrate diversity and decreasing erosion. No significant impacts to natural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. Cultural resources survey would be required. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the State of Iowa

Itemized Cost Estimate:

a. Bank stabilization: 400 ft * \$50.00/lf =	20,000
	Contingencies (25%) - \$ 5,000

	Subtotal - \$25,000
	Engineering and Design (7%) - \$ 1,800
	Supervision and Administration (5.5%) - \$ 1,400

	Total - \$28,200

ENVIRONMENTAL EVALUATION CHECKLIST
Brushy Creek Bank Stabilization

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE		
		MAJOR	MINOR	MAJOR	MINOR	
1. SOCIAL/ECONOMIC IMPACTS						
a. Noise	X					
b. Displacement of People	X					
c. Aesthetic Values	X					
d. Community Cohesion				P		
e. Desirable Community Growth	X					
f. Property Values				P		
g. Tax Revenues	X					
h. Public Facilities/Services				P		
i. Desirable Regional Growth	X					
j. Employment/Labor Force				T		
k. Business/Industry Activity				T		
l. Farm Displacement	X					
m. Existing Land Use Plans	X					
2. ENVIRONMENTAL IMPACTS						
a. Recreation Resources				P		
b. Natural Resources	X					
c. Air Quality						T
d. Water Quality						T
e. Threaten/Endangered Species	X					
f. Archaeological/Historical						P
g. Prime and Unique Farmland	X					
h. Wild and Scenic Rivers	X					

Project Number: 305.1

Project Title: Prospect Park Riverbank Stabilization

Project Purpose: Streambank Stabilization

Local Sponsor: city of Des Moines

Project Location: Prospect Park adjacent to the west bank of the Des Moines River upstream of the 6th Avenue bridge

See Plate(s) Number: 101, 161

Project Description: This project provides for the installation of permanent stabilizing rip-rap along a 3/4 mile stretch of the west bank of the Des Moines River at Prospect Park.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services by protecting existing facilities. Short-term impacts during construction could include minor increases in employment, and business activity, and minor temporary degradation of air and water quality. Riprap placement could provide some benefits to aquatic habitat by increasing substrate diversity. Because the project would be located in a developed urban recreation area, no significant impacts to endangered and threatened species, cultural resources, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. A section 404 permit may be required.

Real Estate Requirement: All lands are owned by the Corps of Engineers and are outgranted to the city of Des Moines.

Itemized Cost Estimate:

a. Bank stabilization: 2,000 ft * \$50.00/lf =	100,000
b. Trees: 100 trees * \$50.00/tree =	5,000

Subtotal -	\$105,000
Contingencies (25%) -	\$ 26,300

Subtotal -	\$131,300
Engineering and Design (7%) -	\$ 9,200
Supervision and Administration (5.5%) -	\$ 7,200

Total -	\$147,700

ENVIRONMENTAL EVALUATION CHECKLIST
Prospect Park Riverbank Stabilization

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 314.3

Project Title: Des Moines and Raccoon River Levee Protection

Project Purpose: Streambank Stabilization

Local Sponsor: city of Des Moines

Project Location: North bank of the Des Moines River from SE 6th Street to 9th Street, and south bank of the Raccoon River from Jackson Street to SW 7th Street

See Plate(s) Number: 101, 102, 169, 170

Project Description: This project will provide for removal of trees and placement of rip-rap on the north bank of the Des Moines River from SE. 6th Street to SE. 9th Street and on the south bank of the Raccoon River between SW. 7th Street to Jackson Street.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project is not likely to be economically justified.

Environmental Impacts: See the attached environmental evaluation checklist. The proposed project would provide long-term erosion protection. Loss of naturally occurring vegetation and aesthetics would also be permanent. Short-term impacts during the construction phase may include minor increases in business activity, and employment, and minor degradation of air and water quality. No significant impacts to natural resources, endangered and threatened species, prime or unique farmland, wild and scenic rivers or economic and social concerns are anticipated. Cultural resources survey could be required. A Section 404 permit may be required for the placement of fill (rock) into the water.

Real Estate Requirement: All lands owned by the city of Des Moines.

Des Moines and Raccoon River Levee Protection (Cont'd)

Itemized Cost Estimate:

a. Bank stabilization: Raccoon River between SW 7th Street and Jackson Street, Stabilization #1,	
1. Tree and brush removal:	
1300 ft * 25 ft = 0.75 acres * 1,350.00/ac =	1,000
2. Bank stabilization: 1,300 ft * \$50.00/lf =	65,000
3. Flap gate, 24 in diameter	3,500
b. Bank stabilization: Des Moines River between SE 6th Street and SE 9th Street, Stabilization #2,	
1. Tree and brush removal:	
1400 ft * 25 ft = 0.8 acres * \$1,350.00/ac =	1,100
2. Bank stabilization: 1,400 ft * \$50.00/lf =	70,000

Subtotal -	\$140,600
Contingencies (25%) -	\$ 35,100

Subtotal -	\$175,700
Engineering and Design (7%) -	\$ 12,300
Supervision and Administration (5.5%) -	\$ 9,700

Total -	\$197,700

ENVIRONMENTAL EVALUATION CHECKLIST
Des Moines and Raccoon River Levee Protection

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values					P
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources					P
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species					
f. Archaeological/Historical					P
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 314.4

Project Title: Reconstruction of West River Wall

Project Purpose: Streambank Stabilization

Local Sponsor: city of Des Moines

Project Location: Des Moines River between I-235 and University Avenue

See Plate(s) Number: 102, 151, 171

Project Description: This project will provide for reconstruction of a damaged portion of the sloped concrete river wall on the west bank of the Des Moines River between the MacVicar Freeway and University Avenue.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project is not likely to be economically justified.

Environmental Impacts: See the attached environmental evaluation checklist. Short-term impacts during construction phase could include minor increases in business activities and employment and minor degradation of air and water quality. Erosion protection and aesthetics could have long-term benefits. Because of the urbanized nature of the project area, no significant impacts to natural resources, cultural resources, endangered and threatened species, prime and unique farmland, wild and scenic rivers, or economic-social concerns are anticipated. Section 10/404 requirements are not applicable if repaired to original design.

Real Estate Requirement: All lands owned by the city of Des Moines

Itemized Cost Estimate:

a. West river wall: concrete, stabilization #3,	
1. Concrete:	
800 ft * 10 ft * 1 ft = 296 cy * \$325.00/cy =	96,300
b. River wall protection, stabilization #4,	
1. Bank stabilization: east side, 3200 ft * \$50.00/1f =	160,000
2. Bank stabilization: west side, 3200 ft * \$50.00/1f =	160,000

	Subtotal - \$416,300
	Contingencies (25%) - \$104,100

	Subtotal - \$520,400
	Engineering and Design (7%) - \$ 36,400
	Supervision and Administration (5.5%) - \$ 28,600

	Total - \$585,400

ENVIRONMENTAL EVALUATION CHECKLIST
Reconstruction of West River Wall

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 801.2

Project Title: Kalo Road Bank Stabilization

Project Purpose: Streambank Stabilization

Local Sponsor: Webster County

Project Location: Northwest of Kalo in Section 17, T88N, R28W

See Plate(s) Number: 77, 192

Project Description: This project involves three slide areas in an approximately one-quarter mile segment of paved roadway. This sliding is accentuated by streambank erosion at the water level approximately 30 feet below.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal.

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit public facilities/services by protecting an existing roadway. Short-term impacts during construction could include minor increases in employment, and minor temporary degradation of air and water quality. Because the project is located in a previously disturbed area, no significant impacts to natural, cultural or recreation resources, endangered or threatened species, prime or unique farmlands, or wild and scenic rivers is anticipated. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by Webster County.

Itemized Cost Estimate:

a. Riprap: 500 ft,
40 ft * 3 ft * 1 ft = 4.5 tn/lf * 500 ft * \$22.00/tn = 49,500

Contingencies (25%) - \$12,400

Subtotal - \$61,900
Engineering and Design (7%) - \$ 4,300
Supervision and Administration (5.5%) - \$ 3,400

Total - \$69,600

ENVIRONMENTAL EVALUATION CHECKLIST
Kalo Road Bank Stabilization

KEY:	NO	BENEFICIAL		ADVERSE	
		EFFECT	MAJOR	MINOR	MAJOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 801.3

Project Title: Route P73 Bank Stabilization

Project Purpose: Streambank Stabilization

Local Sponsor: city of Lehigh

Project Location: County Road P73 in the city of Lehigh

See Plate(s) Number: 81, 193

Project Description: The project would involve the removal of an old concrete bridge pier and bank stabilization along the Des Moines River.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit public facilities/services by protecting an existing roadway. Short-term impacts during construction could include minor increases in employment, and minor temporary degradation of air and water quality. Because the project is located in a previously disturbed area, no significant impacts to natural, cultural or recreation resources, endangered or threatened species, prime or unique farmlands, or wild and scenic rivers are anticipated. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by Webster County

Itemized Cost Estimate:

a. Remove bridge pier: 180 cy * \$150.00/cy =	27,000
b. Bank stabilization: 300 ft * \$50.00/lf =	15,000

Subtotal -	\$42,000
Contingencies (25%) -	\$10,500

Subtotal -	\$52,500
Engineering and Design (7%) -	\$ 3,700
Supervision and Administration (5.5%) -	\$ 2,900

Total -	\$59,100

ENVIRONMENTAL EVALUATION CHECKLIST
Route P73 Bank Stabilization

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources	X				
c. Air Quality					T
d. Water Quality					T
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 801.5

Project Title: Deception Hollow Bank Stabilization

Project Purpose: Streambank Stabilization

Local Sponsor: Iowa Department of Natural Resources

Project Location: Deception Hollow State area

See Plate(s) Number: 82, 194

Project Description: Bank stabilization along a county gravel road.

Operation, Maintenance and Replacement Responsibility: 100-percent non-Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Environmental impacts are unknown at this time. A Section 404 permit may be required.

Real Estate Requirement: All lands are owned by the local sponsor.

Itemized Cost Estimate:

a. Bank stabilization: 5,000 ft * \$50.00/lf =	250,000
Contingencies (25%) - \$	62,500

Subtotal - \$	312,500
Engineering and Design (7%) - \$	21,900
Supervision and Administration (5.5%) - \$	17,200

Total - \$	351,600

ENVIRONMENTAL EVALUATION CHECKLIST
Deception Hollow Bank Stabilization

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values			P		
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

SITE PLANS FOR 100-PERCENT FEDERAL PROJECTS

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GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

APPENDIX B
SITE PLANS FOR 100-PERCENT FEDERAL PROJECTS

TABLE OF CONTENTS

<u>Subject</u>	<u>Page</u>
203.3-Bob Shelter Picnic Ground	B-1
203.4-Walnut Ridge Comfort Station	B-3
203.5-Cottonwood Picnic Shelter	B-5
203.6-Greenbelt Visitor Center Development, Saylorsville Lake	B-7
402.2-Whitehurst Beach and Boat Ramp	B-9
402.3-Wallashuck Camping Loop	B-11
402.4-North Overlook Beach	B-13
402.5-East Wallashuck Boat Ramp	B-15
402.6-Greenbelt Visitor Center Development, Lake Red Rock	B-17
804.9-Saylorsville Prairies	B-19
804.10-Red Rock Reforestation	B-21

GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

APPENDIX B
SITE PLANS FOR 100-PERCENT FEDERAL PROJECTS

Project Number: 203.3

Project Title: Bob Shetler Picnic Ground

Project Purpose: Recreation

Local Sponsor: N/A

Project Location: Saylorville Lake, Polk County

See Plate(s) Number: 142

Project Description: The site plan includes picnic shelters and separate tables with grills and trash receptacles in order to provide picnic opportunities for large and small groups of persons. The road and parking lots will be placed to reduce cut and fill requirements to a minimum. Grass lawns will be provided near the shelter areas and adjacent to the roads. Foot trails will be established to provide access between the parking lots and shelters to the tailrace and ponds for fishing access.

Reference: Master Plan, Design Memorandum 6B, Saylorville Lake Multi-Purpose Project, Des Moines River Basin, Des Moines River, Iowa, September 1984, U.S. Army Corps of Engineers, Rock Island District

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. See Environmental Assessment, Saylorville Master Plan. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Itemized Cost Estimate: To be determined

ENVIRONMENTAL EVALUATION CHECKLIST
Bob Shetler Picnic Ground

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services		P			
i. Desirable Regional Growth			P		
j. Employment/Labor Force			T		
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources		P			
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 203.4

Project Title: Walnut Ridge Comfort Station

Project Purpose: Recreation

Local Sponsor: N/A

Project Location: Saylorville Lake, Polk County

See Plate(s) Number: 98, 143

Project Description: Comfort station at Walnut Ridge recreation area.

Reference: Master Plan, Design Memorandum 6B, Saylorville Lake Multi-Purpose Project, Des Moines River Basin, Des Moines River, Iowa, September 1984, U.S. Army Corps of Engineers, Rock Island District

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. See Environmental Assessment for Saylorville Master Plan. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Itemized Cost Estimate:

a. Flush toilet	95,000
Contingencies (25%) -	\$ 23,800

Subtotal -	\$118,800
Engineering and Design (7%) -	\$ 8,300
Supervision and Administration (5.5%) -	\$ 6,500

Total -	\$133,600

ENVIRONMENTAL EVALUATION CHECKLIST
Walnut Ridge Comfort Station

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 203.5

Project Title: Cottonwood Picnic Shelter

Project Purpose: Recreation

Local Sponsor: N/A

Project Location: Saylorville Lake, Polk County

See Plate(s) Number: 99, 144

Project Description: Picnic shelter at Cottonwood recreation area.

Reference: Master Plan, Design Memorandum 6B, Saylorville Lake Multi-Purpose Project, Des Moines River Basin, Des Moines River, Iowa, September 1984, U.S. Army Corps of Engineers, Rock Island District

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. See Environmental Assessment for Saylorville Master Plan. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Itemized Cost Estimate:

a. Shelter, large	24,000
Contingencies (25%) -	\$ 6,000

Subtotal -	\$30,000
Engineering and Design (7%) -	\$ 2,100
Supervision and Administration (5.5%) -	\$ 1,700

Total -	\$33,800

ENVIRONMENTAL EVALUATION CHECKLIST
Cottonwood Picnic Shelter

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 203.6

Project Title: Greenbelt Visitor Center Development, Saylorville Lake

Project Purpose: Recreation

Local Sponsor: N/A

Project Location: Saylorville Lake visitor center

See Plate(s) Number: 99, 145

Project Description: The Advisory Committee recommends that the Corps of Engineers modify their existing visitors centers to accommodate displays of the entire Greenbelt.

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services. No significant impacts to natural or cultural resources, endangered and threatened species, prime or unique farmland and wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Itemized Cost Estimate: To be determined

ENVIRONMENTAL EVALUATION CHECKLIST
Greenbelt Visitor Center Development, Saylorville Lake

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 402.2

Project Title: Whitebreast Beach and Boat Ramp

Project Purpose: Recreation

Local Sponsor: N/A

Project Location: Lake Red Rock, Marion County

See Plate(s) Number: 110, 181

Project Description: Swimming beach and new boat ramp designed to accomodate a pool raise. Whitebreast beach is located 1-1/2 miles upstream of the dam on the south side of Lake Red Rock. The beach becomes unserviceable at elevation 739 NGVD. There are three boat ramps on Whitebreast Point. Lakeview and Whitebreast Heights boat ramps are unserviceable, and Coal Ridge boat ramp is fully serviceable from elevation 728 to 735 NGVD, marginally serviceable from elevation 736 to 738 NGVD, and becomes unserviceable at elevation 739 NGVD. The Coal Ridge boat ramp will be abandoned upon completion of the new Whitebreast Meadows boat ramp.

A new natural sand beach will be developed to the east of the existing beach. Support facilities will include a beach house and a 125-car parking lot. A new 2-lane boat ramp, designated Whitebreast Meadows, will be located north of the new beach. There will be 15 car and trailer, and 60 car and trailer parking lots adjacent to the ramp along with an access road which will connect to the existing park road. The beach and boat ramp will be connected by an 8-foot paved bicycle trail, and there will be a small earthen dam for a fishing pond.

Reference: Draft Water Control Plan (With Supplemental Environmental Impact Statement), Lake Red Rock, Iowa, March 1987, U.S. Army Corps of Engineers, Rock Island District

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the Supplemental Environmental Impact Statement in the draft Water Control Plan

Real Estate Requirement: All lands are owned by the Corps of Engineers

Whitebreast Beach and Boat Ramp (Cont'd)

Itemized Cost Estimate:

Item -----	Quantity -----	Unit -----	Unit Cost -----	Federal Cost -----
Beach				
Parking lot				
Grading	1,300	cy	\$5.00	6,500
3 in. ACC, 6 in. base	3,900	sy	\$18.00	70,200
Entrance access road	50	lf	\$70.00	3,500
Beach development				
Maintenance access road	400	lf	\$30.00	12,000
Concrete wall	195	cy	\$300.00	58,500
Excavation, wall	520	cy	\$5.00	2,600
Fill, wall	2,600	cy	\$5.00	13,000
Comfort station/changehouse	1	job	sum	174,800
Sidewalks	2,400	sf	\$4.00	9,600
Bike trail	1,600	lf	\$32.00	51,200
Fill, trail	7,000	cy	\$5.00	35,000
Boat ramp				
Existing access road removal	4,200	cy	\$6.00	25,200
Riprap	1,500	tn	\$24.00	36,000
Access road	850	lf	\$65.00	55,250
Parking lot				
Grading	1,400	cy	\$5.00	7,000
3 in ACC, 6 in. base	4,200	sy	\$18.00	75,600
Rigging area				
Grading	400	cy	\$5.00	2,000
3 in. ACC, 6 in. base	1,200	sy	\$18.00	21,600
Ramp with boatway	1	job	sum	150,000

Subtotal - \$				809,600
Contingencies (25%) - \$				202,400

Subtotal - \$				1,012,000
Engineering and Design (7%) - \$				70,800
Supervision and Administration (5.5%) - \$				55,700

Total - \$				1,138,500

Project Number: 402.3

Project Title: Wallashuck Camping Loop

Project Purpose: Recreation

Local Sponsor: N/A

Project Location: Lake Red Rock, Marion County

See Plate(s) Number: 182

Project Description: Camping loop addition at Wallashuck recreation area.

Reference: Resource Master Plan, Design Memorandum No. 24b, Red Rock Dam, Lake Red Rock, Multi-Purpose Project, Des Moines River Basin, Des Moines River, Iowa, December 1976, U.S. Army Engineer District, Rock Island

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Environmental impacts are discussed in the Master Plan for Lake Red Rock. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Itemized Cost Estimate: To be determined

ENVIRONMENTAL EVALUATION CHECKLIST
Wallashuck Camping Loop

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 402.4

Project Title: North Overlook Beach

Project Purpose: Recreation

Local Sponsor: N/A

Project Location: Dam Site Recreation Area, Lake Red Rock, Marion Co.

See Plate(s) Number: 111, 183

Project Description: The project is for the construction of a new beach to accommodate a pool raise. North Overlook beach is located near the dam on the north side of Lake Red Rock. The facility becomes unserviceable at elevation 739 NGVD. The new beach will be placed just upstream of the existing area on high ground. A new parking lot will be located adjacent to the new beach on the east side.

Reference: Draft Water Control Plan (With Supplemental Environmental Impact Statement), Lake Red Rock, Iowa, March 1987, Draft, U.S. Army Corps of Engineers, Rock Island District

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the Supplemental Environmental Impact Statement in the draft Water Control Plan

Real Estate Requirement: All lands are owned by the Corps of Engineers

North Overlook Beach (Cont'd)

Itemized Cost Estimate:

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Federal Cost</u>
Parking Lot				
Grading	2,400	cy	\$5.00	12,000
Drainage excavation	325	cy	\$4.00	1,300
3 in. ACC, 6 in. bas	7,300	sy	\$18.00	131,400
Access road	300	lf	\$65.00	19,500
Drainage culverts	1	job	sum	5,000
Beach				
Grading	4,500	cy	\$3.00	13,500
Sand	6,300	tn	\$3.00	18,900
Vault toilet	1	job	sum	20,000
Remove existing pavement	3,400	sy	\$4.00	13,600

			Subtotal -	\$235,200
			Contingencies (25%) -	\$ 58,800

			Subtotal -	\$294,000
			Engineering and Design (7%) -	\$ 20,600
			Supervision and Administration (5.5%) -	\$ 16,200

			Total -	\$330,800

Project Number: 402.5

Project Title: East Wallashuck Boat Ramp

Project Purpose: Recreation

Local Sponsor: N/A

Project Location: Wallashuck Recreation Area, Lake Red Rock, Marion Co.

See Plate(s) Number: 184

Project Description: The project is for the construction of a boat ramp to accommodate a pool raise. East Wallashuck boat ramp is located about 1 mile upstream of the dam on the north side of Lake Red Rock. The ramp becomes unserviceable at elevation 738 NGVD. The new boat ramp will be built off of the existing parking lot access road. The new parking lot will be located on high ground near the south end of the camping area.

Reference: Draft Water Control Plan (With Supplemental Environmental Impact Statement), Lake Red Rock, Iowa, March 1987, Draft, U.S. Army Corps of Engineers, Rock Island District

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the Supplemental Environmental Impact Statement in the draft Water Control Plan

Real Estate Requirement: All lands are owned by the Corps of Engineers

East Wallashuck Boat Ramp (Cont'd)

Itemized Cost Estimate:

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Cost</u>	<u>Federal Cost</u>
Concrete ramp	1	job	sum	65,000
Boatway	1	job	sum	85,000
Parking lot				
Grading	2,400	cy	\$5.00	12,000
Drainage excavation	325	cy	\$4.00	1,300
3 in. ACC, 6 in. bas	7,300	sy	\$18.00	131,400

			Subtotal -	\$294,700
			Contingencies (25%) -	\$ 73,700

			Subtotal -	\$368,400
			Engineering and Design (7%) -	\$ 25,800
			Supervision and Administration (5.5%) -	\$ 20,300

			Total -	\$414,500

Project Number: 402.6

Project Title: Greenbelt Visitor Center Development, Lake Red Rock

Project Purpose: Recreation

Local Sponsor: N/A

Project Location: Lake Red Rock visitor center

See Plate(s) Number: 111, 185

Project Description: The Advisory Committee recommends that the Corps of Engineers modify their existing visitors centers to accommodate displays of the entire Greenbelt.

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: This project, or portions thereof, is likely to be economically justified. This determination will require detailed study and analysis.

Environmental Impacts: See the attached environmental evaluation checklist. Project would benefit recreation resources and public facilities/services. No significant impacts to natural or cultural resources, endangered and threatened species, prime or unique farmland and wild and scenic rivers, or economic and social concerns are anticipated. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Itemized Cost Estimate: To be determined

ENVIRONMENTAL EVALUATION CHECKLIST
Greenbelt Visitor Center Development, Lake Red Rock

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise					T
b. Displacement of People	X				
c. Aesthetic Values	X				
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth	X				
j. Employment/Labor Force			T		
k. Business/Industry Activity			T		
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources	X				
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.9

Project Title: Saylorville Prairies

Project Purpose: Environmental Enhancement

Local Sponsor: N/A

Project Location: Saylorville Lake

See Plate(s) Number:

Project Description: Development, restoration and preservation of prairie areas within project lands as outlined in the approved master plan.

Reference: Master Plan, Design Memorandum 6B, Saylorville Lake Multi-Purpose Project, Des Moines River Basin, Des Moines River, Iowa, September 1984, U.S. Army Corps of Engineers, Rock Island District

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. See Environmental Assessment for Saylorville Master Plan. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Itemized Cost Estimate: To be determined

ENVIRONMENTAL EVALUATION CHECKLIST
Saylorville Prairies

KEY:	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
T = Temporary P = Permanent					
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values		P			
d. Community Cohesion	X				
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services	X				
i. Desirable Regional Growth	X				
j. Employment/Labor Force	X				
k. Business/Industry Activity	X				
l. Farm Displacement	X				
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources	X				
b. Natural Resources		P			
c. Air Quality	X				
d. Water Quality	X				
e. Threaten/Endangered Species	X				
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

Project Number: 804.10

Project Title: Red Rock Reforestation

Project Purpose: Environmental Enhancement

Local Sponsor: N/A

Project Location: Lake Red Rock, Marion County

See Plate(s) Number:

Project Description: Reforestation at Lake Red Rock.

Reference: Resource Master Plan, Design Memorandum No. 24b, Red Rock Dam, Lake Red Rock, Multi-Purpose Project, Des Moines River Basin, Des Moines River, Iowa, December 1976, U.S. Army Engineer District, Rock Island

Operation and Maintenance Responsibility: 100-percent Federal

Economic Justification: In accordance with Public Law 99-662, Section 907, environmental enhancement projects are considered to have benefits equal to the costs.

Environmental Impacts: See the attached environmental evaluation checklist. Project would result in some benefits to natural resources, recreation resources, and aesthetic values by enhancing habitat quality for forest wildlife, increasing opportunities for consumptive and non-consumptive recreation and public enjoyment, and allow for expanded outdoor educational opportunities. No significant impacts to air and water quality, endangered and threatened species, prime or unique farmland, wild and scenic rivers, or economic and social concerns are anticipated. No significant impacts to cultural resources would be anticipated. Known sites in project area: 13 DA 137, 13 PK 137, 13 PK 192. Section 10/404 requirements are not applicable.

Real Estate Requirement: All lands are owned by the Corps of Engineers

Itemized Cost Estimate: To be determined

ENVIRONMENTAL EVALUATION CHECKLIST
Red Rock Reforestation

KEY: T = Temporary P = Permanent	NO EFFECT	BENEFICIAL		ADVERSE	
		MAJOR	MINOR	MAJOR	MINOR
1. SOCIAL/ECONOMIC IMPACTS					
a. Noise	X				
b. Displacement of People	X				
c. Aesthetic Values			P		
d. Community Cohesion			P		
e. Desirable Community Growth	X				
f. Property Values	X				
g. Tax Revenues	X				
h. Public Facilities/Services			P		
i. Desirable Regional Growth					
j. Employment/Labor Force	X				
k. Business/Industry Activity			T		
l. Farm Displacement			T		
m. Existing Land Use Plans	X				
2. ENVIRONMENTAL IMPACTS					
a. Recreation Resources			P		
b. Natural Resources			P		
c. Air Quality	X				
d. Water Quality			P		
e. Threaten/Endangered Species			P		
f. Archaeological/Historical	X				
g. Prime and Unique Farmland	X				
h. Wild and Scenic Rivers	X				

CULTURAL RESOURCES ASSESSMENT

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GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

APPENDIX C
CULTURAL RESOURCES ASSESSMENT

TABLE OF CONTENTS

<u>Subject</u>	<u>Page</u>
SECTION 1 - INTRODUCTION	C-1
Purpose	C-1
SECTION 2 - PREVIOUS STUDIES	C-2
Related Studies at Saylorville Lake	C-2
Introduction	C-2
Early Studies	C-3
Iowa State University, 1973-1981	C-3
Luther College, 1980-1981	C-4
Southwest Missouri State, 1981-1982	C-5
Impact Services, 1982-1984	C-5
Southwest Missouri State University/Iowa State Geological Survey, 1984-1986	C-6
Related Studies at Lake Red Rock	C-6
Introduction	C-6
Early Studies	C-7
Smithsonian Institution, 1948-1949	C-7
National Park Service, 1961	C-7
Iowa State University, 1964-1966 and 1976	C-8
Miscellaneous Small Projects	C-8
Gilbert Commonwealth, 1983-1984	C-9
Gilbert Commonwealth, 1985-1986	C-9
Pool Raise - Specific Significance and Impact Evaluations	C-9
Other Studies	C-10
SECTION 3 - DES MOINES RECREATIONAL RIVER AND GREENBELT PROJECT FEATURES	C-11
Introduction	C-11
Study Schedule	C-11
SECTION 4 - GEOMORPHOLOGY	C-13
Introduction	C-13
Lake Red Rock	C-14
Saylorville Lake	C-26
Conclusions and Modeling for the Greenbelt	C-35

TABLE OF CONTENTS (Cont'd)

<u>Subject</u>	<u>Page</u>
SECTION 5 - KNOWN CULTURAL RESOURCES	C-37
Overview	C-37
Introduction	C-37
Saylorville Lake Data Base	C-37
Lake Red Rock Data Base	C-43
Additional Study Directions	C-45
SECTION 6 - STATUS OF COMPLIANCE PROCESS	C-46
Historic Preservation Law	C-46
General CRM Requirements	C-46
Cultural Resources Management Processes	C-47
Cultural Resource Management Plan	C-49
Previous Coordination	C-50
Additional Studies Required	C-50
SECTION 7 - SUMMARY	C-50
REFERENCES	C-

List of Tables

<u>No.</u>	<u>Title</u>	<u>Page</u>
C-1	Study Schedule	C-12
C-2	Organization of Field Operations by Tasks at Lake Red Rock	C-15
C-3	Sinuosity of the Des Moines River Channel, Lake Red Rock Area	C-17
C-4	Principal Landform Categories Represented at Lake Red Rock	C-19
C-5	Cultural Landscapes at Lake Red Rock	C-22
C-6	Cultural and Geomorphic Discontinuities	C-23
C-7	Archeological Site Distribution by Landform and Components	C-24
C-8	Archeo-Stratigraphic Potential at Lake Red Rock	C-25
C-9	Geomorphic Study Reach Characteristics: Saylorville Lake	C-31
C-10	Saylorville Lake: Area Occupied by Landform/Terrace Levels (hectares)	C-32
C-11	Saylorville Lake Site Preservation Potentials	C-35
C-12	Saylorville Lake: Volume of Landform/Sediment Features	C-36
C-13	Saylorville Lake Prehistoric Chronology	C-38
C-14	Lake Red Rock Prehistoric Chronology	C-44

TABLE OF CONTENTS (Cont'd)

List of Plates

<u>No.</u>	<u>Title</u>
1	Des Moines River Greenbelt
2	Saylorville Lake Vicinity Map
3	Lake Red Rock Vicinity Map
4	Location of Geomorphological Test Units in Lake Red Rock
5	Land Form Regions and Principal Drainages of Iowa
6	Generalized Project Area Stratigraphy at 13MA115
7	Lake Red Rock Landform Map: Northern Section
8	Lake Red Rock Landform Map: Southern Section
9	Gradational Chronologies in Iowa
10	Longitudinal Profile Along the Des Moines River Valley
11	Archeological Site - Landform Correlations at Lake Red Rock
12	Late Wisconsinan Bench and Terrace Levels Along the Central Des Moines River Valley
13	Slip Off Slope Location of Late Wisconsinan Benches and Terraces
14	Saylorville Lake Geomorphic Units: Northern Section
15	Saylorville Lake Geomorphic Units: Central Section
16	Saylorville Lake Geomorphic Units: Southern Section
17	Geomorphic Components of a Hillslope
18	Sites and Properties Allocation Process
19	Flow Chart of National Register Evaluation Process
20	Advisory Council Procedures
21	Environmental Planning Flow Chart

List of Attachments

1	Pertinent Correspondence
2	Summary of Historic Preservation Laws
3	Archeological Site Lists (For Official Use Only, Not for Public Distribution)

GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

APPENDIX C
CULTURAL RESOURCES ASSESSMENT

SECTION 1 - INTRODUCTION

PURPOSE

The purpose of this report is to summarize what is known about cultural resources in the Upper Des Moines River Valley, Iowa, area (plate 1). Most of the information presented in this report is the result of nearly 20 years of archeological research at Saylorville Lake and Lake Red Rock. While only 16 percent of the entire Greenbelt study area has been surveyed in previous archeological investigations, about 70 percent of Units 2 and 4 has been studied. These studies support general statements about culture history, criteria of site significance, the nature and extent of the known cultural resource base, and the potential for locating additional archeological and historical sites in unsurveyed areas. Nearly 20 years has elapsed since work at Saylorville Lake was initiated, and there have been numerous changes in historic preservation law, land-use patterns, professional standards, and the condition of the archeological and historical resource base. Cultural resource management activities at Lake Red Rock are more limited, but add significantly to our understanding of the pre-historic and historic past. This report is designed to briefly address the following topics:

- a. The nature and adequacy of previous studies
- b. The potential for cultural resources in the Des Moines River Greenbelt area
- c. The nature of known archeological and historical sites as of 1986
- d. The nature of the prehistoric and early historic utilization of the area (e.g., culture history outline)
- e. Relationships between the Saylorville Lake and Lake Red Rock data bases where recent investigations have been conducted at 967 archeological sites (506 at Saylorville Lake, 461 at Lake Red Rock)
- f. The extent of previous coordination under the National Historic Preservation Act (as amended 1980)
- g. A determination of additional studies required
- h. Identification of public interpretation opportunities

i. Recommendations for compliance activities in accordance with the current study schedule for alternatives under consideration

This action is in accordance with the National Historic Preservation Act (as amended 1980), the Archeological and Historic Preservation Act (1974), Executive Order 11593, the Archeological Resources Protection Act (as amended 1984), Title 36 of the Code of Federal Regulations (Parts 60-66 and 800), Engineering Regulation 1105-2-50/55, and draft Engineering Regulation ER-1130-2-XXX entitled "Project Construction and Operation Historic Preservation Program."

