

*DRAFT Invasive Plant Management Plan and  
Environmental Assessment*

# Appendices

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## Appendix A: Glossary

**A B C D E F G H I K L M N O P R S T U V W**

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### A

<b>A.D.</b>	Anno Domini; the counted years of the current epoch based on the Gregorian calendar, and less commonly referenced as C.E., the Common Era or Current Era.
<b>APHIS</b>	Animal and Plant Health Inspection Service, USDA
<b>ARPO</b>	Arkansas Post National Memorial
<b>ASMIS</b>	Archeological Sites Management Information System
<b>Action threshold</b>	The point at which approved invasive plant management treatments are implemented because of current or potential levels of intolerable impacts to environmental resources.
<b>Adaptive management</b>	A system of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to reevaluate the outcomes. (Source: Departmental Manual 516 DM 4.16)
<b>Administrative record</b>	The "paper trail" that documents an agency's decision-making process and the basis for the agency's decision. It includes all materials directly or indirectly considered by persons involved in the decision-making process, including opinions or information considered but rejected. These are the documents that a judge will review to determine whether the process and the resulting agency decision were proper, and that future managers will use to understand the evolution of the issue(s) and how decisions were reached and made.
<b>American Indian tribe</b>	Any band, nation, or other organized group or community of Indians, including any Alaska Native Village, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.
<b>Annual work plan (work plan)</b>	A project proposal, created annually, that summarizes identification of species that meet action thresholds, prioritization of management actions, and selection of the optimum tools for treatment. It specifies exactly what work will be undertaken at precise locations, using what tools. This plan then goes through compliance checks before work is initiated.
<b>Antiquities Act</b>	16 U.S.C. 431 et seq.; authorizes the President to designate as national monuments any historic landmarks and historic and prehistoric sites, structures, and objects situated on Federal land. Establishes the requirement of a permit for the examination or excavation of such nationally important sites and establishes penalties for their destruction.
<b>Archeological resource</b>	Any material remains or physical evidence of past human life or activities that are of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research.
<b>Archaeological Resources Protection Act</b>	16 U.S.C. 470a et seq.; ensures the protection and preservation of archeological resources on Federal lands.
<b>Aerial spraying</b>	Uses aircraft to top-dress expanses of vegetation with chemicals that are sprayed from the moving aircraft.
<b>Attributes</b>	Any living or nonliving feature or process of the environment that can be measured or estimated and that provide insights into the state of the ecosystem.

### B

<b>B.C. used with year (B.C.E.)</b>	Commonly used to mean "before Christ" in reference to the Gregorian calendar dates before the current epoch, which is often referenced as A.D. It is synonymous with BCE, Before the Current Era.
<b>B.P. used with year</b>	Before Present; approximation of years before current time, used to denote prehistoric time.

<b>BPs</b>	Best practices; practices that apply the most state-of-the-art means and technologies available to not only comply with mandatory environmental regulations, but also maintain a superior level of environmental performance. See also, "sustainable practices/principles."
<b>BUFF</b>	Buffalo National River
<b>Biocontrol using biological control agent</b>	A method of controlling pests that relies on predation, parasitism, herbivory, or other natural vectors and mechanisms using a natural enemy of the pest. Within the context of this EPMP/EA, it is the use of natural enemies, such as insects and microorganisms, to reduce the abundance of an invasive plant species.
<b>Biological assessment</b>	A document prepared for the Section 7 process to determine whether a proposed major construction activity under the authority of a federal action agency is likely to adversely affect listed species, proposed species, or designated critical habitat.
<b>Buffer</b>	A strip of land where disturbances are not allowed, or are closely monitored, to preserve qualities or values, particularly along waterways, but also adjacent to roads, trails, and recreation sites.
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<b>C</b>	
<b>CE</b>	Categorical Exclusion; CEs are applicable to actions that, under normal circumstances, are not considered major federal actions and that have no measurable impacts on the human environment.
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act
<b>CFR</b>	Code of Federal Regulations; <a href="http://ecfr.gpoaccess.gov/">http://ecfr.gpoaccess.gov/</a>
<b>CLI</b>	Cultural Landscapes Inventory
<b>CLR</b>	Cultural Landscape Report
<b>CUVA</b>	Cuyahoga Valley National Park; sometimes referred to as CVNP in other documents.
<b>CWA</b>	Clean Water Act (33 U.S.C. §1251 et seq.); originated as the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1977.
<b>CWMA</b>	Cooperative Weed Management Areas; local organizations that bring together landowners and land managers to coordinate action and share expertise and resources to manage common weed species.
<b>Civic Engagement</b>	As a philosophy, a discipline, and a practice, it can be viewed as a continuous, dynamic conversation with the public on many levels that reinforces the commitment of the NPS and the public to the preservation of park resources and strengthens understanding of the full meaning and contemporary relevance of these resources. Civic engagement is the philosophy of welcoming people into the parks and building relationships around a shared stewardship mission, whereas public involvement (also called public participation) is the specific, active involvement of the public in NPS planning and other decision-making processes.
<b>Conserve</b>	To protect from loss or harm; preserve. Historically, the terms conserve, protect, and preserve have come collectively to embody the fundamental purpose of the NPS—preserving, protecting and conserving the national park system.
<b>Compliance</b>	The process by which parks, the IPMT, and NPS ensure that proposed actions meet all the requirements of law, regulation, rule, or policy regarding the action or the resources potentially affected by the action.
<b>Connected actions</b>	Connected actions automatically trigger other actions, they cannot or will not proceed unless other actions have been taken previously or simultaneously, or they are interdependent parts of a larger action and depend on the larger action for their justification.
<b>Consultation (cultural resources)</b>	Consultation is discussion, conference, or forum in which advice or information is exchanged. Consultation generally takes place on an informal basis with many agencies; formal consultation requirements for compliance with section 106 of the NHPA are published in 36 CFR Part 800. Formal consultation may also be required if threatened, endangered or candidate species are involved in a proposal for action. Consultation with recognized tribes is done on a government-to-government basis.

<b>Containment of invasive species</b>	When eradication and control are not feasible options, this method restricts the spread of an alien species and to contain the population in a defined geographical range or locations.
<b>Control of invasive species</b>	The long-term reduction in density and abundance to below a pre-set acceptable threshold.
<b>Council on Environmental Quality (CEQ)</b>	A council that regulates 40 CFR 1500-1508, implementing NEPA.
<b>Critical habitat</b>	Specific areas within a geographical area occupied by a threatened or endangered species which contain those physical or biological features essential to the conservation of the species, and which may require special management considerations or protection; and specific areas outside the geographical area occupied by the species at the time of its listing, upon a determination by the Secretary of the Interior that such areas are essential for the conservation of the species. (See 16 U.S.C. 1342)
<b>Cultural landscape</b>	A geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. There are four general kinds of cultural landscape, not mutually exclusive: historic site, historic designed landscape, historic vernacular landscape, ethnographic landscape.
<b>Cultural Landscape Inventory (CLI) and assessment</b>	The CLI is an evaluated inventory of all cultural landscapes (landscapes, component landscapes, landscape features, and component landscape features) having historical significance in which the NPS has or plans to acquire legal interest. Prescriptive recommendations from the CLI suggest treatments that will allow the cultural landscape to attain the desired conditions. These desired conditions are largely a product of the Cultural Landscape Report.
<b>Cultural Landscape Report (CLR)</b>	The CLR does not consistently rate the condition of resources, but it provides recommendations on how specific resources should look. The degree to which those recommendations have been met will constitute an indicator of current conditions.
<b>Cultural resource</b>	An aspect of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register of Historic Places and as archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources for NPS management purposes.
<b>Cultural method</b>	Within this document, cultural method refers to practices that reduce opportunities for invasive plants to establish and grow. They may include education, prevention, and landscape restoration.
<b>Cumulative actions, cumulative impacts</b>	Actions that, when viewed with other actions in the past, the present, or the reasonably foreseeable future regardless of who has undertaken or will undertake them, have an additive impact on the resource the proposal would affect. Impacts the result from cumulative actions are cumulative impacts.
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<b>D</b>	
<b>DO</b>	Director's Order; guidelines for implementation of NPS policies, as set forth by the bureau director.
<b>DO - 12</b>	NPS Conservation Planning, Environmental Impact Analysis, and Decision-making 2001
<b>DO - 28</b>	NPS Cultural Resource Management Guidelines and Policies
<b>DOI</b>	United States Department of Interior
<b>Decision maker</b>	The managerial-level employee who has been delegated authority to make decisions or take an action that would affect park resources or values. Most often, it refers to the park superintendent or regional director, but may at times include, for example, a resource manager, facility manager, or chief ranger to whom authority has been re-delegated.
<b>Desired condition</b>	A park's natural and cultural resource conditions that the National Park Service aspires to achieve and maintain over time, and the conditions necessary for visitors to understand, enjoy, and appreciate those resources.

<b>Developed area</b>	An area managed to provide and maintain facilities (e.g., roads, campgrounds, housing) serving visitors and park management functions. Includes areas where park development or intensive use may have substantially altered the natural environment or the setting for culturally significant resources.
<b>E</b>	
<b>EA</b>	Environmental assessment; a brief NEPA document that is prepared, with public involvement, to help determine whether the impact of a proposed action or its alternatives could be significant; to aid the NPS in compliance with NEPA by evaluating a proposal that will have no significant impacts, but may have measurable adverse impacts; or as an evaluation of a proposal that is either not described on the list of categorically excluded actions, or is on the list, but exceptional circumstances apply.
<b>EFMO</b>	Effigy Mounds National Monument
<b>EIS</b>	Environmental impact statement; a detailed NEPA analysis document that is prepared, with extensive public involvement, when a proposed action or alternatives have the potential for significant impact on the human environment.
<b>EO</b>	Executive Order
<b>EPA</b>	Environmental Protection Agency of the federal government
<b>EPMT</b>	Exotic Plant Management Team; the traditional name used by the National.
<b>ESA</b>	Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884); provides a program for the conservation of threatened and endangered plants and animals and the habitats. Section 7 requires Federal agencies to insure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat.
<b>ESF</b>	Environmental Screening Form; required for any proposed action
<b>Ecological integrity</b>	A concept that expresses the degree to which the physical, chemical, and biological components (including composition, structure, and process) of an ecosystem and their relationships are present, functioning, and capable of self-renewal. Ecological integrity implies the presence of appropriate species, populations and communities and the occurrence of ecological processes at appropriate rates and scales as well as the environmental conditions that support these taxa and processes.
<b>Ecosystem</b>	A system formed by the interaction of a community of organisms with their physical and biological environment, considered as a unit.
<b>Ecosystem management</b>	A collaborative approach to natural and cultural resource management that integrates scientific knowledge of ecological relationships with resource stewardship practices for the goal of sustainable ecological, cultural, and socioeconomic systems. Ecosystem management includes a primary goal to sustain ecosystem structure and function.
<b>Endangered species</b>	Species that are threatened with imminent extinction; includes species whose numbers or habitats have been reduced to critical levels.
<b>Enabling legislation</b>	The law(s) that establish a park as a unit within the national park system.
<b>Environmental impact</b>	Often addressed by topic, it is the quantified change in conditions of the resources or environment from baseline conditions that can be attributed to the proposed action.
<b>Environmentally preferred alternative</b>	Of the action alternatives analyzed, the one that would best promote the policies in NEPA section 101. This is usually selected by the IDT members. CEQ encourages agencies to identify an environmentally preferable alternative in the draft EIS or EA, but only requires that it be named in the ROD.
<b>Eradication</b>	The elimination of the entire population of an invasive species, including any resting stages, in the managed area.
<b>Ethnographic landscape</b>	An area containing a variety of natural and cultural resources that traditionally associated people define as heritage resources. The area may include plant and animal communities, structures, and geographic features, each with their own special local names.
<b>Ethnographic resource</b>	A site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it.

<b>Executive Order 11514 (EO 11514)</b>	Protection and Enhancement of Environmental Quality: Provides leadership for protecting and enhancing the quality of the Nation's environment to sustain and enrich human life.
<b>Executive Order 11988 (EO 11988)</b>	Requires all Federal agencies to take action to reduce the risk of flood loss, to restore and preserve the natural and beneficial values served by floodplains, and to minimize the impact of floods on human safety, health, and welfare. Because many wetlands are located in floodplains, Executive Order 11988 has the secondary effect of protecting wetlands.
<b>Executive Order 11990 (EO 11990)</b>	Protection of Wetlands: An overall wetlands policy for all agencies managing Federal lands, sponsoring Federal projects, or providing Federal funds to State or local projects. It requires Federal agencies to follow avoidance/mitigation/ preservation procedures with public input before proposing new construction projects.
<b>Executive Order 12372 (EO 12372)</b>	Intergovernmental Review of Federal Programs: Directs Federal agencies to consult with and solicit comments from state and local government officials whose jurisdictions would be affected by Federal actions.
<b>Executive Order 13007 (EO 13007)</b>	Protection and Accommodation of Access To "Indian Sacred Sites": Directs Federal agencies to consider Indian sacred sites in planning agency activities.
<b>Exotic species</b>	An exotic species did not evolve in concert with the species native to a place that it occupies or could occupy as the direct or indirect result of deliberate or accidental human activities. Exotic species are also commonly referred to as nonnative, alien, or invasive species.
<b>External scoping</b>	The use of interested and affected public, beginning early in the process, to gather input for a NEPA document. It is an inclusive civic engagement and consultation process, and at a minimum it should be used to define issues, alternatives, and data needs.
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<b>F</b>	
<b>FIFRA</b>	Federal Insecticide, Fungicide, and Rodenticide Act; the primary guidance governing pesticide registration and use, the training and certification of pesticide applicators, and criminal and civil penalties associated with misuse of pesticides.
<b>FMP</b>	Fire Management Plan
<b>FOIA</b>	Freedom of Information Act
<b>FONSI</b>	Finding of No Significant Impact; a determination based on an EA and other factors in the public planning record for a proposal that, if implemented, would have no significant impact on the human environment.
<b>FS</b>	Forest Service, Department of Agriculture
<b>FTE</b>	Full Time Equivalent, full time employee
<b>Fauna</b>	A general term for all forms of animal life characteristic of a region, period or special environment.
<b>Flora</b>	A general term for all forms of plant life characteristic of a region, period or special environment.
<b>Fundamental resources and values</b>	Those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management because they are critical to achieving the park's purpose and maintaining its significance. A fundamental value, unlike a tangible resource, refers to a process, force, story or experience, such as such as an island experience, the ancestral homeland, wilderness values, or oral histories.
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<b>G</b>	
<b>GIS</b>	Geographic Information System; cartographic data and related databases systems designed for organized storage and retrieval, manipulation, and analysis with an emphasis on spatial database.
<b>GMP</b>	General Management Plan; a plan that clearly defines direction for resource preservation and visitor use in a park, and serves as the foundation for decision-making. GMPs are developed with broad public involvement.
<b>GPRA</b>	Government Performance and Results Act; P.L. 103-62, 1993. Congress requires agencies to engage in project management with measurable outcomes.

<b>GPS</b>	Global Positioning System; a global navigation satellite system accessed through a GPS receiver.
<b>GWCA</b>	George Washington Carver National Monument
<b>Geologic resources</b>	Features produced from the physical history of the earth, or processes such as exfoliation, erosion and sedimentation, glaciations, karst or shoreline processes, seismic, and volcanic activities.
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<b>H</b>	
<b>HEHO</b>	Herbert Hoover National Historic Site
<b>HOCU</b>	Hopewell Culture National Historic Park
<b>HOME</b>	Homestead National Monument of America
<b>HOSP</b>	Hot Springs National Park
<b>HTLN</b>	Heartland Inventory and Monitoring Network
<b>Habitat</b>	The environment in which a population or individual lives; includes not only the place where a species is found, but also the particular characteristics of the place (e.g., climate or the availability of suitable food and shelter) that make it especially well-suited to meet the life cycle needs of that species.
<b>Heavy equipment</b>	Use of tractors and utility terrain vehicles (UTVs) that are propelling equipment such as large mowers, seed drills, or drags. Very heavy equipment, equipment that has the potential for greater than minor and short-term impact to soils, is not proposed in this EPMP/EA.
<b>Herbicide</b>	A pesticide used as a plant growth regulator, defoliant, desiccant or agent for disrupting reproduction. Within this EPMP/EA, herbicides will be referred to as pesticides.
<b>Historic property</b>	A district, site, structure, or landscape significant in American history, architecture, engineering, archeology, or culture; an umbrella term for all entries eligible for or included in the National Register of Historic Places.
<b>Human environment</b>	Defined by Council on Environmental Quality (CEQ) as the natural and physical environment, and the relationship of people with that environment.
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<b>I</b>	
<b>I&amp;M</b>	The National Park Service Inventory and Monitoring program
<b>IPM</b>	Integrated Pest Management; a science-based decision-making process that guides park managers when investigating a pest situation. The IPM approach determines the most appropriate (environmentally sound) and cost effective management solution for the specific pest situation.
<b>IPMT</b>	Invasive Plant Management Team; the Network staff assigned to administer the invasive plant management program.
<b>IPMP/EA</b>	Invasive Plant Management Plan and Environmental Assessment for the Heartland Inventory and Monitoring Network
<b>IPMT coordinator</b>	The staff person directing the Network program for invasive plant management.
<b>Impact topics</b>	Specific natural, cultural, or socioeconomic resources that would be affected by the proposed action or alternatives (including no action). The magnitude, duration, and timing of the effect to each of these resources is evaluated in the impact section of an EA or an EIS.
<b>Impairment</b>	An impact that, in the professional judgment of a responsible NPS manager, would harm the integrity of park resources or values and violate the 1916 NPS Organic Act's mandate that park resources and values remain unimpaired.
<b>Implementation plan</b>	A plan that focuses on how to implement an activity or project needed to achieve a long-term goal. An implementation plan may direct a specific project or an ongoing activity.
<b>Indicators</b>	A selected subset of the physical, chemical, and biological elements and processes of natural systems that are selected to represent the overall health or condition of the system.



<b>Integrated resource management</b>	A holistic approach to resource management that entails the management of 2 or more resources (e.g., water, soil, timber, pasture, wildlife, and recreation) and that integrates the values of the human community into the design of policies or projects to use and sustain these resources in perpetuity.
<b>Internal scoping</b>	The use of NPS staff (at the SSO, regional, park, or National Program Center level) to decide what needs to be analyzed in a NEPA document. It is an interdisciplinary process, and at a minimum it should be used to define issues, alternatives, and data needs.
<b>Invasive species</b>	Species that are not maintained for park purposes and meet one or more of the qualifications under NPS policy (NPS 2006, page 48, Section 4.4.4.2) that make it detrimental to natural processes and features, cultural resources, park management or adjacent lands, or poses a public health threat or a hazard to public safety. This includes species native to a region that may not be naturally occurring on a particular site, but result from human disturbance.
<b>I-rank</b>	Invasiveness rank, developed by Nature Service (Morse, et al. 2004) is an ecological impact that characterizes the effect of the plant on ecosystem processes, community composition and structure, native plant and animal populations, and the conservation significance of threatened biodiversity.
<b>Issue</b>	Some point of debate that needs to be decided. For GMP planning purposes issues can be divided into "major questions to be answered by the GMP" (also referred to as the decision points of the GMP) and the "NEPA issues" (usually environmental problems related to one or more of the planning alternatives).
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<b>K</b>	
<b>Karst</b>	A geologic formation of limestone that is highly erodible, characterized with sinks, ravines, caves, caverns, fissures, and ground water streams. There is a direct or nearly direct connection between surface and ground water in karst formations, leading to concerns about ground water contamination from surface pollution.
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<b>L</b>	
<b>LCS</b>	List of Classified Structures
<b>LIBO</b>	Lincoln Boyhood National Memorial
<b>Landscape</b>	Areas of land that are distinguished by differences in landforms, vegetation, historic land use, or aesthetic characteristics.
<b>Losing stream</b>	A waterway with a bed that allows water to flow directly into the groundwater system. These streams commonly occur in karst geology.
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<b>M</b>	
<b>MSDS</b>	Material Safety Data Sheets provide information to workers and emergency personnel on procedures for handling, physical characteristics, toxicity, first aid, storage, disposal, and protective equipment needed for safe use of a chemical.
<b>MWAC</b>	Midwest Archeological Center of the National Park Service
<b>MWR</b>	Midwest Region of the National Park Service
<b>Management actions</b>	Those activities purposefully initiated by resource managers to meet a predetermined resource objective as a means of attaining desired conditions. Management actions may be adaptive in that they benefit from knowledge acquired by monitoring responses to prior management actions.
<b>Management direction</b>	A planning term referring to statements about desired resource conditions and visitor experiences, along with appropriate kinds and levels of management, use, and development for each park area.
<b>Management zone</b>	A geographical area for which management directions have been developed to determine what can and cannot occur in terms of resource management, visitor use, access, facilities or development, and park operations. Each zone has a unique combination of resource and social conditions and a consistent management direction. Different actions are taken by the NPS in different zones.
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<b>Manager</b>	The managerial-level employee who has authority to make decisions or to otherwise take an action that would affect park resources or values. Most often it refers to the park superintendent or regional director, but may at times include, for example, a resource manager, facility manager, or chief ranger to whom authority has been re-delegated.
<b>Manual treatment</b>	Hand pulling and removal, or use of hand tools for grubbing and cutting. Use of hand tools, such as trowels, shovels, pullers, and pulaskis are simple forms of mechanical treatment, but will be classified as manual treatment in this document, so as to differentiate between treatments requiring use of internal combustion engines or electric motors and those not using an external power source.
<b>Measurements</b>	Acre – two dimensional area measure; 1 ac = 1076 ft <sup>2</sup> Hectare -- two dimensional area measure; 1 ha = 2.47 ac
<b>Mechanical treatment</b>	Light mechanical equipment and power tools are a treatment technique that includes weed whips, small mowers, chainsaws and mechanical devices, having negligible impact on soil. Heat treatments often require light equipment. Heavy equipment can be used in mechanical treatment, but for the purpose of this EPMP/EA will be limited to equipment that cause no greater than short-term, minor impact to soils.
<b>Mesic, mesophytic</b>	A habitat type based on a moderate or well-balanced supply of moisture, as opposed to dry or moist conditions.
<b>Minimum Requirements Analysis</b>	A procedure that follows both law and agency policy to assist wilderness managers in making informed decisions when determining appropriate actions to implement in designated wilderness, to attain or maintain desired conditions.
<b>Minimum tool</b>	The tool or treatment that meets the objectives for action with the least environmental impact.
<b>Mitigation</b>	A modification of a proposal to lessen the intensity of its impact on a particular resource. Actions can be taken to avoid, reduce, or compensate for the effects of environmental damage.
<b>Migratory Bird Treaty Act</b>	16 U.S.C. 703 et seq. restricts the taking, possession, transportation, sale, purchase, importation, and exportation of migratory birds through permits issued by the USFWS.
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<b>N</b>	
<b>NAGPRA</b>	Native American Graves Protection and Repatriation Act (25 U.S.C. 3001—3013; P.L.101-601); a law that provides a process for museums and Federal agencies to return certain Native American cultural items -- human remains, funerary objects, sacred objects, or objects of cultural patrimony -- to lineal descendants, and culturally affiliated Indian tribes and Native Hawaiian organizations.
<b>NEPA</b>	National Environmental Policy Act of 1969; is an umbrella legislation that requires the federal government to use all practicable means to create and maintain conditions in the human environment.
<b>NEPA process</b>	The objective analysis of a proposed action to determine the degree of its impact on the natural, physical, and human environment; alternatives and mitigation that reduce that impact; and the full and candid presentation of the analysis to, and involvement of, the interested and affected public --as required of federal agencies by the National Environmental Policy Act of 1969.
<b>Network</b>	Heartland Inventory and Monitoring Network is part of the nationwide <a href="#">Inventory &amp; Monitoring (I&amp;M) program</a> of the National Park Service (NPS). The Network is charged with creating inventories of species and natural features within its member parks and monitoring trends and issues relative to these resources.
<b>NGPN</b>	Northern Great Plains Network, NPS Inventory and Monitoring program. This network also has an EPMT
<b>NHPA</b>	National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.) establishes policies that preserve historical and cultural foundations of the Nation and our national heritage, including historical and archeological data and specimens.
<b>NHPA §106</b>	Section 106 of the NHPA pertains a procedure to evaluate an undertaking's potential impacts to cultural resources and consultation with SHPO, THPO, and other agencies and stakeholders concerned with preservation of those resources.
<b>NPS</b>	National Park Service, agency of Department of the Interior

<b>NPS-77</b>	Natural resources management guidelines that assist resource managers with implementation of NPS policies. NPS-77 will be replaced by Director's Order-77, which is under development.
<b>NPT</b>	National Park Trust; a non-profit land conservancy associated with TAPR
<b>NRHP</b>	National Register of Historic Places, authorized by the National Historic Preservation Act of 1966, is the official national list of places valued for preservation.
<b>National Park Service Organic Act</b>	16 U.S.C. et seq.; the 1916 law (and subsequent amendments) that created the National Park Service and assigned it responsibility to manage the national parks.
<b>National park system</b>	The sum total of the land and water now or hereafter administered by the Secretary of the Interior through the National Park Service for park, monument, historic, parkway, recreational or other purposes.
<b>Native, warm season grasses</b>	A mix of grasses that are native to the Ozarks and that grow primarily during the warm season. The mix includes wildlife friendly grasses such as big blue stem, little blue stem, Indian grass, as well as native herbs beneficial to multiple wildlife species.
<b>Network</b>	The Heartland Inventory and Monitoring Network, inclusive of parks and Inventory and Monitoring staff. Network staff refers to the Inventory and Monitoring staff.
<b>No Action</b>	Usually presented as the first alternative in an EA or EIS, this alternative is the status quo that would be continued in the absence of implementation of one of the other alternatives in the planning process.
<b>Notice of availability</b>	The notice submitted to the Federal Register stating that a draft EIS or final EIS is ready for distribution to the public.
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<b>O</b>	
<b>OSHA</b>	Occupational Health and Safety; the main federal agency charged with the enforcement of safety and health legislation in the workplace.
<b>OZAR</b>	Ozark National Scenic Riverways
<b>Optimal Tool</b>	A process that identifies treatment options for the priority invasive plant. For each proposed treatment option, the manager evaluates whether alternative treatment options with fewer potential impacts could be used.
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<b>P</b>	
<b>PE</b>	Programmatic Exclusion; PEs are applicable to undertakings that, under normal circumstances, are not considered major federal actions and that have no measurable impacts on cultural resources; NHPA, Programmatic Agreement of 2008
<b>PEPC</b>	Planning, Environment, and Public Comment; an online system and database designed to facilitate the project management process in conservation planning and environmental impact analysis. It assists NPS employees in making informed decisions with regard to a number of compliance issues throughout the planning, design, and construction process. <a href="http://parkplanning.nps.gov/">http://parkplanning.nps.gov/</a>
<b>PERI</b>	Pea Ridge National Military Park
<b>PIPE</b>	Pipestone National Monument
<b>PMIS</b>	Project Management Information System
<b>PPE</b>	Personal protective equipment
<b>PUPS</b>	Pesticide Use Proposal System; NPS software system used to apply for permission to use pesticides
<b>PVT</b>	Potential Vegetation Type; a stable vegetation community type based on the local biophysical environment and often best predicted by the type of historically native vegetation community on the same site.
<b>Park</b>	Any one of the 15 areas of land and water administered as part of the national park system and part of the Heartland Inventory and Monitoring Network.
<b>Policy level issues</b>	The potential for some resources or values to be detrimentally affected by discretionary management decisions intended to achieve conditions consistent with the park's purpose.
<b>Pest species</b>	Pests are living organisms that interfere with the purposes or management objectives of a specific site within a park or that jeopardize human health or safety.

<b>Pesticide</b>	A chemical substance, either natural or synthetic, intended for preventing, destroying, or controlling a pest, either plant or animal. In the context of this EPMP/EA, a pesticide is an herbicide, which is intended for use as a plant growth regulator, defoliant, desiccant, or agent for disrupting reproduction.
<b>Population</b>	A group of organisms of one species that interbreed and live in the same place at the same time. The individual plants and animals found in parks are genetically parts of species populations that may extend across both park and non-park lands.
<b>Potential plant community</b>	Potential plant community considers the type of native plant community that could exist at the site, as indicated by a reference area, and becomes a target standard for species type, guilds, and diversity. It can be quantified by various indices that use species composition to determine community condition. Two of such indices are relative cover and species diversity.
<b>Prescribed burning</b>	The deliberate ignition of fires to accomplish specified resource management objectives and under an identified range of conditions documented in a prescribed burn plan.
<b>Preferred alternative</b>	The alternative an NPS decision-maker has identified as preferred at the draft EIS or EA stage. It is identified to show the public which alternative is likely to be selected to help focus comments. There may be a management preferred alternative, which park management has selected for various reasons, and/or an environmentally preferred alternative, which after analyses proved to be the one that would best promote the policies in NEPA, section 101.
<b>Prescribed fire</b>	A purposefully ignited fire intended to meet management objectives. Use of prescribed fire at parks is defined and detailed in the parks' fire management plans.
<b>Preserve</b>	To protect from loss or harm. Historically, the terms preserve, protect and conserve have come collectively to embody the fundamental purpose of the NPS—preserving, protecting and conserving the national park system.
<b>Preservation (cultural resources)</b>	The act or process of applying measures to sustain the existing form, integrity, and material of a historic structure, landscape or object. Work may include preliminary measures to protect and stabilize the property, but generally focuses upon the ongoing preservation maintenance and repair of historic materials and features rather than extensive replacement and new work.
<b>Primary interpretive themes</b>	The most important ideas or concepts to be communicated to the public about a park.
<b>Professional judgment</b>	A decision or opinion, shaped by study, analysis, and full consideration of all the relevant facts; it takes into account the decision-makers' education, training, and experience. It is advice or insights offered by subject matter experts and others, who have relevant knowledge and experience, good science and scholarship. Whenever appropriate, the results of civic engagement and public involvement activities affect the decision.
<b>Projected implementation costs</b>	A projection of the probable range of recurring annual costs, initial one-time costs, and life-cycle costs of plan implementation.
<b>Protected area</b>	An area protected by legislation, regulation, or land-use policy to control the level of human occupancy or activities. Categories of protected areas include protected landscapes, national parks, designated wilderness areas, and nature (wildlife) reserves.
<b>Public involvement (also called public participation)</b>	The active involvement of the public in NPS planning and decision-making processes. Public involvement occurs on a continuum that ranges from providing information and building awareness, to partnering in decision making.
<b>Park purpose</b>	The specific reason(s) for establishing a particular park.
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<b>R</b>	
<b>RMP</b>	Resource Management Plan; resource program level plan that tiers from the GMP and guides implementation planning for resource preservation, recently supplanted by RSS
<b>RSS</b>	Resource Stewardship Strategy; resource program level plan that tiers from the GMP and guides implementation planning for resource preservation, not approved for implementation

<b>Reconstruction (environmental reconstruction)</b>	The process of recreating a natural environment where the native habitat has been damaged beyond its potential to be restored. Examples include reconstruction of prairie from farm fields that impacted soils, depleted the seed bank, and altered site hydrology from that of the native prairie that once existed on the site. [ <i>The term has separate meaning in cultural resources.</i> ]
<b>Restoration (ecological restoration)</b>	The process by which NPS reestablishes natural functions and processes in disturbed sites, resulting from human disturbances that include the introduction of invasive species, environmental contamination, or the disruption of natural processes. Areas are returned to natural conditions and processes characteristic of the ecological zone in which the damaged resources are situated. [ <i>The term has separate meaning in cultural resources.</i> ]
<b>Riparian buffer</b>	A strip of land maintained along a stream, lake, or other waterway to mitigate the impacts of actions between land and water, to enhance aesthetic values, or as a best management practice.
<b>Riparian zone</b>	A strip of land along a waterway that is a transitional area between the water related features within bank and the terrestrial ecosystem on the upper terrace. The zone usually incorporates a portion of the upper banks and those areas of the terrace that are influenced by the waterway and may be considered part of the floodplain. The term may also be applied roads, recreation sites, or special vegetation zones where the transitional area mitigates impacts between land uses.
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<b>S</b>	
<b>SCI</b>	Species of continental importance; bird species that are in general decline within the North American continent, as recognized by Partners in Flight, a consortium of governmental agencies and non-governmental organizations involved in bird conservation
<b>SOP</b>	Standard operating procedure
<b>SHPO</b>	State Historic Preservation Office
<b>Sacred Sites</b>	Certain natural and cultural resources treated by American Indian tribes and Alaska Natives, and Native Hawaiians as sacred places having established religious meaning, and as locales of private ceremonial activities.
<b>Scoping</b>	Internal NPS decision-making on issues, alternatives, mitigation measures, the analysis boundary, appropriate level of documentation, lead and cooperating agency roles, available references and guidance, defining purpose and need, and so forth. External scoping is the early involvement of the interested and affected public.
<b>Secretary of the Interior's Standards and Guidelines</b>	The standards and guidelines for Archeology and Historic Preservation are not regulatory and do not set or interpret agency policy, but are intended to provide technical advice about archeological and historic preservation activities and methods.
<b>Significantly</b>	A subjective interpretation of the intensity of impact, in several contexts, of the proposed action or alternatives.
<b>Similar actions</b>	Similar actions are those that have similar geography, timing, purpose, or any other feature that provides a basis for evaluating their combined impacts in environmental consequences.
<b>Soundscape (natural)</b>	The aggregate of all the natural, nonhuman-caused sounds that occur in parks, together with the physical capacity for transmitting natural sounds.
<b>Special mandates</b>	Legal mandates specific to the park that expand upon or contradict a park's legislated purpose.
<b>Species of (management) concern</b>	A species that receive special consideration because of their population status (potential decline) or their importance in the survival of a threatened or endangered species. All management actions for protection and perpetuation of special status species will be considered during resource management planning.
<b>Stakeholders</b>	Individuals and organizations that are actively involved in the project, or whose interests may be positively or negatively affected as a result of the project execution/completion. They may also exert influence over the project and its results. For GMP planning purposes, the term stakeholder includes NPS offices/staff as well as public and private sector partners and the public, which may have varying levels of involvement.
<b>Standards</b>	The minimum acceptable condition.