Little is known about areas within the Greenbelt boundary outside of Federal jurisdiction. Archeological studies on non-Federal lands have been small-scale and few in number. Therefore, the intensive archeological, historical, and geomorphological studies conducted on Federal lands serve as a representative data base for the entire Greenbelt corridor.

SECTION 2 - PREVIOUS STUDIES

RELATED STUDIES AT SAYLORVILLE LAKE

INTRODUCTION

Saylorville Lake (plate 2) is a multi-purpose flood control project on the Des Moines River, approximately 6 miles upstream from the city of Des Moines and about 70.8 miles north of Lake Red Rock. The Rock Island District holds fee title to 25,515 acres of land, about 6,000 of which are surface acres of water at the normal conservation pool elevation of 833 feet NGVD (National Geodetic Vertical Datum). The District also has obtained 1,392 acres of flowage easements. The history of cultural resource investigations presented below has a direct bearing on the proposed Des Moines River Greenbelt project because culture histories, the archeological/historical data base, geomorphological considerations, and management processes should be very similar throughout this reach of the valley. Also, what has been learned about investigation methods and techniques at Saylorville Lake can be applied to other areas in order to save significant amounts of time and money for the identification, evaluation, and preservation processes required for the Des Moines River Valley cultural resource base. Detailed information can be found in the report entitled Interpretive Overview of Cultural Resources in Saylorville Lake, Iowa, by Benn and Rogers (1985:12-25).

As of April 1986, 486 sites have been located and recorded above the Saylorville Lake dam, and 38 sites below the dam in the downstream corridor. Investigations at Saylorville Lake (including the Saylorville downstream corridor) have uncovered evidence of PaleoIndian, Archaic, Woodland, Oneota, and Great Oasis cultures from the prehistoric period;

Ioway, Oto, Sauk, and Fox (Mesquakie) from the proto-historic and historic periods; and remnants of various activities of Euro-Americans in the historic period (farmsteads, mills, cemeteries, schools, churches). All of these manifestations are present within the Greenbelt corridor.

EARLY STUDIES

Cultural resources in the central Des Moines River Valley have been studied since the late 19th century. It was not until the initiation of the Saylorville Lake project, however, that extensive field investigations were undertaken. The University of Iowa undertook a reconnaissance level survey of the project area under the auspices of the National Park Service (NPS) in 1964. This survey was conducted by personnel of the University of Iowa under the direction of Marshall McKusick, then the State Archeologist. Sixty-one sites were reported in that survey. The field effort was of a very broad, cursory nature as mandated by the funds appropriated for the survey.

A 1966 archeological reconnaissance (15 days, two people) of the Saylorville Reservoir was conducted as a part of the Interagency Archeological Services (IAS) Salvage Program. The 1966 activities were conducted as part of the River Basin Surveys Program by the Smithsonian Institution at Lincoln, Nebraska, as a supplement to the 1964 survey carried out by the University of Iowa. The report combines the results of both University of Iowa and River Basin Surveys activities. The purposes of the second reconnaissance were: to reexamine previously known sites in the area, to locate and plot additional sites, to evaluate the archeological importance of the sites involved, and to provide recommendations regarding the feasibility of salvage operations.

IOWA STATE UNIVERSITY, 1973-1981

In May 1973, the Iowa Historical Department, Division of Historic Preservation (SHPO), sponsored a small but intensive survey performed by Iowa State University at Ames, Iowa, under the direction of David Gradwohl. This survey program was undertaken to systematically obtain an adequate archeological resource inventory for the entire project area, as mandated by Section 106 of the National Historic Preservation Act of 1966. The area directly upstream of the damsite was surveyed. Only one site had been previously identified in this area; however, Gradwohl's intensive survey located an additional 20 sites. The results of this study indicated that an extensive number of sites in the project area remained to be identified.

Prior to the preparation of the Final Environmental Impact Statement for the Saylorville project (filed May 16, 1974), the Corps of Engineers assumed the responsibility for undertaking an intensive survey involving remaining project lands. This work was continued by David Gradwohl of

Iowa State University, beginning in late 1973 and ending in 1974. Under a series of contracts between the Corps and Iowa State University (1975-1981), David Gradwohl and Nancy Osborn directed work that included: (1) completing surveys upstream of the dam, (2) testing and recovering data from selected sites in the proposed conservation pool area, (3) monitoring construction activities, and (4) testing sites designated as Priority I under the mitigation plan.

The mitigation plan established a priority system for archeological sites utilizing six general research questions applicable to research at Saylorville Lake. The plan was developed by archeologists Roy Eichhorn (Corps) and Stan Riggle (SHPO's staff) in January 1980.

Several reports described this work, the most comprehensive being the Saylorville Stage 2 Contract Completion Report - Archeological Investigations in the Saylorville Lake Project, Iowa, (Osborn and Gradwohl) dated January 1981.

On July 19, 1975, the Saylorville Lake Archeological District was determined eligible for inclusion in the National Register of Historic Places. This was because of the large number of sites present (about 400 at that time), the range of cultural periods represented by the sites, and the potential of the sites for answering research questions about prehistoric and historic cultural development in the Central Des Moines River Valley. The boundary of the Archeological District was defined as the project fee property taking and all known sites at that time. Technically, sites found since the 1975 determination of eligibility (DOE) are not included in the Archeological District unless added by individual site-specific DOE requests (i.e., the Christiansen Site, 13PK407). Once the DOE for the Archeological District was obtained, a priority system was agreed upon by the Corps and the Iowa State Historic Preservation Officer (SHPO) for application to a Memorandum of Agreement (MOA) with the SHPO and the Advisory Council on Historic Preservation (ACHP). The MOA for the Archeological District was ratified on May 21, 1976; an Addendum to this agreement was ratified on June 13, 1978, which required reevaluation of the Archeological District after mitigation stipulations had been completed.

LUTHER COLLEGE, 1980-1981

An archeological and geomorphological survey conducted by the Luther College Archeological Research Center (LCARC) during 1980 identified 26 prehistoric and 12 historic sites within the downstream corridor at Saylorville Lake (Benn and Bettis 1981) where previous surveys had identified only two sites. The historic sites date between ca. 1870 and 1920, and the prehistoric sites represent Archaic, Woodland (EW, LW), and post Woodland (Oneota) occupations. A number of the sites are multi-component. The potential for locating similar sites in the Greenbelt is high because disturbances are minimal and our understanding of river valley geomorphology as related to utilization by prehistoric and historic populations has improved.

SOUTHWEST MISSOURI STATE UNIVERSITY, 1981-1982

Southwest Missouri State University, Center for Archeological Research, initiated a testing program for the downstream corridor at Saylorville Lake. The purpose of this investigation was to determine the research potential of nine archeological sites and to collect sufficient information for the Corps and the Iowa SHPO to consider the question of eligibility for listing in the National Register of Historic Places on an individual basis. The draft report (Benn and Harris 1982) was reviewed by the NPS and the Iowa SHPO. A final report was received by the Corps of Engineers, Rock Island District, in June 1982 describing their epistemological/methodological approach for studying cultural deposits in alluvial settings.

Detailed geomorphological investigations were conducted in the downstream corridor as part of the archeological study referred to above beginning in 1980 (Benn and Bettis 1981). Benn and Bettis developed a general geomorphological sequence for the Des Moines River Valley as follows: (1) high terrace development, 8,500 B.P. before the present B.P. to 4,000 B.P.; (2) alluvial fan development, 8,000 B.P. to 2,000 B.P.; (3) intermediate terrace development, 4,000 B.P. to 1,000 B.P.; and (4) low terrace development, A.D. 1,000 to present. It was clear that river valley development (including meanders and terraces) affected the way in which prehistoric groups utilized the landscape.

IMPACT SERVICES, INC., 1982-1984

Investigations by Impact Services, Inc., from 1982 through 1984 (Patricia Mary Emerson) refined the understanding of cultural resources at Saylorville Lake, and, in particular, for the sites within the area to be affected by a pool raise (833 to 836 feet NGVD). A total of 44 archeological sites (via previous surveys) were identified that would be affected based upon previous investigations of the pool perimeter. Enough information had been collected for 17 of these sites for the Iowa SHPO and the Rock Island District staff archeologist (consulting parties) to agree that their loss by inundation would not affect those qualities which caused the creation of the Archeological District. The deteriorated condition of the sites obviated the recovery of significant data from undisturbed contexts. Information for these sites is fully presented in the report entitled Resurvey and Intensive Testing of Archeological Sites at Saylorville Lake, Polk and Dallas Counties, Iowa (Emerson 1982).

Comparatively little was known about the remaining 27 sites. In this case, the consulting parties agreed that additional investigations were necessary to effectively evaluate the effects of the pool raise. All of the sites potentially contained undisturbed cultural deposits of sufficient quality to merit further consideration. Therefore, the consulting parties agreed to provide for the resurvey of the 27 sites in July 1982 by Impact Services, Inc.

Based upon the results of the resurvey, the consulting parties selected 10 sites for further investigation at the intensive survey/testing level. A second set of 17 sites (of the 27 resurveyed) were deleted from further consideration because of minimal information content and disturbances which precluded the loss of significant in situ cultural deposits. By agreement, the consulting parties directed Impact Services, Inc. (October 1982) to conduct the requisite intensive survey/testing level investigation to refine the understanding of geomorphological factors, cultural affiliations (potential situations of multi-componency), and levels of preservation for the 10 potentially eligible sites.

As a result of the intensive survey/testing level investigation, the consulting parties identified six archeological sites for further excavation. The selection was made based upon the results of investigation as described in a document entitled Interim Report: Intensive Testing of Ten Archeological Sites at Saylorville Lake, prepared by Impact Services, Inc. (Emerson 1983). These six sites, considered eligible for listing in the National Register, were excavated in 1983 under a Data Recovery Plan (approved by the SHPO and the ACHP) to mitigate the effects of the pool raise.

SOUTHWEST MISSOURI STATE/IOWA STATE GEOLOGICAL SURVEY, 1984-1986

The final large-scale study efforts at Saylorville Lake were initiated in 1984 and completed in 1985. Under Contract No. DACW25-84-C-0035, staff from the Center of Archeological Research at Southwest Missouri State University (Benn and Rogers 1985; Benn and Stanley 1985) developed an up-to-date cultural resources overview as part of a project Cultural Resources Management Plan. Southwest Missouri State staff also completed intensive survey and test excavations to evaluate all sites in recreation areas. Hafted biface and ceramic typologies were developed, along with a discussion of the historic period cultural resource base and an annotated bibliography. A second major project initiated in 1984 was a detailed geomorphological study by Iowa State Geological Survey staff (Bettis and Hoyer 1986) designed to establish landform evolution process models required to place all archeological sites within temporal and preservation potential frameworks. This project also provided information on past utilizations of the project area and site distributions. Using the results of these reports referenced above, it should be relatively easy to embark upon the necessary evaluations of recreation projects for the Des Moines River Greenbelt.

RELATED STUDIES AT LAKE RED ROCK

INTRODUCTION

Lake Red Rock also is located on the Des Moines River, approximately 142.9 river miles upstream from the confluence with the Mississippi River. Pella, Iowa, is situated about 4 miles northeast of the dam site. The

conservation pool lies within Marion County, while the flood pool extends into Jasper, Warren, and Polk Counties (plate 3). The Lake Red Rock Dam is about 6 miles upstream from the southernmost point of the Des Moines River Greenbelt. The conservation pool behind the dam attains an elevation of 728 feet NGVD. At the 728-foot elevation, the lake is about 11.3 miles long in the Des Moines River Valley and approximately 6.1 miles long on the Whitebreast Creek arm. The conservation pool has 65 miles of shoreline which expands to 400 miles at the flood control elevation of 780 feet NGVD and results in an impoundment 33.5 miles long. The Corps acquired 47,611 acres for the project, of which 8,950 acres are permanently inundated at the conservation pool elevation. A total of 29,419 acres is outgranted, leaving 18,192 acres for Corps-managed recreation and natural resource enhancement. A total of 25,572 acres (of the 29,419) is leased to the Iowa Conservation Commission. The Rock Island District is currently studying various pool raise plans which would change the conservation pool elevation to 742 feet NGVD, with a 2-foot fall raise for wildlife management purposes.

Operational effects to cultural resources currently vary depending upon physiographic parameters and pool fluctuations. Some areas are being silted in while others are being degraded by erosional processes. These factors are now being identified and incorporated into archeological testing strategies and mitigation recommendations.

EARLY STUDIES

According to Roper (1984:7-10; 1985:18-24), antiquities in Marion, Warren, and Polk Counties were described by Starr (1894) nearly a century ago. Generally, mound groups and Oneota villages were the focus of these early efforts due to high visibility and, in the latter case, on abundance of easily identifiable artifacts. Charles Reuben Keyes studied many Iowa sites in the Lake Red Rock area during the 1920's, which resulted in a trait list for the Oneota culture in Iowa.

SMITHSONIAN INSTITUTION, 1948-1949

In December 1948, Richard P. Wheeler performed the first project-specific survey for Lake Red Rock. A total of 15 sites in Marion (8 sites), Warren (5 sites), and Polk (2 sites) Counties was described (Wheeler 1949, 1959), including mound, village, and temporary camp manifestations. Six Oneota sites were identified, and Wheeler recommended that test excavations be conducted to evaluate the sites prior to project construction.

NATIONAL PARK SERVICE, 1961

The National Park Service entered into a contract with the State Archeologist of Iowa through the State University of Iowa (now the University of Iowa) to conduct "a research project of appraising the archeological values

in Red Rock Reservoir area, Iowa" (McKusick and Ries 1962:1). The resulting report describes 57 sites, including the 15 located by Wheeler. Again, testing was recommended.

IOWA STATE UNIVERSITY, 1964-1966 AND 1976

Iowa State University (ISU) was awarded a contract for archeological salvage work, including survey, test excavation, and data recovery. Forty-two (42) new sites were recorded, 57 sites were surface collected, and 9 sites were excavated. Intermittent site-specific work continued through 1973. ISU staff prepared various technical reports, papers, and articles on cultural resources at Lake Red Rock through 1979 (Gradwohl 1965, 1967, 1973, 1974; Gradwohl and Osborn 1974; Gant and Gradwohl 1966; Cole and Gradwohl 1969; Reynolds 1967, 1969, 1970; Barton 1967; Osborn 1976; Thies 1979). Passage of the Archeological and Historic Preservation Act of 1974 led to a follow-up project at Elk Rock State Park in 1976 under contract with the Corps of Engineers. Seven (7) sites were identified during the initial survey and 37 additional sites were found during construction monitoring (Gradwohl and Osborn 1976).

MISCELLANEOUS SMALL PROJECTS

Corps staff performed cultural resource surveys for Howell Station and the Tailwater Bank Stabilization Project (Smith 1978a, 1978b). A second bank erosion study required a cultural resources reconnaissance of portions of the Des Moines River Valley downstream from the Lake Red Rock dam. This study (Van Dyke and Overstreet 1977) provided an overview and site locational information from the dam to the mouth of the river near Keokuk. The Central Iowa Regional Association of Local Governments (CIRALG; Gourley 1983) utilized a variety of sources, including local avocational archeologists and sample survey results, to record a series of sites near Corps lands at Lake Red Rock. In 1977, ISU staff surveyed the Spence-Johnson Tract in Polk County for a road construction project. Several sites were found and reported on (Gradwohl and Osborn 1977:84-141), and collections held by avocationalists were examined. A survey also was conducted along a portion of Four Mile Creek adjacent to Corps land (Weichman 1974b:55-56). The Knoxville Municipal Airport was surveyed by McKay (1980); the Pella Wastewater Treatment Facility was surveyed by Thompson (1978); and various coal mining facilities by Kean (1979), Benn (1978a), Buecher (1978), Fokken (1978), Frey (1976), and Whitworth (1978). Benn's survey (1978a:2-5) located 23 prehistoric and historic sites which have comparative study value for the Lake Red Rock suite of sites.

GILBERT COMMONWEALTH, 1983-1984

This cultural resources reconnaissance, conducted by archeologists and geoaarcheologists, stands as the modern baseline study of Lake Red Rock. The objectives of this study were to: (1) review the archeological and historical literature for the Lake Red Rock vicinity; (2) conduct field examinations at recorded sites to verify locations, assess current conditions, and enhance the limited data base; (3) synthesize available data into a baseline document; (4) begin preliminary geomorphological investigations for Holocene landscape modeling purposes; and (5) begin considering the possibilities for and utility of predictive models for archeological site locations. Fifty-seven prehistoric and historic sites were examined. The results of this study are presented in the report entitled A Cultural Resources Reconnaissance at Lake Red Rock, Iowa (1984) under Contract No. DACW25-83-C-0064. This effort represents the first modern step toward fulfilling the identification and evaluation requirements of Federal historic preservation law. Geomorphological, environmental, and cultural data collected and analyzed under this baseline study enabled more ambitious research projects to follow in 1985 and 1986.

GILBERT COMMONWEALTH, 1985-1986

The two major contracts awarded to Gilbert Commonwealth can be summarized as follows (Roper 1986):

- a. DACW25-84-C-0031: Required the completion of a synthesis cultural resources overview, a cultural resources management plan, an intensive survey of recreation areas, and an intensive survey of the anticipated pool raise impact zone between 728 and 750 feet NGVD.
- b. DACW25-85-C-0037: Required a comprehensive geomorphological study of Lake Red Rock, including the formulation of Holocene landscape evolution models identifying significant depositional and erosional contexts; this information was to be articulated with the reports due under item "a" above.

POOL RAISE - SPECIFIC SIGNIFICANCE AND IMPACT EVALUATIONS

Gilbert/Commonwealth generated a list of the 159 archeological sites recorded between the 728- and 760-foot NGVD range. The list notes site elevation, components present, and recommendations for treatment (i.e., no further work or further evaluation). Of the 159 sites (or locations) within or adjacent to the pool raise impact area, 67 DID NOT require further work. This determination was made by Gilbert/Commonwealth staff based upon their investigations over the past several years. For the most part, this recommendation was made because the particular sites were: (1) destroyed; (2) disturbed; (3) inundated; (4) sufficiently studied and

determined ineligible; or (5) a combination of reasons 1 through 4. Ninety-two (92) sites required additional archeological/historical studies (i.e., testing) to determine National Register significance prior to the pool raise.

The Rock Island District proposes to complete cultural resource National Register evaluation and mitigation phases for the pool raise as follows:

a. 1986 contract: Evaluation of the 24 sites within the 725- to 740-foot NGVD range (Band 1) plus the 9 potentially significant sites from Band 2 (13MA44, 13MA209, 13MA212, 13MA317, 13MA320, 13MA350, 13MA351, 13MA384, and 13MA387) which are being affected by erosion and vandalism.

b. FY 87 solicitation: Evaluation of all or a sample of sites from the 740-foot NGVD and above range (Band 2) plus mitigation of any of the 24 sites from Band 1 determined eligible for listing in the NRHP.

c. FY 88 solicitation: Completion of evaluation of any remaining sites from the 740-foot NGVD and above range (Band 2) plus initiation of mitigation for any sites within this range determined eligible for listing in the NRHP as a result of FY 87 evaluations.

d. FY 89 solicitation: Completion of mitigation of any remaining sites from the 740-foot NGVD and above range (Band 2) which are eligible for listing in the NRHP as a result of FY 88 evaluations.

Based upon the results of the 1985-1986 pool raise survey completed by Gilbert Commonwealth, the District arranged for the 92 sites potentially endangered by the pool raise to be evaluated for eligibility for inclusion on the NRHP. American Resources Group, Ltd. staff (Mark Hill, Leah Rogers) developed an explicit research design to accomplish the intensive archeological and historical investigations necessary to clearly establish the basis for the District and the Iowa SHPO to make decisions about National Register eligibility for the 92 sites listed under item "a" above. The major work elements to be performed under this contract were to: (1) complete archeological test excavations at 92 locations (various pre-historic/ historic components); (2) generate professional recommendations on site significance for consideration by District and Iowa SHPO archeologists; (3) develop a preliminary mitigation plan; and (4) prepare a comprehensive technical report on the results of field investigations with lab analyses of cultural, historical, environmental, and geomorphological data.

OTHER STUDIES

In 1975 the Environmental Research Center was contracted to assess archeological resources within the proposed "Des Moines River corridor recreation project." The results of the literature review and sample

surface survey are described in the report entitled The Des Moines River Greenbelt Corridor Recreation Project: An Assessment of Archeological Resources (Weichman, Osborn, and Mills 1975). The authors determined that only two sites (13PK203 and 13PK204) were located within project boundaries; however, it was clearly stated that flooding problems prevented surveys of high potential areas and that many more sites likely existed. More intensive survey and testing programs were recommended along with construction monitoring (a practice since abandoned in favor of pre-construction investigations). A series of public interpretation programs was recommended.

Also in 1975, the Environmental Research Center completed the report entitled The Des Moines Riverfront Recreation Project, Des Moines, Iowa: An Assessment and Inventory of Archeological Resources (Weichman 1975). Both records review and surface survey were undertaken, resulting in the identification of archeological sites from the Archaic, Woodland, Oneota, and historic periods in the Des Moines area. It is not clear how many sites were actually located along the river.

A report entitled Cultural Resources Reconnaissance for the Des Moines River Bank Erosion Study prepared by staff (VanDyke and Overstreet 1977) from the Great Lakes Archaeological Research Center for the Rock Island District (DACW25-77-M-1471) presents the results of a sample field survey and a comprehensive literature review for the lower Des Moines River Valley. A preliminary culture history was developed, and erosion problems were evaluated. Only the upper several miles of the study area apply to the Des Moines River Greenbelt. Four sites were recorded along the Des Moines River above the Iowa Highway 92 bridge (13MA29, 13MA30, 13MA48, and 13MA49).

SECTION 3 - DES MOINES RECREATIONAL RIVER AND GREENBELT PROJECT FEATURES

INTRODUCTION

Detailed information on specific greenbelt projects can be found in the reports entitled Plan for Engineering and Design: Des Moines Recreational River and Greenbelt, Des Moines River, Iowa and General Design Memorandum, Des Moines Recreational River and Greenbelt, Des Moines River, Iowa (1986 and 1987, respectively).

STUDY SCHEDULE

The GDM study schedule developed for the study is shown on table C-1.

TABLE C-1
Study Schedule

<u>Item</u>	<u>Date</u>
Workshop locations due to Larry Wilson	27 Jan 86
Distribute draft boundary maps	01 Feb 86
Distribute Scope of Services	01 Feb 86
Initiate General Design Memorandum (GDM) and Environmental Impact Statement (EIS)	13 Feb 86
Boundary subcommittee meeting	14 Feb 86
Comments due on Scope of Services	20 Feb 86
Advisory Committee meeting	21 Feb 86
Finalize boundaries	15 Mar 86
Initial list of projects	08 July 86
Public Workshops	17 Apr 86
Advisory Committee meeting	06 Jun 86
Advisory Committee meeting	14 Aug 86
Advisory Committee meeting	03 Nov 86
Advisory Committee meeting	20 Feb 87
Committee's prioritized list of projects	20 Feb 87
Submit draft GDM & EIS to higher headquarters	31 Mar 87
Advisory Committee meeting	07 May 87
Submit final GDM & EIS to higher headquarters	31 Jul 87
Advisory Committee meeting	___ Aug 87
Final GDM approved by higher headquarters	30 Oct 87
Initiate preparation of Local Cooperation Agreements	01 Nov 87

SECTION 4 - GEOMORPHOLOGY

INTRODUCTION

The Rock Island District recently arranged to have comprehensive geomorphological studies done for Saylorville Lake and Lake Red Rock. These projects were designed to provide landscape evolution models, focused on the Holocene (post ca. 12,500 B.P.), supplemented by landform maps illustrating archeological site preservation potentials. Experience has shown that traditional surface-focused methods of inquiry are wholly inadequate in active alluvial environments. River valleys are a complex, multifaceted landscape where erosional, depositional, biological, and cultural factors affect site preservation. Many sites exist as reworked lag components where context has been lost due to erosion. Conversely, other sites have been nicely buried under sediments or colluvium (centimeters to several meters). Graded lag deposits are easy to find but least significant; buried sites can be much more difficult to find, but these sites often are important. Some sites have been variously eroded and buried over time and hold an intermediate position in terms of preservation and likelihood of discovery.

In this section of the report, the results of the geomorphological studies are summarized. The resulting landform models will be used for assessing archeological fieldwork requirements and methods on Des Moines River Greenbelt projects. The models can be applied specifically for Greenbelt projects within reservoir boundaries and extrapolated (using topographic maps and aerial photography) to non-reservoir areas. Drift Plain area projects would follow the Lake Red Rock model, while projects north of the Bemis Moraine (Des Moines Lake terminus) would follow the Saylorville Lake model.

LAKE RED ROCK

Geomorphological studies undertaken by Gilbert Commonwealth staff (Joseph Schuldenrein, Principal Investigator) between 1983 and 1986 were designed to examine the "dynamics of changing Holocene environments and their effects on prehistoric [site] distributions" for the 42-mile stretch of river valley which forms the Lake Red Rock, Iowa, project (Schuldenrein 1986:1-1). The preliminary work for this 64-square-mile project area was described in the report entitled A Cultural Resources Reconnaissance at Lake Red Rock, Iowa (Roper 1984:Chapters 3 and 5). Correlation of geomorphic relationships with the Saylorville Lake landform evolution and the resulting stratigraphic model continued under a separate geomorphologically-oriented study discussed in the report entitled Late Quaternary Landscape Evolution and the Geo-Archeology of Lake Red Rock (Schuldenrein 1986). It was anticipated that systematic reconstructions of landform networks based upon a detailed understanding of the processes responsible for their formation would provide locationally-specific clues about site locations, site significance, and states of preservation. The principal geomorphological tasks undertaken at Lake Red Rock summarized in table C-2 were excerpted from Schuldenrein (1986:2.2). Detailed test unit locations shown on plate 4 also were taken from Schuldenrein (1986:Figure 2-1).

The general classifications of uplands, high bottoms, and low bottoms proposed in the 1984 study appeared to hold up throughout the comprehensive 1986 effort. Hence, 70 percent of the 1986 study effort was focused on the high and low bottoms areas because these contexts contained the highest percentages of known sites and high potential landforms. Low and high bottoms were examined for evidence of fans, terraces, point bars, oxbow scars, ridge and swale formations, meander scrolls, levees, and backswamps. Conversely, upland contexts generally consisted of loess-over-till profiles, often degraded or disturbed by natural or human landscape modification activities.

As shown on plate 5 (excerpted from Schuldenrein 1986:Figure 3-1), Lake Red Rock lies within the Southern Drift Plain (Prior 1976; Ruhe 1969), a landscape which drains the lower reaches of the Des Moines River. Just above the lake is the terminus of the Des Moines Lobe (Bemis Moraine) wherein Saylorville Lake is located. Because the lakes are located within two different geomorphic contexts, correlations must be made with caution. Schuldenrein states (1986:3-3):

...discrete terraces and erosional surfaces were cut down in the Des Moines Lake valley sector while [Lake] Red Rock functioned as the sediment trap and depositional basin for the erosional debris. The difficulty in extrapolating site-landform and archeo-stratigraphic observations across the two regions is apparent.

TABLE C-2

Organization of Field Operations by Tasks at Lake Red Rock

Personnel	Dates	Task	Task Description
Schuldenrein, Gladfelter, Pitty, Jorstad	Session 1 6/18-6/23	a, h	General reconnaissance of study area and isolation of diagenetic and representative localities for mapping and stratigraphic investigation. Inspection of areas prone to erosion and survey of archeological sites containing key sections and posing preservation problems. Activities involved collaboration with SCS and project archeologists, consultation with Iowa Geological Survey personnel, and preparation of tasks and mapping assignments for crew.
Jorstad, Cluer, Lombard, Morris, Mullany, Pitty	Session 2 6/24-7/3	b, c, e, f, g	Emphasis on profile and section recording, initially at bluff and uplands locations and subsequently at terrace and fan settings. Hillslope and lakeshore erosion studies in vicinity of archeological sites and banklines susceptible to wave cutting and, where river flows, to channel undermining.
Schuldenrein, Jorstad, Cluer, Lombard, Morris, Mullany	Session 3 7/10-1/17	b, c, d, f, g, h	Fieldwork stressed terrace, fan, and alluvial landform mapping, profiling, and soil/sediment sampling. Giddings drill used for coring, especially along floodplain and at critical terrace and upland locales not containing visible profiles and exposures. Archeological site stratigraphies were inspected, recorded, and integrated into overall stratigraphy.
Schuldenrein, Jorstad, Cluer, Lombard, Morris	Session 4 7/21-7/26	a, b, c, d, f, g, h	Final session emphasis on resolving problematic stratigraphic questions and sampling of unique localities outside of principal valley and uplands settings; focus on tributary stream nets. Modern sediment collections made to compare with stratified fills. Concentrations on mapping, profiling, and addressing preservation problems at 13MA115, 13MA209, and especially 13MA44. Planning meetings with regional geomorphologists and Corps personnel.

(excerpted from Schuldenrein 1986:table 2.2)

The principal tributaries, the Raccoon and Middle Rivers and lower order feeders (Teter, Prairie, Calhoun, Brush, and White Breast Creeks, South River), comprise the drainage net for the steeply rolling hills interspersed with fairly level upland divides and graded alluvial valleys. A typical upland-to-valley profile excerpted from Schuldenrein (1986:Figure 3-2) illustrates the setting for cultural resource management activities (plate 6).

Loess fall from 24,000 to 14,000 B.P. was followed by glacial retreat at about 14,000 B.P., followed by a period of climatically (cold-dry) driven deflation of outwash (at Saylorville Lake) and loess deposits. Upland crests represent the terminal depositional cycle of the Pleistocene. Channel meandering and the sediment trap effect at Lake Red Rock resulted in the formation of two major terrace/fan sequences instead of the three postulated for Saylorville Lake. Again, Schuldenrein writes (1986:3-16):

While the Holocene paleogeography at Red Rock partially articulates with the reconstructions offered in the Saylorville Downstream Corridor, the time frame represented at Red Rock is considerably shorter and younger while the resolution of the sequence is in some ways more complex and much finer grained.

Landform history for Lake Red Rock was accomplished through comparative study (Saylorville Lake) and examination of historic maps, aerial photographs, archeological test profiles, and geomorph trenches/cores. The most significant aspect of the geomorphic work is the determination that (Schuldenrein 1986:5-2):

The Saylorville sector of the Des Moines is incised through well developed late Pleistocene outwash terraces that have left behind an exposed sequence of cut and fill landforms while Red Rock represents an older, bedrock valley that has captured stream flows and their poorly sorted, stacked sediments from Pre-Pleistocene times.

Hence, subsequent Holocene activity continued to mask older topographic defining features as meandering, trapping of sediments, and related cutting and filling occurred. The more mature Red Rock drainage network captures sediments as it expands, resulting in massive site/landform burial by low energy inundations over an expansive (2 to 3 miles wide) floodplain.

Schuldenrein (1986:5-7) noted that 123 archeological sites (75 percent) are located along the most meandering portions of the river on the Otley, Knoxville NW., and Pleasantville USGS 7.5-minute quadrangles. Site location, or at least the potential for locating sites, appears to be highest where sinuosity indices are highest as shown in table C-3 excerpted from Schuldenrein (1986:Table 5.1).

The contemporary meander belt occupies the entire width of the modern flood-plain; hence, paleomeander belts are hard to identify. Some abandoned loops (scars) can be sorted out, but ages of associated features remain in question. It is clear that much of the prehistoric record is buried (much more so than at Saylorville Lake) and that many of the recorded sites are reworked lag deposits, sites located where preservation is poorest. Ease of discovery and lack of integrity are directly related.

Alluvial fan development (high terrace, or TH) occurred mid-Holocene about 5,000 B.P. at the Franklin site, a context comparable to deposits in the Sweet Jane Fan (13BN279) at Saylorville Lake. Earlier fan development episodes (8,000 - 3,500 B.P.) may be documented at Lake Red Rock, but landform burial problems have hampered exploratory efforts in this regard. A date of 3,460 ± 100 B.P. substantiates the ca. 3,500 B.P. terminus for this episode of fan development correlated with the Saylorville Lake model (Bettis and Hoyer 1985).