<b>Stewardship</b>	The cultural and natural resource protection ethic of employing the most effective concepts, techniques, equipment, and technology to prevent, avoid, or mitigate unacceptable impacts.
<b>Succession</b>	Changes in the species composition of an ecosystem over time, often in a predictable order. In forests, it refers to the sequence of one community of plants gradually replacing another.
<b>Superintendent</b>	The senior onsite NPS official in a park. Used interchangeably with "park superintendent," "park manager," or "unit manager."
<b>Sustainable practices/principles</b>	Those choices, decisions, actions and ethics that will best achieve ecological/biological integrity; protect qualities and functions of air, water, soil, and other aspects of the natural environment; and preserve human cultures. Sustainable practices allow for use and enjoyment by the current generation, while ensuring that future generations will have the same opportunities. Traditionally associated peoples: Social cultural entities such as tribes, communities, and kinship units exhibiting a continued identity and associated with a specific park, area, or resource.
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<b>T</b>	
<b>TAPR</b>	Tallgrass Prairie National Preserve
<b>TNC</b>	The Nature Conservancy; partner Non-Governmental Organization
<b>THPO</b>	Tribal Historic Preservation Office
<b>Target or target population</b>	The entire collection of units or elements to be affected through actions.
<b>Threatened species</b>	A species that is likely to become endangered if certain pressures are not reversed.
<b>Traditionally associated peoples</b>	Social/cultural entities such as tribes, communities, and kinship units, as well as park neighbors, traditional residents, and former residents who remain attached to a park area despite having relocated, are "traditionally associated" with a particular park when (1) the entity regards park resources as essential to its development and continued identity as a culturally distinct people; (2) the association has endured for at least two generations (40 years); and (3) the association began prior to establishment of the park.
<b>Traditional cultural property</b>	A property associated with cultural practices, beliefs, the sense of purpose, or existence of a living community that is rooted in that community's history or is important in maintaining its cultural identity and development as an ethnically distinctive people. Traditional cultural properties are ethnographic resources eligible for listing in the National Register.
<b>Traditional use plants</b>	Plants used or held sacred by Native American Tribes for medicinal, ceremonial, religious, or other cultural purposes.
<b>Treatment plan (cultural resources)</b>	A plan of action that involves one or more of the following actions preservation, restoration, or reconstruction of a historical property, cultural landscape, or other cultural resource. The treatment plan is officially approved before implementation.
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<b>U</b>	
<b>USDA</b>	United States Department of Agriculture
<b>USDI</b>	United States Department of Interior, also known as DOI
<b>USFWS</b>	United States Fish and Wildlife Service, Department of Interior
<b>USGS</b>	United States Geological Survey, Department of Interior
<b>UTV</b>	utility vehicles; usually an all-wheel-drive vehicle for off-road use
<b>Unacceptable impacts/threats</b>	Impacts or resource threats that, individually or cumulatively, would be inconsistent with a park's purposes or values, or impede the attainment of a park's desired conditions for natural and cultural resources as identified through the park's planning process, or create an unsafe or unhealthful environment for visitors or employees, or diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values, or unreasonably interfere with park programs or activities, or an appropriate use, or the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park, or NPS concessioner or contractor operations or services.
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**V**

<b>Visitor</b>	Anyone who physically visits a park for recreational, educational or scientific purposes, or who otherwise uses a park's interpretive and educational services, regardless of where such use occurs (e.g., via Internet access, library, etc.).
<b>Visitor experience</b>	The perceptions, feelings, and reactions a person has while visiting a park. Examples of visitor experiences include: a sense of being immersed in a natural landscape; a feeling of being crowded; a feeling of being in an area where the sights and sounds of people and vehicles are predominant; having a sense of challenge and adventure; or a perception of solitude and privacy.
<b>Vital Signs</b>	As used by the National Park Service, are a subset of physical, chemical, and biological elements and processes of park ecosystems that are selected to represent the overall health or condition of park resources, known or hypothesized effects of stressors, or elements that have important human values. The elements and processes that are monitored are a subset of the total suite of natural resources that park managers are directed to preserve "unimpaired for future generations."

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**W**

<b>WASO</b>	Washington Office (National Park Service)
<b>WICR</b>	Wilson's Creek National Battlefield
<b>Watershed</b>	An area of land that is drained by a ground water system or surface streams into a primary stream or waterway. Because groundwater systems are usually not mapped, watershed delineation is usually based on geographical topography. This becomes complex in karst geology systems where ground and surface water are often directly connect through springs, seeps, and losing streams.
<b>Wilderness (designated)</b>	Federal land that has been designated by Congress as a component of the national wilderness preservation system; Federal lands that have been found to possess wilderness character based on the criteria specified in the Wilderness Act.
<b>Wilderness Act of 1964</b>	16 U.S.C. 1121, 1131-1136; establishes the National Wilderness Preservation System. Wilderness defined as "an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain...which generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."
<b>Wildland fires</b>	Unplanned fires that burn vegetation in parks. Wildland fires occur from both natural and human sources of ignition, and may contribute to or hinder the achievement of park management objectives.

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## Appendix B: Invasive species known in parks and current treatments

This list is based on NPSpecies database, Heartland Network designation as invasive, and park records. Management actions previously used to control plants in each park are indicated. (This is largely the basis for the No Action Alternative treatment description.)

X = Occurs, but no treatment    BT = Biological    CT = Chemical    FT = Fire    L = Locations documented  
M = Mapped, likely in GIS    MMT = Manual or Mechanical Treatment – cutting, grubbing, pulling    T = Treated, unknown treatment

Species	Common Name	ARPO	BUFF	CUVA	EFMO	GWCA	HEHO	HOCU	HOME	HOSP	LIBO	OZAR	PERI	PIPE	TAPR	WICR	Total Parks
<i>Acer ginnala</i>	Amur maple					X	X										2
<i>Acer platanoides</i>	Norway maple		X	X		X	X										4
<i>Agrostis stolonifera</i>	Creeping bent grass											X					1
<i>Ailanthus altissima</i>	Tree of heaven		X	CT, MMT				M, CT, MMT		CT, MMT		X	CT, MMT				5
<i>Albizia julibrissin</i>	Mimosa	MMT	X					X		CT, MMT	X	X	CT, MMT				7
<i>Alliaria petiolata</i>	Garlic mustard		X	CT, MMT	CT, MMT			M, MMT				X			X		6
<i>Alnus glutinosa</i>	European alder			X													1
<i>Alternanthera philoxeroides</i>	Alligatorweed	X															1
<i>Andropogon bladhii</i>	Caucasian bluestem														X		1
<i>Andropogon ischaemum</i>	Turkestan bluestem														X		1
<i>Arctium minus</i>	Lesser burdock		X	X	X	X	X	M				X		X	X	X	11
<i>Baccharis halimifolia</i>	Eastern baccharis	X								X							2
<i>Berberis thunbergii</i>	Japanese barberry			CT, MMT	MMT, CT			M	CT, MMT	MMT	X						6
<i>Bromus inermis</i>	Smooth brome		X	X	X	X	FT	M	L, FT	MMT				FT	CT, FT	X	11
<i>Bromus racemosus</i>	Bald brome		X			X			X		X		X			X	6
<i>Bromus sterilis</i>	Poverty brome					X				X						X	3
<i>Bromus tectorum</i>	Cheatgrass		X			X	X	M				X	X	X	X	X	9
<i>Carduus nutans</i>	Musk thistle				X	MMT		X	L, MMT					MMT	MMT	X	7

Species	Common Name	ARPO	BUFF	CUVA	EFMO	GWCA	HEHO	HOCU	HOME	HOSP	LIBO	OZAR	PERI	PIPE	TAPR	WICR	Total Parks
<i>Celastrus orbiculatus</i>	Oriental bittersweet			X								X	X				3
<i>Centaurea biebersteinii</i> , <i>Centaurea stoebe</i> knapweed <i>ssp. micranthos</i>	Spotted knapweed			X								X	MMT				3
<i>Cirsium arvense</i>	Canada thistle			X	X	X	CT	M, CT, MMT					MMT	CT, MMT			7
<i>Cirsium vulgare</i>	Bull thistle		X	X	X	X	X	M	MMT	X		X	MMT	MMT	X		12
<i>Coronilla varia</i>	Crown vetch		X	X	X	CT	X					X	X	CT			8
<i>Cynodon dactylon</i>	Bermuda grass	X								X			X				3
<i>Cynanchum nigrum</i>	Black swallowwort														CT, MMT		1
<i>Daucus carota</i>	Queen Anne's lace		X	X	X	X	X	M		X	X	X	X			X	11
<i>Dioscorea oppositifolia</i>	Climbing yam									MMT	X	X	X				4
<i>Dipsacus fullonum</i>	Fuller's teasel		X	X		X		M								X	5
<i>Echinochloa crus-galli</i>	Barnyardgrass									X			X				2
<i>Eichhornia crassipes</i>	Water hyacinth	MMT															1
<i>Elaeagnus angustifolia</i>	Russian olive						MMT, CT	M, CT, MMT		L				CT, MMT			4
<i>Elaeagnus pungens</i>	Thorny olive									X							1
<i>Elaeagnus umbellata</i>	Autumn olive			CT, MMT			CT, MMT					X					3
<i>Elymus repens</i>	Quackgrass			X	X	X								X			4
<i>Euonymus alata</i>	Burningbush			CT, MMT			CT, MMT	M, CT, MMT			X	X					5
<i>Euonymus fortunei</i>	Wintercreeper			CT, MMT		CT					X	X	X				4
<i>Euphorbia cyparissias</i>	Cypress spurge		X														1

Species	Common Name	ARPO	BUFF	CUVA	EFMO	GWCA	HEHO	HOCU	HOME	HOSP	LIBO	OZAR	PERI	PIPE	TAPR	WICR	Total Parks
<i>Euphorbia esula</i>	Leafy spurge													CT			1
<i>Frangula alnus</i>	Alder buckthorn			CT, MMT													1
<i>Glechoma hederacea</i>	Ground ivy		X	X		X	X	M		MMT	X	X	X				9
<i>Hedera helix</i>	English ivy			X		X				MMT	X		X			X	6
<i>Hemerocallis fulva</i>	Orange daylily		X	X	X	X		M			X				X	X	8
<i>Hesperis matronalis</i>	Dame's rocket		X	X			X	M	MMT			X		MMT		X	8
<i>Holcus lanatus</i>	Common velvetgrass		X	X											X	X	4
<i>Humulus japonicus</i>	Japanese hops			X												X	2
<i>Hypericum perforatum</i>	Common St. Johnswort			X	X	X		X		X		X	X		X	X	9
<i>Iris pseudacorus</i>	Pale yellow iris			X													1
<i>Juniperus virginiana</i>	Eastern redcedar					X						X				CT, MMT	2
<i>Leonurus cardiaca</i>	Common motherwort		X	X	X			M	X			X		X		X	8
<i>Lespedeza cuneata</i>	Chinese bushclover, Chinese bushclover	X	X		CT	CT				L	X	X	MMT		M. CT	X	10
<i>Ligustrum japonicum</i>	Japanese privet									MMT			X				2
<i>Ligustrum obtusifolium</i>	Border privet			CT, MMT							X						2
<i>Ligustrum sinense</i>	Chinese privet	CT, MMT	X							MMT							3
<i>Ligustrum vulgare</i>	Common privet		X	CT, MMT		X		M, CT, MMT		L, MMT	X		MMT			X	8
<i>Linaria vulgaris</i>	Butter and eggs		X	X			X			X				MMT			5
<i>Lolium arundinaceum</i>	Tall fescue						X					X	MMT			X	4

Species	Common Name	ARPO	BUFF	CUVA	EFMO	GWCA	HEHO	HOCU	HOME	HOSP	LIBO	OZAR	PERI	PIPE	TAPR	WICR	Total Parks
<i>Lolium pratense</i>	Meadow fescue		X							X	X		MMT			X	5
<i>Lonicera japonica</i>	Japanese honeysuckle	CT, MMT	X	CT, MMT		CT, MMT		M, CT, MMT		L, MMT	L	X	MMT	CT, MMT	X	X	12
<i>Lonicera maackii</i>	Amur honeysuckle			CT, MMT				M, CT, MMT									2
<i>Lonicera morrowii</i>	Morrow's honeysuckle			CT, MMT			CT, MMT			X	X						4
<i>Lonicera tatarica</i>	Tartarian honeysuckle			CT, MMT	MMT, CT		CT, MMT	M, CT, MMT		X				CT, MMT			6
<i>Lonicera X bella</i>	Showy fly honeysuckle			CT, MMT													1
<i>Lotus corniculatus</i>	Bird's-foot trefoil			X	X		X					X	X				5
<i>Lysimachia nummularia</i>	Creeping jenny		X	X	X			M				X					5
<i>Lythrum salicaria</i>	Purple loosestrife			CT, M, MMT	X												2
<i>Maclura pomifera</i>	Osage orange					X			CT, MMT			X			FT, CT	X	5
<i>Melia azedarach</i>	Chinaberrytree	X								X							2
<i>Melilotus officinalis</i>	Sweetclover		X	X	X	MMT	CT, MMT	M	MMT		X	X	MMT	MMT	X	X	13
<i>Mentha piperita</i>	Peppermint											X					1
<i>Microstegium vimineum</i>	Japanese stiltgrass	X	X									X	X				4
<i>Miscanthus sinensis</i>	Chinese silvergrass									X							1
<i>Morus alba</i>	White mulberry		X	X		X	CT, MMT	M	CT, MMT	X	X		X		X	X	11
<i>Murdannia keisak</i>	Aneilema, Swamp dayflower	X															1
<i>Myosotis scorpioides</i>	True forget-me-not			X													1
<i>Myriophyllum spicatum</i>	Eurasia watermilfoil			X	X							X					2
<i>Najas minor</i>	Brittle waternymph			X													1

Species	Common Name	ARPO	BUFF	CUVA	EFMO	GWCA	HEHO	HOCU	HOME	HOSP	LIBO	OZAR	PERI	PIPE	TAPR	WICR	Total Parks
<i>Nandina domestica</i>	Sacred bamboo									L, MMT							1
<i>Paspalum urvillei</i>	Vasey's grass	X															1
<i>Pastinaca sativa</i>	Wild parsnip		X	X	X		X	M									5
<i>Paulownia tomentosa</i>	Princesstree							X		X			CT, MMT				3
<i>Phalaris arundinacea</i>	Reedcanary grass			CT, MMT	X		CT, FT, MMT	M	CT					CT, MMT		X	7
<i>Photinia serratifolia</i>	Taiwanese photinia									X							1
<i>Phragmites australis</i>	Common reed			CT, MMT	X												2
<i>Poa compressa</i>	Canada bluegrass		X	X	X	X					X	X	MMT	X		X	8
<i>Poa pratensis</i>	Kentucky bluegrass			X	X	X	FT	M	FT	X	X	X	MMT	FT	FT	X	13
<i>Polygonum cuspidatum</i>	Japanese knotweed			CT							X						2
<i>Poncirus trifoliata</i>	Trifoliate orange	CT, MMT								X							2
<i>Populus alba</i>	White (silver) poplar		X	X						X		X	X				4
<i>Potamogeton crispus</i>	Curly pondweed			X	X	X											3
<i>Potentilla recta</i>	Sulphur cinquefoil		X	X	X	X	X	M		X		X	X	X		X	11
<i>Prunus mahaleb</i>	Mahaleb cherry							M									1
<i>Pueraria montana</i> <i>var. lobata</i>	Kudzu		X							L, CT, MMT							2
<i>Pyrus calleryana</i>	Callery pear					X				X		X					3
<i>Rhamnus cathartica</i>	Common buckthorn			CT, MMT	MMT, CT								X	CT, MMT			4
<i>Rhus copallina</i>	Winged Sumac					CT, MMT											1
<i>Rhus glabra</i>	Smooth sumac					X			L, CT, MMT							X	3
<i>Robinia</i>	Black locust	MMT	X	X	X	X	X	M		X	X	X	MMT		X	X	13

Species	Common Name	ARPO	BUFF	CUVA	EFMO	GWCA	HEHO	HOCU	HOME	HOSP	LIBO	OZAR	PERI	PIPE	TAPR	WICR	Total Parks
<i>pseudoacacia</i>																	
<i>Rorippa nasturtium-aquaticum</i>	Watercress			X		X		X		X		X	X		X	X	8
<i>Rosa multiflora</i>	Multiflora rose	X	X	CT, MMT	MMT, CT	X	MMT	M, CT, MMT	X		X	X	X		X	X	13
<i>Rumex acetosella</i>	Common sheep sorrel		X	X		X	X	X		X	X	X	X			X	10
<i>Rumex crispus</i>	Curly dock		X	X		X	X	M	X	X		X	X	X	X	X	12
<i>Saponaria officinalis</i>	Bouncingbet		X	X		X		X	X			X	X			X	8
<i>Sonchus arvensis</i>	Sowthistle			X										MMT			2
<i>Sorghum halepense</i>	Johnsongrass	X	X			CT		M, CT, MMT	CT	X		L, CT, MMT	MMT		CT	X	10
<i>Sphenoclea zeylanica</i>	Chickenspike									X							1
<i>Spiraea japonica</i>	Japanese spiraea									X							1
<i>Tanacetum vulgare</i>	Common tansy		X	X													2
<i>Torilis arvensis</i>	Common hedgeparsley		X			X		X		X		X				X	6
<i>Torilis japonica</i>	Japanese hedgeparsley	X	X	X		X				X			X			X	7
<i>Typha angustifolia</i>	Narrowleaf cattail	X	X	X	X												4
<i>Typha X glauca</i>	Hybrid cattail		X	X											X		3
<i>Ulmus pumila</i>	Siberian elm			X		MMT	CT, MMT	X	CT, MMT	X		X	MMT	CT, MMT	X	X	11
<i>Verbascum thapsus</i>	Common mullein	X	X	X	X	X	X	M	MMT	X	X	X	MMT	MMT	X	X	15
<i>Vinca major</i>	Common periwinkle	X								X		X	X				3
<i>Vinca minor</i>	Periwinkle		X	X		X		M		MMT	X	X	X				7
<i>Wisteria floribunda</i>	Japanese wisteria									X							1