TABLE C-3

Sinuosity of the Des Moines River Channel,
Lake Red Rock Area
(by Quadrangle)

<u>Quadrangle</u>	<u>Valley Length (mil)</u>	<u>Channel Length (mil)</u>	<u>Sinuosity Index</u>	<u>Number of Archeological Sites</u>
Harvey	7.86	9.19	1.16	4
Knoxville	0.57	-	-	-
Otley	6.82	9.85	1.44	75
Knoxville Northwest	7.58	12.31	1.63	24
Pleasantville	6.82	11.74	1.72	14
Hartford	3.98	4.26	1.07	5
Rising Sun	<u>6.44</u>	<u>8.90</u>	<u>1.38</u>	<u>27</u>
Total (Red Rock) (Source: this report)	40.07	56.25	1.40	149
Downstream Corridor (Source: Benn and Bettis 1981)	7.43	9.00	1.21	

(excerpted from Schuldenrein 1986:Table 5.1)

By about 2,500 B.P., the floodplain had stabilized, to be followed by a new sequence of downcutting (ca. 2,000 B.P.) which isolated remnant pre-2,500 B.P. Holocene features (fans/terraces) about 2 meters above the modern floodplain. Surfaces that aggraded after this period are referred to as Low Terrace (TL) by Schuldenrein (1986:50-18) and it is postulated that TI (Intermediate Terrace) landforms, if present at all, may be buried uniformly under overbank deposits. It is also very likely that TI features were eroded and lost by the post 2,500 B.P. downcutting/erosional cycle. Schuldenrein summarizes as follows (1986:5-18):

This scenario discloses that sites of prehistoric activity during early and middle Holocene time that remain in this area [Lake Red Rock] are sealed within fans and beneath floodplain alluvium. Only in the Late Archaic period did aggradation in these settings wane such that Late Archaic and younger occupations may occur in near-surface contexts. However, because meandering by the Des Moines River and its larger tributaries is ongoing, Woodland and Oneota sites will be found only where more recent channel activity has not destroyed them. ... the Red Rock basin functioned as an undifferentiated sediment trap for most of the past 10,000 years. ... It is primarily the High Terraces (TH), Low Terraces (TL), and alluvial fan complexes that bridge the lengths of the Saylorville and Red Rock segments of the Des Moines drainage.

The resulting eight major landform categories and their distributions are displayed on plates 7 and 8, as excerpted from Schuldenrein (1986:Figures 5.2A and 5.2B). Geomorphic events and distributions are defined in table C-4 (Schuldenrein 1986:table 5.3). Schuldenrein's (1986:5-19 to 5-28) "cultural landscapes" are shown on table C-5.

Schuldenrein's summary statement continues as follows (1986:5-25):

The early prehistoric periods, from Paleo-Indian through Middle Archaic times have been omitted from this succession, largely due to their absence in the study area. Their presence in deeply buried deposits remains a possibility, but until diagnostic cultural materials or dates from equivalent landforms or strata are found, this 7000 year interval remains a gap in the landform record. In effect, then, the landforms of the present valley document over 5000 years of geomorphic history, during which time at least two cut and fill cycles registered discrete surfaces corresponding with the High and Low Terraces, respectively. The terraces, especially the TL, are very subtly offset from the contemporary floodplain because of aggradation and inter-digitation of two separate alluvial fan complexes and because of the masking effect produced

TABLE C-4
Principal Landform Categories Represented at Lake Red Rock

Landform Category	Distribution	Geomorphic History and Correlation	Hectares	% of Reservoir
Wisconsinan Loess Capped Uplands	Lines valley margins the entire length of the Red Rock Basin. Overlies Paleozoic bedrock and/or Yarmouth Sangamon paleosol at elevations of 770 to 780'.	Loess accumulated atop the scarps in terminal Pleistocene times. Silts are deflated from Wisconsinan floodplains and have weathered in situ, leaching out carbonates. Minor cycles of deflation occurred during Holocene, and silts form parent material underlying podsol profiles.	Extend beyond floodplain limits across Southern Drift Plain.	-
High Terrace/(TH) (Intermediate)	Elevations ranging between 760 (upstream) to 720 feet (downstream). Terraces outcrop primarily on north side of river and are extensively distributed. They are 3-4 meters above floodplain.	Formed as a result of rapid alluviation in mid-Holocene. Outcrops were subsequently bisected by tributary streams and general surface was incised by Des Moines River subsequent to 2,500 B.P.	6,470	10.3
Alluvial Fan/High Terrace (AF/TH)	Elevations are on same order as TH, but complexes are isolated and appear to be related to larger tributary nets on south side of river, especially Ballard, Whitebreast, and Competine Creeks.	Fans inter-digitated with alluvial deposits of laterally migrating Des Moines River during early-mid Holocene. Stratification and bedding structures are often preserved in bedload stream flows; sands are moderately to well-sorted at confluences, often overlying older (Mollisol) profiles.	1,285	2.0

TABLE C-4 (Cont'd)

Landform Category	Distribution	Geomorphic History and Correlation	Hectares	% of Reservoir
Low Terrace (TL)	Elevations ranging between 735-730 (upstream) to 710 feet (downstream). Terraces flank entire length of floodplain and grade down to present channel and bank levels.	Terraces are underlain by Mollisols and Entisols and accumulations of overbank (suspended load) deposits. Overbanking has buried former surfaces and perhaps remnants of an Intermediate Terrace. A new phase of limited incision, effectively stabilized at present base levels, has been ongoing over the past 1,000 years.	34,890	55.3
Alluvial Fan/Low Terrace (AF/TL)	Elevations are on same order as TL and complexes are affiliated with shorter and less mature drainage than AF/TR. Outcrops were identified at Sugar and Wildcat Creeks - at site 13MA209 - as well as at less prominent tributaries.	Fine sandy silts overlying Entisols have been tied to prehistoric Oncoia site signifying fan sedimentation within the past 1,000 years. These deposits were laid down by slightly more competent streams than that flowing in the main Des Moines channel. Fan flows may reflect adjustment to a lowering base level.	865	1.3
River Channel	Present channel meanders across a floodplain ranging from 1/2 to 3 miles wide. Meandering is most prominent in central portion of reach average (sinuosity = 1.40)	Channel as mapped represents natural course of stream flow prior to 1938. This period represents the height of 20th century land use (primarily agrarian) prior to dam generated impacts. Stream migrations were largely affected by sedimentation and erosion patterns attributable to human landscape modifications.	3,925	6.2

TABLE C-4 (Cont'd)

Landform Category	Distribution	Geomorphic History and Correlation	Hectares	% of Reservoir
Point Bars	Localized at inside bends of most arcuate meanders of mapped channel. More sinuous reaches contain thicker point bars with medium sandy depositions.	Point bars reflect most recent channel migrations at the time of mapping (c. 1938) since the active channel was rapidly overriding former bars, eroding and/or entraining their sediment loads.	1,385	2.2
Ridges and Swales (Former Bars and Levees)	Highly variable spatial distributions but limits are defined by alluvial fans and more extensive (transverse) terrace outcrops. In many cases, complex bars are diagnostic of former oxbows and identify a former differentiated floodplain setting.	Illustrate the broad lateral dimensions of the Holocene channel. Bars are often composed of finer sediments (i.e., fine sands and silts) than would be typically expected and suggest considerable migration even during late Holocene periods when overbanking was dominant mode of sedimentation.	7,825	12.4
Meander Loops	Distribution intensified downstream in conjunction with diminished gradient, increased discharge, and deposition of finer sediment load.	Discernible loops and oxbows represent most recent migrations (pre-1938), since older scars were invariably filled in by settling silts and clays. These comprised sediment traps in the larger Red Rock basin.	6,470	10.3

(excerpted from Schuldenrein 1986: Table 5.3)

by contemporary, dam-regulated, siltation. On the basis of the available dates, it appears that aggradation of the TH ceased around 4000 - 3500 BP and that a new base level stabilized by 2500 BP. This was incised and the TL emerged as a very gently raised, undulating surface around 750 BP.

TABLE C-5

Cultural Landscapes at Lake Red Rock

<u>Cultural Landscape</u>	<u>Time Frame</u>	<u>Landform Categories</u>
Pre-occupation	<12,000 BP	Wisconsinan Loess Capped Uplands
Prehistoric/Early Historic	5,000-200 BP	High Terrace, Low Terrace, Alluvial Fan Complexes
Historic/Industrial-Agrarian	<200BP	River Channel, Point Bar, Ridge-Swale, Meander Loops

Approximately 88 percent of the valley terrain has been altered in some fashion over the past 1,000 years (since ca. A.D. 900) as a result of sediment trapping from upstream downcutting processes and inputs from the more mature headward eroding streams in the Lake Red Rock drainage network. The river channel, point bars, ridges/swales, and meander loops that characterize the modern landscape comprise only 31 percent of the valley terrain. There are "more extensive and more geologically recent low-lying tracts at Red Rock than there are at Saylorville." (Schuldenrein 1986: 5-26) Hence, the basic High versus Low Bottoms categories perceived in 1983 still apply, with the latter firmly ensconced on the (or within the) modern floodplain.

The bottomland areas were reworked by fluvial sedimentation and stream erosion to the point where only about 6,000 years of geomorphic record has been clearly identified. Aggradation occurred from 6,000 to 3,500 B.P. as floodplain deposits and fans become interdigitated. Most of the alluvial fill material was translocated by slope and bluff crest erosion. From about 5,000 B.P. to 2,500 B.P., tributary fill deposits accumulated, particularly as headward erosion continued to expand the drainage net. Erosion of valley slopes and deposition on the valley floor was coincident, with a period of accelerated activity during the Middle Holocene hypsithermal interval (cold, dry) about 7,000 B.P. According to Schuldenrein, local mechanisms also can affect valley morphology to create unique, non-correlative contexts. These mechanisms include (1986:6-112, 6-113): slopewash, bank erosion, rainsplash, rill and interrill wash, cultivation, freeze-thaw cycles, wave erosion, solifluction, seepage, and weathering. All of these processes act upon archeological sites.

Schuldenrein (1986:7-1) feels that we have an outline of Holocene landscapes development for Lake Red Rock; a lack of data from fully excavated and tested archeological sites prevents development of a refined model.

The landform maps (plates 7 and 8) are two-dimensional and do not provide information about the complete nature of "contexts" as proposed on plate 10. Schuldenrein summarized aggradation-erosional cycles for the Dissected Till Plains (1986:Figure 7.1); this summary is excerpted for this report as plate 9. Climatic discontinuities, at least partly responsible for these cycles, occurred at: 8,000; 6,000; 4,500; 3,000; 2,000 to 1,800; and 800 B.P. No single drainage system contains evidence for all of these discontinuities, but often there is a relationship partly modified by local extrinsic and intrinsic factors. Wendland and Bryson's (1974:Table 5) statement on cultural discontinuities was used by Schuldenrein to further illustrate the possible relationships between culture and context (table C-6).

TABLE C-6

<u>Cultural and Geomorphic Discontinuities</u>		
<u>Cultural Discontinuity (Years B.P.)</u>	<u>Archeological Period (Des Moines Valley)</u>	<u>Red Rock Alluvial Chronology</u>
830	Oneota	Limited channel migration, incision and soil formation
1260	Woodland	Overbanking and establishment of AF/TL complexes; Low Bottoms
2510	Archaic/Woodland	Accretion of TL complexes, Low Bottoms
3110	(late) Archaic	Incision of TH/AF surfaces and extensive channeling
4230	(early) Archaic	Slowing of TH/AF alluviation; soil formation
5900	(early) Archaic	Aggradation of TH/AF complexes, High Bottoms
9530	Paleo-Indian	Unknown

All known archeological sites were plotted onto a geomorphological landform map (Schuldenrein 1986:Figure 7.2), as shown on plate 11. After a quick review, it is clear that archeological sites are distributed as shown in table C-7 (Schuldenrein 1986:Table 7.1):

TABLE C-7

Archeological Site Distributions By
Landform and Components

Landform	Component			
	Paleo- Indian	Archaic	Woodland	Oneota/ Great Oasis
Wisconsinan Uplands	0	2	14	1
High Terrace	0	0	2	2
Alluvial Fan/High Terrace	0	0	0	2
Low Terrace	0	0	12	2
Alluvial Fan/Low Terrace	0	0	8	0
Contemporary Floodplain	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>
TOTALS	0	3	37	7

Archeological site potentials were defined by Schuldenrein (1986:Table 7.2) as excerpted for table C-8.

Schuldenrein (1986:7-12, 7-13) outlines the following general trends regarding prehistoric site distributions:

1. Archeological assemblages of all post-Archaic prehistoric periods are likely to be encountered along uplands and interfluves. In general, such sites will be small and will decline in relative integrity downslope as hillslope process accelerates site degradation and reworking;
2. Woodland sites are likely to occur on low terrace and in conjunction with low terrace/alluvial fan complexes at tributary junctures.
3. Optimally preserved sites are the larger Oneota sites housed in upper sediments of high terrace complexes on the High Bottoms.

Basal portions of these landforms are mid-Holocene in age and may contain Archaic deposits, but this has not been demonstrated to date;

4. Archeo-stratigraphic associations of the Low Bottoms are very poorly understood, since the "blanketing effect" and highly buried settings rend them inaccessible. Indications (i.e., from the Franklin site) are that middle Holocene deposits are preserved at the base of sequences.

TABLE C-8

Archeo-Stratigraphic Potential at Lake Red Rock

Unit	Geomorphic Setting	Soil-Sediment Properties	Probable Archeological Context
I	a. Upland crests and interfluvial edges and steps	a. Upland podzols with organic A-horizons and leached substrate	a. Generally reworked, but occasionally intact assemblages from smaller Woodland, Oneota, or Archaic sites
	b. Floodplain terrace tops of high and low surfaces	b. Overbank silts and clays capping mollisols on lower terraces and interdigitated with fine sands on higher fan-terrace surfaces	b. Reworked assemblages of Woodland-Oneota sites on low bottoms; well preserved Oneota sites on higher fan-terraces
II	a. Upland interfluvial edges	a. Truncated Wisconsin loess paleosol	a. Reworked assemblages from Woodland, Oneota, and Archaic
	b. Fan head deposits on higher terrace bottoms and buried silts on lower terrace	b. Alluvial fan silts and sands (upper); mildly weathered silts (lower)	b. Well preserved Oneota material on high surfaces and reworked undiagnostic (Late prehistoric) on buried surface
III	a. Upland interfluvial step	a. Proglacial lacustrine deposits	a. Reworked assemblages in secondary context
	b. Buried terrace surface (Low Terrace only)	b. Argillic paleosol (upper)	b. Uncertain (Late Archaic-Early Woodland?)
IV	a. Upland interfluvial step	a. Kansan till deposits	a. Reworked assemblages in secondary context
	b. Buried terrace surface (Low Terrace only)	b. Argillic paleosol (lower)	b. Uncertain (prior to Late Archaic?)
V	a. Upland bench	a. Pennsylvanian bedrock	a. Generally reworked, occasionally intact assemblages of Woodland period
	b. Buried outwash (Low Terrace only)	b. Terminal Pleistocene outwash (?)	b. Pre-occupation (?)

5. The evidence indicates that there is a unique preservation signature to each of the principal settings of the project area: uplands/interfluvial edges, High Bottoms, Low Bottoms. The Figure 7.3 schematic highlights settings, their relative elevations and outcrop dispositions across Lake Red Rock, and the principal stratigraphic units documented by the research. On the basis of these patterned archeo-stratigraphic and site-landform correlations, several major predicative statements can be advanced.

6. Upland/interfluvial locales hold a high potential for prehistoric site occurrence, but the landscape history of that physiographic setting precludes encountering significant occurrences of buried or stratified sites. In general, the farther downslope the site is encountered, the more likely it is to be in secondary association. An emphasis in uplands survey would be to record as many sites as possible, and to generate an index for site context by noting the nature of its slope setting. Representative artifact collections along slopes may register differential erosional rates.

7. Both High and Low Bottoms locales offer strong preservation potentials, but the "blanketing" effect has obscured formerly diagnostic topographies. Higher Bottoms refer to surfaces accumulated during the first mid-Holocene fill hemi-cycle. Surface aggradation may be tied to the Hypsithermal (>6000 B.P.) and incision dates to around 3,000 years ago. Downcutting was limited, however, and tributary and fan aggradation near confluences persisted and built up fans that were exploited by Oneota peoples (i.e., raised fields). Low Bottoms date to the second fill hemi-cycle (<3000 years B.P.), but they are underlain disconformably by some of the oldest Holocene deposits preserved along the floodplain and at depths of less than 4 meters. Both landform sequences suggest that the subsurface stratigraphy may provide the only repositories for significant pre-Woodland finds. These observations suggest that while more extensive coring can date and ultimately identify base levels of early Holocene landforms, the potential for recovering significant cultural materials from these time frames is minimal.

SAYLORVILLE LAKE

Geomorphological studies by Iowa Geological Survey (IGS) staff (E. Arthur Bettis III and Bernard E. Hoyer) in 1984 and 1985 were undertaken to identify, map, and date valley landscapes. The results of this study are

presented in the report entitled Late Wisconsinan and Holocene Landscape Evolution and Alluvial Stratigraphy in the Saylorville Lake Area, Central Des Moines River Valley, Iowa (Bettis and Hoyer 1986). This study was an extension of a 1984 project wherein a preliminary Holocene landscape evolution model was proposed for the downstream corridor at Saylorville Lake (Bettis and Benn 1984). The original model focused primarily on floodplain features of the main valley. The 1984-1985 comprehensive geomorphological study by IGS expanded the model "to include sidevalleys, alluvial fans, colluvial slopes, valley slopes, and uplands." (Bettis and Hoyer 1986:2) More importantly, however, was the fact that the "landscape" approach became the unifying thread for the cultural resources overview and management plan prepared by Benn (1986).

Saylorville Lake (plate 2) includes portions of the Des Moines River Valley (DMV) in Polk, Boone, and Dallas Counties. Roughly 17 river miles define the reservoir proper (conservation pool), supplemented by 37 miles to the north, comprising the flood control pool and about 5 miles of river valley below the dam in what is referred to as the downstream corridor. Thus, nearly 60 miles of river valley and 14,907 Km² (5,823 square miles) was included in the study.

Coincidentally, the project area marks the southernmost extent of the last glaciation to affect this part of Iowa around 13,000 B.P. (plate 5). The southern end of the project area is defined by the Bemis Moraine of the Des Moines Lobe. Uplands predominantly are "low-relief till plains with extensive areas of ground moraine and a poorly integrated drainage network" which, prehistorically, would have harbored "extensive intermittent lakes and other wetlands." (Bettis and Hoyer 1986:2) Thus, the DMV and its tributaries are cut into deposits of the late Wisconsinan-aged Des Moines Lobe, and the DMV becomes the outwash-related source of sediments flushed downstream to the Lake Red Rock sediment trap caused by a marked decrease in gradient. Wisconsinan-aged loess covers eroded and pedogenically-altered pre-Illinoian deposits, with, in places, a basal loess dated (A-C profile paleosol) to 21,500 B.P.

Quoting from Bettis and Hoyer (1986:10), the purpose of the project was:

1. to define the age and to map the extent of valley surfaces and landforms as well as to determine the age and sequence of the deposits underlying them, and
2. to use this information to construct a model of landscape evolution in the central DMV for the purpose of assessing the geological potential for preservation of various-age archaeological deposits within the valley deposits.

IGS staff examined aerial photographs, USGS 7.5-minute topographic maps, solid 7.6-inch diameter Giddings soil cores, backhoe trench profiles, archeological test pits, and fortuitous exposures. The DMV above Beaver Creek at the town of Des Moines is of Des Moines Lobe and post-Des Moines Lobe age, while the Beaver Creek Valley and DMV areas to the south appear to contain pre-Wisconsinan alluvial fills which, in part,

have been reexhumed. The Saylorville Lake portion of the DMV began to evolve after glacial retreat in 13,500 B.P. Sand deposits were left on top of Wisconsinan-aged loess, possibly due to a subglacial or englacial channel at the base of (or within) the Des Moines Lobe. Till deposits were then laid down over the fluvial sands and both the sand and the till deposits were then subjected to the fluvial actions of cutting, filling, meandering, and flooding. At about 12,600 B.P., the DMV was located east of the Highland Park/Capitol Hill area of the present city of Des Moines in a Beaver Creek channel. By 12,300 B.P., the current DMV course was established and extensive outwash deposits began to accumulate.

Bettis and Hoyer (1986:24) write:

Numerous high late Wisconsinan benches and terraces flank the DMV in Boone, Dallas, and Polk Counties. Benches referred to in this report are erosional features cut into underlying deposits and are mantled with less than 2 meters of alluvium. Terraces, on the other hand, are constructional with more than 2 meters of alluvium burying a cut surface. The benches and terraces occur above 930 feet (283 m) in elevation in the vicinity of the Altamont Moraine in Boone County to above 835 feet (254m) in the vicinity of Saylorville Dam in Polk County. The benches and terraces are generally unpaired, developed on glacial till or Pennsylvanian-age rock and separated by prominent scarps. Benches are numerous and are found at both low and high elevations, while terraces are less common and are restricted to the lower elevations. One to two meters of cobbly outwash mantle the benches while the terraces contain outwash in excess of 3 meters in thickness. Approximately 1 meter of loamy outwash, often altered by eolian activity, usually mantles the bench and terrace surfaces.

Late Wisconsinan bench and terrace levels at Saylorville Lake are shown on plate 12 excerpted from Bettis and Hoyer (1986: Fig 7). Late Wisconsinan terraces have three basic units; (1) a lower unit of bedded, pebbly sands, resulting from small-scale ripple and dune bedforms, lateral accretion deposits, and channel fills; (2) a coarser middle unit of poorly sorted pebbles or cobbles of bar and channel-fill structures from increased flows; and (3) an upper unit of sandy loam (fining-upward) deposited during periods of low flows. The upper horizon has been modified by Holocene eolian, blow sand activity. Late Wisconsinan terraces and benches formed between 13,500 and 11,000 B.P., are at substantially higher elevations than later Holocene features, and occur as a series of steps along the inside bends of valley meanders (slip-off slopes), or "as a series of stair-like steps along the valley wall in straight reaches of the valley." (Bettis and Hoyer 1986:27) These features are illustrated on plate 13 excerpted from Bettis and Hoyer (1986:Figure 10).

Bettis and Hoyer (1986:27-32) divided the Saylorville Lake project area into six reaches which define district variations in geomorphic and physiographic features and degree of inundation. Detailed descriptions of the reaches are presented in the report; however, the three maps which illustrate the reaches and the geomorphic features within them are included

in this cultural resources assessment as plates 14, 15, and 16 which are large-sized fold-out pocket enclosures. The maps essentially summarize the landscape model for the Saylorville Lake area. Most important, at this juncture, is the information on Holocene landforms which bears directly upon archeological site locations and preservation potentials.

By 11,000 B.P., Holocene deposits began to occur "as horizontal sequences composed of fine-grained loamy alluvium, with subordinate amounts of sandy loam and silt loam alluvium, deposited by a meandering stream" (Bettis and Hoyer 1986:32). Three general terrace complexes have been identified ... that is, High (TH), Intermediate (TI), and Low (TL) terraces separated by 1- to 3-meter-high scarps. According to Bettis and Hoyer (1986:32), "the Holocene terrace complexes show consistent age relationships along the valley," and, furthermore, that the terrace complexes can be defined as follows:

The High Terrace (TH) was deposited episodically by flood events between 11,000 and 4,000 years B.P., and contains various paleosols (buried soils) within the alluvial sequence, indicating local periods of landscape stability on the DMR floodplain during this time interval. TI deposits accumulated between 4,000 and 750 years B.P. The alluvial sequences comprising this terrace complex often contain weakly-developed buried soils. The TL terrace complex dates from 750 years B.P. to the present. No buried soils are associated with this level.

The High Terrace occurs as a relatively featureless level above the present level of flooding (excluding the effect of Saylorville Lake). Deposits making up this level are generally oxidized and loam to silt loam texture. Stratification is usually evident only in the lower portions of TH deposits. Relatively thick, dark colored surface soils (Mollisols), often with argillic horizons (zone of secondary clay accumulation), are developed on this level.

TI usually exhibits undulations across its surface. These undulations reflect scarps separating individual terraces within the TI complex as well as partially masked natural levees, chutes, and abandoned channels. This level occupies high portions of the modern floodplain. TI deposits are usually darker colored than TH deposits. Stratification is more pronounced in TI deposits than it is in TH deposits. Dark colored surface soils are developed on TI. These are morphologically less well expressed than are those on TH.

TL occupies the lowest portions of the modern floodplain. It is marked by ridge-and-swale topography and has much more surface relief than TI. Alluvial landforms on TL are less masked by overbank deposits than are those on TI. Surface soils on TL are Entisols (A-C profiles).

Alluvial fan deposition occurs where tributaries join the main DMV. The main period of alluvial fan deposition was from 11,000 to 4,000 years B.P., contemporaneous with deposition of the High Terrace. Paleosols within the fan sequence represent periods of stability following episodic deposition across the fan surface.

Detailed information on the geomorphological character of the six study reaches can be found in Bettis and Hoyer (1986: 32-51). Most Holocene terraces in Reach 3 are inundated by the conservation pool limiting archeological potentials in this portion of the DMV. Generally, TH deposits are overbank deposits derived from Early Holocene flood events. "TH channel deposits are at or slightly below the present river level" (Bettis and Hoyer 1986:54). Tables C-9 and C-10 present landform descriptions and calculated areas, respectively.

After 11,000 B.P., tributary valleys quickly formed, downcutting rapidly to keep pace with Des Moines River entrenchment. Most of these valleys have steep gradients floored on glacial till, loess, or Pennsylvanian bedrock for upper and middle reaches. Upper reaches typically contain several elevated terrace remnants which eventually merge together by mid-reach or lower reach. Alluvial fans have formed at the junction of the tributary valleys and the DMV. Colluvial slopes and small fans appear along valley walls. Many tributary valleys have been severely reworked during the historic period due to clearing, erosion, and changes in water levels. Bettis and Hoyer (1986:58) state:

Just as in the main valley, maximum downcutting in lower portions of the tributaries had occurred by around 11,000 to 10,000 B.P. Following that, the tributaries alluviated in conjunction with the fans at their mouth.

A lower terrace or floodplain level is inset below the upper level tributary terraces. Deposits making up this lowest level are usually darker colored than those comprising the upper level. The lower level usually occupies the greatest area in the tributary valleys. Deposits making up the lower level are probably late Holocene and Historic in age. ... Soils developed on the lower level in the tributary valleys are Inceptisols (A-Bw-C profiles) and Entisols (A-C profiles).

Small tributaries (<0.5 Km long) are very steep and have V-shaped valleys with little or no floodplain area. Only small patches of pre-late Holocene alluvium are preserved in these valleys. Most of their valley floor is late Holocene and Historic in age. Often, trenched, steep angled fans are found where these tributaries join larger tributaries or the DMV.

TABLE C-9

Geomorphic Study Reach Characteristics: Saylorville Lake

Reach	General Location	TR	TI	TL	Fans	Colluvial Footslope	Late Wisconsinan Terrace/Bench and Madrock Characteristics
6	Mineral Branch confluence south to a point several miles below Honey Creek	largest accessible area but not uniformly distributed; several large remnants on inside bends of large meanders	separated from TI by 3-5m scarp; highest portions of modern floodplain; surface relief greater than TI w/ landforms such as natural levees, point bars, chutes, and abandoned channels -- after abandoned by FA; steep TI levels are subtly differentiated; TI deposits can be buried by TL landform at lower elevations; upward facing sequences; surface soils are Entisols (A-C profiles) on minimally developed Mollisols (A-Bw-C profiles); less common on inside bend of large valley meanders	between the river and the TI throughout the reach; lowest portion of modern floodplain; separated from TI by prominent scarp; TI truncates TI alluvial features and also has its own natural levees, point bars, chutes, and abandoned channels; less PSA than TI; TI deposits typically coarser and more stratified with beds of organic materials/logs common; surface soils are Entisols; TI-TL designation means that an interdigitated landform or feature w/shared properties exists	numerous fans, some low-angle;	easy areas	inside bend of valley meanders and as steps along straight sections
5	Just below Honey Creek south to IA Hwy 210 West out of Madrid	remnants are fairly rare; some on inside bends of valley meanders; 2-3m above TI	as above	very little present; as above; little channel change indicated	most fans present; several large low-angle fans mantling benches	abundant	similar to Reach 6 except for more extensive Pennsylvania rock outcrops such as at Ledges State Park (cliffs, palisades, overhangs of sandstone)
4	IA Hwy 210 south to Mosquito Creek	rare, focused in Kenia area; mostly eroded away during TI and TL formation; 2-3m higher than TL	as above	inundated by flood pool; more TL than in Reach 5 indicating more channel change	rare, eroded away by TI and TL formation; large low-angle fan merges w/ TI just downstream of IA Hwy 17 which is of TI age	rare	benches are common; stair-step like configuration to uplands; Pennsylvania limestone beds
3	Mosquito Creek to the Saylorville Dam (conservation pool)	AGE of TI in project area; mostly on eastern valley side; indicates post 11,000 B.P. western migration of river; 2-3m above TI	contained most TI in project area but now under conservation pool; historical maps show abandoned channels, chutes, natural levees, oxbow lakes	contained mostly TL in project area but now under conservation pool; historical maps show abandoned channels, chutes, natural levees, and oxbow lakes; extensive channel movement during past 1000 years may have reworked floodplain features and sites	abundant due to increased gradient and sinuosity; both large low-angle and smaller steep angle fans (latter are common), mostly preserved on the eastern wall; extensive channel movement during past 4,000 years may have reworked floodplain features and sites	abundant due to increased gradient and sinuosity but most under conservation pool	Pennsylvanian shales outcrop along western valley wall; wider valley generally; benches continuous along eastern valley wall and intermittently along western valley wall (stair-step configuration); steep river gradient, increased pre-lake meandering; benches reworked by earlier activity during Holocene
2	Saylorville Dam south to Saylor Creek	extensive remnant below Rock Creek on eastern side; remnant on western side being destroyed by 1-80 borrowing; properties similar to reaches 4-6 above; most TI outside Corps boundary	largest extent TI remnants in large meander loops; similar to Reach 6 description	largest extent TL remnants in large meander loops; similar to Reach 6 description	common but restricted to eastern valley wall; many inter-finger w/TI		Small benches at and below 640' elevation; unique extensive back-sweep development between TI and valley wall on east side
1	Saylor Creek south to terrace of Des Moines Lake at city of Des Moines (outside project area)	NONE - destroyed by historic meandering and urbanization	NONE	very extensive due to substantial meandering during past few hundred years	NONE - destroyed by meandering and urbanization	NONE - destroyed by meandering and urbanization	very narrow valley defined by Pennsylvanian bedrock outcrops

TABLE C-10

Saylorville Lake: Area Occupied by Landform/Terrace Levels (hectares)

Reach	Fan/Colluvial							
	Fan/LWB	Slope	Fan	Fan/TH	TH	TI	TI/TL	TL
Fraser - Turkey Creek								
Total area	6.3	4.9	51.9	48.6	383.8	336.7	135.2	117.1
% of reach	1	.4	5	4	35	31	12	11
% of reservoir	.1	.1	1	1	10	9	3	3
% of level in reservoir	*	23	48	5	39	22	21	29
Turkey Creek - Hwy. 210								
Total area	18.4	9.8	32.6	11.1	54.7	354.4	124.5	11.2
% of reach	3	2	5	2	9	57	20	2
% of reservoir	.5	.2	1	.3	1	9	3	0.3
% of level in reservoir	*	46	30	10	6	23	19	3
Hwy. 210 - Mosquito Ck.								
Total area	*	*	*	23	67.9	224.6	147.5	34.7
% of reach				5	14	45	30	7
% of reservoir				1	2	6	4	1
% of level in reservoir				22	7	14	23	8
Mosquito Ck. - Dam								
Total area	*	6.8	24.7	25.4	474.2	649.0	241.6	247.7
% of reach		.4	1	2	28	39	14	15
% of reservoir		.2	1	1	12	17	6	6
% of level in reservoir		31	22	23	48	41	37	60
TOTAL AREA		21.5	109.2	108.1	980.6	1,564.7	641.8	410.7

* Individual occurrences of these levels are very small and difficult to map at this scale.
(excerpted from Bettis and Hoyer 1986: Table 2)

Based upon radiocarbon dates, archeological remains, and landform analyses, Bettis and Hoyer (1986: 58-60) present a general DMV landscape evolution chronology as follows:

- 11,000 B.P. - DMR downcut rapidly to level below present; Des Moines Lake retreated; Holocene river regime developing; tributary valleys rapidly downcutting/lengthening, providing large volumes of loamy sediment to river

- 11,000-
6,500 B.P. - river meandered across valley floor leaving fine-loamy overbank deposits; fans develop at junctions w/tributary valleys; deflection of river away from junction

- 6,500-
6,000 B.P. - soils develop on stabilizing floodplain

- 6,000-
4,000 B.P. - sedimentation rates increase, burying earlier soils/landforms with loamy alluvium

- 4,000-
3,500 B.P. - downcutting resumes isolating former floodplain as elevated TH; soils begin to develop on TH; fans continue to develop at tributary junctions.

- 4,000-
750 B.P. - river meandered across valley floor creating TI and TL landforms; fan head trenches developed at ca. 3,250 B.P. and sedimentation on fan surfaces ceased; DMR has continued to downcut (i.e., 750 B.P. episode) and isolate TI's where soils developed

- Post
750 B.P. - TL formed by river meandering; sedimentation on most TI levels due to flooding; period of valley reworking

Citing Ruhe and Walker (1986), Bettis and Hoyer (1986:60) apply a hillslope model of erosion and deposition to help explain site locations, preservation potentials, and extent of site burial/erosion. The hillslope elements of summit, shoulder, backslope, footslope, and toeslope are used as illustrated on plate 17, as excerpted from Bettis and Hoyer (1986:Fig. 21). The latter authors also state:

The summit is the most stable area, the shoulder and backslope are zones of net erosion, while the foot-slope and toeslope are depositional areas. Slopes are not two dimensional, but instead occupy three dimensions. Hillslope profiles are parts of larger geomorphic components which comprise the landscape. These geomorphic components are: interfluve -- upland areas located between hillslopes; headslope -- the head of a tributary valley where slope lengths converge; sideslope -- forms the sides of the valley, slope lengths are generally parallel in these areas; and, noseslope -- located at the valleyward end of the interfluve where slope lengths diverge downward.

In general, noseslopes are areas of net erosion while headslopes are areas of net deposition.

Areas evolve through time and can change from one hillslope position to another as pedogenic and geomorphic processes occur. Typically, however, Saylorville Lake archeological sites will be found as follows: (1) at or near the surface of shoulder and backslope contexts (net erosion); (2) summit locations may contain cultural materials at or above the A (or E) -B interface; (3) buried prehistoric deposits will be concentrated in footslope and toeslope contexts (i.e., colluvial slopes). It must be recognized that there is a great variation in hillslope-specific characteristics as numerous erosional, depositional, biological, and cultural factors alter hillslopes. Each physiographic setting must be compared to the general model but described individually to account for variations, such as those caused by the three major periods of instability: (1) ca. 13,000 deglaciation; (2) 8,000 - 3,000 B.P. hypsithermal internal climatic/vegetation change; and (3) modern period urbanization, agriculture, and deforestation.

Bettis and Benn (1984) estimated preservation potentials for buried archeological deposits at Saylorville Lake. The result, table C-11 (Bettis and Hoyer 1986:Table 3) illustrates which contexts have preservation potentials by major cultural period. The table does not account for older landforms destroyed by the development of younger ones.

TABLE C-11

Saylorville Lake Site Preservation Potentials

<u>Culture Period</u>	<u>Alluvial Fans</u>	<u>High Terrace</u>	<u>Inter-mediate Terraces</u>	<u>Low Terrace</u>
Paleo-Indian	++	+(late)	-	-
Early and Middle Archaic	++	++	-	-
Late Archaic	++	+	++	-
Woodland	+-	-	++	-
Oneota and Great Oasis	+-	-	++	+-
Historic	-	-	+-	++

- not possible; +- low potential; + moderate potential; ++ high potential (excerpted from Bettis and Hoyer 1986: Table 4).

Bettis and Hoyer (1986:Table 4) also address the problem of sampling a large three-dimensional universe by calculating volumes for the various geomorphic contexts at Saylorville Lake. As table C-12 shows, there are inherent problems with any attempts to explain site distributions, locational preferences, procurement strategies, and so forth, when the three-dimensional factor is not considered. Survey and testing strategies can be designed to correct past biases and to ensure that archeologists examine the correct contexts for a given research problem.

CONCLUSIONS AND MODELING FOR THE GREENBELT

The 967 archeological sites from Saylorville Lake (506) and Lake Red Rock (461), as well as the 179 known sites on non-Federal land, have been plotted on USGS 7.5-minute quadrangles. Geomorphic landscape units also are mapped to some extent, and aerial photographs are available for evaluation. The Des Moines River Greenbelt projects which are economically justified and which qualify for Federal participation will be examined in light of known archeological site locations and the landscape models. Clearances or additional field study recommendations will be developed on a case-by-case basis for coordination with the Iowa SHPO. Survey and testing methodologies will be derived upon consideration of potential for buried components.

TABLE C-12
Saylorville Lake Area: Volume of Landform/Sediment Features

<u>Landform/Sediment Assemblage</u>	<u>Fan/Colluvial Slope</u>	<u>Fan</u>	<u>Fan/High T</u>	<u>High T</u>	<u>Intermediate T</u>	<u>Intermediate/Low</u>	<u>Low T*</u>
average thickness (m) (excluding basal sand and gravel)	3.67	5.26	5.0	4.65	2.96	2.8	2.73
area in project (hectares)	21.5	109.2	108.1	980.6	1564.7	648.8	410.7
volume (m ³)	789,050	5,743,920	5,405,000	45,597,900	46,315,120	18,166,400	11,212,110

* Portions of TL may be too young to contain prehistoric cultural remains
 volume in cubic meters

(excerpted from Bettis and Hoyer 1986: Table 4)

SECTION 5 - KNOWN CULTURAL RESOURCES

OVERVIEW

INTRODUCTION

The brief cultural resources overview presented here is derived primarily from the Benn and Rogers (1985) overview for Saylorville Lake and Roper's overview for Lake Red Rock (1984, 1986). It is anticipated that prehistory and history throughout the valley will be very similar to the Saylorville Lake and Lake Red Rock manifestations in terms of geomorphological characteristics, past utilization, and cultural developments.

SAYLORVILLE LAKE DATA BASE

Benn and Rogers (1985) provide detailed overviews of prehistoric (pp. 26-60) and historic (pp. 61-98) cultural manifestations which generally would be expected to apply to the entire river basin (table C-13) north of the Bemis Moraine. The hafted biface and ceramic typologies for prehistoric sites also would apply. Any detailed studies done for Greenbelt projects should use the Saylorville Lake cultural and artifact identification frameworks as a start, and make the anticipated minor adjustments that may be required based on the reevaluation of the ISU data and information collected through additional field studies. This procedure should save both time and funds, and allow for the rapid identification of sites and impacts. A summary of prehistoric cultural manifestations is presented in table C-13 based primarily on the overview for Saylorville Lake developed by Benn (Benn and Rogers 1985:26-60).

This report also establishes major subdivisions for the historic period (1985:61-98) as following Iowa's Resource Protection Planning Process (Henning 1985) general outline.

Early Contact	1600-1845
Early Settlement	1845-1850
Settlement Boom	1845-1857
Nation Divided	1857-1865
Rural, Urban, and Industrial Development	1865-1900
Change in the Twentieth Century	1900-1950's

Benn and Rogers (1985:72) propose specific study units for the central Des Moines River Valley which could apply to the area as follows:

Early Contact	1600-1820
Adventure and Exploration	1600-1803
Frontier Safety	1820-1851
Early Settlement	1838-1850

TABLE C-13
Saylorville Lake Prehistoric Chronology

PERIOD	DATE RANGE	DIAGNOSTIC ARTIFACTS	DIAGNOSTIC FEATURES	RELEVANT LANDFORMS	SUBSISTENCE	COMMENTS
Paleoindian	12,500-9,500 B.P.	Fluted points (clovis, folson); unfluted lanceolate points like Dalton, Meserve	none identified	possible floodplain sites lost to erosion or buried under high terraces; some sites may remain on high terraces or bluff crests	nomadic w/focus on larger game; upland focus	buried sites likely below water table
Early Archaic	9,500-8,000 B.P.	unfluted lanceolate points (Dalton), corner notched points (Kirk), side-notched points (Hardie Barbed, Brannon, Little Sioux); ground bases and beveled edges occur on some examples	none identified	surface sites at upland and bench locations; buried sites possible under high terraces and alluvial fans		buried sites likely below water table
Middle Archaic	8,400-4,500 B.P.	predominated by side-notched forms (Goder Raddatz, Matanzas) with single examples of St. Charles and Little Sioux; some corner notched forms may apply (Rice and Turin variations); points often reworked; 3/4-grooved axes	none identified	period of sediment aggradation from uplands and sidevalleys to valley floor; fans grew to 5m deep from 8,500-4,000 B.P.; a large valley wide high terrace system developed; sites on high terrace and fan remnants uplands, or Wisconsin benches; cannot occur in present meander belt (eroded away or too young)	mobile foraging family bands of hunters and gatherers; begin of emphasis on mesic riverine settings; shift to use of base and extractive camps; utilization of wild plants, birds and smaller mammals	based upon point collections, a tripartite chronology is applied similar to the one for the Koster Site (C.F. Benn and Rogers 1985:36) MA 1 = 8,300-7,600 B.P., MA 2 = 7,300-6,850 B.P., and Halkon = 5,800-4,900 B.P.; site remains are typically ephemeral/diffuse; possible contraction of territories from prairie to rivers due to hypsithermal drying and resource reduction

TABLE C-13 (Cont'd)

PERIOD	DATE RANGE	DIAGNOSTIC ARTIFACTS	DIAGNOSTIC FEATURES	RELEVANT LANDFORMS	SUBSISTENCE	COMMENTS
Late Archaic	4,500-2,350 B.P.	projectile point types proliferate; side-notched points of EA continue with Atlatles and Ft. Dodge; stemmed points emerge (Table Rock, Poag, Apple Blossom, Nipton, Stone Square, Smith Basal-Notched, Marow); lanceolate forms (Sedalia-Wabo Hill complex and Karnack); gouges, Sedalia Biggers, chipped stone axes, various knife and scraper forms	trash pits w/carbonized plant and animal/fish remains	buried in intermediate terraces; surface on high and uplands	wide range of plant, animal, and riverine resources exploited more efficiently; trend toward sedimentation and intensive resource utilization; floodplain utilization increases	artifect proliferation could be the result of increased population and interaction, temporal differences, and/or functional diversity; three times more sites than EA; possible reexpansion onto uplands due to amelioration of hypsithermal drying and expansion of Woodlands and related animal resources
Early Woodland	2,350-2,050 B.P.	introduction of ceramic vessels; Black Sand Incised pottery (sand and grit temper) with straight-stemmed Kramer and possibly Poag points; the Black Sand-like pottery from Saylorville Lake is called McHride Ware (plain and trailed); abundance of fire-cracked rocks, abraders, grinders, pulverizers	roasting pits w/fire-cracked rock	alluvial fans, Wisconsin benches, and uplands, concentrated within a 5-mile area near mouth of Big Creek; lack of floodplain sites is problematic	small seasonal extractive camps for processing plant, animal, bird, and aquatic resources; exotic cultigens expected but no evidence found to date	Polk City phase concentrated in Polk County; possible relationships with Illinois River Valley Black Sand and Upper Mississippi River Valley Prairie Phase

TABLE C-13 (Cont'd)

PERIOD	DATE RANGE	DIAGNOSTIC ARTIFACTS	DIAGNOSTIC FEATURES	RELEVANT LANDFORMS	SUBSISTENCE	COMMENTS
Middle Woodland	2,050-1,550 B.P. (100 B.C.-A.D. 400)	stemmed points (Adena, Dickson, Lost Island); corner-notched points (Synders, Manker, Morton, Okoboji); ovate bladed styles like Gibson, Heston, and Pelican Lake predominate; Knife River flint as an exotic; hematite celts, 3/4-grooved axes, sandstone abraders, drills, stavers, end scrapers, bifaces; High Bridge Ware sub-convoidal jars, cord-roughened with stamping, embossing, trailing (affinities with Havana or Sister Creeks possible)	high conical mounds and concentration of mound groups around the Boone Co. Bottoms; rock pavement, piles of mussel shell, limestone slab floor, log enclosures, ash stone enclosures, ash heaps in the Boone mound; possibly a channel house for community rituals; trash and roasting pits	Boone Bottoms focal point on intermediate terraces and fans; some sites on high terraces	mammal bones (i.e., deer), remains of birds, turtles, fish, mussels, and vegetal foods	Van Hyning Phase; traditionally defined as a western variation of the Havana tradition and part of the Hopewell Interaction Sphere; local peoples were certainly in touch with Hopewell but likely not fully assimilated (socio-economic and religious factors) but exhibited certain artifact and mortuary characteristics of Hopewell gradual transition to ELM
Early Late Woodland	1,550, 1,250 B.P. (A.D. 400-700)	medium to small side-notched points (Tama, Assent, Need), corner-notched points (Okoboji, Little Sioux, Lost Island), and the stemmed Steuben point; trend toward thinness w/smaller points for arrows; Madrid Ware pottery very similar to High Bridge with more rim curvature and less decoration and little embossing, cord-roughened, plain punctated, stamped, and trailed varieties (strongest affinities w/Lane Farm and Llan Wares)	small conical mounds on bluff crests	most landforms but concentrations at confluences of major tributaries and on wide bottomland areas on slight ridges; dispersed small conical mounds on bluff crests	hypothesized increases in food processing and utilization of an increased diversity of ecotones	riverland phase; pottery thin walls and fine pebbles with constricted necks

TABLE C-13 (Cont'd)

PERIOD	DATE RANGE	DIAGNOSTIC ARTIFACTS	DIAGNOSTIC FEATURES	RELEVANT LANDFORMS	SUBSISTENCE	COMMENTS
Late Late Woodland 1. Great Oasis	1,250-950 B.P. (A.D. 700-1,100)	Great Oasis High Rim pottery w/fine dense paste, smooth tooled surfaces, sharp rim/shoulder junctures, and carefully executed decorations confined to rim/lip; knives and end scrapers; small points; freshwater and marine (Gulf Coast) shell beads	vattle and dumb structures set on the ground surface; trash pits	fans, high and intermediate terraces	small settlements; small and large mammals, birds, maize, cucurbits and seeds, sunflower seeds, chenopods, nuts, wild seeds	13PL110 yielded three radiocarbon dates averaging 893 B.P. (A.D. 1,037); could be related to Initial Middle Missouri Tradition; antecedent to village cultures and strong territorial overlap with the distribution of Looska Ware; shared general territories w/other Late Late Woodland groups; tightly-knit endogenous lands composed of exogenous patrilineal clans; possibly some Oneota/Mississippian contact reflected by use of exotic materials for status symbols
2. General		medium to small side-notched points w/sub-triangular to ovate blades; fine secondary flaking of flake blanks; most points are small triangles; general cord-roughened and cord-impressed pottery w/high rim straight to gently curved and fine paste w/grit temper, single cord lines parallel w/fringes of vertical cord impressions or pendant cord triangles; tool impressed lips; Saylor Ware has thicker walls, castellated rim, squared orifices, nested chevron cord decoration		most landforms but concentrations at confluences of major tributaries and on wide bottomland areas on slight ridges; dispersed small conical mounds on bluff crests		Saylor Ware at 13PL165 only but overall characteristics of Minotia Cord Impressed of SE. of Iowa; the general cord-impressed pottery has attributes seen in Looska Ware of NW. Iowa (thin walls, curved rim, evenly spaced corded decorations) and Lane Farm Cord Impressed of NE. Iowa (rocker stamps, evenly spaced corded decorations); overall, east-to-west cultural relationships may have predominated over north-to-south ones

TABLE C-13 (Cont'd)

PERIOD	DATE RANGE	DIAGNOSTIC ARTIFACTS	DIAGNOSTIC FEATURES	RELEVANT LANDFORMS	SUBSISTENCE	COMMENTS
Oneota (Mississippian & Prehistoric)	850 B.P.-250 B.P. (A.D. 1100-1600)	unnotched triangular pointe; ovate and side scrapers; no Euro- American trade goods; horticultural (hoes) and processing, and hunting tools; shell tempered pottery	oval houses; trash pits; seasonally occupied hunting or extractive camps of aggregate bends	insufficient data to determine if the Ames Lake area was part of the Oneota range; possible small camps could exist; buried in lower terraces and often obscured by vegetation and PSA	deer, elk, bison, fish, shellfish, maize, lewals and cobs, squash seeds, and beans	dating is troublesome w/fine dates from the Christensen site (13PK407) ranging from A.P. 1240 to modern; Red Rock Lake and Racoon River area sites span the period from ca. A.D. 850 to 1,600; A.D. 1,100 to A.D. 1,400 appears to be the primary occupation range; Oneota likely abandoned the area prior to A.D. 1,500; Moinsons-Burlington Phase at Saylerville Lake derived from Red Rock Lake area focal point at heartland; warrior-elder leaders of corporate descent groups supported by a symbolic iconographic system related to Mississippians; Oneota may have absorbed weaker Great Oasis and General Woodland Groups

Settlement Boom	1850-1860
The Nation Divided	1840-1870
Urban and Industrial Development	1865-1890
Agricultural Change	1865-1890
Mineral Development	1865-1890
Economic Change	1890-1914
War and Aftermath	1930-1940
Great Depression	1930-1940
Post-1940 Period	Post-1940

LAKE RED ROCK DATA BASE

The cultural resources overview is presented in the report entitled Archeological Survey and Testing at Lake Red Rock, Iowa: the 1984 and 1985 Seasons (Roper 1986). Detailed information is presented in Chapter 13 of this report. For sites in and around Lake Red Rock south of the Bemis Moraine, Roper's lithic and ceramic typologies would apply, as would Roper's analysis of settlement patterns, resource availability/procurement, and site distributions. Any detailed studies done for Greenbelt projects will use the Lake Red Rock cultural and artifact frameworks as a baseline. A summary of prehistoric cultural manifestations is presented in table C-14. Bastian (cf. Roper 1986) proposed the following topical study units for the historic period:

Early Contact	
Early Exploration and Settlement	1600-1846
General Farming Era	1830-1880
Crop/Livestock Specialization	1880-1940
Related Industries: Mills, Elevators, Meat-Packing	
Coal Mining and Stone Quarrying	
Manufacturing of Ceramics and Other Items	
Emerging Settlements and Town Building	1830-1940
Transportation: River and Road Era	1830-1880
Transportation: Railroad Era	1844-1900
Transportation: Automobile and Paved Road Era	1900-1940
Origins of the Population and Ethnic Presence	
Religious Expression	
Fraternal and Social Organizations	

TABLE C-14
Late Red Rock Prehistoric Chronology

Period	Date Range	Diagnostic Artifacts	Diagnostic Features	Relevant Landforms	Substance	Comments
Paleoindian		fluted points (clovis, folson); only later Plano forms found (Angostura)	none identified			no evidence from undisputed contexts
Early Archaic	10,000-8,000 B.P.	side- and corner-notched points (Charokse and Kirt)		Late Wisconsinan and Early Holocene features degraded or buried by alluvium; sites on fan remnants and uplands		small residential/extraction sites
Middle Archaic	8,000-5,000 B.P.	Side-notched (Oedar, Tams, Maddatz) and stemmed (Jackie) points				evidence sparse; unattractive due to low productivity and biotic diversity
Late Archaic	5,000-2,500 B.P.	stemmed (Table Rock)				ephemeral
Early Woodland		only 2 sherds to date; Kramer points and incised-over-cord-marked pottery expected				
Middle Woodland	2,500-1,500 B.P.	Havana-related stamped and nodded ceramics like High Bridge ware from Saylorville Lake (Van Hyning Phase; some Weaver-like Madrid ware (Saylorville Lake area type))	bluff crest conical burial mounds	alluvial fans and terraces	base camps on alluvial fans and terraces; extractive camps along bluff crests and on floodplain features such as levees and meander loop edges	No true Hopewell material
Late Woodland	1,500 - 600 B.P.	Great Basin and Riverbend ceramics; small notched and unnotched points	Large village sites; small extractive camps; small burial mounds			largest number of sites, possibly due to recentness and context; older sites are more likely to be buried or eroded
Oncote	850 - 300 B.P.	Moingona Phase shell tempered ceramics w/geometric designs; small unnotched triangular projectile points; and scrapers; shaft abraders	small villages and hamlets; dash	elevated portions of river bottoms	corn, bison, small game and plants	

ADDITIONAL STUDY DIRECTIONS

After nearly 20 years of research, 506 sites have been identified at Saylorville Lake. The work at Lake Red Rock in the past several years has confirmed the presence of approximately 461 sites. Nearly all of the sites at these Iowa reservoir projects were found on Federal land after the projects were placed in operation; hence, the numbers cited above could easily represent less than half of the total present (remainder primarily under the conservation pools).

Benn and Bettis (1986) and Schuldenrein (1986) were able to determine relationships between site locations (and their functions and cultural affiliations) and various landforms in the Des Moines River Valley. Historic materials are scarce on low terraces, but occur in relatively dense concentrations on intermediate and high terraces. PaleoIndian sites and Early through Middle Archaic sites would be most common on high terraces where erosion and historic disturbances also have been most severe. Woodland and Late Archaic sites occur most frequently on intermediate terraces (habitation and campsites), but these sites are buried by alluvium. Woodland Period mortuary sites are expected on the bluffs at the edge of the valley. Therefore, the majority of recorded sites within the reservoir area tend to be small lithic scatters from the PaleoIndian and Early through Middle Archaic periods which are often exposed on remnant high terraces.

Although mound complexes (Woodland) may be encountered on bluffs and habitation sites on high and intermediate terrace remnants, most of these tracts are in heavily dissected areas where erosional actions have deflated or completely displaced many sites. These areas were farmed or used for pasture during the past 100 years, further exacerbating an already severe erosional situation. This also may mean that in spite of extensive survey and mitigation at Saylorville Lake and at Lake Red Rock, a major portion of the prehistoric and historic record for the reservoir area was lost, primarily because the problem of site burial was not fully considered and because the extractive camps that remain upstream of the dams are in areas where erosion and recent historic disturbances have been the greatest. This deficiency can be corrected at other valley locations by concentrating on high potential depositional contexts during future preconstruction studies.

In general, the reservoir studies have established that significant periods of real time are not represented by floodplain surfaces or contexts. Therefore, only limited segments of real time, or cultural time, have been dealt with by previous surfaces surveys elsewhere in the Des Moines River Valley. Consequently, the existing site database is biased as follows: (1) certain time periods are under-represented (or over-presented), (2) site contexts of the same age are skewed (e.g., Woodland sites on old low terraces but not in the lower landscape positions), and (3) certain data classes and physical data contexts are absent (e.g., fragile botanical or faunal remains which would be preserved in buried contexts but not in sola or plowzones or easily separated site components). These biases will be considered during the evaluation process for Greenbelt projects.

SECTION 6 - STATUS OF COMPLIANCE PROCESS

HISTORIC PRESERVATION LAW

GENERAL CRM REQUIREMENTS

The Rock Island District is required by several laws to Identify, Evaluate, and Manage cultural resources under its jurisdiction. Identification typically is accomplished through literature searches and field surveys (surface and subsurface). Identified sites are then Evaluated using National Register of Historic Places (NRHP) criteria of significance based upon information generated through more detailed studies (i.e., testing).

Those resources which do not meet the significance criteria do not have to be protected or preserved. These properties may be destroyed, monitored to learn more about project effects, or used for testing experimental management techniques (stabilization or research, optional) that eventually may be applied to significant sites. Full compliance is met at the time the sites in this category are determined ineligible for listing in the NRHP by the District and the SHPO. Disputed properties are mediated by the NPS.

Evaluation through archeological testing and/or architectural recording results in cultural resources being determined eligible or ineligible for listing in the NRHP. Typically, eligible properties are significant due to a combination of integrity (good preservation), uniqueness, or unusually high quality. National Register significance criteria are outlined in a later section of this report. National Register eligible or listed resources must be protected from adverse effects derived from project operations or uses. Adverse effects are any conditions which denigrate a characteristic or characteristics of the resource contributing to its significance. The most common factors producing adverse effects are construction, erosion, vandalism, inundation, or recreational use (i.e., vehicular traffic which can churn up cultural deposits).

Federal agencies are directed to avoid impacts if prudent and feasible avoidance measures can be found. This might involve redesigning a construction project or providing vegetation/riprap bank protection for erosion-prone areas. Zoning also is a viable approach.

Compliance is fully met when identified National Register sites can be conserved or preserved by protective measures. If preservation is not possible due to the magnitude of impacts or mission requirements, then mitigation measures must be undertaken. Typically, for archeological sites, the best approach is "data recovery (as defined in 36 CFR 800)." This means that excavations are conducted to recover enough of the important information (artifacts and features) so that the Federal agency, the SHPO,

and the ACHP can determine that preservation has been achieved through representative data collection and interpretation. The agency and the SHPO must agree on this approach, as must the ACHP. The latter review agency mediates disputes through staff review or formal chairman comment or hearings. Again, at this point compliance is met and site remnants can be destroyed (delisted if it is on the National Register).

Architectural properties are treated in similar fashion. Recording of data describing structures in accordance with procedures established by the Historic American Building Survey and the Historic American Engineering Record (HABS/HAER) could constitute a preservation measure, supplemented by the appropriate curation of photographs, drawings, and a historical narrative.

Section 106 of the National Historic Preservation Act, as amended in 1980, (PL 96-387) requires that Federal agencies take into account the effect of their proposed undertakings on properties listed in or eligible for inclusion in the National Register before expending Federal funds for rehabilitation and construction projects. The Act also stipulates that the ACHP be allowed a reasonable opportunity to comment on proposed projects affecting significant historic properties, supplemented by comments from the appropriate SHPO. The consultation process is fully described in Title 36 of the Code of Federal Regulations (CFR), Part 800. Executive Order 11593 (16 U.S.C., 470, Supp. 1, 1971) directs Federal agencies to take a leadership role in preserving, restoring, and maintaining the historic and cultural environment of the Nation. Federal agencies must survey, inventory, and nominate all qualified (36 CFR 60 and 63) historic resources under their jurisdiction to the National Register. Until these procedures are completed, agency heads must exercise caution to assure that potentially qualified Federal properties are not inadvertently demolished or substantially altered.

Finally, the Archeological and Historical Preservation Act of 1974 (PL 93-291) directs Federal agencies to preserve significant cultural resources that would be lost as a result of Federal construction or operation activities. Herein, the agency itself is authorized to undertake recovery, protection, and preservation measures utilizing up to 1 percent of project funds.

CULTURAL RESOURCES MANAGEMENT PROCESSES

Briefly, each study phase incorporates the following basic methods:

Identification: surface and subsurface sample survey, literature search, oral interviews, followed up by informed, intensive surveys

Evaluation: archeological testing sufficient to allow National Register eligibility issues to be resolved; geomorphological studies are imperative, and remote sensing techniques can be invaluable

Management: elimination or reduction of impacts through avoidance, preservation, stabilization, and/or mitigation through data recovery of artifacts, features, and floral/faunal remains (full scale excavation); public interpretation applies here through brochures, slide shows, films, exhibits, and on-site interpretive programs.

Plates 19 and 20 best illustrate the overall Cultural Resource Management (CRM) process. These flow diagrams show how sites are evaluated for National Register significance and how management options are derived. Plate 19 was developed by Dr. David Overstreet from the Great Lakes Archeological Research Center for Coralville Lake. Plate 20 was developed by Dr. Donna Roper of Gilbert/Commonwealth for Lake Red Rock.

Plate 20 illustrates the consultation process for attaining compliance with National Register nomination mandates and projects which affect significant properties. Note that the Federal agency must Identify and Evaluate first, then initiate coordination with the SHPO and the NPS to determine National Register status. Because of the complexity and time-consuming nature of the determination of eligibility process, an expedited procedure has been made part of the Federal rules. If the agency and the SHPO agree on eligibility, the consultation process can proceed with the ACHP and coordination with the NPS held at a later date. Ineligible sites or project areas (i.e., no sites) clear the way for a project action, or eliminate the need for further archeological investigations. The exception to this clearance is when unanticipated cultural remains are found during construction. In these situations, consultation (SHPO and ACHP) is reinstated, but under an expedited process. Once a site is determined to be eligible for listing in the National Register, then consultation proceeds as shown on plate 20 to determine effects and to eliminate adverse effects through avoidance or mitigation.

Actions which do not involve National Register properties, or for which No Effect determinations can be made, can usually be handled fairly quickly. Once field studies are done, the SHPO has 30 days to review the results and either concur or object. Under an objection, additional studies, negotiations, or both could be required.

Adverse Effect determinations are much more difficult to resolve unless avoidance can be agreed upon (60 days). Many times mitigation or avoidance strategies are executed to change an Adverse Effect determination to a No Adverse Effect determination, thereby clearing the way for a Federal action. As the flow charts show, there are numerous steps in the consultation process that are required by law. In some cases, resolution can be achieved within 90 days of completion of fieldwork and report writing; in unusually complex or controversial cases, 6 months to 1 year may be required to accommodate a multitude of reviews, meetings, hearings, and Memorandum of Agreement (MOA) reviews.

Plate 21 illustrates a more general compliance schedule that commonly applies to flood control projects. For the most part, this is a result of insufficient inventory data. As an example, this diagram reflects

the planning and compliance process currently being used for the Lake Red Rock pool raise. Furthermore, project construction for the Des Moines River Greenbelt fall under this diagram. While Saylorville Lake is at the MOA development and execution stage at this point in time (revision in this case), Lake Red Rock is still in the Identification (intensive survey) stage, the latter more than the former two. Certain areas of these projects and specific sites, of course, are near the end of the process or fully completed due to project/action specific attention given to clear maintenance or construction projects. These examples illustrate the fact that reservoir projects require substantial amounts of time and funds to complete the compliance process. The intervening unsurveyed area between the lakes will require some field studies to insure that the cultural resource base is protected.

CULTURAL RESOURCE MANAGEMENT PLAN (CRMP)

In 1984, NCR awarded contracts for the development of CRMP's for the two reservoir projects on the Des Moines River. The contractors are as follows:

Saylorville Lake: Dr. David W. Benn, Southwest Missouri State University (417-836-5363)

Lake Red Rock: Dr. Donna Roper, Gilbert Commonwealth, Incorporated (517-788-3426)

The contracts were awarded through the professional services competitive solicitation procedure and coordinated with the Iowa SHPO and NCROD for review. Contract services require the development of preliminary CRMP's to guide all future research (NRHP evaluations), conservation, preservation, interpretation, and adaptive reuse activities within NCR mission objectives. However, the major objective of the CRMP's and actions discussed therein is to achieve compliance with the historic preservation laws set forth in attachment 2. Three major references were used for CRMP development in addition to the applicable laws and regulations. The three references are:

- a. Implementation of the Resource Protection Process in Iowa (E. Henning 1982).
- b. "Planning in Context". Draft guidelines formulated by Dr. Thomas King from the Advisory Council on Historic Preservation, 1982.
- c. Problem Orientation and Allocation Strategies for Prehistoric Cultural Resources on the New Mexico National Forest, Cultural Resources Management Report No. 3 (Green and F. Plog 1983).

This report is the beginning of the management plan process for the Des Moines River Greenbelt.

PREVIOUS COORDINATION

The report entitled Plan for Engineering and Design, Des Moines Recreational River and Greenbelt, Des Moines River, Iowa (March 1986) was sent to the Iowa SHPO in April 1986. Corps staff met with SHPO staff at a public meeting for the project. The SHPO also was consulted regarding known sites outside of areas covered by previous archeological studies for Corps water resources projects.

ADDITIONAL STUDIES REQUIRED

Precise maps illustrating areas of effect under each alternative will be completed as part of the GDM study phase. Alternative plans will be compared to delineate the maximum overall potential impact zone and the necessary cultural resource evaluations will be initiated based upon existing information. Because so many of the project areas are not located within lands presently under Federal jurisdiction, a substantial amount of archeological compliance work remains to be done. Development of a cultural resources management plan, similar to and building upon those already developed at Saylorville and Red Rock, may be necessary to ensure compliance with historic preservation laws and to fulfill Federal management responsibilities.

Several concurrent tasks can be accomplished. Geomorphological evaluations will be designed to determine which landscape model applies and what preservation potentials are for each project. The models will be used to identify where archeological sites are likely located (by culture period), whether buried manifestations are expected, and where depositional contexts have resulted in high quality preservation versus mixing, erosional loss, or total destruction. Archeologists can resurvey any of the known sites or high potential landforms that may be within areas of effect (direct, indirect).

Based upon the resurvey and any testing results, cultural resource sites will be sorted into "potentially significant" and "not potentially significant" categories. Only those in the first group will be considered further (i.e., testing) for National Register eligibility.

The results of the above actions would be coordinated with the Iowa SHPO and the keeper of the NRHP. Once an alternative is selected, impacts can be evaluated and any mitigation plans developed through consultation with the ACHP.

SECTION 7 - SUMMARY

Depending upon the nature of plans carried forward, archeological and geomorphological studies will be undertaken pursuant to requirements of the National Historic Preservation Act. Current aerial photography has

been acquired so that landscape interpretations can proceed as a guide for establishing survey needs. Once the SHPO review of this report has been completed, District elements will determine time and funding plans necessary to achieve full compliance.