Species	Common Name	ARPO	BUFF	CUVA	EFMO	GWCA	HEHO	HOCU	HOME	HOSP	LIBO	OZAR	PERI	PIPE	TAPR	WICR	Total Parks
<i>Wisteria sinensis</i>	Chinese wisteria									X							1
Woody species (unspecified)						CT, MMT	CT, MMT		CT, MMT								3
Grand Total		20	46	68	32	46	32	43	20	52	26	41	45	25	26	39	561

X = Occurs, but no treatment

BT = Biological

CT = Chemical

FT = Fire

L = Locations documented

M = Mapped, likely in GIS

MMT = Manual or Mechanical Treatment – cutting, grubbing, pulling

T = Treated, unknown treatment





## Appendix C: Completed Compliance Forms



National Park Service  
U.S. Department of the Interior

Midwest Region  
Date: 05/19/2010

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### ENVIRONMENTAL SCREENING FORM (ESF)

#### DO-12 APPENDIX 1

Date Form Initiated: 05/19/2010

Updated May 2007 - per 2004 Departmental Manual revisions and proposed Director's Order 12 changes

#### A. PROJECT INFORMATION

Park Name:	Midwest Regional Office
Project Title:	#31771 Heartland Exotic Plant Management Plan
PEPC Project Number:	31771
PMIS Number:	
Project Type:	Implementation Plan (IMPL)
Project Location:	
County, State:	N.A., X - Unknown
Project Leader:	Sherry Middlemis-Brown
Administrative Record Location:	
Administrative Record Contact:	
Notes:	Program level plan/strategy

#### B. PROJECT DESCRIPTION

The goal of this project is to establish an exotic plant management plan (EPMP) to control exotic plants within the fifteen Heartland Inventory and Monitoring Network (HTLN) parks. The HTLN parks extend across eight states (Arkansas, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, Ohio) and include a diversity of terrestrial and aquatic ecosystems associated with tallgrass prairies, Eastern deciduous forests, interior highlands, and the Mississippi floodplain.

The project proposes a cooperative, multi-park program for addressing exotic plant management actions to augment individual park projects addressing exotic plant management. This proposed approach to invasive/exotic plant management uses a program similar to an Exotic Plant Management Team (EPMT) to achieve economy of scale to augment exotic plant programs in parks, to monitor effects for adaptive management purposes, and to centralize data management for parks. The program would also require the allocation of resources to target species and locations where success is most feasible and critical resources (i.e. threatened species, restoration areas, significant cultural landscapes) are most threatened.

For many parks, compliance for treatment of exotic/invasive plants has been handled under a Categorical Exclusion (CE). These CEs include 3.4.e(2) Restoration of noncontroversial (based on internal scoping requirements in section 2.6) native species into suitable habitats within their historic range, and 3.4.e(3) Removal of individual members of a non-threatened/endangered species or populations of pests and exotic plants that pose an imminent danger to visitors or an immediate threat to park resources.

With the potential for augmenting exotic/invasive species management through an EPMT, the Heartland parks will have consistent and continuous management of exotic plants. Therefore, actions will be taken throughout the years that probably have little or no potential for environmental impact, but thorough assessment can be made with an Environmental Assessment

(EA) to ensure that the understanding of environmental impacts is correct and that no cumulative impacts may occur with repeated action over time.

Additionally, some proposed treatments may have an impact and require mitigation for their use, which does not allow that treatment to be used under a CE. An EA or other rigorous assessment document may broaden the set of tools available for safe use in exotic plant management within parks. It also taps the expertise of botanists with experience in this field to augment the knowledge base at the parks.

**Target compliance completion date:** 06/30/2012

**Is project a hot topic (controversial or sensitive issues that should be brought to attention of Regional Director)?** No

**C. RESOURCE EFFECTS TO CONSIDER:**

<b>Identify potential effects to the following physical, natural, or cultural resources</b>	<b>No Effect</b>	<b>Negligible Effects</b>	<b>Minor Effects</b>	<b>Exceeds Minor Effects</b>	<b>Data Needed to Determine/Notes</b>
1. Geologic resources – soils, bedrock, streambeds, etc.	None				
2. From geohazards	None				
3. Air quality		Negligible			Analysis as to whether project would cause potentially measurably impacts is needed.
4. Soundscapes		Negligible			Analysis as to whether project would cause potentially measurably impacts is needed.
5. Water quality or quantity	None				None expected with mitigations
6. Streamflow characteristics	None				
7. Marine or estuarine resources	None				
8. Floodplains or wetlands	None				
9. Land use, including occupancy, income, values, ownership, type of use	None				
10. Rare or unusual vegetation – old growth timber, riparian, alpine			Minor		Objective includes beneficial effects to these resources
11. Species of special concern (plant or animal; state or federal listed or proposed for listing) or their habitat		Negligible			Mitigation expected to result in no appreciable impact
12. Unique ecosystems, biosphere reserves, World Heritage Sites	None				
13. Unique or important wildlife or wildlife habitat	None				
14. Unique or important fish or fish habitat	None				
15. Introduce or promote non-native species (plant or animal)			Minor		Objectives include beneficial impacts in this topic
16. Recreation resources, including supply, demand, visitation, activities, etc.	None				
17. Visitor experience, aesthetic resources		Negligible			Beneficial impact
18. Archeological resources		Negligible			
19. Prehistoric/historic structure	None				

Identify potential effects to the following physical, natural, or cultural resources	No Effect	Negligible Effects	Minor Effects	Exceeds Minor Effects	Data Needed to Determine/Notes
20. Cultural landscapes			Minor		Beneficial impacts
21. Ethnographic resources		Negligible			
22. Museum collections (objects, specimens, and archival and manuscript collections)	None				
23. Socioeconomics, including employment, occupation, income changes, tax base, infrastructure	None				
24. Minority and low income populations, ethnography, size, migration patterns, etc.	None				
25. Energy resources	None				
26. Other agency or tribal land use plans or policies	None				
27. Resource, including energy, conservation potential, sustainability		Negligible			
28. Urban quality, gateway communities, etc.	None				
29. Long-term management of resources or land/resource productivity		Negligible			
30. Other important environment resources (e.g. geothermal, paleontological resources)?	None				

**D. MANDATORY CRITERIA**

Mandatory Criteria: If implemented, would the proposal:	Yes	No	N/A	Comment or Data Needed to Determine
A. Have significant impacts on public health or safety?		N		
B. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas?		N		
C. Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources (NEPA section 102(2)(E))?		N		
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?		N		
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?		N		
F. Have a direct relationship to other actions with individually insignificant, but cumulatively significant, environmental effects?		N		
G. Have significant impacts on properties listed or eligible for listing on the National Register of Historic Places, as determined by either the bureau or office?		N		
H. Have significant impacts on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?		N		

I. Violate a federal law, or a state, local, or tribal law or requirement imposed for the protection of the environment?		N		
J. Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898)?		N		
K. Limit access to and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007)?		N		
L. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112)?		N		

For the purpose of interpreting these procedures within the NPS, any action that has the potential to violate the NPS Organic Act by impairing park resources or values would constitute an action that triggers the DOI exception for actions that threaten to violate a federal law for protection of the environment.

#### **E. OTHER INFORMATION**

1. Are personnel preparing this form familiar with the site? Yes
- 1.A. Did personnel conduct a site visit? No
2. Is the project in an approved plan such as a General Management Plan or an Implementation Plan with an accompanying NEPA document? No
3. Are there any interested or affected agencies or parties? Yes
- 3.A. Did you make a diligent effort to contact them? Yes
4. Has consultation with all affected agencies or tribes been completed? No
5. Are there any connected, cumulative, or similar actions as part of the proposed action? *(e.g., other projects in area or identified in GMP, adequate/available utilities to accomplish project)* N/A

#### **F. INSTRUCTIONS FOR DETERMINING APPROPRIATE NEPA PATHWAY**

First, always check DO-12, section 3.2, "Process to Follow" in determining whether the action is categorically excluded from additional NEPA analyses. Other sections within DO-12, including sections 2.9 and 2.10; 3.5; 4.5(G)(4) and (G)(5), and 5.4(F), should also be consulted in determining the appropriate NEPA pathway. Complete the following tasks: conduct a site visit or ensure that staff is familiar with the site's specifics; consult with affected agencies, and/or tribes; and interested public and complete this environmental screening form.

If your action is described in DO-12 section 3.3, "CEs for Which No Formal Documentation is Necessary," follow the instructions indicated in that section.

If your action is not described in DO-12, section 3.3, and IS described in section 3.4, AND you checked YES or identified "data needed to determine" impacts in any block in section D (Mandatory Criteria), this is an indication that there is potential for significant impacts to the human environment, therefore, you must prepare an EA or EIS or supply missing information to determine context, duration, and intensity of impacts.

If your action is described in section 3.4 and NO is checked for all boxes in section D (Mandatory Criteria), AND there are either no effects or all of the potential effects identified in section C (Resource Effects to Consider) are no more than minor intensity, usually there is no potential for significant impacts and an EA or EIS is not required. If, however, during internal scoping and further investigation, resource effects still remain unknown, or are at the minor to moderate level of intensity, and the potential for significant impacts may be likely, an EA or EIS is required.

In all cases, data collected to determine the appropriate NEPA pathway must be included in the administrative record.

#### **G. INTERDISCIPLINARY TEAM SIGNATORIES**

*All interdisciplinary team members sign as directed or deemed necessary by the Superintendent. By signing this form, you affirm the following: you have either completed a site visit or are familiar with the specifics of the site; you have consulted with affected agencies and tribes; and you, to the best of your knowledge, have answered the questions posed in the checklist correctly.*

<b>Field of Expertise</b>	<b>Name</b>
Project Leader	Sherry Middlemis-Brown
Project Leader	Craig Young
Field of Expertise	Technical Specialist
Natural Resource Specialist	Sarah Allely
Chief of Resources	Merrith Baughman
Natural Resource Specialist	Jesse Bolli
Natural Resource Specialist	Mike Capps
NEPA Specialist	Nick Chevance
NHPA Specialist	Ron Cockrell
NEPA Specialist	Christopher Davis
Natural Resource Specialist	Kristen Hase
Natural Resource Specialist	Seth Hendriks
Natural Resource Specialist	Lana Henry
Natural Resource Specialist	Kimberly Houf
Regional 106 Reviewer	Regional 106 Coordinator Midwest Region
Natural Resource Specialist	Nolan Moore
Superintendent	Jim Nepstad
Natural Resource Specialist	Meg Plona
Natural Resource Specialist	Dafna Reiner
Natural Resource Specialist	Rodney Rovang
Natural Resource Specialist	Stephen Rudd
NHPA Specialist	Joe Strenfel
Natural Resource Specialist	Gary Sullivan
Archeologist	Anne Vawser
NEPA Specialist	Cary Wiesner
Chief of Resources	Barbara Wilson

**Field of Expertise****Name**

106 Advisor

Roberta Young

Natural Resource Specialist

Charles Bitting

106 Advisor

Marla McEnaney

**H. SUPERVISORY SIGNATORY**

*Based on the environmental impact information contained in the statutory compliance file and in this environmental screening form, environmental documentation for this stage of the subject project is complete.*

**Recommended:****Compliance Specialist:**

**Nick Chevance** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Ron Cockrell** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Approved:**

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_

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**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_



National Park Service  
U.S. Department of the Interior

Midwest Regional Office  
Date: 5/20/2010

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## ASSESSMENT OF ACTIONS HAVING AN EFFECT ON CULTURAL RESOURCES

### A. DESCRIPTION OF UNDERTAKING

1. Park: *Midwest Region* Park district (optional):

2. Project Description:

a. Project Name *Heartland Exotic Plant Management Plan* Date: *May 20, 2010* PEPC project ID no. *31771*

b. Describe project and area of potential effects (as defined in 36 CFR 800.2[c])

The goal of this project is to establish an exotic plant management plan (EPMP) to control exotic plants within the fifteen Heartland Inventory and Monitoring Network (HTLN) parks. The HTLN parks extend across eight states (Arkansas, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, Ohio) that include a diversity of terrestrial and aquatic ecosystems associated with tallgrass prairies, Eastern deciduous forests, interior highlands, and the Mississippi floodplain.

The project proposes a cooperative, multi-park program for addressing exotic plant management actions to augment individual park projects addressing exotic plant management. This proposed approach to invasive/exotic plant management uses a program similar to an Exotic Plant Management Team (EPMT) to achieve economy of scale to augment exotic plant programs in parks, to monitor effects for adaptive management purposes, and to centralize data management for parks. The program would also require the allocation of resources to target species and locations where success is most feasible and critical resources (i.e. threatened species, restoration areas, significant cultural landscapes) are most threatened.

For many parks, compliance for treatment of exotic/invasive plants has been handled under a Categorical Exclusion (CE). These CEs include 3.4.e(2) Restoration of noncontroversial (based on internal scoping requirements in section 2.6) native species into suitable habitats within their historic range; and 3.4.e(3) Removal of individual members of a non-threatened/endangered species or populations of pests and exotic plants that pose an imminent danger to visitors or an immediate threat to park resources.

With the potential for augmenting exotic/invasive species management through an EPMT, the Heartland parks will have consistent and continuous management of exotic plants. Therefore, actions will be taken throughout the years that probably have little or no potential for environmental impact, but thorough assessment can be made with an Environmental Assessment (EA) to ensure that the understanding of environmental impacts is correct and that no cumulative impacts may occur with repeated action over time.

Additionally, some proposed treatments may have an impact and require mitigation for their use, which does not allow that treatment to be used under a CE. An EA or other rigorous assessment document may broaden the set of tools available for safe use in exotic plant management within parks. It also taps the expertise of botanists with experience in this field to augment the knowledge base at the parks.

3. Has the area of potential effects been surveyed to identify cultural resources?

☒ No

☐ Yes, Source or reference:

☒ Check here if no known cultural resources will be affected. (If this is because area has been disturbed, please explain or attach additional information to show the disturbance was so extensive as to preclude intact cultural deposits.)

4. Potentially Affected Resource(s):

The planning process will not impact park resources. The implementation of the plan may impact resources and so NHPA, Section 106 compliance will be done on work plans that propose treatment in the field. Potential for affecting resources will be made for those work plans.

5. The proposed action will: (check as many as apply)

- ☐ Destroy, remove, or alter features/elements from a historic structure
- ☐ Replace historic features/elements in kind
- ☐ Add non-historic features/elements to a historic structure
- ☐ Alter or remove features/elements of a historic setting or environment (inc. terrain)
- ☐ Add non-historic features/elements (inc. visual, audible, or atmospheric) to a historic setting or cultural landscape
- ☐ Disturb, destroy, or make archeological resources inaccessible
- ☐ Disturb, destroy, or make ethnographic resources inaccessible
- ☒ Potentially affect presently unidentified cultural resources
- ☐ Begin or contribute to deterioration of historic features, terrain, setting, landscape elements, or archeological or ethnographic resources
- ☐ Involve a real property transaction (exchange, sale, or lease of land or structures)
- ☐ Other (please specify)

6. Measures to prevent or minimize loss or impairment of historic/prehistoric properties: (Remember that setting, location, and use may be relevant.)

**Mitigations are identified in the Environmental Assessment.**

7. Supporting Study Data:

(Attach if feasible; if action is in a plan, EA or EIS, give name and project or page number.)

8. Attachments:

- [X] Maps [ ] Archeological survey, if applicable [ ] Drawings [ ] Specifications
- [X] Photographs
- [X] Scope of Work [ ] Site plan [ ] List of Materials [ ] Samples [X] Other: Environmental Assessment

Prepared by **Sherry Middlemis-Brown** Date: **May 20, 2010 (updated November 16, 2011)** Title: **Biologist** Telephone: **906-296-8097**

**B. REVIEWS BY CULTURAL RESOURCE SPECIALISTS**

The park 106 coordinator requested review by the park's cultural resource specialist/advisors as indicated by check-off boxes or as follows:

---

No Reviews From: Curator, Archeologist, Historical Architect, Historian, 106 Advisor, Other Advisor, Anthropologist, Historical Landscape Architect



---

**C. PARK SECTION 106 COORDINATOR'S REVIEW AND RECOMMENDATIONS****1. Assessment of Effect:**

\_\_\_\_\_ No Historic Properties Affected \_\_\_\_\_ No Adverse Effect \_\_\_\_\_ Adverse Effect

**2. Compliance requirements:****☒ A. STANDARD 36 CFR PART 800 CONSULTATION**

Further consultation under 36 CFR Part 800 is needed.

**☐ B. STREAMLINED REVIEW UNDER THE 2008 SERVICEWIDE PROGRAMMATIC AGREEMENT (PA)**

The above action meets all conditions for a streamlined review under section III of the 2008 Servicewide PA for Section 106 compliance.

**APPLICABLE STREAMLINED REVIEW Criteria**  
(Specify 1-16 of the list of streamlined review criteria.)

**☐ C. PLAN-RELATED UNDERTAKING**

Consultation and review of the proposed undertaking were completed in the context of a plan review process, in accordance with the 2008 Servicewide PA and 36 CFR Part 800.

Specify plan/EA/EIS: \_\_\_\_\_

**☐ D. UNDERTAKING RELATED TO ANOTHER AGREEMENT**

The proposed undertaking is covered for Section 106 purposes under another document such as a statewide agreement established in accord with 36 CFR 800.7 or counterpart regulations.

Specify: \_\_\_\_\_

**☐ E. COMPLIANCE REQUIREMENTS SATISFIED BY USE OF NEPA**

Documentation is required for the preparation of an EA/FONSI or an EIS/ROD has been developed and used so as also to meet the requirements of 36 CFR 800.3 through 800.6

**☐ F. No Potential to Cause Effects [800.3(a)(1)]****☐ G. STIPULATIONS/CONDITIONS**

Following are listed any stipulations or conditions necessary to ensure that the assessment of effect above is consistent with 36 CFR Part 800 criteria of effect or to avoid or reduce potential adverse effects.

Recommended by Park Section 106 coordinator:

Name: **Ron Cockrell**

Title: **NHPA Specialist**

Date:

**D. SUPERINTENDENT'S APPROVAL**

The proposed work conforms to the NPS *Management Policies* and *Cultural Resource Management Guideline*, and I have reviewed and approve the recommendations, stipulations, or conditions noted in Section C of this form.

Name/Signature of Superintendent \_\_\_\_\_

\_\_\_\_\_  
Date:



## Appendix D: Blank Compliance Forms



National Park Service  
U.S. Department of the Interior

Midwest Region  
Date: **Enter Date**

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### ASSESSMENT OF ACTIONS HAVING AN EFFECT ON CULTURAL RESOURCES

#### A. DESCRIPTION OF UNDERTAKING

1. Park: **Midwest Region** Park district (optional): **PARK**

2. Project Description:

a. Project Name **Heartland Exotic Plant Management for Park Name, Year** Date: **Enter date** PEPC project ID no. **####**

b. Describe project and area of potential effects (as defined in 36 CFR 800.2[c])

**Enter plan from Annual Work Plan**

3. Has the area of potential effects been surveyed to identify cultural resources?

☐ No

☐ Yes, Source or reference:

☐ Check here if no known cultural resources will be affected. (If this is because area has been disturbed, please explain or attach additional information to show the disturbance was so extensive as to preclude intact cultural deposits.)

4. Potentially Affected Resource(s):

**Add Affect Resources and include maps from Annual Work Plan.**

5. The proposed action will: (check as many as apply)

☐ Destroy, remove, or alter features/elements from a historic structure

☐ Replace historic features/elements in kind

☐ Add non-historic features/elements to a historic structure

☐ Alter or remove features/elements of a historic setting or environment (inc. terrain)

☐ Add non-historic features/elements (inc. visual, audible, or atmospheric) to a historic setting or cultural landscape

☐ Disturb, destroy, or make archeological resources inaccessible

☐ Disturb, destroy, or make ethnographic resources inaccessible

☐ Potentially affect presently unidentified cultural resources

☐ Begin or contribute to deterioration of historic features, terrain, setting, landscape elements, or archeological or ethnographic resources

☐ Involve a real property transaction (exchange, sale, or lease of land or structures)

☐ Other (please specify)

6. Measures to prevent or minimize loss or impairment of historic/prehistoric properties:  
(Remember that setting, location, and use may be relevant.)

**Use mitigations as presented in Work Plan and reference the IPMP/EA**

7. Supporting Study Data:  
(Attach if feasible; if action is in a plan, EA or EIS, give name and project or page number.)

8. Attachments:  
☒ Maps ☐ Archeological survey, if applicable ☐ Drawings ☐ Specifications ☐ Photographs  
☒ Scope of Work ☐ Site plan ☐ List of Materials ☐ Samples ☐ Other:

Prepared by **Park Staff filing** Date: **Date** Title: **Title** Telephone: **Contact**

## **B. REVIEWS BY CULTURAL RESOURCE SPECIALISTS**

The park 106 coordinator requested review by the park's cultural resource specialist/advisors as indicated by check-off boxes or as follows:

---

No Reviews From:

---

## **C. PARK SECTION 106 COORDINATOR'S REVIEW AND RECOMMENDATIONS**

1. Assessment of Effect:

\_\_\_\_\_ No Historic Properties Affected \_\_\_\_\_ No Adverse Effect \_\_\_\_\_ Adverse Effect

2. Compliance requirements:

☐ A. STANDARD 36 CFR PART 800 CONSULTATION  
Further consultation under 36 CFR Part 800 is needed.

☐ B. STREAMLINED REVIEW UNDER THE 2008 SERVICEWIDE PROGRAMMATIC AGREEMENT (PA)

The above action meets all conditions for a streamlined review under section III of the 2008 Servicewide PA for Section 106 compliance.

APPLICABLE STREAMLINED REVIEW Criteria  
(Specify 1-16 of the list of streamlined review criteria.)

☐ C. PLAN-RELATED UNDERTAKING

Consultation and review of the proposed undertaking were completed in the context of a plan review process, in accordance with the 2008 Servicewide PA and 36 CFR Part 800.  
Specify plan/EA/EIS: \_\_\_\_\_

☐ D. UNDERTAKING RELATED TO ANOTHER AGREEMENT

The proposed undertaking is covered for Section 106 purposes under another document such as a statewide agreement established in accord with 36 CFR 800.7 or counterpart regulations.

Specify: \_\_\_\_\_

☐ E. COMPLIANCE REQUIREMENTS SATISFIED BY USE OF NEPA

Documentation is required for the preparation of an EA/FONSI or an EIS/ROD has been developed and used so as also to meet the requirements of 36 CFR 800.3 through 800.6

☐ F. No Potential to Cause Effects [800.3(a)(1)]☐ G. STIPULATIONS/CONDITIONS

Following are listed any stipulations or conditions necessary to ensure that the assessment of effect above is consistent with 36 CFR Part 800 criteria of effect or to avoid or reduce potential adverse effects.

Recommended by Park Section 106 coordinator:

Name:

Title:

Date:

**D. SUPERINTENDENT'S APPROVAL**

The proposed work conforms to the NPS *Management Policies* and *Cultural Resource Management Guideline*, and I have reviewed and approve the recommendations, stipulations, or conditions noted in Section C of this form.

Name/Signature of Superintendent \_\_\_\_\_

Date:

**Basic Steps: Section 106 and PEPC**

These are the basic steps to integrate Section 106 review into PEPC. More detail follows.

- Add project information in as much detail as necessary for adequate project review and for inclusion on your Assessment of Effect Form (in PEPC Steps 1 and 4). Information will be in Work Plan.
- Upload the background materials and supporting documents necessary for adequate project review (Step 5).
- Identify your CRM Team and assign tasks when the project is ready for review (Step 3).
- CRM Team provides project comments within PEPC (Step 4).
- Section 106 Coordinator enters park Section 106 finding and any additional information for the Assessment of Effect Form (Step 4).
- Automatically generate an Assessment of Effect form for submission with the SHPO/THPO package and document the SHPO/THPO submission and response (Step 4).
- Attach copies of SHPO/THPO correspondence in PEPC (Step 5).
- Solicit and analyze public comments on projects or documents, such as programmatic agreements, memorandums of agreement or effect findings, by posting information to the PEPC public site and using PEPC step 7 to code and sort the comments (Steps 6 and 7).
- Post any mitigation developed for adverse effects to help project managers keep track of all project mitigation (Step 4).
- Close out compliance in PEPC (Compliance Status).



National Park Service  
U.S. Department of the Interior

Midwest Regional Office  
Date: **Enter Date**

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## ENVIRONMENTAL SCREENING FORM (ESF)

### DO-12 APPENDIX 1

Date Form Initiated: **xx/xx/201X**

Updated May 2007 - per 2004 Departmental Manual revisions and proposed Director's Order 12 changes

#### A. PROJECT INFORMATION

Park Name: Midwest Regional Office  
Project Title: Heartland Exotic Plant Management for **Park Name, Year.**  
PEPC Project Number:  
PMIS Number:  
Project Type: Implementation Plan (IMPL)  
Project Location:  
County, State:  
Project Leader:  
Administrative Record Location:  
Administrative Record Contact:  
Notes: Annual implementation

#### B. PROJECT DESCRIPTION

Target compliance completion date: **xx/xx/201x**  
Projected advertisement/Day labor start: **xx/xx/20xx**  
Project start date:  
Is project a hot topic (controversial or sensitive issues that should be brought to attention of Regional Director)?

**C. RESOURCE EFFECTS TO CONSIDER:**

<b>Identify potential effects to the following physical, natural, or cultural resources</b>	<b>No Effect</b>	<b>Negligible Effects</b>	<b>Minor Effects</b>	<b>Exceeds Minor Effects</b>	<b>Data Needed to Determine/Notes</b>
1. Geologic resources – soils, bedrock, streambeds, etc.					
2. From geohazards					
3. Air quality					
4. Soundscapes					
5. Water quality or quantity					
6. Streamflow characteristics					
7. Marine or estuarine resources					
8. Floodplains or wetlands					
9. Land use, including occupancy, income, values, ownership, type of use					
10. Rare or unusual vegetation – old growth timber, riparian, alpine					
11. Species of special concern (plant or animal; state or federal listed or proposed for listing) or their habitat					
12. Unique ecosystems, biosphere reserves, World Heritage Sites					
13. Unique or important wildlife or wildlife habitat					
14. Unique or important fish or fish habitat					
15. Introduce or promote non-native species (plant or animal)					
16. Recreation resources, including supply, demand, visitation, activities, etc.					
17. Visitor experience, aesthetic resources					
18. Archeological resources					
19. Prehistoric/historic structure					
20. Cultural landscapes					
21. Ethnographic resources					
22. Museum collections (objects, specimens, and archival and manuscript collections)					
23. Socioeconomics, including employment, occupation, income changes, tax base, infrastructure					
24. Minority and low income populations, ethnography, size, migration patterns, etc.					
25. Energy resources					
26. Other agency or tribal land use plans or policies					



Identify potential effects to the following physical, natural, or cultural resources	No Effect	Negligible Effects	Minor Effects	Exceeds Minor Effects	Data Needed to Determine/Notes
27. Resource, including energy, conservation potential, sustainability					
28. Urban quality, gateway communities, etc.					
29. Long-term management of resources or land/resource productivity					
30. Other important environment resources (e.g. geothermal, paleontological resources)?					

**D. MANDATORY CRITERIA**

Mandatory Criteria: If implemented, would the proposal:	Yes	No	N/A	Comment or Data Needed to Determine
A. Have significant impacts on public health or safety?				
B. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas?				
C. Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources (NEPA section 102(2)(E))?				
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?				
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?				
F. Have a direct relationship to other actions with individually insignificant, but cumulatively significant, environmental effects?				
G. Have significant impacts on properties listed or eligible for listing on the National Register of Historic Places, as determined by either the bureau or office?				
H. Have significant impacts on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?				
I. Violate a federal law, or a state, local, or tribal law or requirement imposed for the protection of the environment?				
J. Have a disproportionately high and adverse effect on low income or minority populations (Executive Order 12898)?				
K. Limit access to and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007)?				
L. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth,				

<b>Mandatory Criteria: If implemented, would the proposal:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment or Data Needed to Determine</b>
or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112)?				

For the purpose of interpreting these procedures within the NPS, any action that has the potential to violate the NPS Organic Act by impairing park resources or values would constitute an action that triggers the DOI exception for actions that threaten to violate a federal law for protection of the environment.

#### **E. OTHER INFORMATION**

1. Are personnel preparing this form familiar with the site?
  - 1.A. Did personnel conduct a site visit?
2. Is the project in an approved plan such as a General Management Plan or an Implementation Plan with an accompanying NEPA document?
3. Are there any interested or affected agencies or parties?
  - 3.A. Did you make a diligent effort to contact them?
4. Has consultation with all affected agencies or tribes been completed?
5. Are there any connected, cumulative, or similar actions as part of the proposed action? (e.g., other development projects in area or identified in GMP, adequate/available utilities to accomplish project)?

#### **F. INSTRUCTIONS FOR DETERMINING APPROPRIATE NEPA PATHWAY**

First, always check DO-12, section 3.2, "Process to Follow" in determining whether the action is categorically excluded from additional NEPA analyses. Other sections within DO-12, including sections 2.9 and 2.10; 3.5; 4.5(G)(4) and (G)(5), and 5.4(F), should also be consulted in determining the appropriate NEPA pathway. Complete the following tasks: conduct a site visit or ensure that staff is familiar with the site's specifics; consult with affected agencies, and/or tribes; and interested public and complete this environmental screening form.

If your action is described in DO-12 section 3.3, "CEs for Which No Formal Documentation is Necessary," follow the instructions indicated in that section.

If your action is not described in DO-12, section 3.3, and IS described in section 3.4, AND you checked YES or identified "data needed to determine" impacts in any block in section D (Mandatory Criteria), this is an indication that there is potential for significant impacts to the human environment, therefore, you must prepare an EA or EIS or supply missing information to determine context, duration, and intensity of impacts.

If your action is described in section 3.4 and NO is checked for all boxes in section D (Mandatory Criteria), AND there are either no effects or all of the potential effects identified in

section C (Resource Effects to Consider) are no more than minor intensity, usually there is no potential for significant impacts and an EA or EIS is not required. If, however, during internal scoping and further investigation, resource effects still remain unknown, or are at the minor to moderate level of intensity, and the potential for significant impacts may be likely, an EA or EIS is required.

In all cases, data collected to determine the appropriate NEPA pathway must be included in the administrative record.

#### **G. INTERDISCIPLINARY TEAM SIGNATORIES**

*All interdisciplinary team members sign as directed or deemed necessary by the Superintendent. By signing this form, you affirm the following: you have either completed a site visit or are familiar with the specifics of the site; you have consulted with affected agencies and tribes; and you, to the best of your knowledge, have answered the questions posed in the checklist correctly.*

##### **Field of Expertise**

Field of Expertise

Technical Specialist

#### **H. SUPERVISORY SIGNATORY**

Based on the environmental impact information contained in the statutory compliance file and in this environmental screening form, environmental documentation for this stage of the subject project is complete.

Recommended:

##### **Compliance Specialist:**

##### **NEPA**

_____	Date: _____
_____	Date: _____
_____	Date: _____

##### **NHPA**

_____	Date: _____
_____	Date: _____

##### **Approved:**

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_





## Minimum Requirements References in National Park Service Policy

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### ***2006 NPS Management Policies***

#### ***Chapter 6: Wilderness Preservation and Management***

##### 6.3 Wilderness Resource Management

###### *6.3.1 General Policy (in part)*

All management decisions affecting wilderness will further apply the concept of “minimum requirement” for the administration of the area regardless of wilderness category. The only exception is for areas that have been found eligible, but for which, after completion of a wilderness study, the Service has not proposed wilderness designation. However, those lands will still be managed to preserve their eligibility for designation.

###### *6.3.5 Minimum Requirement*

All management decisions affecting wilderness must be consistent with the minimum requirement concept. This concept is a documented process used to determine if administrative actions, projects, or programs undertaken by the Service or its agents and affecting wilderness character, resources, or the visitor experience are necessary, and if so how to minimize impacts. The minimum requirement concept will be applied as a two-step process that determines

- Whether the proposed management action is appropriate or necessary for administration of the area as wilderness and does not cause a significant impact to wilderness resources and character, in accordance with the Wilderness Act.
- The techniques and types of equipment needed to ensure that impacts on wilderness resources and character are minimized.

In accordance with this policy, superintendents will apply the minimum requirement concept in the context of wilderness stewardship planning, as well as to all other administrative practices, proposed special uses, scientific activities, and equipment use in wilderness. The only exception to the minimum requirement policy is for eligible areas that the Service has not proposed for wilderness designation. However, those lands will still be managed to preserve their eligibility.

When determining minimum requirements, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than, economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable.

Although park managers have flexibility in identifying the method used to determine minimum requirement, the method used must clearly weigh the benefits and impacts of the proposal, document the decision-making process, and be supported by an appropriate environmental compliance document. Parks must develop a process to determine minimum requirement until the plan is finally approved. Parks will complete a minimum requirement analysis on those administrative practices and equipment uses that have the potential to impact wilderness resources or values. The minimum requirement concept cannot be used to rationalize permanent roads or inappropriate or unlawful uses in wilderness.