Note: The references presented
were taken primarily from Benn
and Rogers (1985) and Roper
(1984, 1985)

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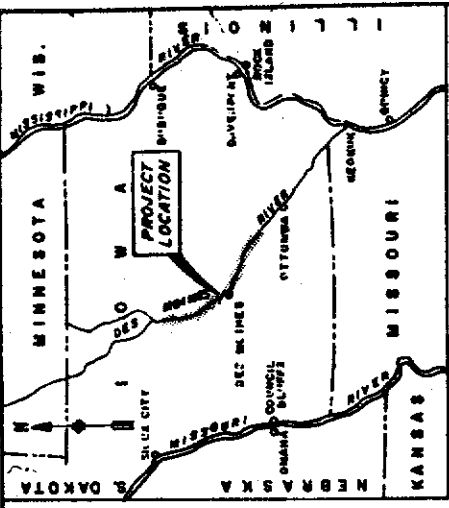
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**DES MOINES RIVER
DES MOINES RECREATION
RIVER AND GREENBELT
RECREATION & ENVIRONMENTAL
ENHANCEMENT**
ROCK ISLAND DISTRICT
NORTH CENTRAL DIVISION
1 JANUARY 1986

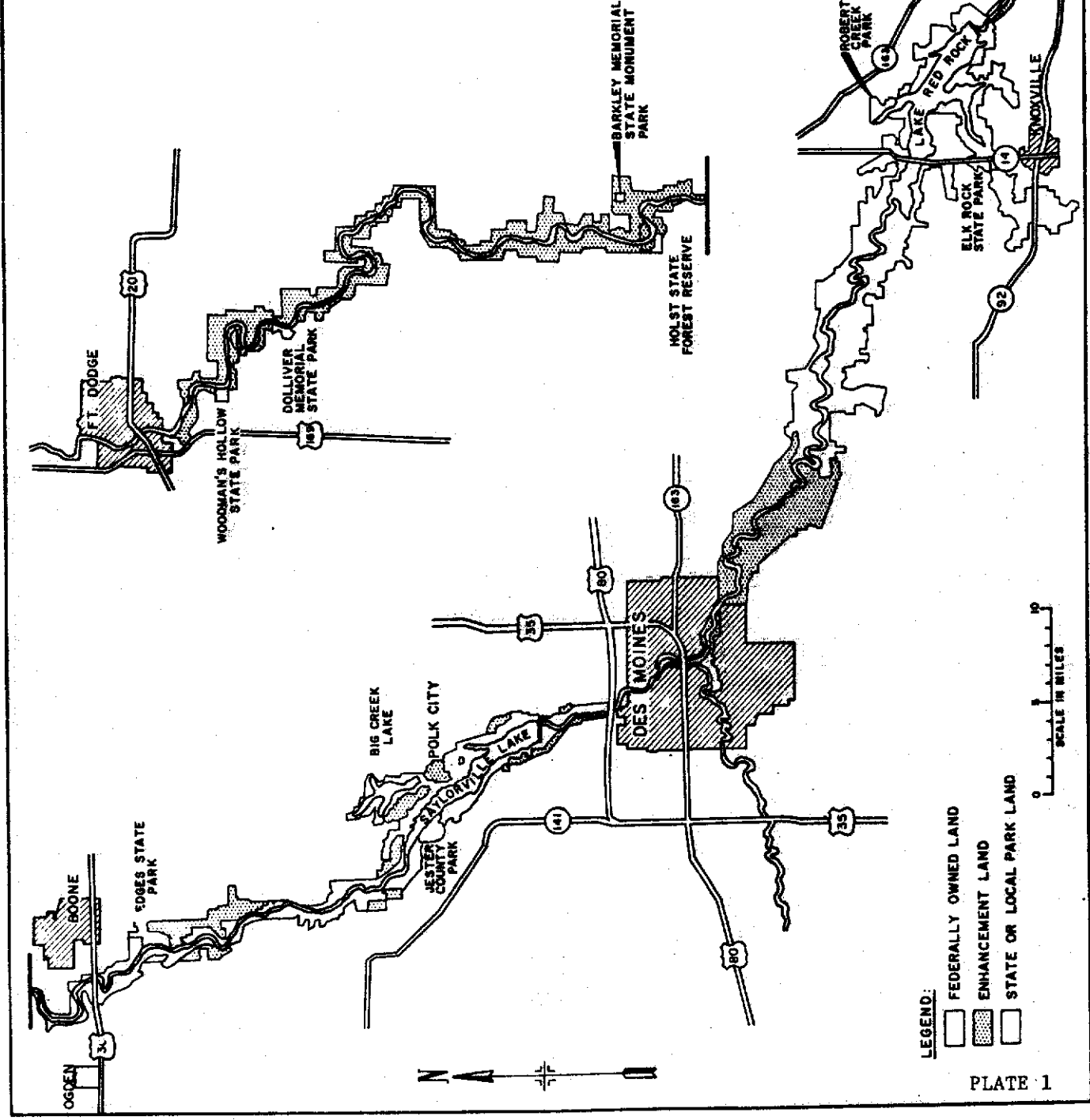
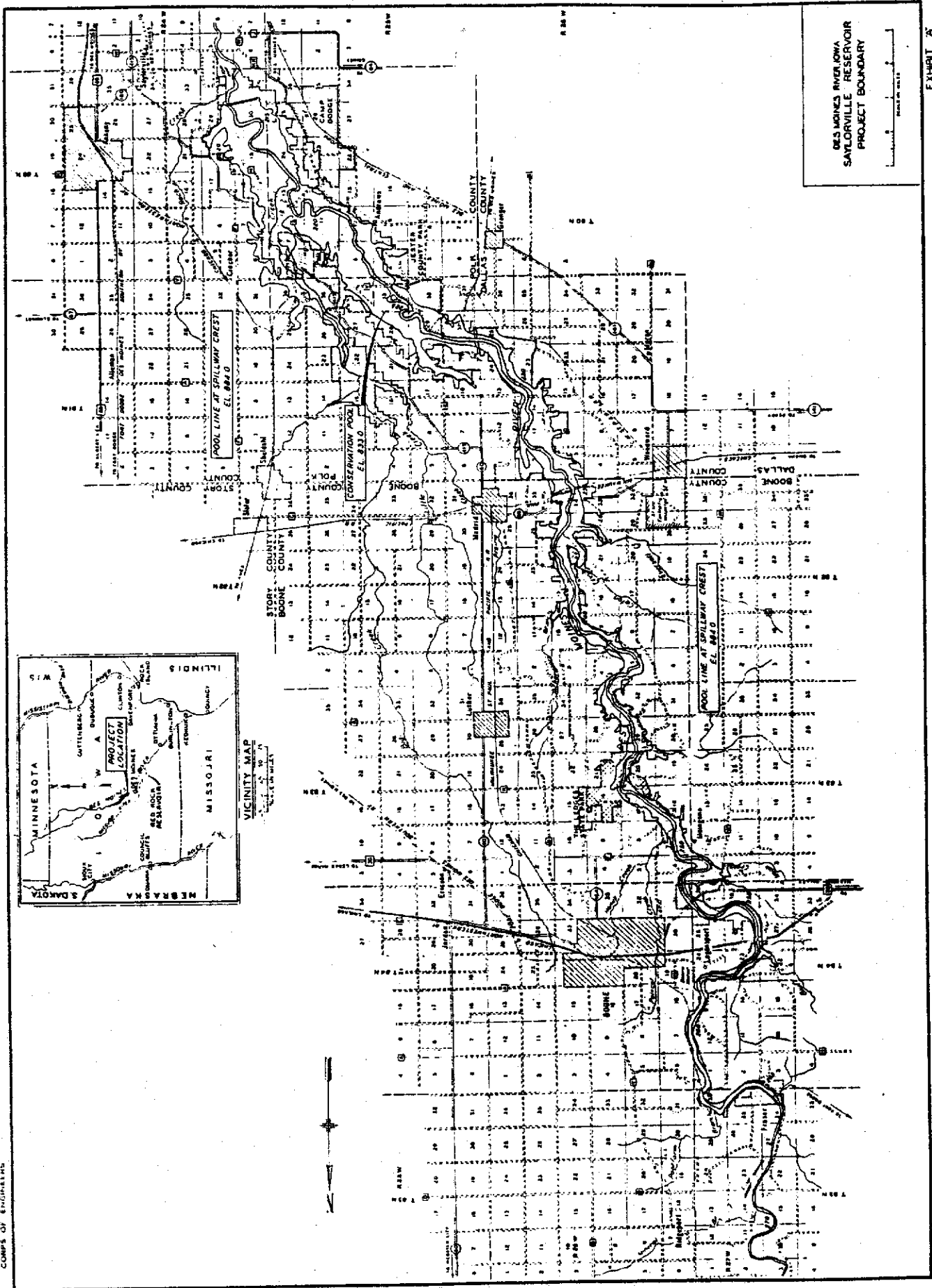
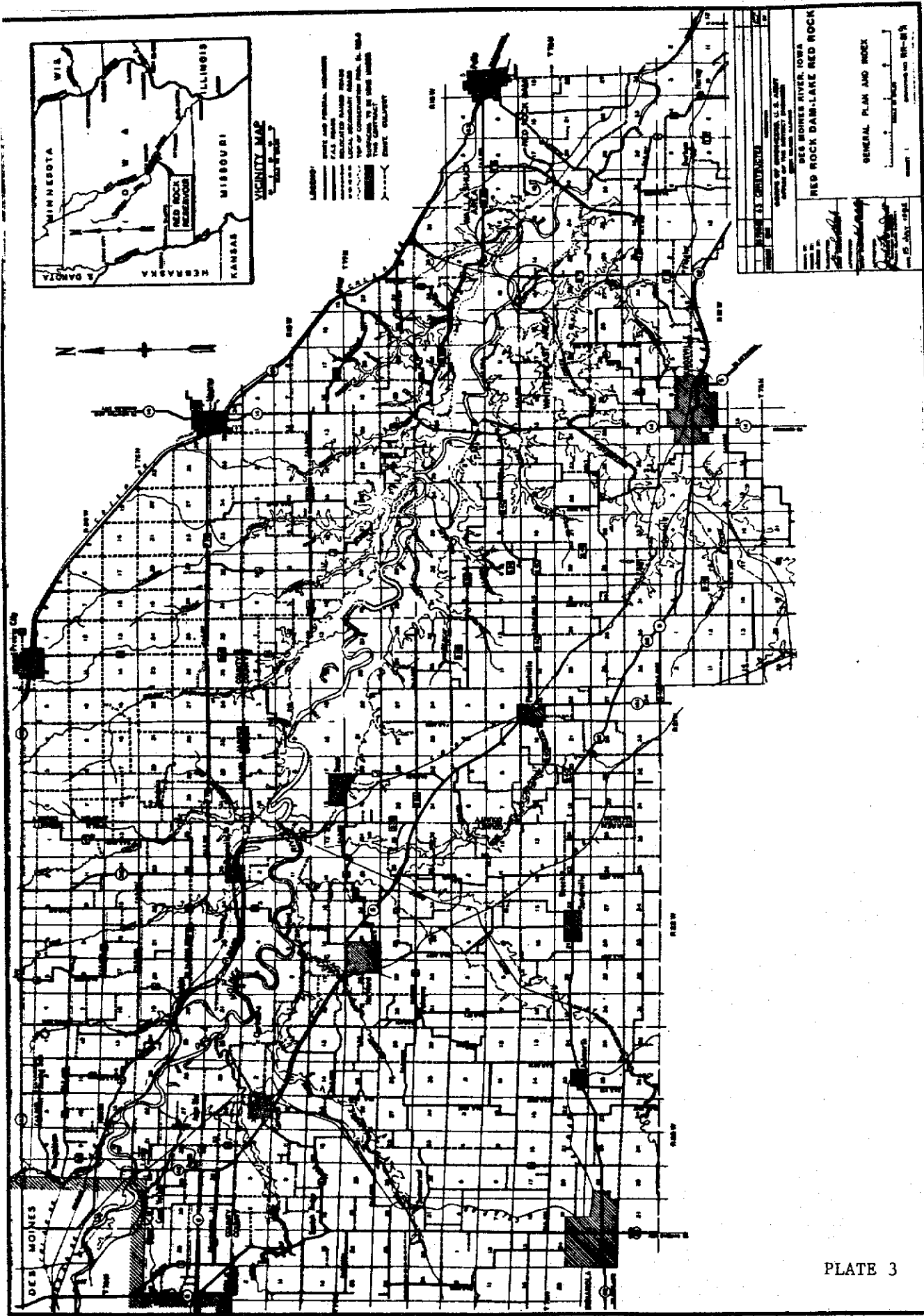


PLATE 1



DES MOINES RIVER IOWA
 SAYLerville RESERVOIR
 PROJECT BOUNDARY

1" = 1 MILE



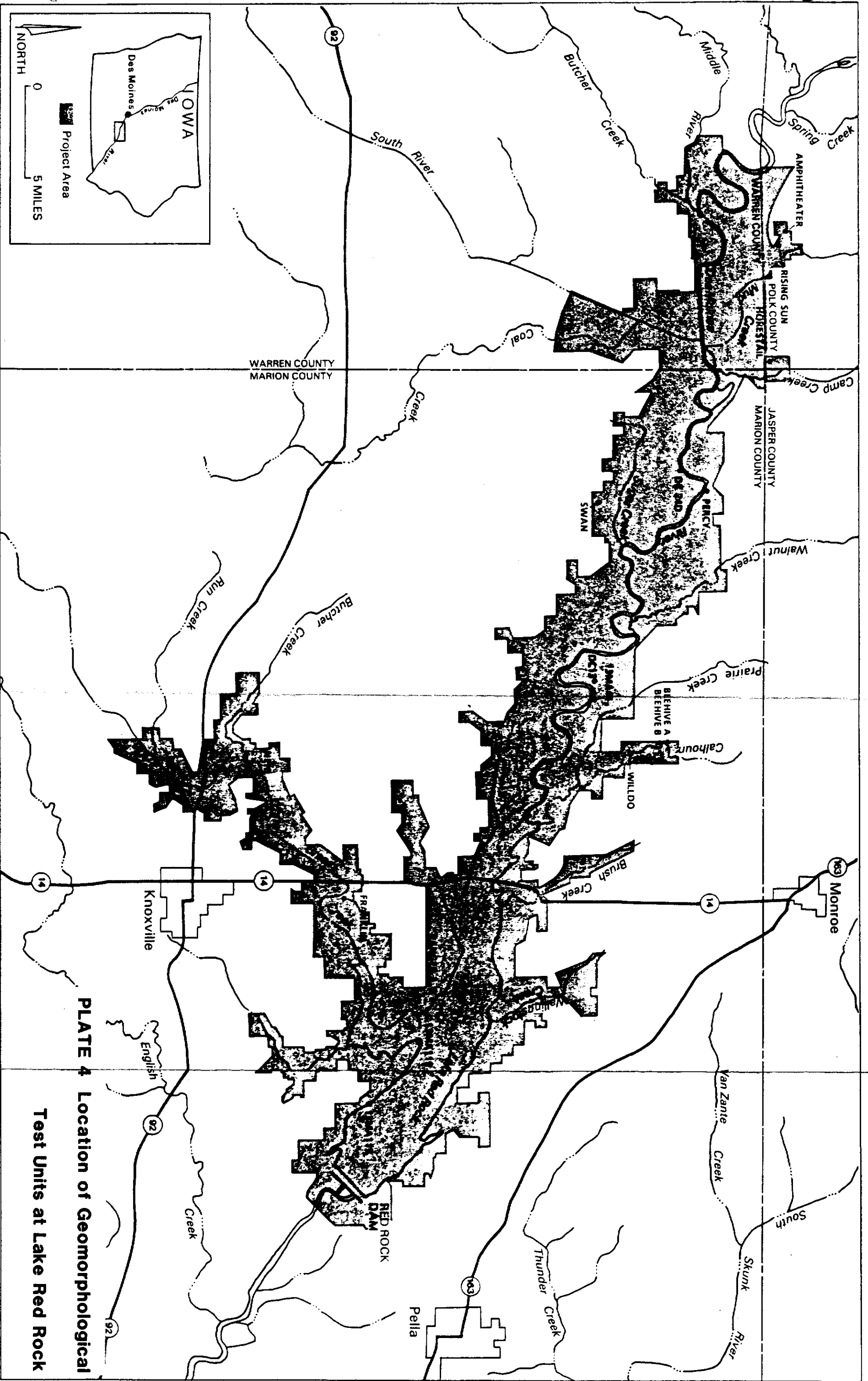
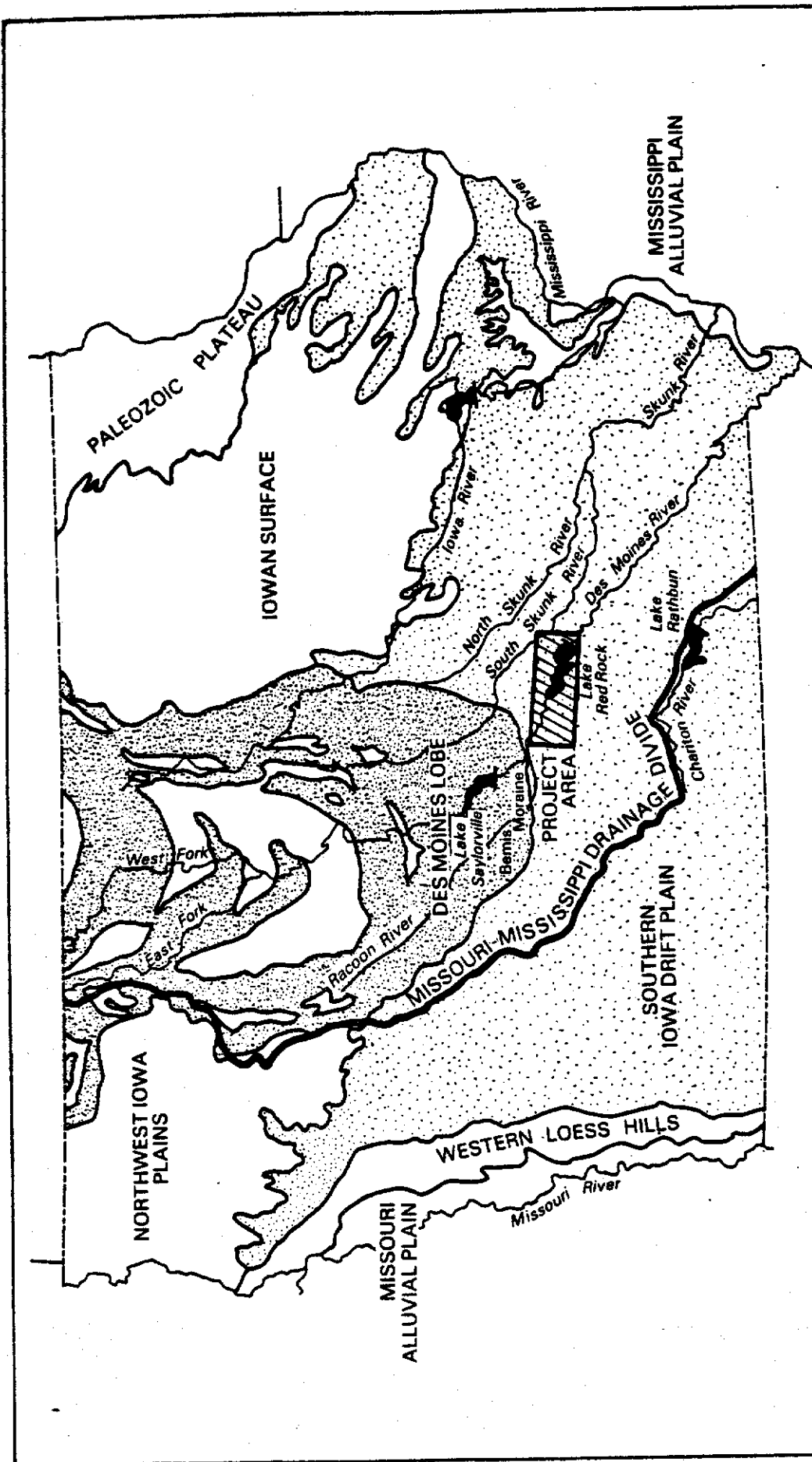


PLATE 4 Location of Geomorphological

Test Units at Lake Red Rock



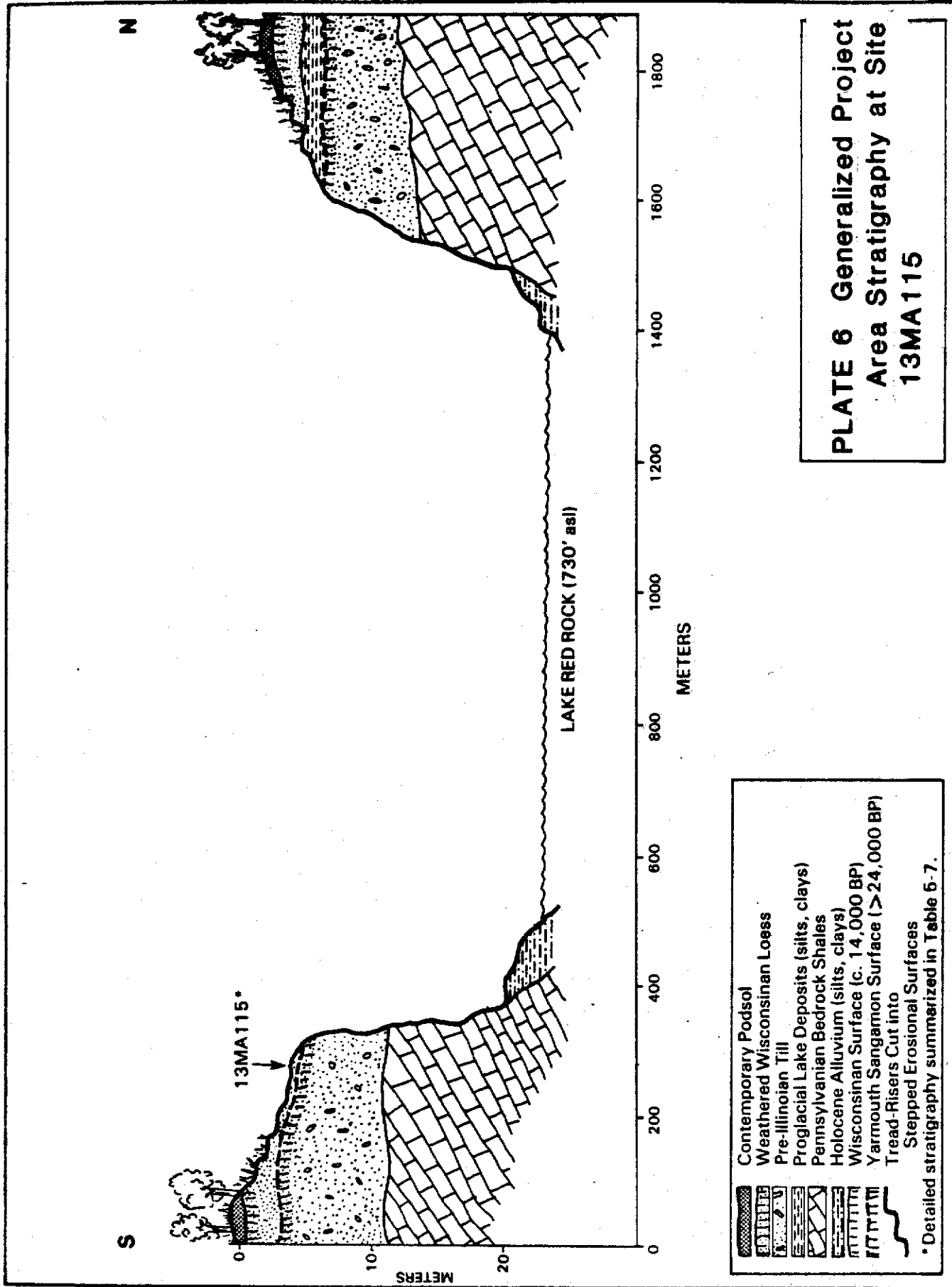
**PLATE 5 Landform Regions
and Principal Drainages of
Iowa**

DATA SOURCE:
Prior 1976: 23:24

50 MILES

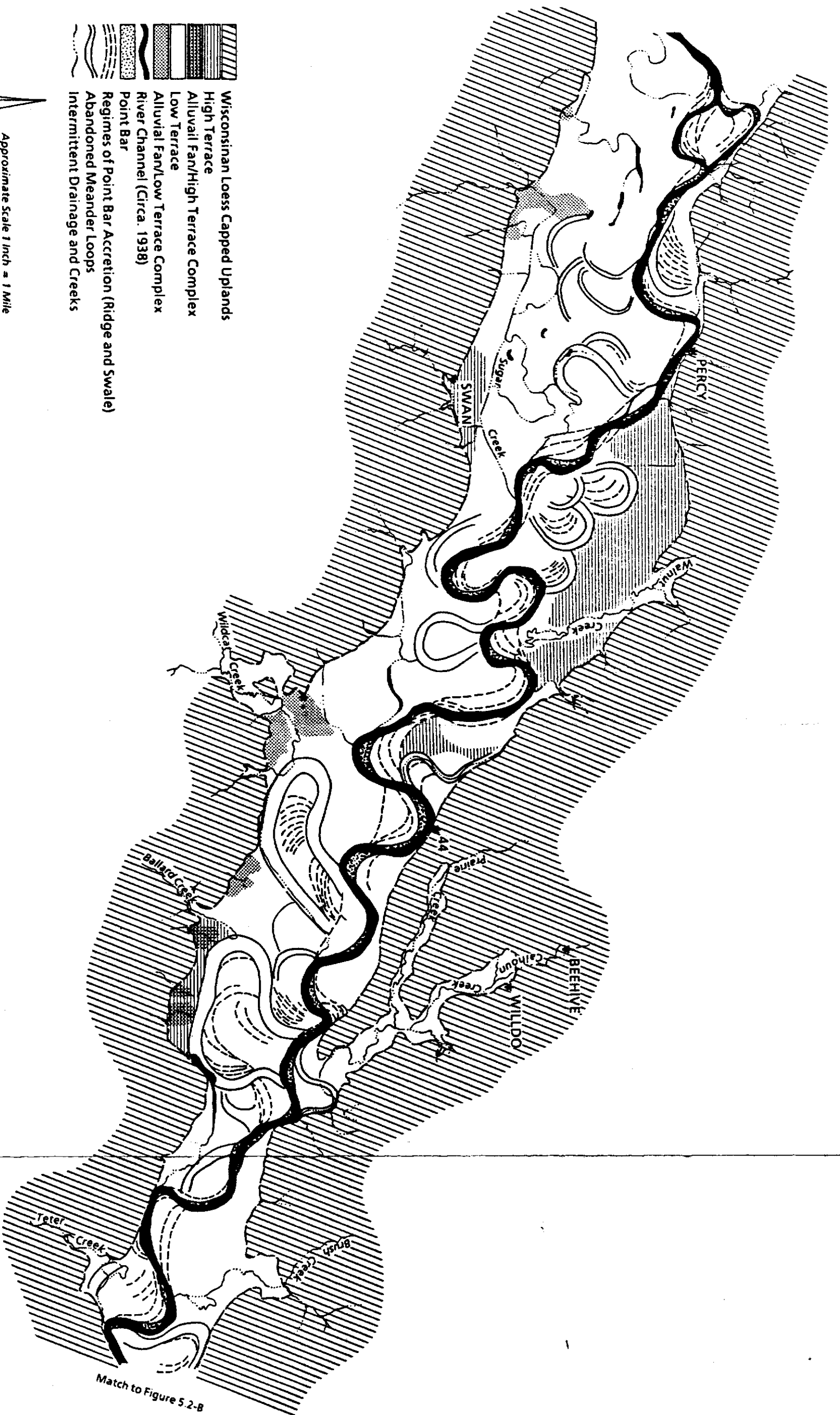
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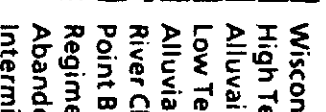
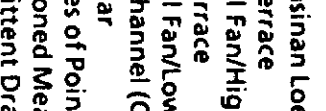
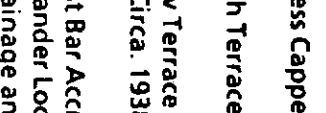

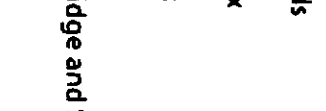




NORTH



**PLATE 6 Generalized Project
Area Stratigraphy at Site
13MA115**











- Contemporary Podsol
- Weathered Wisconsinan Loess
- Pre-Illinoian Till
- Proglacial Lake Deposits (silt, clays)
- Pennsylvanian Bedrock Shales
- Holocene Alluvium (silt, clays)
- Wisconsinan Surface (c. 14,000 BP)
- Yarmouth Sangamon Surface (>24,000 BP)
- Tread-Risers Cut into Stepped Erosional Surfaces
- * Detailed stratigraphy summarized in Table 6-7.