Administrative use of motorized equipment or mechanical transport will be authorized only

- If determined by the superintendent to be the minimum requirement needed by management to achieve the purposes of the area, including the preservation of wilderness character and values, in accordance with the Wilderness Act; or
- In emergency situations (for example, search and rescue, homeland security, law enforcement) involving the health or safety of persons actually within the area.

Such management activities will also be conducted in accordance with all applicable regulations, policies, and guidelines and, where practicable, will be scheduled to avoid creating adverse resource impacts or conflicts with visitor use.

While actions taken to address search and rescue, homeland security and law enforcement issues are subject to the minimum requirement concept, preplanning or programmatic planning should be undertaken whenever possible to facilitate a fast and effective response and reduce paperwork.

For more detailed guidance, see Director's Order #41 and the National Wilderness Steering Committee Guidance Paper #3: "What Constitutes the Minimum Requirements in Wilderness?"

*(See Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-making)*

Additional references to minimum requirements can be found in the following sections of Management Policies:

- 6.3.6 Scientific Activities in Wilderness
- 6.3.9 Fire Management
- 6.3.10 Management Facilities
- 6.4.4 Commercial Services
- 6.4.7 Grazing and Livestock Driveways

<<<<< >>>>>

*1999 Director's Order #41**Wilderness Preservation and Management***B. INSTRUCTIONS AND REQUIREMENTS**

3. Management Responsibility and Accountability. Park managers will ensure that wilderness resources are afforded maximum protection through implementation of the following actions addressing the NPS wilderness accountability and responsibilities defined in Chapter 6 Wilderness Preservation and Management policies. (Reference Manual #41: Appendix C provides a checklist for these items)

- d. Administer and Protect the Wilderness Resource. Stewardship responsibilities for wilderness will be completed through the following:
- (ii) Minimum Requirement Process. A process to determine the "minimum requirement" for administrative actions, proposed special uses, scientific activities, and equipment use in wilderness will be identified and established. It must specify how the process is to be implemented in the park and that a record of the decisions generated through this process must be kept for public inspection.

**C. WILDERNESS MANAGEMENT ISSUES**

The following guidance is provided for dealing with major wilderness management issues confronting the National Park Service:

**1. Wilderness Management Plan Requirements**

The wilderness management plan will: 1) clearly identify the boundaries of wilderness units of the park; 2) identify individuals and/or organizations within the park administration responsible for wilderness preservation; 3) establish an administrative process to determine "minimum requirement" for actions in wilderness; and 4) establish specific management actions to be applied to guide public use and preservation of wilderness resources, including the establishment of desired future conditions.

**2. Application of the Minimum Requirement Concept**

*...except as necessary to meet the minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area) there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.*

*The Wilderness Act: Section 4 (c)*

*All management decisions affecting wilderness must be consistent with a minimum requirement concept.... When determining minimum requirement, the potential disruption of wilderness character and resources will be considered before, and given significantly more weight than, economic efficiency and convenience. If a compromise of wilderness resource or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable.*

*NPS Management Policies: 6.3.5 Minimum Requirement*

The National Park Service will apply the minimum requirement concept to all administrative activities that affect the wilderness resource and character. The application of the minimum

requirement concept is intended to minimize impacts on wilderness character and resources and must guide all management actions in wilderness.

Wilderness managers may authorize (using a documented process) the generally prohibited activities or uses listed in Section 4(c) of the Wilderness Act if they are deemed necessary to meet the minimum requirements for the administration of the area as wilderness and where those methods are determined to be the ‘minimum tool’ for the project. The use of motorized equipment and the establishment of management facilities are specifically prohibited when other reasonable alternatives are available. The minimum requirement process cannot be used to permit roads or inappropriate commercial enterprises within wilderness unless these are authorized by specific legislation.

The minimum requirement concept is to be applied as a two-step process that documents:

1. A determination as to whether or not a proposed management action is appropriate or necessary for the administration of the areas as wilderness, and does not pose a significant impact to the wilderness resources and character; and,
2. If the project is appropriate or necessary in wilderness, the selection of the management method (tool) that causes the least amount of impact to the physical resources and experiential qualities (character) of wilderness.

It is important to understand the distinctions between the terms “Minimum Requirement,” and “Minimum Tool.”

Minimum Requirement is a documented process the NPS will use for the determination of the appropriateness of all actions affecting wilderness.

Minimum Tool means a use or activity, determined to be necessary to accomplish an essential task, which makes use of the least intrusive tool, equipment, device, force, regulation, or practice that will achieve the wilderness management objective. This is not necessarily the same as the term “primitive tool,” which refers to the actual equipment or methods that make use of the simplest available technology (i.e., hand tools).

Park managers will apply the minimum requirement concept when making all decisions concerning management of the wilderness area. This includes decisions concerning administrative practices, historic properties, proposed special uses, research, and equipment use in wilderness.

Planned administrative actions that may result in an exception to a prohibited use (i.e., chainsaws, aircraft use, radio repeater sites, rock drills, patrol structures, weather stations) or have the potential to impact wilderness resources and values must be consistent with an approved wilderness management plan and be documented in accordance with the park’s minimum requirements process. The minimum requirements process will be conducted through appropriate environmental analysis (e.g., categorical exclusions, environmental assessment/ FONSI, or an environmental impact statement/Record of Decision).

When determining the minimum requirement for a proposed action, the manager will strive to minimize the extent of adverse impact associated with accomplishing the necessary wilderness objective. The determination as to whether or not an action has an adverse impact on wilderness



must consider both the physical resources within wilderness, and wilderness characteristics and values. These characteristics and values include: the wilderness's primeval character and influence; the preservation of natural conditions (including the lack of man-made noises); cultural resource values, the assurance of outstanding opportunities for solitude; the assurance that the public will be provided with a primitive and unconfined type of recreational experience; and the assurance that wilderness will be preserved and used in an unimpaired condition.

Managers must give appropriate consideration to the aesthetic values of wilderness as well as the physical resource. These factors take precedence over cost or convenience in determining minimum requirement.

National parks with wilderness must have a documented process for applying the minimum requirement concept. Reference Manual #41: Appendix F includes examples of "decision trees," which may be adopted or referred to as a procedure by which alternatives can be assessed and final management decisions developed. These decision tree examples do not alleviate a park's responsibility for providing adequate environmental compliance documentation for individual projects.

Additional references to minimum requirement can be found in the following sections of Director's Order #41:

- C.4. Cultural Resource Management
- C.5. Fire Management
- C.7. Mineral Development
- C.8. Scientific Activities
- C.10. Special Events
- C.12. Commercial Services



National Park Service  
U.S. Department of the Interior

Midwest Regional Office  
Date: 11/14/2011

## Mitigations List Form

Date: November 14, 2011

Park: Midwest Regional Office

Project: Heartland Exotic Plant Management

PEPC Project Number:

Project Description:

Project Locations:

Location

County: N.A. State: UN

District: Section:

Geo. Marker: Other:

Funding

Source(s):

PMIS

Number(s):

Mitigation(s):

(the following is a complete list of all mitigations that will be incorporated into the above-referenced project)

- Use of Fire: Use of prescribed or wildland fire will follow the provisions established in the parks' Fire Management Plans.
- If during the course of survey or treatment a new resource is discovered, action will cease and the resource manager will confer with NHPA and NEPA specialists to assess the likelihood of impact to the resource. The Environmental Screening Form will be updated to include consideration of the discovered resource. Other appropriate consultations will be made. Actions may resume once compliance is complete.
- The EPMT and parks will follow all laws, regulations, and policies on federal, state, and local levels that relate to actions proposed. Similarly, the EPMP, as it is implemented within each park, will remain consistent with that park's policies, mission, and restrictions.
- Excluded Actions under the Action Alternatives: Aerial spraying is not being considered in the parks. No heavy equipment with potential for greater than moderate, short-term impacts to the soils will be used. Surface waters will not receive pesticide application to control of aquatic plants.

Using the Best Practices and Mitigations in Chapter, add all that apply to this work plan.

## Appendix E: Consultation and Civic Engagement

### Internal Scoping

#### ***Scoping for Exotic Plant Management Team Environmental Assessment***

*July 21, 2010 at University Hotel and Convention Center, Springfield, Missouri*

The IPMT initiated Internal Scoping for the Heartland Exotic Plant Management Plan.

Interpreters can be a big part of the Civic Engagement for an Environmental Assessment and they are on the front lines for answering questions from the public. Often, interpreters have a solid grasp of public and visitor concerns or issues that may not occur to resource managers. Therefore, Craig Young and Sherry Middlemis-Brown requested that interpreters as well as park resource managers and subject matter experts participate in the scoping on Wednesday afternoon.

The internal scoping examined the basic needs of the parks for exotic plant management, brainstormed some activities that could help formulate alternatives in the plan, and finally listed a large number of potential concerns or resource issues that exotic plant actions could affect.

A follow up to the Internal Scoping is for each park to develop a Civic Engagement Plan for the Exotic Plant Management Program Plan. Each park with the Exotic Plant Management Team support will complete civic engagement and public participation. These activities involve relationships with stakeholders and partners, and it cannot be accomplished through a centralized group in a remote location. Civic engagement can range from informational articles and letters to open meetings.

The Exotic Plant Management Team and the parks will conduct consultation with agencies, such as State Historic Preservation Offices and U.S. Fish and Wildlife Service.

Thursday morning, a concurrent session for the interpreters provided time for parks to outline their civic engagement plan. With the aid of a toolkit put together by the IPMT, park interpreters selected the type of media that best reaches its stakeholders. The kit contained examples of media with the main text explaining the plan and planning process included. Parks should plug in park specific information into templates for news releases, letters, articles, or other informational formats.

In addition to the activities at the HTLN biennial meeting, the entire Exotic Plant Management Plan process can be followed through the PEPC.

### ***Issues of concern***

The following issues were identified during the scoping meeting:

1. Damage to cultural resources such as artifacts, structures, and historic fabrics.
2. Degradation of water quality.
3. Unknown effects on soil properties.
4. Impacts on visitor health and quality of experience.
5. Impacts on wilderness.
6. Unintentional damage due to “footprint” of workers in field.
7. Degradation of air quality.
8. Secondary infestations of invasive plants after initial control.

9. Negative impacts on threatened or endangered species.
10. Degradation of cultural landscapes (aesthetics, historicity).
11. Degradation of wetlands (as defined in Clean Water Act).
12. Movement of herbicides in karst landscapes.
13. Fate of herbicide, esp. in areas with ground water near soil surface.
14. Fate of herbicide within soil column.
15. Degradation of traditional cultural property.
16. Degradation of cave habitats and cave biota.
17. Risks to workers exposed to herbicide.
18. Potential for drift on to private lands.
19. Degradation of wildlife habitat.
20. Direct exposure of wildlife to toxic substances.

The following observations were made

1. Mechanical methods of invasive plant control may also pose risks to cultural and natural resources.
2. Aquatic nuisance species should be handled under a different EA.
3. Beware of unintended consequences.
4. Prescriptions should accompany any treatment recommendations.

**Alternatives**

Three alternatives were proposed for the group's consideration

1. No action.
2. Integrated pest management.
3. Pest management using only mechanical and cultural practices.

The group proposed the following additional alternatives

1. A program of spot spraying vs. broadcast spraying.
2. A program using only general use herbicides.
3. Plans for specific species.
4. A program using only chemicals.

**Table E.1.** Participants in internal scoping

Name	Affiliation	Name	Affiliation
Sarah Allely	ARPO	Troy Banzhaf	PERI
Pamela Barnes	CUVA	Jen Haack	Network
Gary Sullivan	WICR	Kris Bolin	PERI
Jesse Bolli	HOME	Jessica Bolwahn	EFMO
David Bowles	Network	Mike Capps	LIBO
Tyler Cribbs	Network	Mike DeBacker	Network
Reed Detring	OZAR	Hope Dodd	Network
Diane Eilenstein	GWCA	Victoria Grant	OZAR
Zach Morris	Hutton Fisheries Intern	Merrith Baughman	HOME
Brandi Harmon	HOCU	Seth Hendriks	PIPE
Lana Henry	GWCA	Joe Herron	ARPO
Jan Hinsey	Network	JD Holding	HEHO
Dave Hutson	WICR	Kevin James	Network
Keith Jefferson	BUFF	Theresa Johnson	Miller High School
David Larsen	Harpers Ferry, NPS	Wendy Lauritzen	TAPR

Name	Affiliation	Name	Affiliation
Michelle Lee	Network	Sherry Leis	Network
Jessica Luraas	Network	Dena Matteson	OZAR
George McCabe	PERI	Darin McCullough	TAPR
Sherry Middlemis-Brown	HTLN	Jennifer Pederson	HOCU
Karola Mlekush	Network	Weinberger	
Lloyd Morrison	Network	Nolan Moore	PERI
Dave Peitz	Network	Rod Rovang	EFMO
Adam Prato	HEHO	Meg Plona	CUVA
Chad Gross	Student Conservation Association	Tom Richter	Midwest Region
Gareth Rowell	Network	Jesse Roth	Student Conservation Association
Jeff Rundell	TAPR	Steve Rudd	HOSP
Mary Short	Student Conservation Association	Gail Sears	HOSP
Faron Usrey	BUFF	Jordan Bell	Student Conservation Association
Ed Wood	ARPO	Barbara Wilson	BUFF
		Craig Young	Network

An Interdisciplinary Team provided expertise and support. The team include some participants from the Internal Scoping, but also included additional areas of expertise.

**Table E.2.** Interdisciplinary Team Members (found total '19')

Team Member	Responsibility	Team Member	Responsibility
Marla McEnaney	106 Advisory	Kristen Hase	Natural Resource Specialist
Roberta Young	106 Advisory	Gary Sullivan	Natural Resource Specialist
Anne Vawser	Archeologist	Meg Plona	Natural Resource Specialist
Barbara Wilson	Chief of Resources	Rodney Rovang	Natural Resource Specialist
Merrith Baughman	Chief of Resources	Dafna Reiner	Natural Resource Specialist
Nick Chevance	NEPA Specialist	Stephen Rudd	Natural Resource Specialist
Cary Wiesner	NEPA Specialist	Lana Henry	Natural Resource Specialist
Christopher Davis	NEPA Specialist	Jesse Bolli	Natural Resource Specialist
Ron Cockrell	NEPA Specialist	Sarah Allely	Natural Resource Specialist
Joe Strenfel	NEPA Specialist	Charles Bitting	Natural Resource Specialist
Jim Nepstad	Superintendent	Nolan Moore	Natural Resource Specialist
Craig Young	Project Leader	Seth Hendriks	Natural Resource Specialist
Sherry Middlemis-Brown	Project Leader	Mike Capps	Natural Resource Specialist
Regional 106 Coordinator	Regional 106	Kimberly Houf	Natural Resource Specialist
	Reviewer		

**Consultation Initiation**

Consultation with the State/Tribal Historic Preservation Office (S/THPO), and other entities or agencies is an ongoing process that does not begin or end with individual projects. It is a continuing discussion in which information or ideas are exchanged. Consultation can take place on an informal basis for most of the EA process, but formal consultation may be required for compliance with some regulations. Consultation may be required for federally listed endangered and threatened species or migratory birds (U.S. Fish and Wildlife Service), and for impacts related to aquatic resources, floodplains, and wetlands (Army Corps of Engineers). It is also advisable to consult with state fish and game agencies when proposed actions may impact habitat for wildlife and fish populations.

The IPMT initiated consultation with letters to agencies and authorities (agencies) with a concern for park resources. The IPMT divided the parks into clusters by state or area/districts, such that one letter went to each agency office with multiple parks listed as participants in the request for consultation. This reduced the amount of paperwork for both parks and the consulting agency. The agencies were invited to with the individual parks in their jurisdiction and the IPMT to handle park specific issues.


The relationship between parks and their S/THPO involves communication beyond that for most agency consultation. The NPS and S/THPO work closely together at all times to ensure the preservation of archeological, ethnographic, and historic resources. Therefore, several parks completed documentation of National Historic Preservation Act (NHPA), Section 106, Section 4 of PEPC project #31771 with IPMT assistance as needed.

The parks provided documentation of consultation in which the IPMT did not participate to the IPMT for inclusion in the EA. The results of consultation were analyzed by the IPMT and included in the final EA.

**Compliance documentation**

The IPMT maintains complete compliance record in its central files. Each park retains copies of park specific documents relating to that park's civic engagement and consultation.

**Example of Initial Consultation Letter**

	<b>National Park Service</b> U.S. Department of the Interior  <b>Heartland Network</b> Inventory and Monitoring Program	<b>c/o Wilson's Creek National Battlefield</b> 6424 West Farm Road 182 Republic, MO 65738  Phone: 417-732-6438 Fax: 417-732-7888
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January 10, 2011

NI617

US EPA Region 5  
Environmental Services Division  
77 W. Jackson Blvd.  
Chicago, IL 60604

Subject: Consultation for an Exotic Plant Management Plan and Environmental Assessment

Dear Sir/Madam:


The purpose of this letter is to provide you with notice that the National Park Service is beginning the development of an Exotic Vegetation Management Plan (plan) and Environmental Assessment (EA) for 15 parks in the Midwest. This plan includes Lincoln Boyhood National Memorial, Lincoln City, Indiana; Pipestone National Monument, Pipestone, Minnesota; Hopewell Culture National Historical Park, Chillicothe, Ohio; and Cuyahoga Valley National Park, Brecksville, Ohio, which fall under your jurisdiction for impact analysis and review.

The purpose of this plan and EA is to address resource issues within park boundaries associated with vegetation management in natural areas with native plant communities. Particular attention will be placed on eradication, control, and containment of exotic invasive plants.

Currently, the planning team is developing concepts for alternatives that meet feasible objectives and goals for exotic invasive plant management. The alternatives will suggest differing strategies for exotic plant management. An internal scoping has been completed and external scoping will begin soon.

A key goal for the National Park Service is to meet the mandate of the Organic Act, which established the bureau in 1916. The Organic Act states that the National Park Service must "conserve the scenery and the natural and historic objects and the wild life [in national parks] and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." Consistent with this mandate, important components of the plan will be to protect the parks' core historic features, cultural resources, and natural resources.

This letter invites your agency into consultation with the National Park Service in the analysis of potential environmental impacts of several alternatives for exotic plant management and development of a final implementation plan. We invite you to participate in consultation with the parks and Exotic Plant Management Team early in the process and to review and comment on the draft EA and plan, during the designated comment period. This project will be accessible to you as project #31771 Heartland Exotic Plant Management Plan at <http://parkplanning.nps.gov/projectHome.cfm?projectID=31771>. Documents will be posted to that site as they become available. We will also notify you when the review period opens for the EA.

  
Natural Resource Monitoring

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*protecting the habitat of our heritage*

If you have questions or concerns, please contact me. I will gladly arrange a conference with your office and the parks if you request. Thank you for your participation in this planning activity.

Sincerely,



Craig C. Young  
Invasive Plant Program Leader

Cc:

Lincoln Boyhood National Memorial  
P.O. Box 1816  
Lincoln City, IN 47552-1816

Pipestone National Monument  
36 Reservation Ave  
Pipestone, MN 56164-1269

Hopewell Culture National Historical Park  
16062 State Route 104  
Chillicothe, OH 45601-8694

Cuyahoga Valley National Park  
15610 Vaughn Road  
Brecksville, OH 44141



**Table E.3.** Consultation agencies and addresses

Park	Environmental Protection Agency Office	USFWS Ecological Services Field Office	Army Corps of Engineers Office	State Historic Preservation Office	State Natural Resources	Other State Agency
<b>Arkansas Post National Memorial</b>	<a href="#">EPA Region 6</a> , Environmental Services Division	<a href="#">U.S. F.W.S. Arkansas Field Office</a>	<a href="#">Army Corps of Engineers, Little Rock District</a>	<a href="#">State Historic Preservation Office</a>	<a href="#">Arkansas Department of Environmental Quality</a>	Arkansas Game and Fish Commission
1741 Old Post Road Gillett, AR 72055	1445 Ross Avenue, Suite 1200  Dallas, Texas 75202	Mark Sattelberg, Supervisor 110 S. Amity Road, Suite 300  Conway, AR 72032	Colonel  P.O. Box 867  Little Rock, AR 72203-0867	George McCluskey, 106 Coordinator 1500 Tower Building, 323 Center Street  Little Rock, Arkansas 72201	5301 Northshore Drive  North Little Rock, AR 72118-5317	Director  2 Natural Resources Drive  Little Rock, AR 72205
<b>Buffalo National River</b>	<a href="#">EPA Region 6</a> , Environmental Services Div.	<a href="#">U.S. F.W.S. Arkansas Field Office</a>	<a href="#">Army Corps of Engineers</a> Little Rock District	<a href="#">State Historic Preservation Office</a>	<a href="#">Arkansas Department of Environmental Quality</a>	Arkansas Game and Fish Commission
402 N Walnut, Suite 136 Harrison, AR 72601	1445 Ross Avenue, Suite 1200  Dallas, Texas 75202	Mark Sattelberg, Supervisor 110 S. Amity Road, Suite 300  Conway, AR 72032	Colonel  P.O. Box 867  Little Rock, AR 72203-0867	George McCluskey, 106 Coordinator 1500 Tower Building, 323 Center Street  Little Rock, Arkansas 72201	5301 Northshore Drive  North Little Rock, AR 72118-5317	Director  2 Natural Resources Drive  Little Rock, AR 72205
<b>Cuyahoga Valley National Park</b>	<a href="#">EPA Region 5</a> , Environmental Services Division	<a href="#">US Fish and Wildlife Service</a> , Ohio Field Office	Army Corps of Engineers, <a href="#">Buffalo District</a>	<a href="#">Ohio State Historic Preservation Office</a>	<a href="#">Ohio Department of Natural Resources</a>	<a href="#">Ohio Environmental Protection Agency</a>
15610 Vaughn Road Brecksville, OH 44141	77 W. Jackson Blvd.  Chicago, IL 60604	Mary Knapp, Field Supervisor 4625 Morse Road, Suite 104 Columbus, OH 43230	1776 Niagara Street  Buffalo, NY 14207-3199	567 E. Hudson St.  Columbus, OH 43211-1030	2045 Morse Road, Building D Columbus OH 43229-6693	P.O. Box 1049  Columbus, OH 43216-1049
<b>Effigy Mounds National Monument</b>	<a href="#">US EPA, Region 7</a> , Environmental Services Division	<a href="#">U.S. Fish and Wildlife Service</a> , Rock Island Field Office	<a href="#">Army Corps of Engineers</a> , St. Paul District	<a href="#">State Historic Preservation Office</a>	<a href="#">Iowa Depart. of Natural Resources</a>	<a href="#">Office of the State Archeologist</a>

Park	Environmental Protection Agency Office	USFWS Ecological Services Field Office	Army Corps of Engineers Office	State Historic Preservation Office	State Natural Resources	Other State Agency
151 HWY 76 Harpers Ferry, IA 52146-7519	Larry Shepard, NEPA Team, Environmental Services Division 901 N. 5th Street  Kansas City, KS 66101	Richard Nelson, Supervisor  1511 47th Avenue  Moline, IL 61265	Randall R. Urich, Acting Supervisor, Environmental Section 1114 So. Oak St.  La Crescent, MN 55947-1560	State Historical Society  Capital Complex, 600 E. Locust St. Des Moines, IA 50319-0290	Wallace Building, 502 E. 9th Street Des Moines, IA 50319-0034	Director - John Doershuk Burials - Shirley Shermer 700 Clinton Street  Iowa City, Iowa 52242
<b>George Washington Carver National Monument</b>	<a href="#">US EPA, Region 7</a> , Environmental Services Division	<a href="#">U.S. Fish and Wildlife Service</a>  Charlie Scott, Field Supervisor 101 Park DeVille Drive, Suite A Columbia, MO 65203-0057	<a href="#">Army Corps of Engineers</a> , Little Rock District  Colonel  P.O. Box 867  Little Rock, AR 72203-0867	<a href="#">Missouri Historic Preservation Program</a> , Division of State Parks  P. O. Box 176  Jefferson City, MO 65102	<a href="#">Missouri Department of Natural Resources</a>  P.O. Box 176  Jefferson City, MO 65102	<a href="#">Missouri Department of Conservation</a> , Headquarters  2901 W. Truman Blvd.  Jefferson City, MO, 65102
<b>Herbert Hoover National Historic Site</b>	<a href="#">US EPA Region 7</a> , Environmental Services Division	<a href="#">U.S. F.W.S. , Rock Island Ecological Services Office</a>  Richard Nelson, Supervisor 1511 47th Avenue  Moline, IL 61265	Army Corps of Engineers, <a href="#">Rock Island District</a>  Clock Tower Building, 205 Rodman Ave Rock Island, IL 61299	<a href="#">State Historic Preservation Office</a> , State Historical Society  Capital Complex, 600 E. Locust St. Des Moines, IA 50319-0290	<a href="#">Iowa Department of Natural Resources</a>  Wallace Building  502 E. 9th Street  Des Moines, IA 50319-0034	<a href="#">Office of the State Archeologist</a>  Director - John Doershuk, Geo Science - Art Bettis 700 Clinton Street  Iowa City, Iowa 52242
<b>Homestead National Monument of America</b>	<a href="#">US EPA Region 7</a> , Environmental Services Division	<a href="#">U.S. Fish and Wildlife Service, Nebraska Field Office</a>  Michael D. George , Project Leader	<a href="#">Army Corps of Engineers, Omaha District</a>	<a href="#">Nebraska State Historical Society</a>	<a href="#">Nebraska Department of Environmental Quality</a>	<a href="#">The Nebraska Department of Natural Resources</a>
8523 W. State						

<b>Park</b>	<b>Environmental Protection Agency Office</b>	<b>USFWS Ecological Services Field Office</b>	<b>Army Corps of Engineers Office</b>	<b>State Historic Preservation Office</b>	<b>State Natural Resources</b>	<b>Other State Agency</b>
Highway 4 Beatrice, NE 68310	901 N. 5th Street  Kansas City, KS 66101	203 West Second Street, Federal Building  Grand Island, Nebraska 68801	1616 Capitol Ave., Suite 9000  Omaha, NE 68102	P.O. Box 82554, 1500 R St.  Lincoln, NE 68501	PO Box 98922, 1200 "N" Street, Suite 400  Lincoln, Nebraska 68509	301 Centennial Mall South  Lincoln, Nebraska 68509-4676
<b>Hopewell Culture National Historical Park</b>	<a href="#">US EPA Region 5</a> , Environmental Services Division	<a href="#">U.S. Fish and Wildlife Service</a> , Ohio Field Office  Mary Knapp, Ph.D, Field Supervisor	<a href="#">Huntington District</a>	<a href="#">Ohio State Historic Preservation Office</a>	<a href="#">Ohio Department of Natural Resources</a>	<a href="#">Ohio Environmental Protection Agency</a>
16062 State Route 104 Chillicothe, OH 45601	77 W. Jackson Blvd.  Chicago, IL 60604	4625 Morse Road, Suite 104  Columbus, OH 43230	502 Eighth Street  Huntington, WV 25701-2070	567 E. Hudson St.  Columbus, OH 43211-1030	2045 Morse Road, Building D  Columbus OH 43229-6693	P.O. Box 1049  Columbus, OH 43216-1049
<b>Hot Springs National Park</b>	<a href="#">EPA Region 6</a> , Environmental Services Division	<a href="#">U.S. Fish and Wildlife Service, Arkansas Field Office</a>  Mark Sattelberg, Supervisor	<a href="#">Army Corps of Engineers</a> , Little Rock District	<a href="#">State Historic Preservation Office</a>	<a href="#">Arkansas Department of Environmental Quality</a>	Arkansas Game and Fish Commission
101 Reserve Street Hot Springs, AR 71901	1445 Ross Avenue, Suite 1200  Dallas, Texas 75202	110 S. Amity Road, Suite 300  Conway, AR 72032	Little Rock District  P.O. Box 867  Little Rock, AR 72203-0867	George McCluskey, 106 Review Coordinator  1500 Tower Building, 323 Center Street  Little Rock, Arkansas 72201	5301 Northshore Drive  North Little Rock, AR 72118-5317	Director  2 Natural Resources Drive  Little Rock, AR 72205
<b>Lincoln Boyhood National Memorial</b>	<a href="#">US EPA Region 5</a> , Environmental Services Division	<a href="#">U.S. F.W.S., Bloomington Field Office</a>  Scott Pruitt, Supervisor	<a href="#">Army Corps of Engineers, Louisville District</a>	<a href="#">Indiana Division of Historic Preservation and Archaeology</a>	<a href="#">Indiana Department of Environmental Management</a>	<a href="#">Indiana Department of Natural Resources</a>
P.O. Box 1816 Lincoln City, IN 47552-1816	77 W. Jackson Blvd.  Chicago, IL 60604	620 South Walker Street  Bloomington, IN	P.O. Box 59  Louisville, KY	402 W. Washington St., Government Center South, Rm. W274  Indianapolis, IN	Government Center North, 100 N. Senate Ave., Mail Code 50-01  Indianapolis, IN	402 West Washington Street  Indianapolis, IN

Park	Environmental Protection Agency Office	USFWS Ecological Services Field Office	Army Corps of Engineers Office	State Historic Preservation Office	State Natural Resources	Other State Agency
		47403-2121	40201-0059	46204-2739	46204-2251	46204
<b>Ozark National Scenic Riverways</b>	<a href="#">US EPA Region 7</a> , Environmental Services Division	<a href="#">U.S. Fish and Wildlife Service</a> , <a href="#">Charlie Scott, Field Supervisor</a>	<a href="#">Army Corps of Engineers</a> , Little Rock District	<a href="#">Missouri Historic Preservation Program</a> , Division of State Parks	<a href="#">Missouri Department of Natural Resources</a>	<a href="#">Missouri Department of Conservation</a> , <a href="#">Conservation Headquarters</a>
404 Watercress Dr PO Box 490 Van Buren, MO 63965	901 N. 5th Street  Kansas City, KS 66101	101 Park DeVille Drive, Suite A Columbia, MO 65203-0057	P.O. Box 867  Little Rock, AR 72203-0867	P. O. Box 176  Jefferson City, MO 65102	P.O. Box 176  Jefferson City, MO 65102	2901 W. Truman Blvd. Jefferson City, MO, 65102
<b>Pea Ridge National Military Park</b>	<a href="#">EPA Region 6</a> , Environmental Services Division	<a href="#">U.S. Fish and Wildlife Service</a> , <a href="#">Arkansas Field Office</a>	<a href="#">Army Corps of Engineers</a> , Little Rock District	<a href="#">State Historic Preservation Office</a>	<a href="#">Arkansas Department of Environmental Quality</a>	Arkansas Game and Fish Commission
15930 Highway 62 Garfield, AR 72732	1445 Ross Avenue, Suite 1200  Dallas, Texas 75202	Mark Sattelberg, Supervisor 110 S. Amity Road, Suite 300 Conway, AR 72032	P.O. Box 867  Little Rock, AR 72203-0867	George McCluskey, 106 Coordinator 1500 Tower Building, 323 Center Street Little Rock, Arkansas 72201	5301 Northshore Drive  North Little Rock, AR 72118-5317	Director  2 Natural Resources Drive Little Rock, AR 72205
<b>Pipestone National Monument</b>	<a href="#">US EPA Region 5</a> , Environmental Services Division	<a href="#">U.S. Fish and Wildlife Service</a> Minnesota Field Office	<a href="#">Army Corps of Engineers</a> , Omaha District	<a href="#">State Historic Preservation Office</a>	<a href="#">Minnesota Department of Natural Resources</a>	<a href="#">Minnesota Pollution Control Agency</a>
36 Reservation Ave. Pipestone, MN 56164	77 W. Jackson Blvd.  Chicago, IL 60604	Tony Sullins, Field Supervisor 4101 American Boulevard East Bloomington, MN 55425	1616 Capitol Ave., Suite 9000 Omaha, NE 68102	Britta Bloomberg, Deputy SHP Officer 345 Kellogg Blvd., West St. Paul, MN 55102-1903	500 Lafayette Road  St. Paul, MN 55155-4040	1601 East Highway 12, Suite 1 Willmar, MN 56201-6002
<b>Tallgrass Prairie National Preserve</b>	<a href="#">US EPA Region 7</a> , Environmental Services Division	<a href="#">U.S. Fish and Wildlife Service</a> , <a href="#">Kansas Field Office</a>	<a href="#">Army Corps of Engineers</a> , Kansas City District	<a href="#">Kansas State Historical Society</a> , <a href="#">Cultural Resources Division</a>	Kansas Department of Wildlife and Parks	<a href="#">Kansas Department of Health &amp; Environment</a>

Park	Environmental Protection Agency Office	USFWS Ecological Services Field Office	Army Corps of Engineers Office	State Historic Preservation Office	State Natural Resources	Other State Agency
P.O. Box 585 226 Broadway Cottonwood Falls, KS 66845	901 N. 5th Street  Kansas City, KS 66101	Mike LeValley, Project Leader  2609 Anderson Avenue Manhattan, Kansas 66502-2801	601 E 12th Street  Kansas City, Mo 64106	Jennie Chinn, State Historic Preservation Office, 6425 SW 6th Ave.  Topeka, KS 66615-1099	Eric Johnson, Environmental Services Section 512 SE 25 <sup>th</sup> Avenue  Pratt, KS 67124	Office of the Secretary, Curtis State Office Bldg, 1000 SW Jackson  Topeka, KS 66612
<b>Wilson's Creek National Battlefield</b>	<a href="#">US EPA Region 7</a> , Environmental Services Division	<a href="#">U.S. F.W.S.</a> , Missouri Field Office	<a href="#">Army Corps of Engineers</a> , Little Rock District	<a href="#">Missouri Historic Preservation Program</a> , Division of State Parks	<a href="#">Missouri Department of Natural Resources</a>	<a href="#">Missouri Department of Conservation</a> , Conservation Headquarters
6424 West Farm Road 182 Republic, MO 65738	901 N. 5th Street  Kansas City, KS 66101	Charlie Scott, Field Supervisor 101 Park DeVillie Drive, Suite A Columbia, MO 65203-0057	P.O. Box 867  Little Rock, AR 72203-0867	P. O. Box 176  Jefferson City, MO 65102	P.O. Box 176  Jefferson City, MO 65102	2901 W. Truman Blvd. Jefferson City, MO, 65102