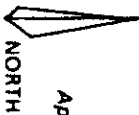


-  Wisconsinan Loess Capped Uplands
-  High Terrace
-  Alluvial Fan/High Terrace Complex
-  Low Terrace
-  Alluvial Fan/Low Terrace Complex
-  River Channel (Circa. 1938)
-  Point Bar
-  Regimes of Point Bar Accretion (Ridge and Swale)
-  Abandoned Meander Loops
-  Intermittent Drainage and Creeks

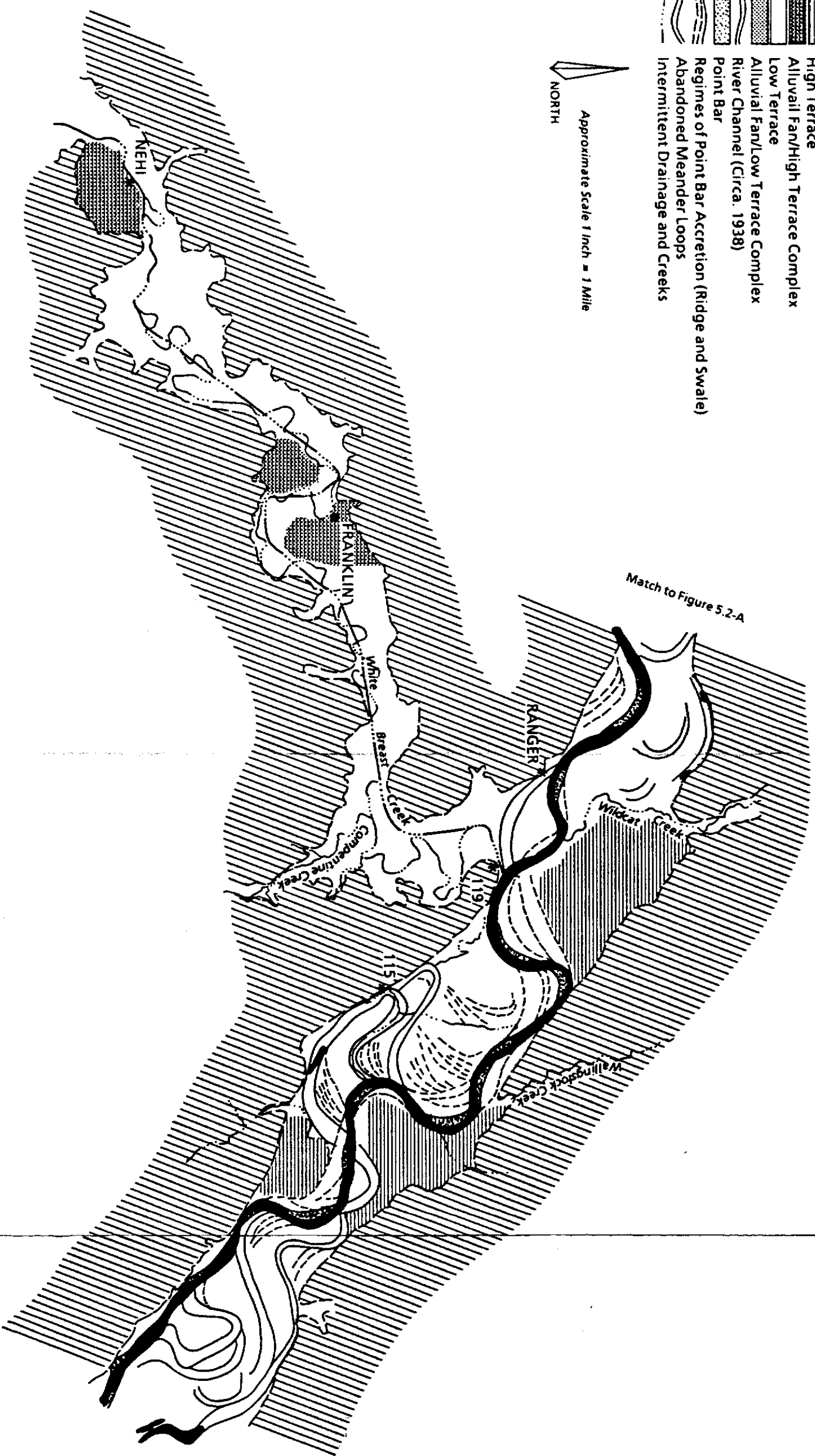

 NORTH
 Approximate Scale 1 inch = 1 Mile

PLATE 7 Lake Red Rock
Landform Map : Northern
Section

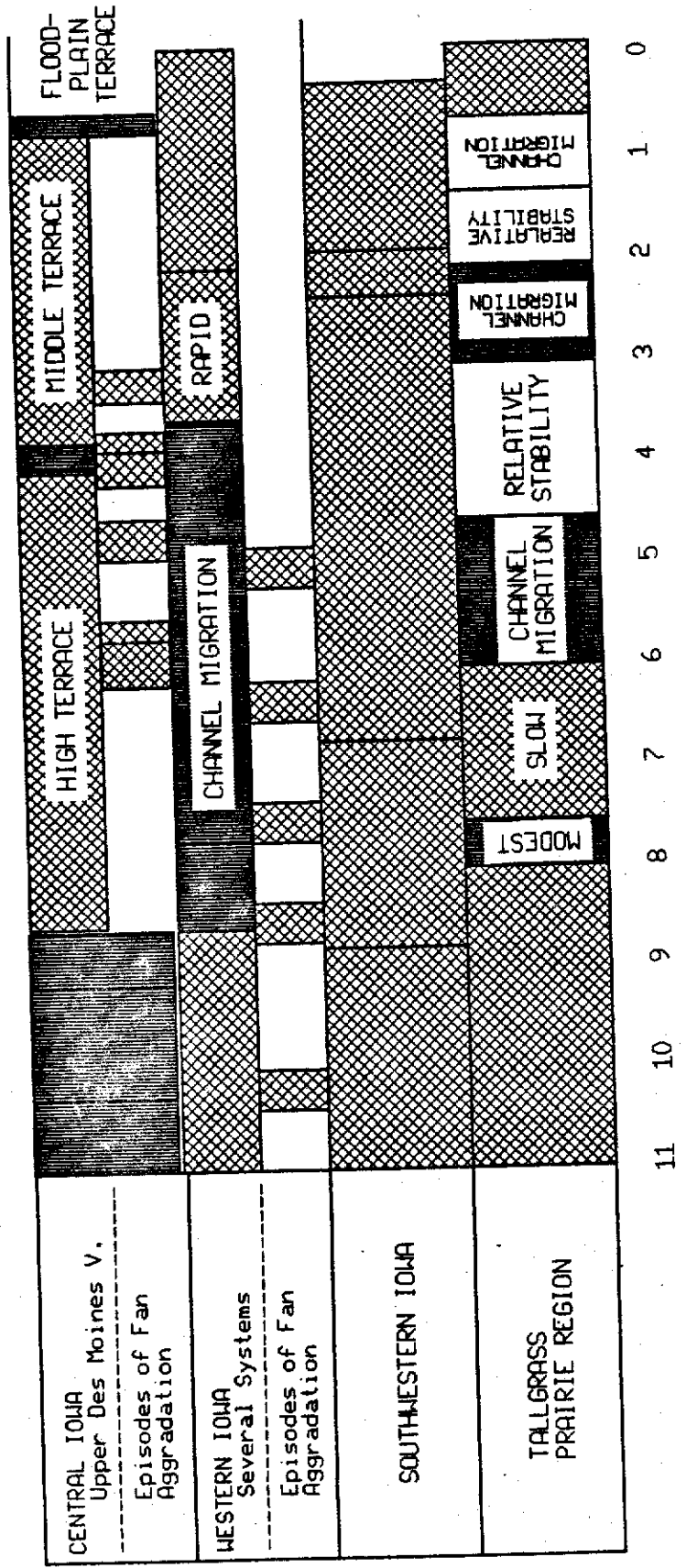
-  Wisconsinan Loess Capped Uplands
-  High Terrace
-  Alluvial Fan/High Terrace Complex
-  Low Terrace
-  Alluvial Fan/Low Terrace Complex
-  River Channel (Circa. 1938)
-  Point Bar
-  Regimes of Point Bar Accretion (Ridge and Swale)
-  Abandoned Meander Loops
-  Intermittent Drainage and Creeks



Approximate Scale 1 inch = 1 Mile



**PLATE 8 Lake Red Rock
Landform Map: Southern
Section**



1000 YEARS B.P.



 = PERIODS OF AGGRADATION
 = PERIODS OF INCISION

PLATE 9 Gradational Chronologies in Iowa

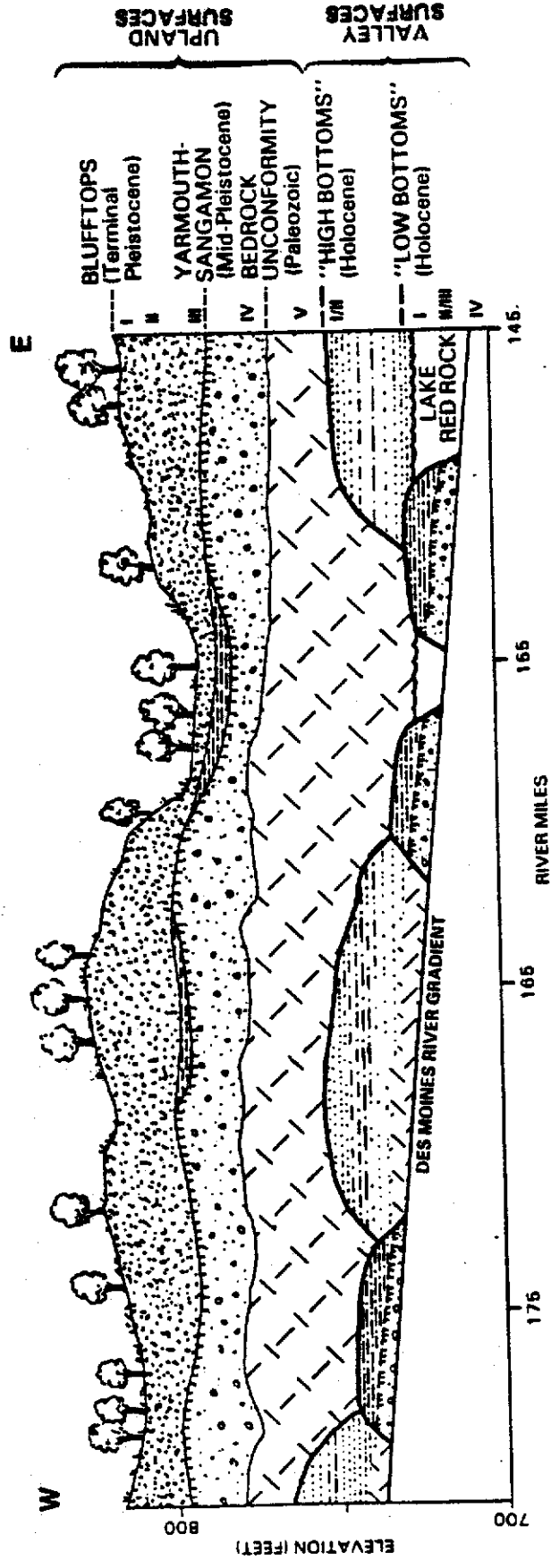
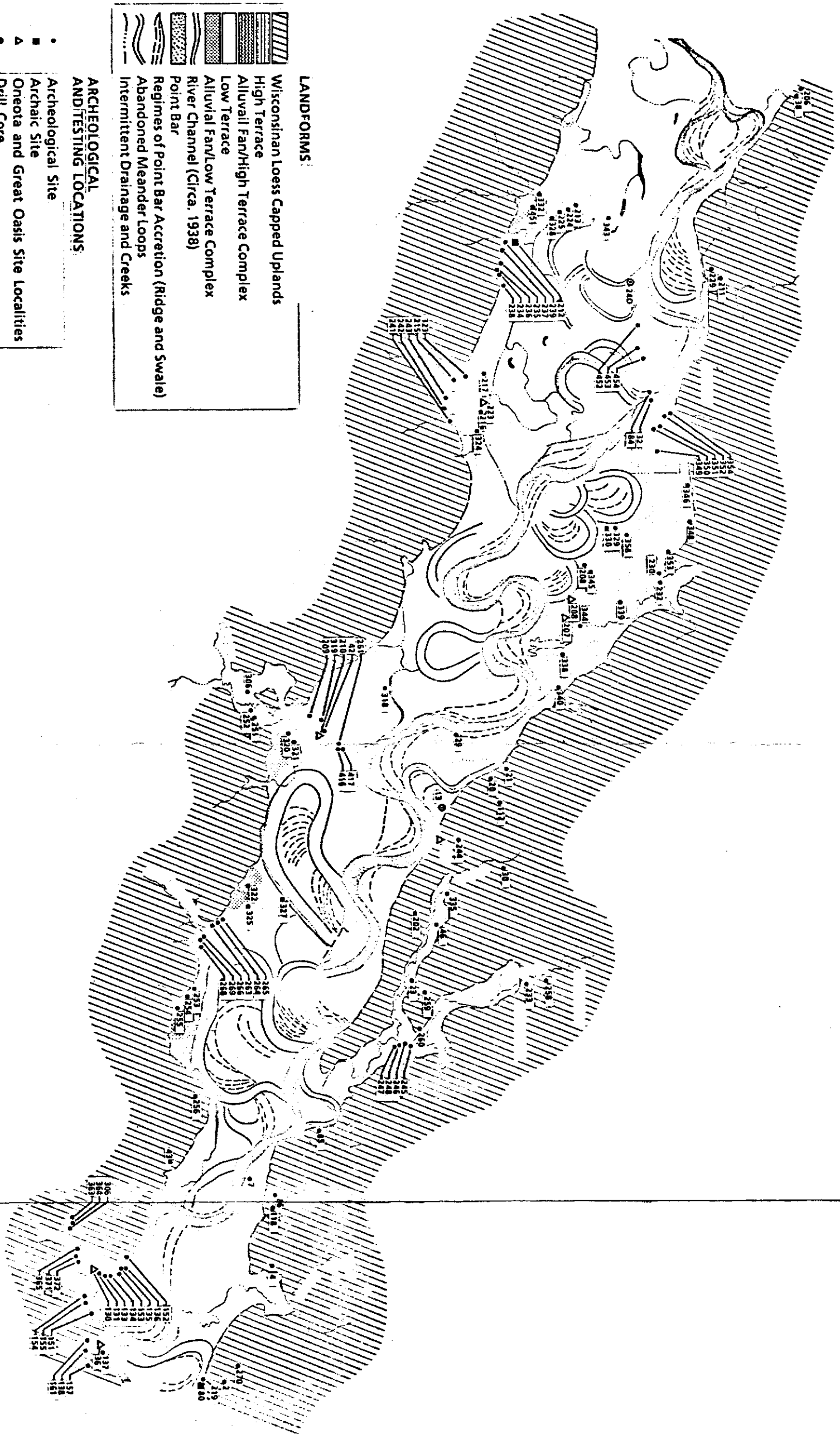


PLATE 10 Longitudinal Profile
Des Moines River Valley



- LANDFORMS:**
- Wisconsinan Loess Capped Uplands
 - High Terrace
 - Alluvial Fan/High Terrace Complex
 - Low Terrace
 - Alluvial Fan/Low Terrace Complex
 - River Channel (Circa. 1938)
 - Point Bar
 - Regimes of Point Bar Accretion (Ridge and Swale)
 - Abandoned Meander Loops
 - Intermittent Drainage and Creeks

- ARCHEOLOGICAL AND TESTING LOCATIONS:**
- Archeological Site
 - Archaic Site
 - Oneota and Great Oasis Site Localities
 - Drill Core

NORTH
Approximate Scale 1 Inch = 1 Mile

**PLATE 11 Archeological Site
Landform Correlations at
Lake Red Rock**

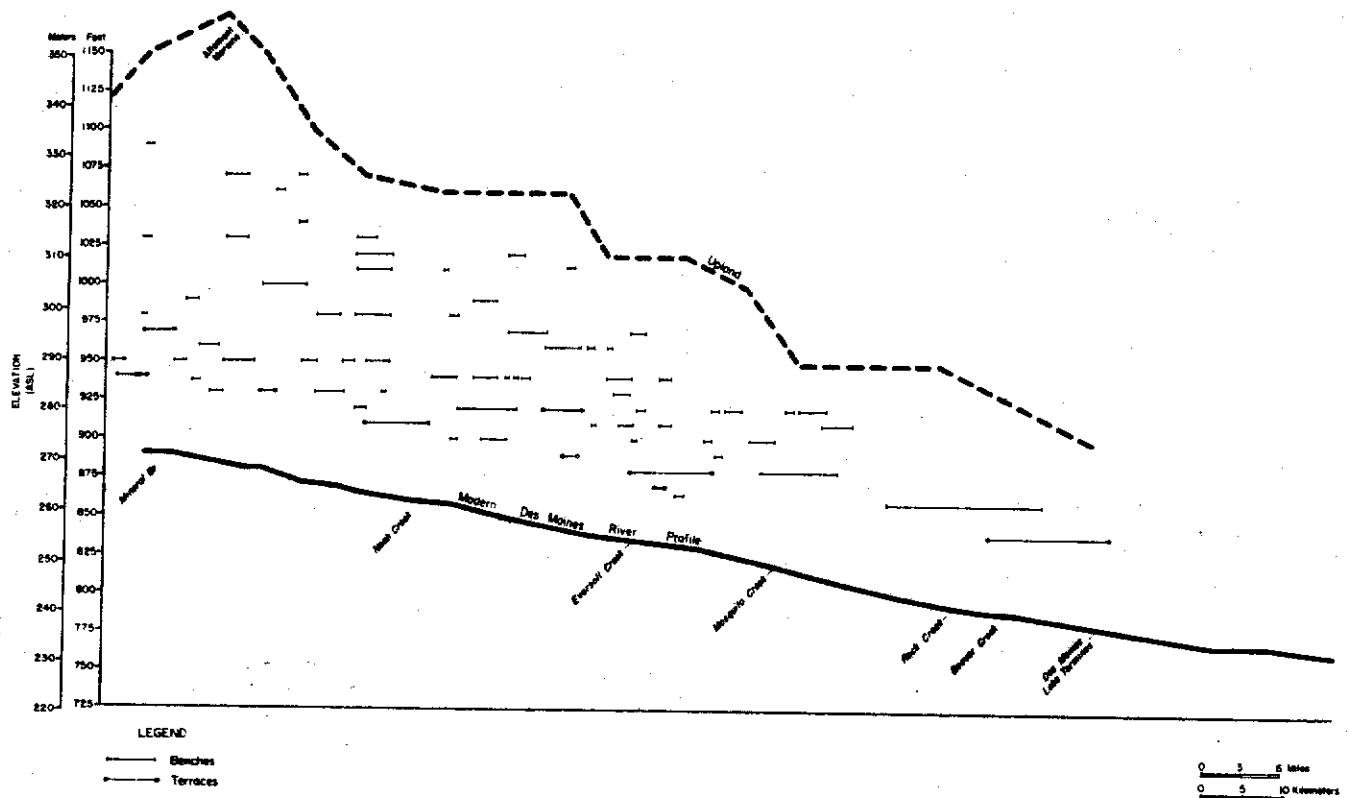


PLATE 12 Late Wisconsinan Bench and Terrace Levels Along the Central Des Moines River Valley

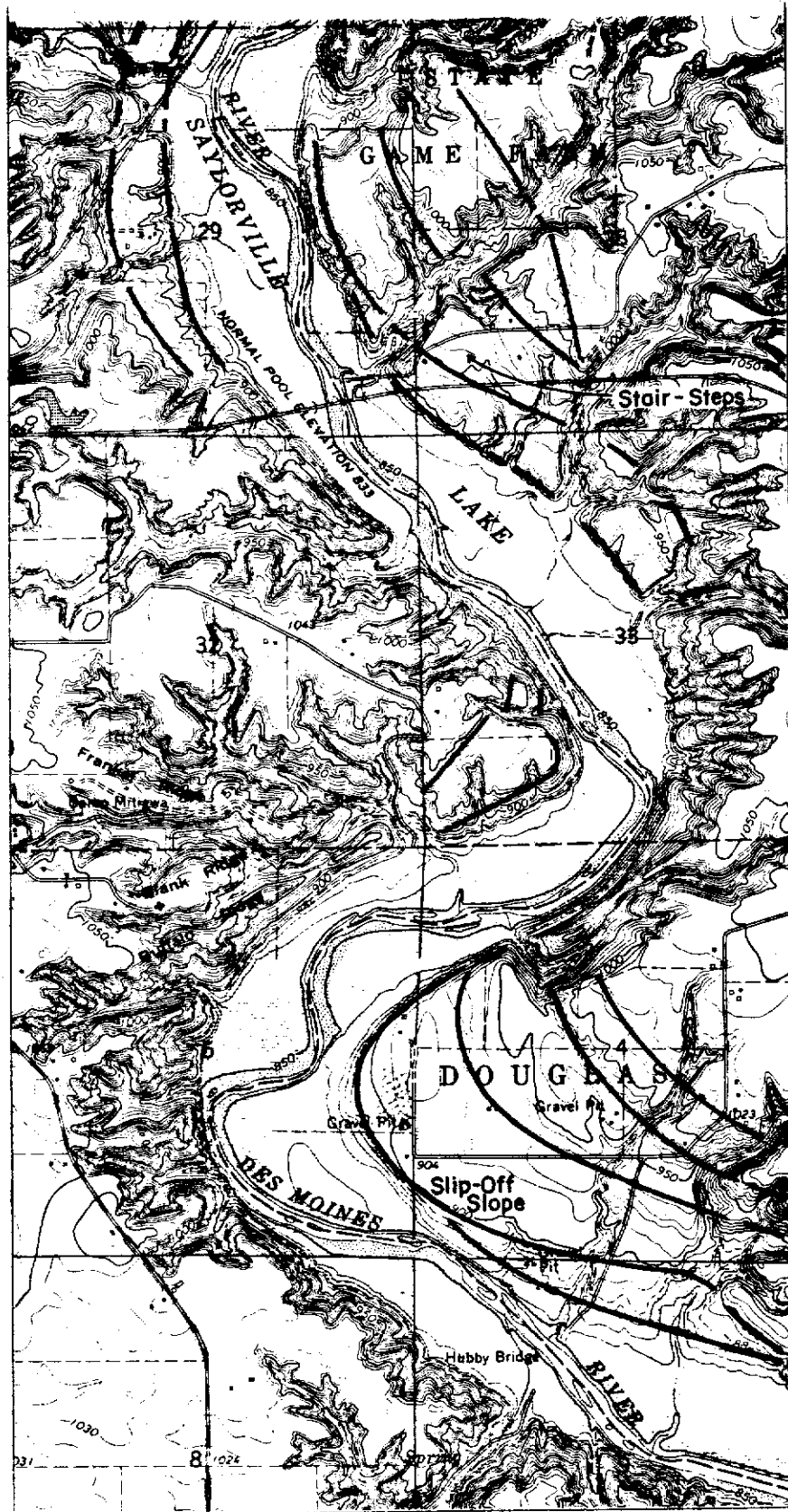
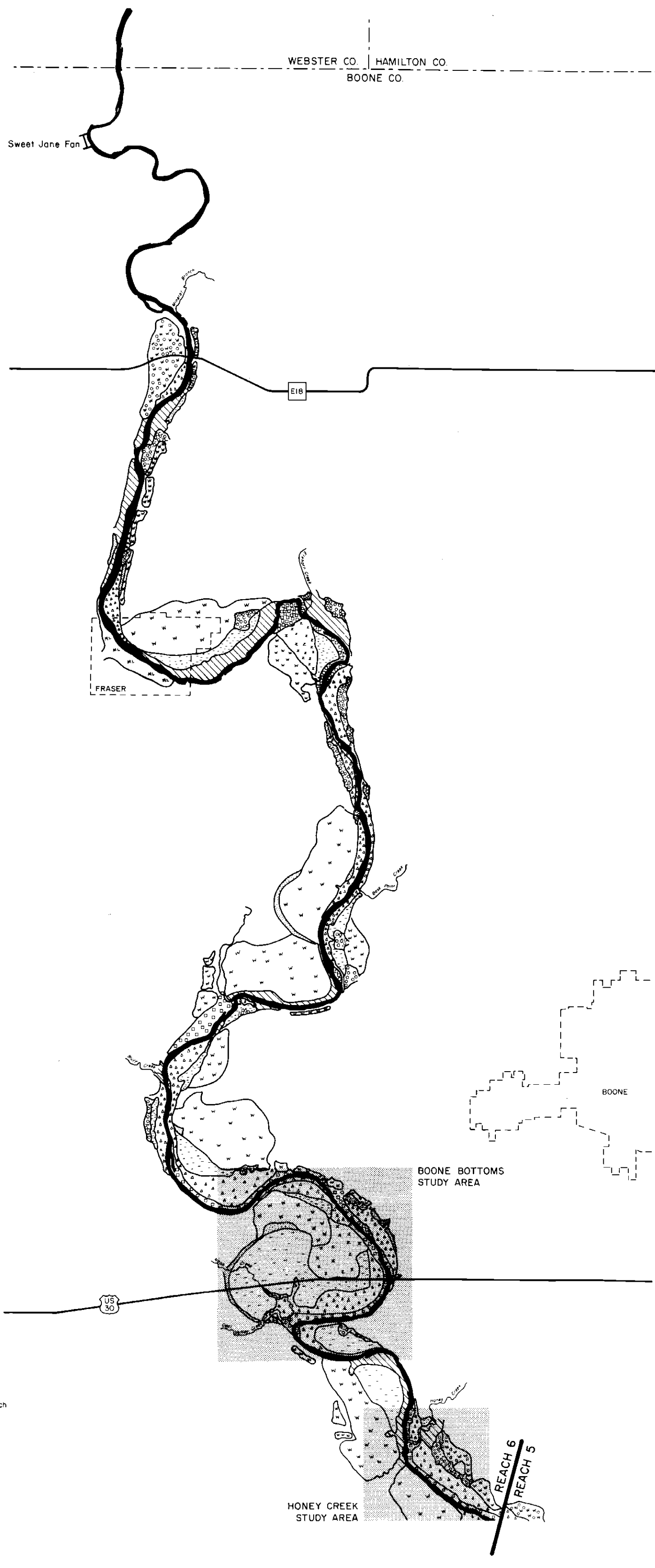


PLATE 13 Slip Off Slope Location of Late Wisconsinan Benches and Terraces



EXPLANATION

- Late Wisconsin Bench
- Late Wisconsin Terrace
- Alluvial Fan on Late Wisconsin Bench
- Alluvial Fan
- Colluvial Slope/Fan
- High Terrace
- Fan/High Terrace
- Intermediate Terrace
- Low Terrace
- Intermediate/Low Terrace

PLATE 14 Saylorville Lake Geomorphic Units: Northern Section

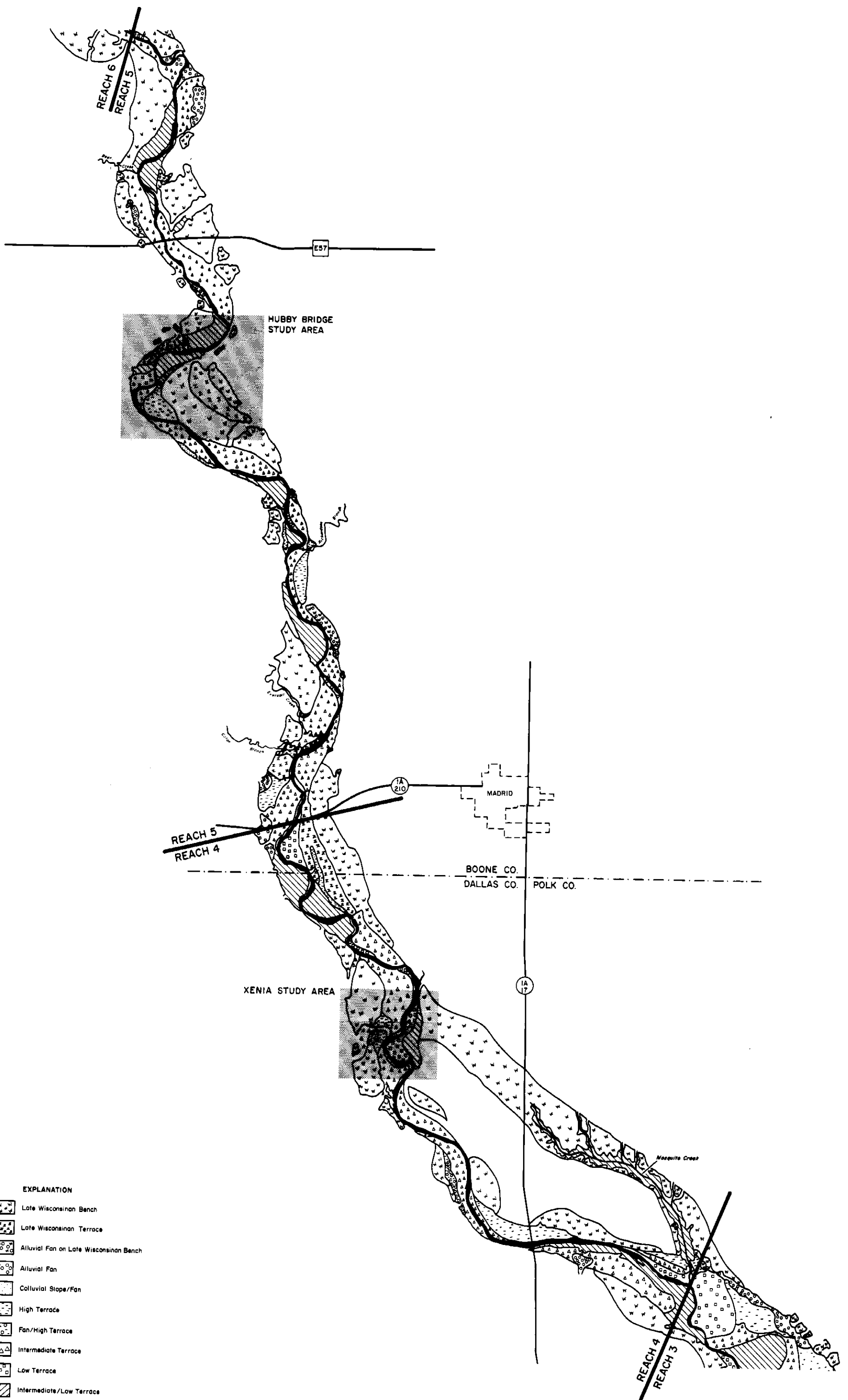


PLATE 15 Saylorville Lake Geomorphic Units: Central Section

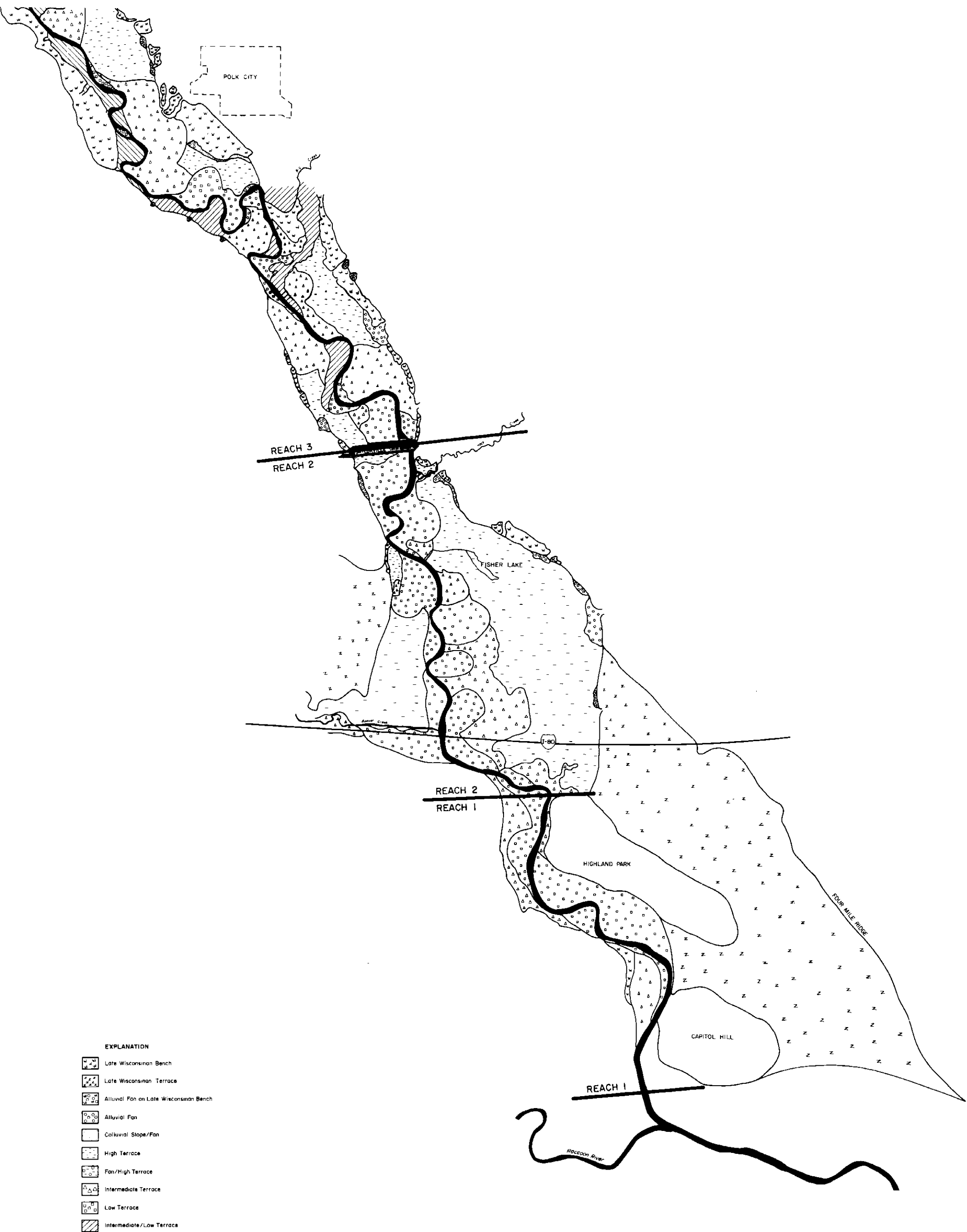


PLATE 16 Saylorville Lake Geomorphic Units: Southern Section

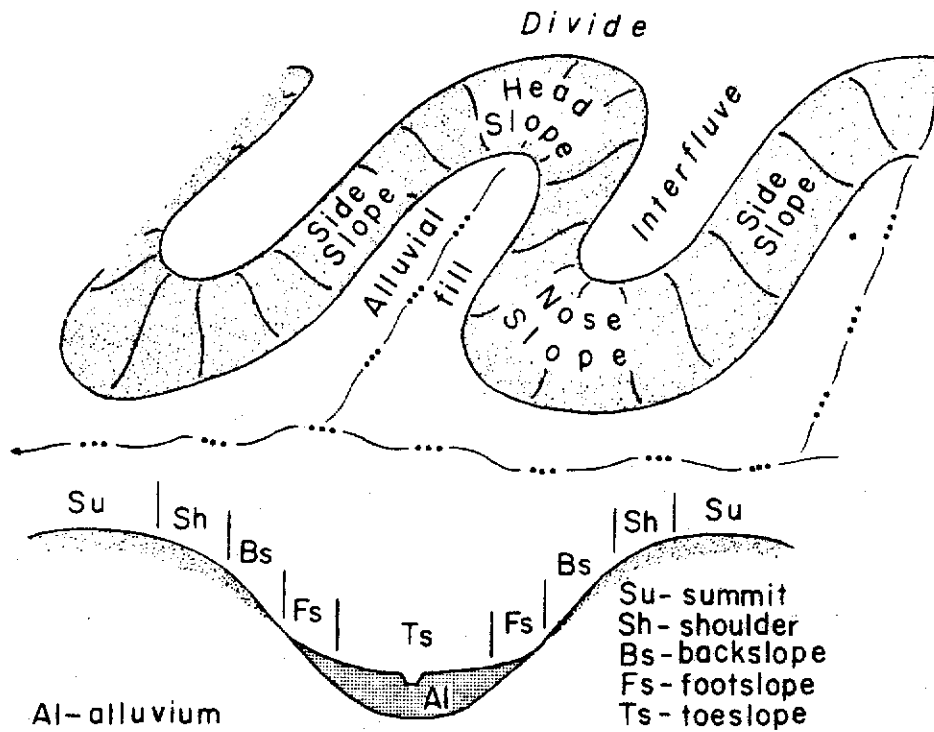


PLATE 17 Geomorphic Components of a Hillslope

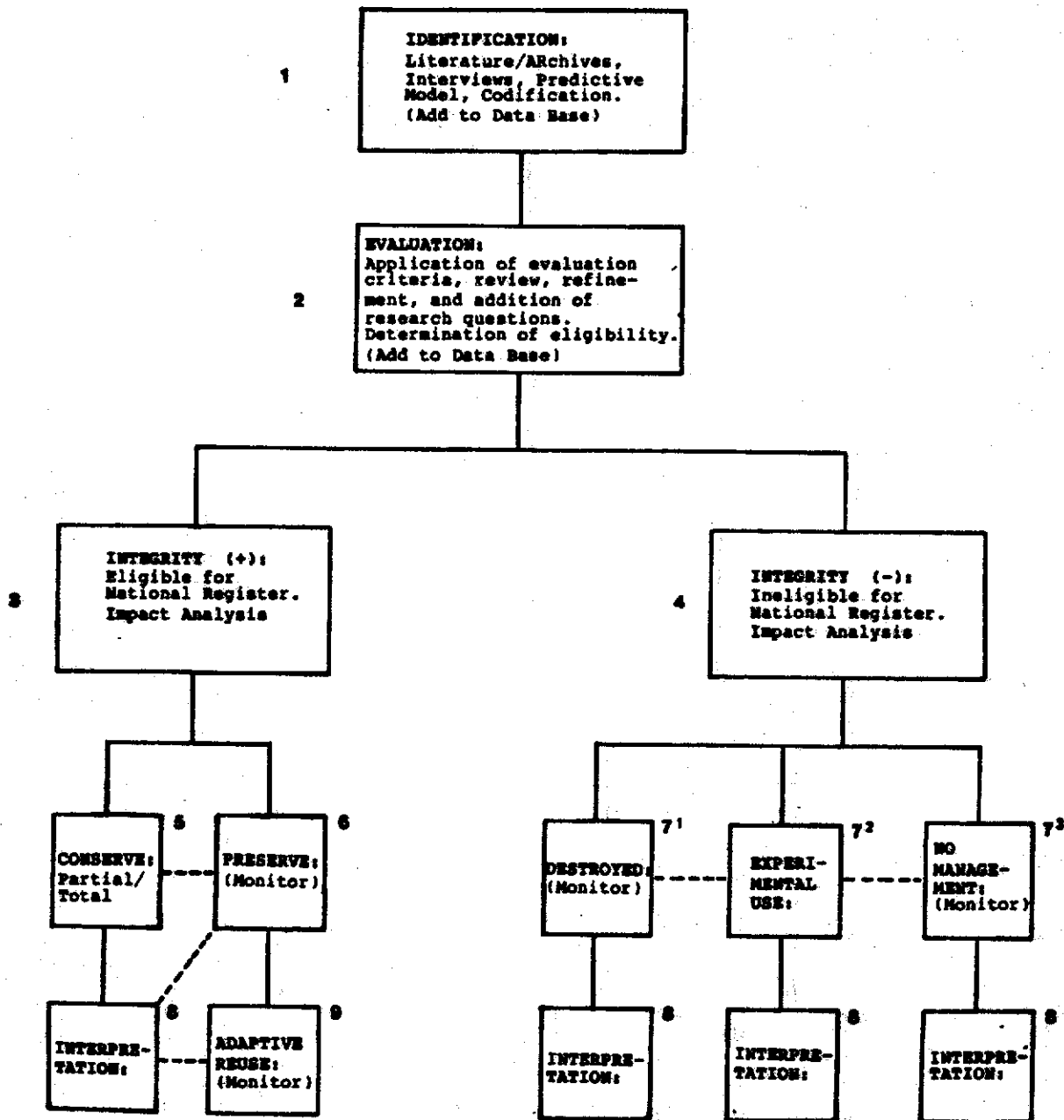
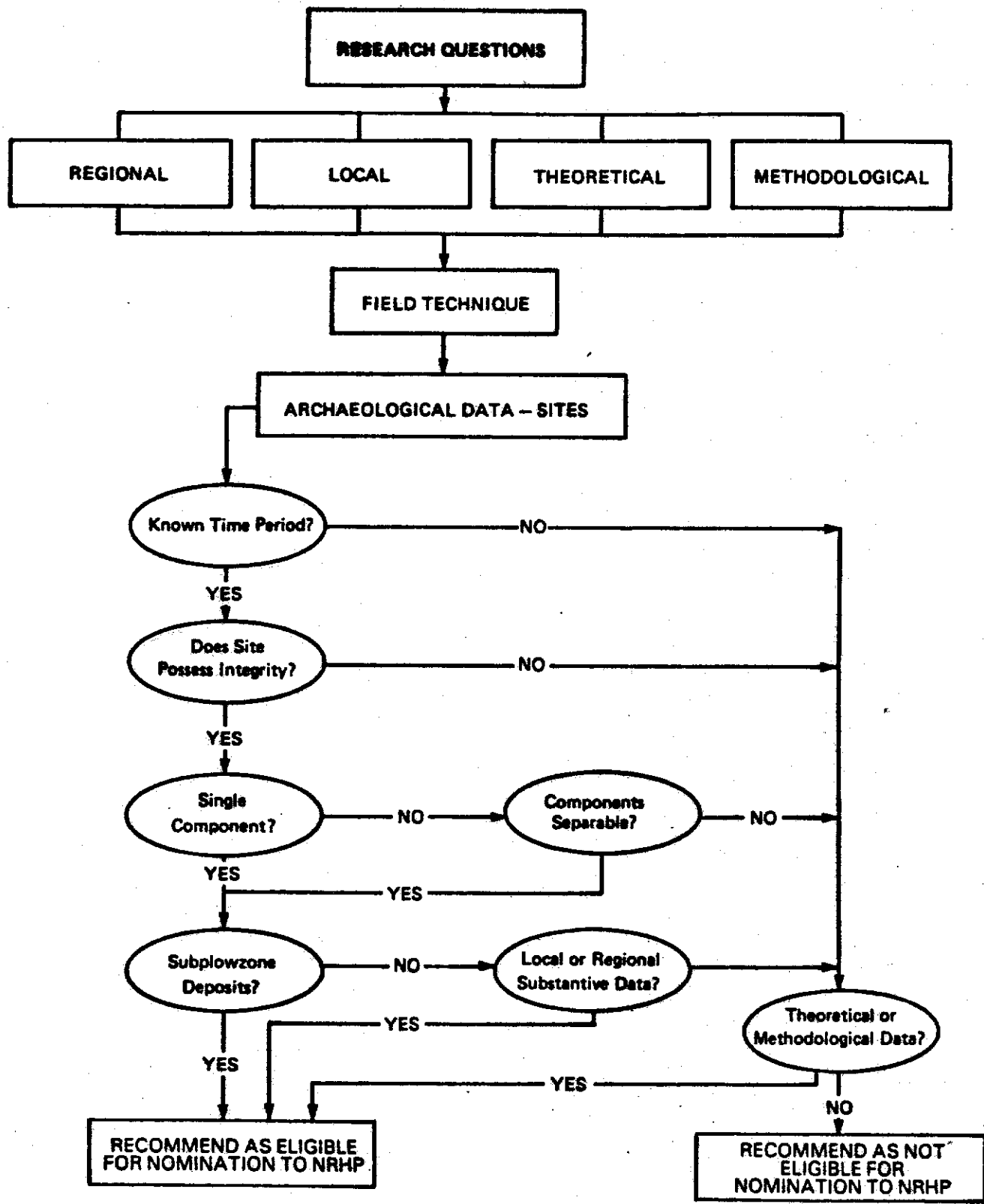
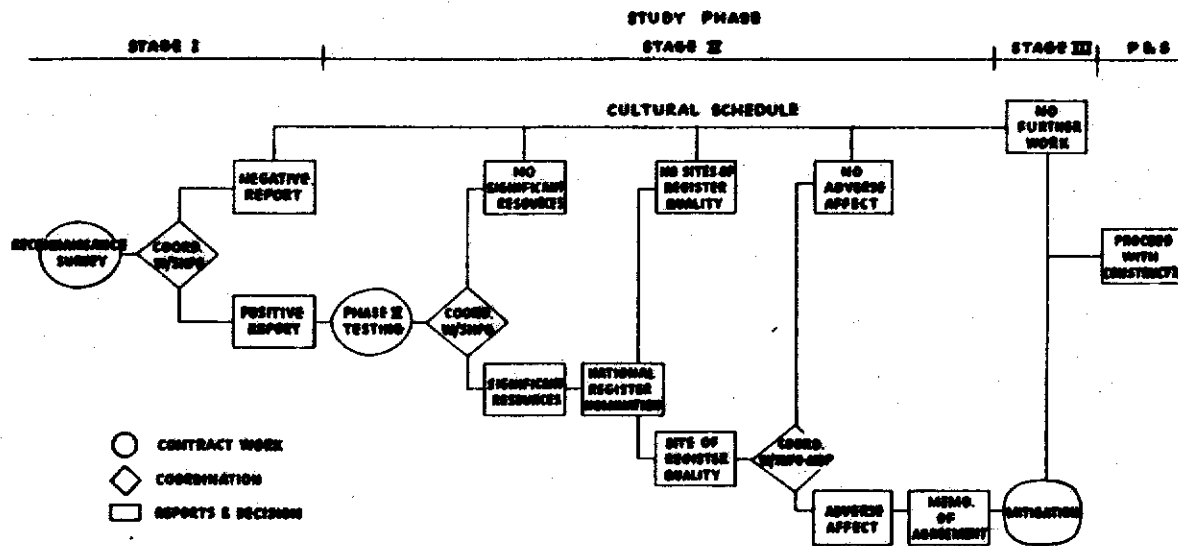


PLATE 18 Sites and Allocation Processes



Gilbert/Commonwealth Inc. of Michigan

PLATE 19 Flow Chart of the National Register Evaluation Process



ADVISORY COUNCIL PROCEDURES FOR PROTECTION OF HISTORIC AND CULTURAL PROPERTIES

TM 5-801-1

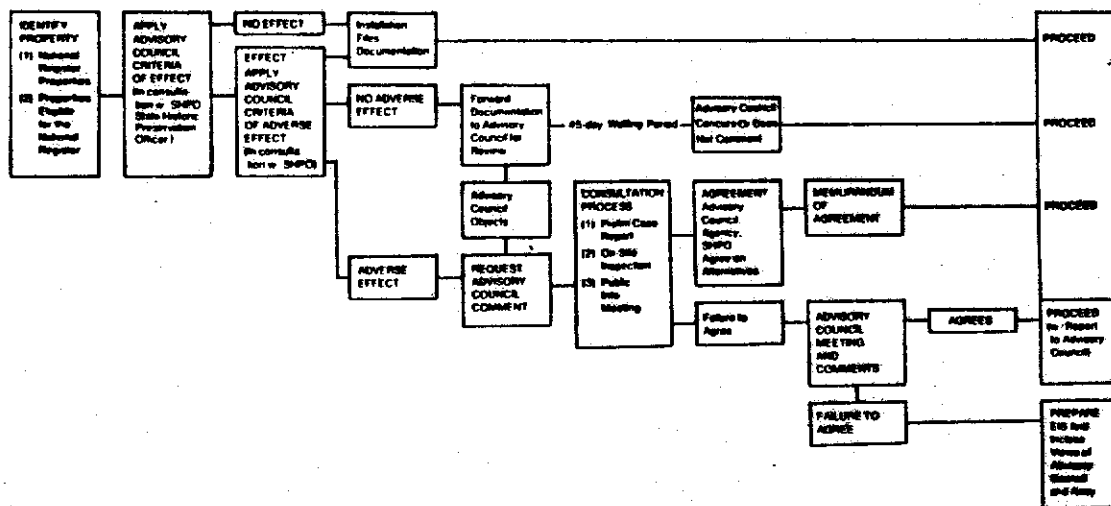


PLATE 20 Advisory Council Procedures

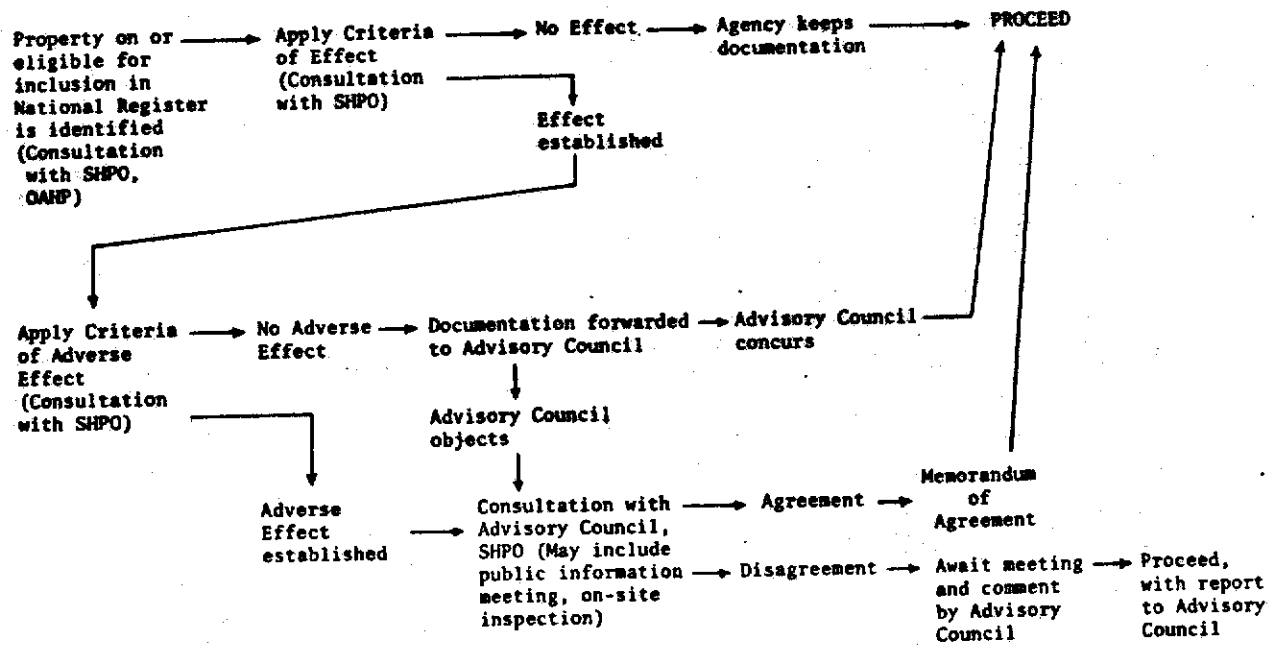
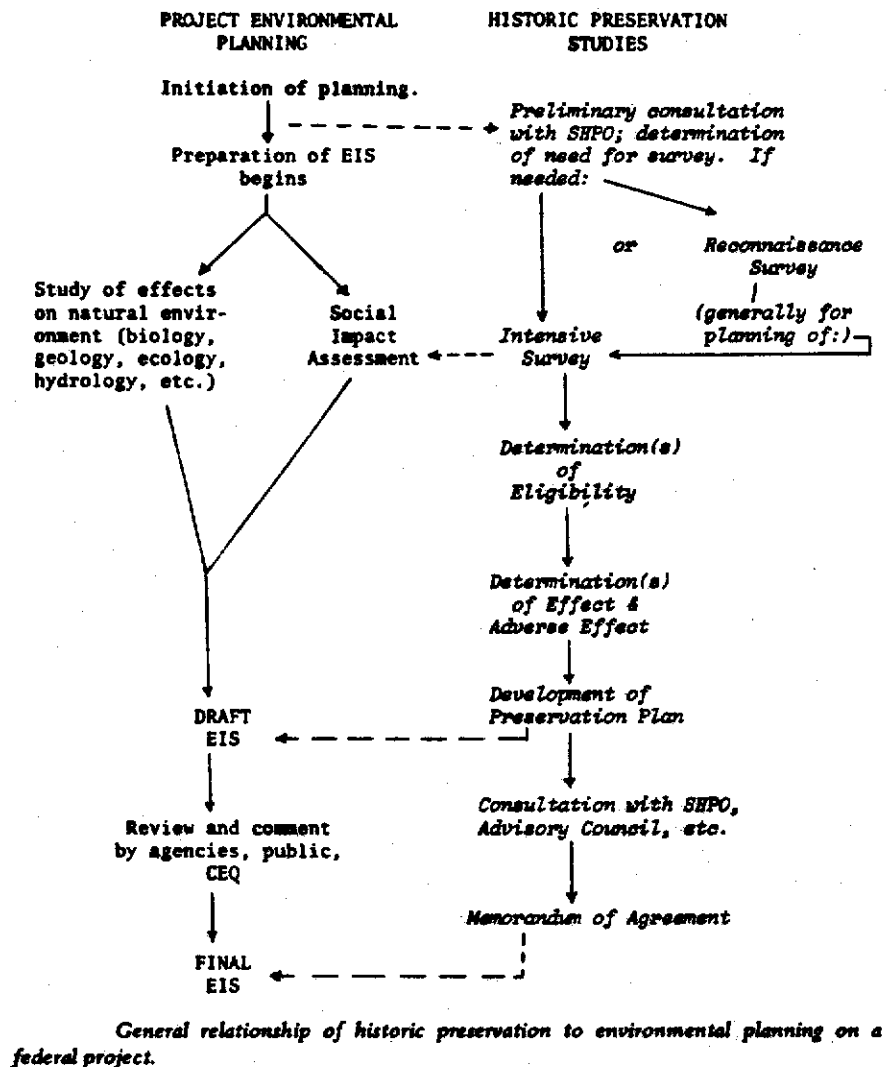


PLATE 21 Environmental Planning Flow Chart

PERMANENT CORRESPONDENCE

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GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

APPENDIX C
CULTURAL RESOURCES ASSESSMENT

ATTACHMENT 1
PERTINENT CORRESPONDENCE

TABLE OF CONTENTS

	<u>Page</u>
Letter dated December 2, 1985, from Dr. Lowell J. Soike, Deputy SHPO, to NCR	1-1
Letter dated April 2, 1986, from Dr. Lowell J. Soike, Deputy SHPO, to NCR	1-2
Letter dated April 21, 1986, from Dr. Lowell J. Soike, Deputy SHPO, to NCR	1-4
Letter dated April 23, 1986, from NCR to Dr. Lowell J. Soike, Deputy SHPO	1-5
Letter dated May 6, 1986, from Dr. Lowell J. Soike, Deputy SHPO, to NCR	1-9

IOWA STATE HISTORICAL DEPARTMENT
OFFICE OF HISTORIC PRESERVATION

DAVID CROSSON, EXECUTIVE DIRECTOR

~~XX~~
STATE HISTORIC PRESERVATION OFFICER

April 2, 1986

Dudley M. Hanson, P.E.
Acting Chief, Planning Division
Rock Island District Corps of Engineers
Clock Tower Building
P.O. Box 2004
Rock Island, IL 61204-2004

RE: DES MOINES RIVER GREENBELT CORRIDOR -
BENNINGTON BRIDGE RECREATION ACCESS

Dear Mr. Hanson:

We have received and reviewed the information you submitted to our office concerning the above referenced project. Based on your project description and a review of our records and maps, we make the following comments and recommendations.

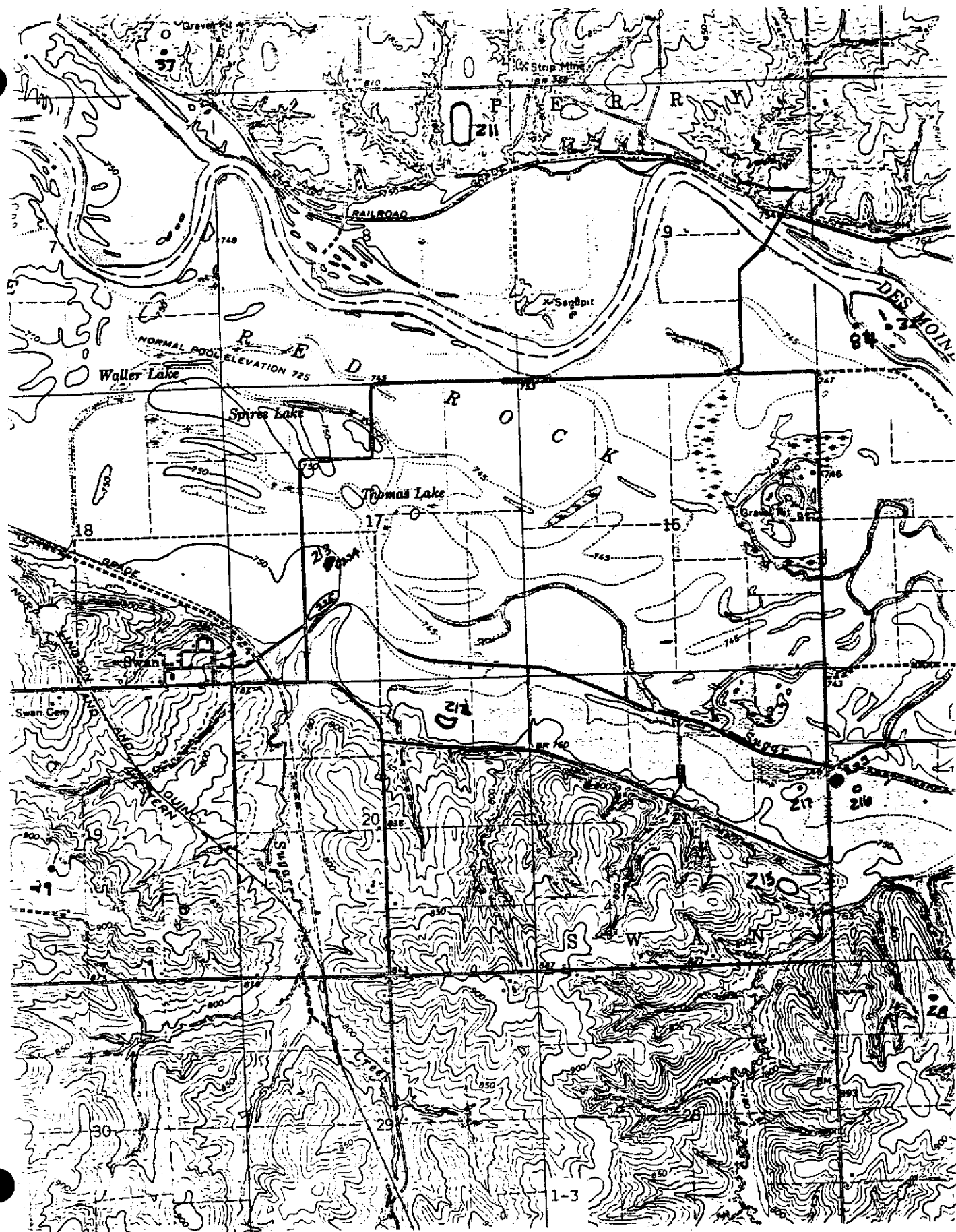
As several archeological sites have been recorded in the vicinity of your project area, we recommend an archeological survey be conducted prior to land disturbance activities. The purpose of the survey is to locate any presently unidentified archeological or historical sites which may be impacted by the proposed undertaking.

Sincerely,



Dr. Lowell J. Soike, Director
Deputy State Historic Preservation Officer

/mdd





DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004

REPLY TO
ATTENTION OF:

April 23, 1986

Planning Division

Dr. Lowell Soike
Deputy State Historic Preservation Officer
Historical Building
East 12th and Grand Avenue
Des Moines, Iowa 50319

Dear Dr. Soike:

This letter describes the results of three cultural resources reconnaissance surveys for Des Moines Recreational River and Greenbelt Projects. The three projects are prototypes and begin the process of Corps cooperation with local sponsors to plan and construct recreational facilities under this program. A general vicinity map (Map 1) is enclosed, which illustrates the locations of the projects, one at the north end of Saylorville Lake near Boone, one at Jester County Park at Saylorville Lake, and a third project at Lake Red Rock. District archeologists Charles Smith and Kenneth Barr conducted the investigations on April 16 and 17, 1986. Each project is described in detail below. No archeological or historical sites were listed for these areas in the office of the State archeologist site files.

Bennington Bridge. The title for this project is somewhat of a misnomer, as a bridge no longer exists at this location. Map 2, a xeroxed section of the Pleasantville 7.5 Minute Quadrangle, shows the project area in Section 9 (NW¹/₄, SE¹/₄, SE¹/₄, NW¹/₄) of T. 77 N., R. 21 W., in Marion County, Iowa. A double-lane, concrete boat launch ramp is in place, and the area around the ramp is severely disturbed because of previous construction and landscaping activities for gravel roads and the boat ramp. Examinations of 6-foot-high cut banks along the river and on either side of the boat ramp revealed that at least 2 meters of post-settlement alluvium are present. Any early historic or prehistoric landscape remnants that may be present are below the water table. Several shovel tests (0.5 x 0.5 m) were excavated about 15 meters inland from the river bank to confirm this stratigraphic interpretation. These tests, extended to a depth of about 2 meters by silt probe, support the determination that the project will have No Effect on intact significant cultural resources. The area is completely reworked.

The Greenbelt Advisory Committee proposes to recommend the construction of a new boat ramp and to upgrade/expand an existing parking lot (see enclosed oversized plan on map 3). The design requires 1,269 cubic yards of cut and fill for the parking lot, 365 tons of crushed stone for the parking lot and road surfaces, 213 square yards of concrete for the ramp, 545 tons of riprap base, and 65 tons of crushed stone for the ramp foundation. When completed, the access area will have a one-lane, 15-foot wide launching ramp, and a parking area for 15 cars with trailers and approximately 15 cars without trailers. The parking lot would be constructed on fill to an elevation of 748 MSL to reduce inundation frequency. The proposed development site is 3 acres in size.

The two "X" Marks on map 2 illustrate the locations of cultural remains outside the project area that were discovered by Corps staff during the reconnaissance survey. Both sites are located approximately 70 meters to the north of the east-west gravel road on a high terrace, which is about 6 meters higher than the riverbank area where the boat ramp and parking lot will be located. A light scatter of chert flakes was mixed, on the surface, with historic materials. The westernmost crest has a poured concrete basement entranceway and a scatter of artifacts (not collected) which included:

- 2 pressed glass amethyst-colored vase fragments
- 1 ironstone crock base (Johnson Brothers basemake, England)
- 1 blue-green Mason Perfect Ball preserve jar base w/Owens scar
- 3 3-piece mold preserve jar fragments (screw top)
- 2 decal-decorated sherds, 1 porcelain, 1 ironstone
- x numerous crockery sherds with Bristol and Albany glazes

These items suggest a ca. 1900-1920 date range, although earlier materials could be contained in subsurface features. The eastern side of the ridgetop has an oil tank, a tile field, and a cement foundation. Three chert flakes and a biface tip were found in the roadcut adjacent to the historic remains. No artifacts were collected. Map 4 is a general sketch of the site locations.

The proposed Bennington Bridge Access Area project will have No Effect on significant cultural remains based upon current plans. Any expansion of the project to the ridgetop area would result in a Corps recommendation for additional archeological and historical studies to evaluate the significance of the cultural remains. Photographs taken, and Iowa State Survey forms, will be submitted to your office as soon as they are available.

Boone County Boat Launch. This project is located in Section 13 (S¹/₂, SE¹/₂) of T. 84 N., R. 27 W., in Boone County, Iowa, as shown on Maps 5 and 6. The preliminary plan (Sketch 1) illustrates the proposed boat ramp profile. The project was previously approved under a Department of the Army permit dated October 1, 1981. The field inspection revealed that construction activities will be limited to low-potential landscapes characterized by recently accreted alluvium and severely disturbed areas affected by several episodes of bridge construction. Post-settlement alluvium or fill materials are about 2 meters thick. This determination was made by cut bank examinations and shovel tests extended by silt probes. Hence, the project will have No Effect on intact significant cultural remains.

Jester County Park. The park is located along the right bank of the Des Moines River in Section 32 (SW¹/₄, NW¹/₄) of T. 81 N., R. 23 W., in Polk County, Iowa, as shown on maps 7 and 8. Sketch 2 illustrates the proposed layout for adding 32 camping pads and access road to an existing open campground. The pads will be made of crushed rock bordered by large timbers. Electrical and water services will be installed. A modern shower/restroom building will be added at a later date.

Excavation of 55 shovel tests (0.5 x .05 m) revealed a sod and humus layer of 20 centimeters over loess and till. The area is severely deflated as a result of logging, agricultural practices, and original campground construction. No cultural remains were found in the shovel tests placed at 10-meter intervals across the site. All tests were excavated to a depth of 30 centimeters. This project will have No Effect on intact significant cultural resources. This 1-acre site should require no further cultural resource reviews.

We request your comments on the above projects at your earliest convenience. If you have any questions, please call Mr. Charles Smith at 309/788-6361, Ext. 349. Your comments may be sent to the following address:

District Engineer
U.S. Army Engineer District, Rock Island
ATTN: Planning Division
Clock Tower Building - P.O. Box 2004
Rock Island, Illinois 61204-2004

Sincerely,

Signed By
J. T. SCHNERRE

Dudley M. Hanson, P.E.
Chief, Planning Division

Enclosures

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SUMMARY OF HISTORIC PRESERVATION LAWS

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GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

APPENDIX C
CULTURAL RESOURCES ASSESSMENT

ATTACHMENT 2
SUMMARY OF HISTORIC PRESERVATION LAWS

TABLE OF CONTENTS

<u>Subject</u>	<u>Page</u>
Antiquities Act of 1906	2-1
Historic Sites Act of 1935	2-1
Reservoir Salvage Act of 1960	2-1
National Historic Preservation Act of 1966	2-1
Amendments to the National Historic Preservation Act of 1966	2-2
National Environmental Policy Act of 1969	2-2
Executive Order 11595	2-2
Archaeological and Historic Preservation Act of 1974	2-2
Archaeological Resources Protection Act of 1979	2-3
36 CFR Part 60	2-3
36 CFR Part 63	2-4
36 CFR Part 64	2-4
36 CFR Part 65	2-4
36 CFR Part 66	2-5
36 CFR Part 680	2-5
Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation	2-5

GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

APPENDIX C
CULTURAL RESOURCES ASSESSMENT

ATTACHMENT 2
SUMMARY OF HISTORIC PRESERVATION LAWS

ANTIQUITIES ACT OF 1906 (PUBLIC LAW 59-209) 16 U.S.C. 431-33 (1970)

- Provides for protection of historic and prehistoric remains, "or any antiquity," on Federal lands
- Establishes criminal sanctions (fines and imprisonment) for unauthorized destruction or appropriation of federally owned antiquities
- Authorizes through a permit system the scientific investigation of antiquities on Federal lands

HISTORIC SITES ACT OF 1935 (PUBLIC LAW 74-292) 16 U.S.C. 461-67 (1970)

- Gives the Secretary of the Interior the power to make historic surveys, to document, evaluate, acquire, and preserve archeological and historic sites.

THE RESERVOIR SALVAGE ACT OF 1960*

- Provides for the recovery and preservation of "historical and archaeological data" that might be lost or destroyed as a result of the construction of federally funded or licensed dams, reservoirs, and attendant facilities.
- Extensively amended in 1974

NATIONAL HISTORIC PRESERVATION ACT OF 1966 (Public Law 89-665) 16 U.S.C. 470-470m.*

- Sets forth a national policy of historic preservation
- Encourages states and private parties to contribute matching funds and grants

- Expands the National Register of Historic Places
- Establishes the President's Advisory Council on Historic Preservation
- Encourages states to conduct statewide surveys and prepare State Historic Preservation Plans
- Authorizes grants by the Secretary of Interior to states in support of survey, planning, and preservation activities

AMENDMENTS TO THE NATIONAL HISTORIC PRESERVATION ACT OF 1966 (PUBLIC LAW 96-515) 16 U.S.C. 470

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (PUBLIC LAW 91-190) 42 U.S.C. 4321 et. seq. (1970)

- Requires evaluation of the effects of major Federal actions on environmental and cultural resources
- Establishes President's Council on Environmental Quality

EXECUTIVE ORDER 11593, PROTECTION AND ENHANCEMENT OF THE CULTURAL ENVIRONMENT, 16 U.S.C., 470 (Supp. 1, 1971)*

- Requires all Federal agencies to:
 - Make an inventory of historic properties under their control
 - Nominate eligible properties to National Register of Historic Places
 - Give priority in inventory to federally owned properties to be transferred and/or altered
 - Develop policies that will contribute to the preservation of non-federally owned historic properties
- Directs Secretary of Interior to prepare standards and provide advice concerning identification and preservation

THE ARCHEOLOGICAL AND HISTORIC PRESERVATION ACT OF 1974 (PUBLIC LAW 93-291) 16 U.S.C. 469a*

- All Federal projects are covered and up to one percent of project funds may be used for this purpose
- Amends Reservoir Salvage Act of 1960 by specifically providing mechanisms for the preservation of archeological data

ARCHEOLOGICAL RESOURCES PROTECTION ACT OF 1979 (PUBLIC LAW 96-95) 16
U.S.C. 470aa

- Provides permitting, excavating, curatorial, and public involvement guidance for projects affecting historic properties
- Establishes criminal penalties for unauthorized disturbance or vandalism on public or Indian lands

36 CFR PART 60

- Sets forth basic procedures for nominating cultural resources to the National Register of Historic Places

An excerpt from this critical regulation is provided below to explain National Register significance.

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

(a) That are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) That are associated with the lives of persons significant in our past; or

(c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) That have yielded, may be likely to yield, information important in prehistory or history.

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

(a) A religious property deriving primary significance from architectural or artistic distinction or historical importance.

(b) A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event.

(c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.

(d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events.

(e) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived.

(f) A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance.

(g) A property achieving significance within the past 50 years if it is of exceptional importance.

36 CFR PART 63

-Establishes the procedures for requesting determinations of eligibility and outlines the information necessary to make such a determination.

36 CFR PART 64

-Sets forth methods to be used to identify potentially significant cultural resources. Acceptable professional standards also are described.

36 CFR PART 65

-Requires that Federal agencies inform the SHPO, the ACHP, and the Secretary of the Interior when their activities are likely to destroy or damage historical or archeological data. Data recovery as mitigation is authorized.

36 CFR 66

-Sets forth basic professional standards for conducting data recovery activities under terms of the Archeological and Historical Preservation Act. Significant data classes are identified, research designs are mandated, and minimum qualifications for archeologists, historians, and architectural historians are set forth. Reporting standards also are clarified.

36 CFR PART 800

In a sense, this is the most important regulation under which NCR must operate because it ties all other laws and regulations (as above) together in what is typically referred to as the "Advisory Council's" procedures. The ACHP is the highest Federal review and compliance authority for evaluating impacts to National Register properties, and for approving mitigation plans. The ACHP also has the authority to guide and control the compliance process. This regulation implements Sections 106 and 110 of the National Historic Preservation Act and Executive Order 11593. All Federal agencies are required to establish procedures for implementing the consultation process, and Federal agencies are required to exercise caution on lands under their control until the Identification and Evaluation processes (including NRHP nomination) are completed. Impact avoidance and mitigation are discussed and provisions are made for developing Memoranda of Agreement (MOA) on the treatment of cultural resources.

SECRETARY OF THE INTERIOR'S STANDARDS AND GUIDELINES FOR ARCHEOLOGY AND HISTORIC PRESERVATION

-Provides for preservation planning, Identification, Evaluation, and National Register nomination. These standards are not binding on Federal agencies, but most ACHP compliance reviews are done in accordance with the standards. Hence, ignoring the standards usually leads to noncompliance or compliance conflicts.

ARCHEOLOGICAL SITE LISTS

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GENERAL DESIGN MEMORANDUM
DES MOINES RECREATIONAL RIVER AND GREENBELT
DES MOINES RIVER, IOWA

APPENDIX E
CULTURAL RESOURCES ASSESSMENT

ATTACHMENT 3
ARCHAEOLOGICAL SITE LISTS

TABLE OF CONTENTS

<u>Table No.</u>		<u>Page</u>
3-1	Saylorville Lake Sites File	3-1
3-2	Summary of Site Impacts and Allocations for Recreation Areas at Saylorville Lake, Iowa	3-91
3-3	Summary of Lake Red Rock Sites	3-92
3-4	Lake Red Rock Research Topics	3-101
3-5	Sites at Lake Red Rock in Recreation Areas	3-104

TABLE 3-1

FOR OFFICIAL USE ONLY

MASTER ON FILE AT ROCK ISLAND DISTRICT OFFICE

TABLE 3-2

Summary of Site Impacts and Allocations
for Recreation Areas at Saylorville Lake, Iowa

(Adapted from Stanley and Benn 1985 - Draft: Table 9)

<u>Landform/ Site</u>	<u>Hillslope Position</u>	<u>Impacts</u>	<u>Age</u>	<u>Allocation</u>	<u>Recreation Area</u>	<u>Eligible NRHP</u>
Uplands						
13PK235	s-sh	lc,p	UP	destroyed	Walnut Ridge	-
13PK25	s-sh	lc,p	UP	destroyed	Walnut Ridge	-
13PK25,B	s-sh	lc,6	UP	research	Walnut Ridge	-
13PK120	s-sh	0c	UP	destroyed	Lakeview	-
13PK197	s-sh	0c	LA-EW,MW	destroyed	Cherry Glen	-
13PK233	s-sh	0c,6	LA	destroyed	Walnut Ridge	-
13PK241	s-sh	lc,4,6	UP	research	Acorn Valley	-
13PK280	s-sh	0c,6	e LW	destroyed	Cherry Glen	-
13PK298	s-sh	0c	P	destroyed	Prairie Flower	-
13PK299	s-sh	lc,6	LA,MW	conserve	Prairie Flower	-
13PK300	s-sh	lc,3r,6	UP	remove	Prairie Flower	-
13PK302	s-sh	0c	UP	destroyed	Prairie Flower	-
13PK305	s-sh	0c	UP	destroyed	Prairie Flower	-
13PK310	s-sh	0c,6	LW	destroyed	Prairie Flower (Marina)	-
13PK311	s-sh	0p,6	UP	remove	Prairie Flower (North)	-
13PK311,W	s-sh	lp,4,6	UP,H	remove	Prairie Flower (North)	-
13PK316	s-sh	0c	UP	destroyed	Prairie Flower (North)	-
13PK317	s-sh	lpc,2r,6	UP	remove	Cherry Glen	-
13BN271	s-sh	lc,p	U	destroyed	Dogwood Boat Launch	-
Benches						
13PK113	s-sh	3lp,6	MAI	research	Oak Grove	-
13PK318	fs	1l,c	U	destroyed	Walnut Ridge	-
13PK139	fs	0c	UP	destroyed	Cherry Glen	-
13PK240	fs	0c	UP	destroyed	Cherry Glen	-
13PK247	s-sh	lc,4,6	UP	remove	Oak Grove	-
13BN274	s-sh	lpc,4,6	UP	research	Laurie	+
13BN276	s-sh	4,5,6	UP	research	Dogwood	+
13PK295	s-sh	lcrp,3r,6	UP	remove	Cherry Glen	-
13PK296	s-sh	lcp,3r,6	UP	remove	Cherry Glen	-
13PK321	s-sh	lpcr,4,6	LW	conserve	Bob Shetler	-
13PK197	s-sh	0pc	MA,MW	destroyed	Cherry Glen	-
Terraces						
13BN108	fs-ts(TH)	lpic,2ibr,6	LA,eMW,eLW,lLW,H	remove	Laurie	-
13PK109	ts(TW)	lpibc,2ib,6	LA,eMW,eLW,lLW,H	remove	Sandpiper Beach	-
13PK111	ts(TW)	libcpr,3i,6	EAI,MAII,LA,EW, MW,lLW-GO,H	remove	Oak Grove	-
13PK112	ts(TW)	0ibcpr	UP	destroyed	Oak Grove	-
13PK155	ts(TW)	0ibcpr	UP	destroyed	Oak Grove	-
13BN272	ts(TW)	lp,3i,6	UP	conserve	Sportsman	+
13BN275	ts(TH)	lpcib,3ib,6	UP,H	conserve	Lauri	+
13PK320	ts(TI)	lpc,6	ON	remove	Cottonwood	-

Hillslope Position

keys: s-sh=summit/shoulder
fs=footslope
ts=toeslope
TW=Wis. terrace
TH=High terrace
TI=Intermed. terrace
TL=Low Terrace

Impacts

0=destroyed
1=impacted
2=probable impact (future)
3=possible impact (future)
4=no future impact
5=out of CE
boundary
6=excavated
i=inundated
b=bank erosion
c=construction
p=plowing
r=recreational
v=vandalism

Age

UP=Undetermined Prehistoric
E,e=early
M=middle
L,l=late
A=Archaic
W=Woodland
GO=Gr. Oasis
ON=Oneota
H=Historic
I,II=period

TABLE 3-3
SUMMARY OF LAKE ELD ROCK SITES

Site No.	Components	Condition	NRHP	Elevation
MA1	P	Unknown	Unknown	
MA2	P	Destroyed	Not Elig	
MA3	P	Destroyed	Not Elig	
MA4	P	Unknown	Unknown	
MA5	P	Unknown	Unknown	
MA6	P	Unknown	Unknown	
MA7	P	Unknown	Unknown	
MA8	P	Unknown	Unknown	
MA9	P	Unknown	Unknown	
MA10	W,O	Unknown	Unknown	
MA11	MW,H	Inundated	Not Elig	
MA12	P,H	Unknown	Unknown	
MA13	P	Unknown	Unknown	
MA14	P	Unknown	Unknown	
MA15	P	Unknown	Unknown	
MA16	P	Unknown	Unknown	
MA17	P	Unknown	Unknown	
MA18	P	Unknown	Unknown	
MA19	O	Unknown	Unknown	
MA20	P	Intact	Unknown	
MA21	O	Unknown	Unknown	
MA22	P	Unknown	Unknown	
MA23	P	Unknown	Unknown	
MA24	O	Unknown	Unknown	
MA25	P	Unknown	Unknown	
MA26	P	Unknown	Unknown	
MA27	O	Unknown	Unknown	
MA28	P	Unknown	Unknown	
MA29	P	Unknown	Unknown	
MA30	O	Unknown	Unknown	
MA31	P	Unknown	Unknown	
MA32	P	Unknown	Unknown	
MA33	P	Destroyed	Not Elig	
MA34	P	Unknown	Unknown	
MA35	P	Unknown	Unknown	
MA36	O,H	Unknown	Unknown	
MA37	P	Unknown	Unknown	
MA38	P	Unknown	Unknown	
MA40	P	Unknown	Unknown	
MA41	W	Unknown	Unknown	
MA42	O	Intact	Unknown	
MA43	P	Unknown	Unknown	
MA44	MW,LW,GO,O,H	Eroding	Unknown	
MA45	O	Unknown	Unknown	
MA46	W,O	Unknown	Unknown	
MA47	F	Inundated	Unknown	
MA55	P	Unknown	Unknown	
MA80	A,MW	Eroding	Unknown	
MA81	MW,LN	Eroding	Unknown	
MA83	W	Unknown	Unknown	
MA84	H	Destroyed	Unknown	
MA85	P	Unknown	Unknown	
MA86	P	Unknown	Unknown	

TABLE 3-3 (Cont'd)
SUMMARY OF LAKE RED ROCK SITES

Site No.	Components	Condition	NRHP	Elevation
MA87	P			
MA88	-			
MA102	P	Unknown	Unknown	
MA103	H	Inundated	Unknown	
MA104	H	Unknown	Unknown	
MA105	H	Unknown	Unknown	
MA106	H	Inundated	Unknown	
MA107	H	Unknown	Eligible	
MA108	P	Unknown	Unknown	
MA110	P	Unknown	Unknown	
MA111	P	Unknown	Unknown	
MA112	P	Intact	Unknown	
MA114	P	Other	Unknown	
MA115	P	Eroding	Unknown	
MA116	P	Other	Unknown	
MA117	W	Destroyed	Not Elig	
MA118	P	Unknown	Unknown	
MA119	W,H	Eroding	Unknown	
MA120	P	Unknown	Unknown	
MA122	LW	Eroding	Unknown	
MA123	W	Eroding	Unknown	
MA127	LW	Eroding	Unknown	
MA128	P	Eroding	Unknown	
MA129	W,P	Unknown	Unknown	
MA130	O	Eroding	Unknown	
MA131	W,O	Eroding	Unknown	
MA132	W	Unknown	Unknown	
MA133	W	Eroding	Unknown	
MA134	LW	Eroding	Unknown	
MA135	P	Eroding	Unknown	
MA136	W	Eroding	Unknown	
MA137	W	Unknown	Unknown	
MA138	W	Unknown	Unknown	
MA139	W	Unknown	Unknown	
MA140	P	Unknown	Unknown	
MA141	P	Unknown	Unknown	
MA142	P	Unknown	Unknown	
MA143	P	Unknown	Unknown	
MA144	P	Unknown	Unknown	
MA144	P	Unknown	Unknown	
MA145	P	Unknown	Unknown	
MA146	P	Unknown	Unknown	
MA147	P	Unknown	Unknown	
MA148	P	Unknown	Unknown	
MA149	P	Unknown	Unknown	
MA150	P,H	Unknown	Unknown	
MA151	P	Unknown	Unknown	
MA152	P	Unknown	Unknown	
MA153	P	Eroding	Unknown	
MA154	P	Unknown	Unknown	
MA155	LW	Unknown	Unknown	
MA156	W	Unknown	Unknown	
MA157	W	Unknown	Unknown	

TABLE 3-3 (Cont'd)
SUMMARY OF LAKE RED ROCK SITES

Site No.	Components	Condition	NRHP	Elevation
MA158	P	Unknown	Unknown	
MA159	P	Unknown	Unknown	
MA160	P	Unknown	Unknown	
MA161	W,P	Unknown	Unknown	
MA162	W	Eroding	Unknown	
MA163	W,H	Eroding	Unknown	
MA164	MW,LW,H	Eroding	Unknown	
MA165	MW,LW,H	Eroding	Unknown	
MA166	LW,H	Eroding	Unknown	
MA167	W,P	Eroding	Unknown	
MA202	P	Unknown	Unknown	
MA203	P	Eroding	Unknown	
MA204	P	Unknown	Unknown	
MA205	P	Intact	Unknown	
MA206	P	Unknown	Unknown	
MA207	O	Eroding	Unknown	
MA208	P	Unknown	Unknown	
MA209	O,H	Eroding	Unknown	
MA210	P,H	Intact	Unknown	
MA211	P	Unknown	Unknown	
MA212	MA,O	Other	Unknown	
MA213	P	Intact	Unknown	
MA215	W,O	Intact	Unknown	
MA216	LW,O	Other	Unknown	
MA217	P,H	Intact	Unknown	
MA218	H	Eroding	Unknown	
MA219	W	Eroding	Unknown	
MA220	P	Eroding	Unknown	
MA221	P	Other	Unknown	
MA222	W	Other	Unknown	
MA223	O,H	Other	Unknown	
MA224	P	Intact	Unknown	
MA225	P	Intact	Unknown	
MA226	P	Intact	Unknown	
MA227				
MA228				
MA229	P			780-790
MA230	H		Not Elig	770-780
MA231	H		Not Elig	770-790
MA232	P		Not Elig	780-790
MA233	P		Not Elig	760-780
MA234	P		Not Elig	770-790
MA235	H		Unknown	790-800
MA236	H		Unknown	770-800
MA237	H		Not Elig	780-790
MA238	H		Unknown	760-760
MA239	H		Not Elig	770-780
MA240	H		Unknown	760-770
MA241	P		Not Elig	770-780
MA242	P		Not Elig	760-770
MA243	MA,W		Unknown	770-780
MA244	H		Unknown	800-810
MA245	H		Unknown	760-770

TABLE 3-3 (Cont'd)
SUMMARY OF LAKE RED ROCK SITES

Site No.	Components	Condition	NRHP	Elevation
MA246	LW,H		Unknown	740-755
MA247	P		Unknown	740-750
MA248	P,H		Not Elig	750-760
MA249	H		Not Elig	750-760
MA250	P		Not Elig	770-780
MA251	H		Unknown	750-760
MA252	LW		Unknown	750-760
MA253	P		Not Elig	740-750
MA254	P		Unknown	760-770
MA255	P		Not Elig	790-800
MA256	H		Not Elig	880-890
MA257	H		Not Elig	760-770
MA258	P		Not Elig	770-780
MA259	H		Unknown	790-800
MA260	W,H		Unknown	770-780
MA261	P,H		Unknown	740-745
MA262	H		Unknown	735-740
MA263	W		Unknown	740-745
MA264	MA,LW		Unknown	740-745
MA265	H		Not Elig	740-745
MA266	P,H		Unknown	745-750
MA267	EA,W		Unknown	770-790
MA268	W,H		Unknown	760-770
MA269	H		Not Elig	770-780
MA270	H		Unknown	790-820
MA271	UP		Unknown	810-820
MA272	H		Not Elig	770-783
MA273	MA,W		Not Elig	750-760
MA274	LW		Not Elig	750-750
MA275	MA		Unknown	770-780
MA276	P,H		Not Elig	
MA277	H		Not Elig	810-820
MA278	P		Not Elig	833-837
MA279	H		Unknown	750-760
MA280	H		Not Elig	750-760
MA281	H		Not Elig	730-740
MA282	H		Unknown	730-740
MA283	P		Not Elig	730-740
MA284	W,H		Not Elig	730-740
MA285	W		Unknown	770-780
MA286	P		Unknown	740-750
MA287	H		Not Elig	760-770
MA288	H		Not Elig	750-770
MA289	H		Unknown	790-800
MA290	P		Not Elig	780-780
MA291	H		Unknown	790-800
MA292	H		Not Elig	730-740
MA293	H		Unknown	750-770
MA294	H		Unknown	750-760
MA295	W		Unknown	735-745
MA296	W,H		Not Elig	735-740
MA297	LW,H		Unknown	760-770
MA298	W,H		Unknown	740-740

TABLE 3-3 (Cont'd)
SUMMARY OF LAKE RED ROCK SITES

Site No.	Components	Condition	NRHP	Elevation
MA299	MW,H		Unknown	730-738
MA300	P		Not Elig	750-760
MA301	P		Not Elig	740-740
MA302	P		Unknown	750-760
MA303	EA		Unknown	760-770
MA304	H		Unknown	790-800
MA305	P		Unknown	760-770
MA306	LA		Unknown	770-780
MA307				
MA308				
MA309				
MA310				
MA311				
MA312				
MA313				
MA314				
MA315				
MA316	H,O		Not Elig	750-790
MA317	O		Eligible	740-740
MA318	P,H		Unknown	740-740
MA319	P		Not Elig	750-763
MA320	LW,O		Unknown	748-755
MA321	W		Unknown	745-755
MA322	H		Unknown	747-753
MA323	H		Not Elig	750-780
MA324	P,H		Unknown	740-750
MA325	H		Not Elig	735-735
MA326	LW,H		Unknown	730-733
MA327	P,H		Unknown	730-733
MA328	W		Unknown	750-760
MA329	P		Unknown	740-745
MA330	LW,O		Unknown	740-745
MA331	P		Not Elig	740-760
MA332	MA,LW,O,H		Unknown	750-780
MA333	W,H		Unknown	750-780
MA334	H		Not Elig	740-760
MA335	LW,O		Unknown	755-765
MA336	H		Unknown	750-760
MA337	H		Not Elig	750-750
MA338	P		Unknown	738-742
MA339	P		Not Elig	740-750
MA340	H		Not Elig	745-748
MA341	H		Unknown	740-740
MA342	H		Unknown	740-740
MA343	LW		Not Elig	740-745
MA344	H		Unknown	740-745
MA345	P		Unknown	740-750
MA346			Unknown	740-740
MA347	H		Unknown	
MA348	H		Not Elig	750-770
MA349	P		Not Elig	740-740
MA350	W,O		Unknown	740-740
MA351	P		Unknown	740-744

TABLE 3-3 (Cont'd)
SUMMARY OF LAKE RED ROCK SITES

Site No.	Components	Condition	NRHP	Elevation
MA352	P		Not Elig	740-745
MA353	H		Not Elig	750-750
MA354	P		Unknown	748-752
MA355	P		Not Elig	740-740
MA356	H		Unknown	740-750
MA357	P		Not Elig	788-781
MA358	H		Unknown	740-740
MA359	O		Unknown	730-740
MA360	P		Not Elig	750-750
MA361	P		Unknown	730-740
MA362	W		Unknown	750-790
MA363	P		Not Elig	750-760
MA364	P		Not Elig	748-752
MA365	P		Not Elig	745-748
MA366	H		Unknown	740-750
MA367	P,H		Unknown	740-750
MA368	W		Unknown	750-760
MA369	P		Unknown	750-760
MA370	W		Unknown	740-760
MA371	P		Unknown	741-745
MA372	O		Unknown	740-748
MA373	P,H		Unknown	735-742
MA374	LW		Not Elig	750-770
MA375	P		Not Elig	750-770
MA376	LW		Not Elig	730-750
MA377	P		Not Elig	750-770
MA378	LW		Unknown	740-760
MA379	W		Not Elig	750-770
MA380	LW,H		Unknown	750-770
MA381	W		Unknown	750-770
MA382	P		Unknown	740-770
MA383	LW,O,H		Unknown	750-780
MA384	MW,LW,GO,O		Eligible ?	740-770
MA385	W		Eligible ?	740-760
MA386	P		Unknown	740-750
MA387	MW,LW,O		Eligible ?	740-770
MA388	P		Not Elig	740-760
MA389	O		Unknown	740-760
MA390	LW		Unknown	750-770
MA391	LW,O		Unknown	750-770
MA392	W		Unknown	740-770
MA393	LW		Unknown	740-760
MA394	W		Unknown	725-735
MA395	LW		Unknown	730-740
MA396	W		Not Elig	728-740
MA397	MW,LW		Not Elig	725-730
MA398	H		Unknown	740-760
MA399	H		Unknown	740-760
MA400	LW,O,H		Unknown	730-750
MA401	H		Unknown	800-810
MA402	H		Unknown	830-840
MA403	LW		Unknown	730-733
MA404	W		Unknown	740-760

TABLE 3-3 (Cont'd)
SUMMARY OF LAKE RED ROCK SITES

Site No.	Components	Condition	NRHP	Elevation
MA405	LW		Unknown	735-745
MA406			Not Elig	
MA407	W		Unknown	740-740
MA408	O		Unknown	750-750
MA409	H		Not Elig	750-800
MA410	P		Not Elig	750-760
MA411	W		Not Elig	750-760
MA412	P		Unknown	750-750
MA413	P,H		Not Elig	730-740
MA414	P,H		Unknown	730-740
MA415	H		Unknown	730-740
MA416	H		Not Elig	740-740
MA417	H		Not Elig	740-740
MA418	H		Unknown	750-760
MA419	H		Not Elig	728-730
MA420	W		Not Elig	730-750
MA421	LW,H		Eligible ?	725-770
MA422	P		Not Elig	730-750
MA423	LW		Not Elig	730-770
MA424	LW		Not Elig	740-770
MA425	W		Unknown	740-770
MA426	W		Not Elig	740-760
MA427	W		Not Elig	740-780
MA428	W		Not Elig	730-770
MA429	P		Not Elig	740-750
MA430	P		Not Elig	740-770
MA431	H		Not Elig	740-750
MA432	H		Unknown	740-750
MA433	P		Unknown	740-770
MA434	H		Unknown	730-740
MA435	P,H		Unknown	740-760
MA436	LW		Not Elig	730-750
MA437	W		Not Elig	760-800
MA438	LW,H		Unknown	740-770
MA439	P,H		Unknown	725-730
MA440	P,H		Unknown	740-770
MA441	H		Not Elig	780-800
MA442	P		Not Elig	740-750
MA443	LW		Not Elig	740-770
MA444	H		Unknown	725-740
MA445	H		Unknown	740-760
MA446	H		Unknown	740-760
MA447	LW		Not Elig	740-780
MA448	P		Not Elig	760-800
MA449	H		Unknown	740-770
MA450	H		Not Elig	750-750
MA451	H		Unknown	750-760
MA452				
MA453	H		Unknown	740-740
MA454	H		Unknown	740-740
MA455	H		Not Elig	740-760
MA456	H		Unknown	740-740
MA457	P		Not Elig	760-770

TABLE 3-3 (Cont'd)
SUMMARY OF LAKE RED ROCK SITES

Site No.	Components	Condition	NRHP	Elevation
MA458	H		Unknown	740-760
MA459	H		Not Elig	740-780
MA460	H		Unknown	740-780
MA461	H		Not Elig	730-730
PK1	O	Unknown	Eligible	
PK4	O	Unknown	Unknown	
PK6	O	Unknown	Unknown	
PK7	P	Unknown	Unknown	
PK8	P	Unknown	Unknown	
PK9	P,O	Unknown	Unknown	
PK10	O	Unknown	Unknown	
PK11	P	Unknown	Unknown	
PK12	P	Unknown	Unknown	
PK13	P	Unknown	Unknown	
PK14	P	Unknown	Unknown	
PK15	P	Unknown	Unknown	
PK33	W	Destroyed	Not Elig	
PK33A	P			
PK43	O	Unknown	Unknown	
PK44	P	Unknown	Unknown	
PK45	O	Unknown	Unknown	
PK46	O	Unknown	Unknown	
PK48	P	Unknown	Unknown	
PK52	H	Unknown	Unknown	
PK58	H			790-800
PK101	P,W	Unknown	Unknown	
PK101A	W			
PK102	P	Unknown	Unknown	
PK103	W,H	Unknown	Unknown	
PK104	P,H	Unknown	Unknown	
PK105	H	Other	Unknown	
PK106	O,H	Unknown	Unknown	
PK290	P	Unknown	Unknown	
PK291	P	Unknown	Unknown	
PK292	P	Unknown	Unknown	
PK293	P,H	Unknown	Unknown	
PK294	P,H	Unknown	Unknown	
PK303	P,H	Unknown	Unknown	
PK304	P	Unknown	Unknown	
PK438	P	Unknown	Unknown	
PK439	O	Unknown	Unknown	
PK440	P	Unknown	Unknown	
WA1	P	Unknown	Unknown	
WA2	O,H	Unknown	Unknown	
WA3	W,O	Unknown	Unknown	
WA4	W,O	Unknown	Unknown	
WA5	P,H	Unknown	Unknown	
WA6	P	Unknown	Unknown	
WA7	P	Unknown	Unknown	
WA8	P	Unknown	Unknown	
WA11	O	Unknown	Unknown	
WA21	H			790-800
WA22	H		Not Elig	760-765

TABLE 3-3 (Cont'd)
SUMMARY OF LAKE RED ROCK SITES

Site No.	Components	Condition	NRHP	Elevation
WA23	O		Unknown	760-765
WA24	H		Not Elig	750-760
WA25	H		Not Elig	760-760
WA26	H		Not Elig	760-770
WA101	O	Unknown	Unknown	
WA102	O	Unknown	Unknown	
WA103	W	Unknown	Unknown	
WA104	W	Unknown	Unknown	
WA105	O	Unknown	Eligible	
WA106	O	Unknown	Unknown	
WA107	P	Unknown	Unknown	
WA108	O	Unknown	Unknown	
WA110	P	Unknown	Unknown	
Red Rock	H	Unknown	Unknown	
Pinchy	H	Unknown	Unknown	
LaFayette	H	Unknown	Unknown	
Percy	H	Unknown	Unknown	
Dunreath	H	Unknown	Unknown	
Cordova	H	Unknown	Unknown	
Fifield	H	Unknown	Unknown	
Runnells	H	Unknown	Unknown	
Amsterdam	H	Unknown	Unknown	

Key to Components:

- A = Early/Middle Archaic
- MW = Middle Woodland
- LW = Late Woodland
- W = Unknown Woodland
- GO = Great Oasis
- O = Oneota
- P = Unknown Prehistoric
- H = Historic

TABLE 3-4

Lake Red Rock Research Topics

<u>Topic</u>	<u>E/MA</u>	<u>Woodland</u>	<u>GT Oasis</u>	<u>Oneota</u>		
I. Cult. Chron.	MA80	MA11	MA162	MA44	MA207	WA4
	MA212	MA44	MA163		MA209	WA11
		MA80	MA164		MA223	WA101
		MA81	MA165		PK1	WA102
		MA122	MA166		PK4	WA105
		MA127	MA167		PK10	WA106
		MA134	MA216		WA2	WA108
					WA3	
II. Cult. Conn.	MA80	MA11	MA163	MA44	MA207	WA4
	MA212	MA44	MA164		MA209	WA11
		MA81	MA165		PK1	WA101
		MA122	MA166		PK4	WA102
		MA127	MA167		PK10	WA105
		MA134	MA216		WA2	WA106
		MA162			WA3	WA108
III. Sett Mob.	MA80	MA10	MA139	MA44	MA10	PK1
	MA212	MA11	MA155		MA19	PK4
		MA41	MA156		MA21	PK6
		MA44	MA157		MA24	PK9
		MA46	MA162		MA27	PK10
		MA80	MA163		MA30	PK43
		MA81	MA164		MA36	PK45
		MA83	MA165		MA42	PK46
		MA119	MA166		MA44	PK106
		MA122	MA167		MA45	PK439
		MA123	MA215		MA46	WA2
		MA127	MA216		MA130	WA3
		MA129	MA219		MA131	WA4
		MA131	MA222		MA207	WA11
		MA132	PK101		MA209	WA101
		MA133	PK104		MA212	WA102
		MA134	WA3		MA215	WA105
		MA136	WA4		MA216	WA106
		MA137	WA103		MA223	WA108
		MA138	WA104			
	IV. Lith. Tech.	-----Same Sites as Topic III-----				
V. Agri.	N/A	N/A	MA44	MA207	WA4	
				MA209	WA11	
				PK1	WA101	
				PK4	WA102	
				WA2	WA105	
				WA3		
VI. Env. Chg.	Unid	Not Yet Ident	MA44	Not Yet Ident		
VII. Geo. Arch.	MA80 MA212	MA44 & Others Not Yet Ident	MA44	MA44 & Others Not Yet Ident		

TABLE 3-4 (Cont'd)

Lake Red Rock Research Topics (Cont'd)

<u>Topic</u>	<u>Sett & Exploit</u>	<u>Livelihoods & Lifestyles</u>		<u>Communities in Transition</u>	<u>Trans</u>
VIII. Div	Any Sites Found	MA103 MA104 MA105 MA106-C		MA106 (Coalport) MA166 (Rousseau) WA2 (Clarkson) Red Rock Pinchy/Oradell LaFayette Percy Dunreath Cordova Fifield Runnells Amsterdam	PK105 WA5
IX. Affil	Any Sites Found	MA11 MA12 MA36 MA44 MA119 MA150 MA164 MA209 MA210	MA217 MA218 MA223 PK52 PK103 PK104 PK106 PK293 PK294	MA106 (Coalport) MA166 (Rousseau) WA2 (Clarkson) Red Rock Pinchy/Oradell LaFayette Percy Dunreath Cordova Fifield Runnells Amsterdam	
X. Sett. Patt.	Any Sites Found	MA11 MA12 MA36 MA44 MA119 MA150 MA164 MA209 MA210 MA217	MA218 MA223 PK52 PK103 PK104 PK106 PK293 PK294 PK303	MA106 (Coalport) MA166 (Rousseau) WA2 (Clarkson) Red Rock Pinchy/Oradell LaFayette Percy Dunreath Cordova Fifield Runnells Amsterdam	PK105 WA5

TABLE 3-4 (Cont'd)

Lake Red Rock Research Topics (Cont'd)

<u>Topic</u>	<u>Sett & Exploit</u>	<u>Livelihoods & Lifestyles</u>		<u>Communities in Transition</u>	<u>Trans</u>
XI. Tech.		MA11	MA209	MA106 A&B	WA5
		MA12	MA210	MA166 (Rousseau)	
		MA36	MA217	WA2 (Clarkson)	
		MA44	MA218	Red Rock	
		MA103	MA223	Pinchy/Oradell	
		MA104	PK52	LaFayette	
		MA105	PK104	Percy	
		MA106-C	PK106	Dunreath	
		MA119	PK293	Cordova	
		MA150	PK294	Fifield	
		MA164		Runnells	
				Amsterdam	
XII. Cont Micro Envir	Any	MA11	MA217		
	Sites	MA12	MA218		
	Found	MA36	MA223		
		MA44	PK52		
		MA119	PK104		
		MA150	PK106		
		MA164	PK293		
		MA209	PK294		
		MA210			
XIII. FTR.	Any Sites Found				

TABLE 3-5

Sites at Lake Red Rock in Recreation Areas

<u>Unit</u>	<u>Frequency</u>
Corps of Engineers Management	(138)
Recreation Areas:	
Whitebreast	18
Wallashuck	5
Fifield	5
Forest Reserve	105
Inundated	5
Iowa Conservation Commission Management	(209)
Elk Rock State Park:	
North Unit	19
South Unit	38
Wildlife Management Areas	152
Marion County Management	(5)
Roberts Creek Park	5
Flowage Easement	(15)
Private Land Near COE Boundaries	<u>(53)</u>
	420