**Table E.4.** Additional consulting agencies (not exhaustive)

Park	Additional Consultation or Stakeholder Contacts					
<b>Iowa Parks</b>	EFMO: Allamakee County Conservation Board Box 278, 427 N. First Street Harpers Ferry, IA 52146-0278	HEHO: Cedar County Conservation Board 400 Cedar Street Tipton, IA 52772				
<b>HOCU</b>	Union Township Trustees c/o Daren R. Grossman 9254 Williamsport Pike Chillicothe, OH 45601	Liberty Township Trustees c/o Shirley Manson 31112 US Rt 50 Chillicothe, OH 45601	Paxton Township Trustees c/o Vichy Mettler 5837 Jester Hill Rd PO Box 283 Bainbridge, OH 45612	Ross Count Park District 15 North Paint Street Chillicothe, OH 45601	Springfield Township Trustees c/o June Sutherland 523 Schrader Rd. Chillicothe, OH 45601	

<b>HOME</b>	Nebraska Game and Parks Commission Mr. James Douglas 2200 N. 33rd Street Lincoln, NE 68503-0370				
<b>OZAR</b>	Forest Supervisor, U.S. Forest Service 401 Fairgrounds Road Rolla, MO 65401	Presiding Commissioner Dent County 400 North Main Salem, MO 65560	Presiding Commissioner, Shannon County PO Box 187 Eminence, MO 65466	Presiding Commissioner, Carter County P.O. Box 517 Van Buren, MO 63965	Presiding Commissioner, Texas County 210 North Grand Houston, MO 65483
<b>TAPR</b>	Chase County Board of County Commissioners P.O. Box 547 Cottonwood Falls, KS 66845	Josh Svaty, Secretary Kansas Department of Agricultural 109 SW Ninth Street Topeka, KS 66612	Cliff Cole, Ranch Management Group 226 Broadway Cottonwood Falls, KS 66845	Alan Pollom, State Director The Nature Conservancy Kansas Field Office 700 SW Jackson, Suite 804 Topeka, KS 66603	
<b>For All Parks</b>	Katry Harris, Program Analyst Advisory Council on Historic Preservation 1100 Pennsylvania Avenue NW, Room 803 Washington, DC 20004				

**Tribal Consultations**

**ARPO** Quapaw Tribe of Indians of Oklahoma

**BUFF** Absentee Shawnee,  
Caddo Indian Tribe of Oklahoma,  
Cherokee Nation of Oklahoma,  
Eastern Shawnee Tribe of Oklahoma,  
Osage Tribe of Oklahoma,

**CUYA** Absentee-Shawnee Tribe of Indians of Oklahoma,  
Delaware Nation of Oklahoma,  
Delaware Tribe of Indians (Oklahoma),  
Eastern Shawnee Tribe of Oklahoma,

**EFMO** Iowa Tribe of Kansas and Nebraska,  
Iowa Tribe of Oklahoma,  
Ho-Chunk Nation,  
Upper Sioux Indian Community of Minnesota,  
Lower Sioux Indian Community of Minnesota,  
Otoe-Missouria Tribe of Indians,  
Prairie Island Indian Community,

**GWCA** Cherokee Nation,  
Eastern Shawnee Tribe of Oklahoma,  
Miami Tribe of Oklahoma,  
Modoc Tribe of Oklahoma,  
Osage Nation,  
Peoria Tribe of Oklahoma,

**HEHO** none

Quapaw Tribe of Oklahoma,  
The Shawnee Tribe,  
Tunica-Biloxi Tribe,  
United Keetoowah Band of Cherokee Indians in Oklahoma,  
Wichita and Affiliated Tribes

Seneca-Cayuga Tribe of Oklahoma,  
Shawnee Tribe,  
Wyandotte Nation of Oklahoma

Mdewakanton Sioux Indians of the Lower Sioux Reservation  
Minnesota,  
Sac and Fox Nation in Missouri,  
Sac and Fox Nation of Oklahoma,  
Sac and Fox of the Mississippi in Iowa,  
Shakopee Mdewakanton Sioux Community of Minnesota,  
Winnebago Tribe of Nebraska,

Quapaw Tribe of Oklahoma,  
Shawnee Tribe,  
THPO of Citizen Potawatomi Nation,  
THPO of Absentee Shawnee Tribe of Oklahoma,  
THPO of Choctaw Nation of Oklahoma,  
Wyandotte Nation

<b>HOME</b>	Park recognizes Pawnee Nation of Oklahoma,	Otoe-Missouri Tribe
<b>HOCU</b>	Absentee-Shawnee Tribe of Indians of Oklahoma, Delaware Nation, Delaware Tribe of Indians, Eastern Shawnee Tribe of Oklahoma, Miami Tribe of Oklahoma,	Ottawa Tribe of Oklahoma, Seneca-Cuyaga Tribe of Oklahoma, Shawnee Tribe, Wyandotte Nation
<b>HOSP</b>	Caddo Indian Tribe, Osage Tribe of Oklahoma,	Quapaw Tribe of Indians of Oklahoma
<b>LIBO</b>	none	
<b>OZAR</b>	Absentee-Shawnee Tribe of Indians of Oklahoma, Cherokee Nation of Oklahoma, Delaware Nation of Oklahoma, Delaware Tribe of Indians, Eastern Shawnee Tribe of Oklahoma,	Osage Tribe of Oklahoma, Osage Nation, Quapaw Tribe of Indians of Oklahoma, Shawnee Tribe, United Keetoowah Band of Cherokee Indians in Oklahoma
<b>PERI</b>	Cherokee Nation of Oklahoma,	United Keetoowah Band of Cherokee Indians in Oklahoma
<b>PIPE</b>	Flandreau Santee Sioux Tribe of South Dakota, Lower Sioux Indian Community, Santee Sioux Tribe of Nebraska, Shakopee Mdewakanton Sioux Community,	Sisseton-Wahpeton Oyate of the Lake Traverse Reservation of South Dakota, Upper Sioux Community of Minnesota, Yankton Sioux Tribe of South Dakota
<b>TAPR</b>	Kaw Tribe of Oklahoma, Osage Tribe of Oklahoma,	Pawnee Tribe of Oklahoma, Wichita Tribe of Oklahoma
<b>WICR</b>	Cherokee Nation of Oklahoma,	United Keetoowah Band of Cherokee Indians in Oklahoma



**Initial Consultation Responses:****United States Department of the Interior****FISH AND WILDLIFE SERVICE**

Ecological Services  
4625 Morse Road, Suite 104  
Columbus, Ohio 43230  
(614) 416-8993 / FAX (614) 416-8994

January 27, 2011

Mr. Craig Young  
Cuyahoga Valley National Park  
15610 Vaughn Road  
Brecksville, OH 44141

TAHLS: 31420-2011-VA-0219

Dear Mr. Young:

This letter is in response to your January 10, 2011 letter requesting information and comments on resource issues within park boundaries that may be impacted by an exotic plant management plan. In Ohio the areas that would be included in this plan are Cuyahoga Valley National Park in Brecksville, Cuyahoga County, and Hopewell Culture National Historical Park in Chillicothe, Ross County Ohio.

The Service supports activities that reduce the likelihood of invasive plant spread and encourage native plant colonization. Prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats. Areas that will have invasive species removed should be managed to allow for colonization of native species. If sites are augmented with seed or plants we recommend that local genotypes be used to maintain the genetic integrity of the site. Local genotypes will be adapted to the specific conditions of the site and will be better suited to local climatic conditions and hydrologic regimes.

The most efficient method for managing invasive species is to prevent their colonization. The Service encourages development of an early detection program so that invasive species can be addressed when populations are still small and there is opportunity to eradicate them. Improving the quality of habitat can also make it more resistant to colonization of invasive species.

A variety of methods can be used to address invasive species. The Service recommends the use of Integrated Pest management (IPM) to maximize impacts to invasive species while reducing negative impacts to the ecosystem. The use of pesticides should be minimized to the extent possible to avoid impacts to non-target species. Selective pesticides that target specific species or a group of species are recommended over non-selective or more general pesticides to avoid impacts to a diversity of species.

The Ohio Invasive Plant network provides information on the most common invasive species and methods to treat them. Information including fact sheets and alternatives to invasive species can be found at <http://www.oipc.info/default.asp>

### MIGATORY BIRD COMMENTS:

The Service is concerned about possible impacts to endangered species and migratory birds. Cuyahoga Valley National Park is located within the Cuyahoga River Lower Important Bird Area (IBA) and portions of the Hopewell Culture National Historical Park are located within the Scioto River Lower IBA. These areas are important for bird migration and breeding. Potential impacts to bird species should be evaluated before widespread spraying of herbicides is initiated. Stump treatment, basal bark treatment, hack and squirt, and injection are preferable to foliar sprays. For foliar treatments we recommend spot application with a spray bottle or backpack applicator instead of boom application from a vehicle, airplane or helicopter. The targeted application will minimize the potential contact birds may have with pesticides. If mowing will be used as a management technique we recommend that it occur before March 1 or after July 15 to avoid seasons when ground-nesting birds are breeding.

The proposed project lies within the range of the **Kirtland's warbler** (*Dendroica kirtlandii*), a federally listed endangered species. The Kirtland's warbler is a small blue-gray songbird with a bright yellow breast. This species migrates through Ohio in the spring and fall, traveling between its breeding grounds in Michigan, Wisconsin, and Ontario and its wintering grounds in the Bahamas. During migration, individual birds usually forage in low vegetation and stay in one area for a few days. This species has been documented north of the Cuyahoga Valley National Park. Precautions should be taken to avoid impacting this species in the spring from late April through May and from late August to early October.

The project lies within the range of the **piping plover** (*Charadrius melodus*), a federally listed endangered species. Due to the project type, location, and onsite habitat, this species would not be expected within the project area, and no impacts to this species are expected. Relative to this species, this precludes the need for further action on this project as required by the 1973 Endangered Species Act.

The project lies within the range of the **bald eagle** (*Haliaeetus leucocephalus*), a species protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Nests have been documented along river habitat at both parks. The Service also suggests that you contact Becky Jenkins of the Ohio Department of Natural Resources at 614-256-6631 to determine if any nest sites within the project vicinity are currently being used before the plan is initiated. Aerial spraying can be disruptive during nesting season. Habitat disturbance should not occur should not occur within 0.5 miles of a bald eagle nest.

### ENDANGERED SPECIES COMMENTS:

The proposed project lies within the range of the **Indiana bat** (*Myotis sodalis*), a federally listed endangered species. Since first listed as endangered in 1967, their population has declined by nearly 60%. Several factors have contributed to the decline of the Indiana bat, including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, and the loss and degradation of forested habitat, particularly stands of large, mature trees. Fragmentation of forest habitat may also contribute to declines. During winter, Indiana bats hibernate in caves and abandoned mines. Summer habitat requirements for the species are not well defined but the following are considered important:

- (1) dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas;
- (2) live trees (such as shagbark hickory and oaks) which have exfoliating bark;
- (3) stream corridors, riparian areas, and upland woodlots which provide forage sites.

Should the proposed site contain trees or associated habitats exhibiting any of the characteristics listed above, we recommend that the habitat and surrounding trees be saved wherever possible. There are records of this species occurring within Cuyahoga Valley National Park. If trees must be cut, further coordination with this office is requested to determine if surveys are warranted. Any survey should be designed and conducted in coordination with the Endangered Species Coordinator for this office. Surveyors must have a valid Federal permit. You have indicated that invasive plants are the target of this plan and therefore the use of insecticides, which could impact food availability for the Indiana bat, is not expected. If insecticides will be used, additional information will be required for the Service to evaluate the proposed plan.

The Hopewell Culture National Historical Park is within the range of the **clubshell** (*Pleurobema clava*), **northern riffleshell** (*Epioblasma torulosa rangiana*), **rayed bean** (*Villosa fabalis*), **snuffbox** (*Epioblasma triquetra*), and **eastern hellbender** (*Cryptobranchus a. alleganiensis*). Potential habitat for the **clubshell**, **northern riffleshell**, and **rayed bean** maybe found within the Scioto River. Several sites of the Hopewell Culture National Historical Park are adjacent to the Scioto River. **To prevent impacts to all aquatic organisms we recommend that a no-spray buffer of 200 feet be established along this river and all other aquatic features at both parks.**

The Hopewell Culture National Historical Park lies within the range of the **timber rattlesnake** (*Crotalus horridus horridus*), a Federal species of concern, and Ohio endangered species, for which a pre-listing Conservation Plan is being developed. Your proactive efforts to conserve this species now may help avoid the need to list the species under the Endangered Species Act in the future. In Ohio, the timber rattlesnake is restricted to the un-glaciated Allegheny Plateau. Winters are spent in dens usually associated with high, dry ridges. In the fall, timber rattlesnakes return to the same den.

It may be helpful to inquire about timber rattlesnake sightings with local resource agency personnel or reliable local residents. Local herpetologists may have knowledge of historical populations as well as precise knowledge of the habits, and especially the specific, local types of habitats that may contain timber rattlesnakes.

In areas where timber rattlesnakes or their dens are known or likely to exist, clearing, construction, and maintenance activities (mowing, cutting, burning, etc.) should be avoided at least 100 feet, or less, from ridges and areas of exposed rock and should be conducted from November 1 to March 1, when timber rattlesnakes are hibernating. **Due to the potential for the snakes to occur in this area, all workers should be instructed not to harm or kill the snakes and to use caution, as the timber rattlesnake is a venomous species.**

This technical assistance letter is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered

Species Act of 1973, as amended, and is consistent with the intent of the National Environmental Policy Act of 1969 and the U.S. Fish and Wildlife Service's Mitigation Policy. Please note that consultation under section 7 of the ESA may be warranted for this project if suitable habitat for listed species may be impacted by this project. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

If you have any questions regarding our response or if you need additional information, please contact Jennifer Finfera at extension 13.

Sincerely,

A handwritten signature in dark ink, appearing to read "Mary Knapp". The signature is fluid and cursive, with the first name "Mary" and last name "Knapp" clearly distinguishable.

Mary Knapp, Ph.D.  
Field Supervisor

cc: ODNR, DOW, SCEA Unit, Columbus, OH



February 15, 2011

**Natural Resources Division**  
 4500 Valley Parkway  
 Fairview Park, Ohio 44126  
 (440) 331-8111  
 FAX (440) 331-8555

Heartland Exotic Plant Management Team  
 Wilson's Creek NB  
 6424 West Farm Road 182  
 Republic, MO 65738-9514  
 Attention: Craig Young

**Board of Park  
 Commissioners**

Bruce G. Rinker  
 Fred Rzepka  
 David W. Whitehead

**Executive  
 Director-Secretary**

Brian M. Zimmerman

RE: Comments on Heartland Exotic Plant Management Plan (L7617)

The Cleveland Metroparks is the oldest metropolitan park district in Ohio and is responsible for managing over 21,000 acres of land in six counties in northeastern Ohio. The Park District shares boundaries with the Cuyahoga Valley National Park and with Metroparks, Serving Summit County. In recent decades, the effects of urbanization and the introduction of numerous invasive species to North America have made it increasingly difficult to ensure the long-term ecological integrity of the forests, wetlands, streams, and other habitats preserved by the park. Invasive plants, in particular, provide one of the single largest threats to the long-term integrity of the Park's natural resources.

Cleveland Metroparks initiated a systematic invasive plant control program across its 16 reservations in 2009. Although invasive plant control had been handled by natural resource managers for decades, the centralization of management planning and strike team supervision has resulted in substantial reductions of invasive plants. The invasive plant management program (IPMP) model is based in part upon the National Park Service's Exotic Plant Management Teams, and we strongly favor a multi-year deployment of a team at the Cuyahoga Valley National Park (CVNP). We intend to work closely with CVNP on the development of a cooperative weed management area, and are glad to offer any assistance we can in addressing invasive plants in our region.

In consideration of the alternatives presented in the Heartland Exotic Plant Management Plan Scoping, we have the following concerns and suggestions. These comments are made with respect to the Cuyahoga Valley National Park, but may pertain to any of the sites within the Heartland Inventory and Monitoring Network.

**Alternatives for Action**

- 1) **No Action.** To take no action against invasive plants in a national park is irresponsible management on a number of fronts. It leads to continued introduction and expansion of invasive plants, limiting the probability of successful management or containment within or beyond park boundaries. Uncontrolled populations of invasive plants would become a perpetual seed source to adjacent areas. This alternative would likely hamper efforts to develop a strong Cooperative Weed Management Area in northeast Ohio, without the National Park Service at the table.
- 2) **Integrated Pest Management.** We support this alternative as the only reasonable option because it provides the broadest range of surveillance and management tools. We strongly support the use of chemical and biological control methods when used according to all applicable regulations. Adopting

IPM principles provides the most flexibility and opportunities for working with partner organizations.

**a) Adopting IPM.** It must be stressed that IPM principles must be interpreted broadly in the context of invasive plant management, particularly within urban/suburban landscapes where we have limited information about action thresholds for ecologically invasive plants. In particular, the invitation for public comments states that the

"EPMT would be proactive in the treatment of exotic invasive species before threats become severe. Prevention and early detection would be important to success in managing invasive exotic species."

It would be ill-advised to focus solely on established populations of invasive species without having a plan to address source populations of persistent invasive plants. The emerald ash borer (*Agrilus planipennis*) has been found in Cleveland Metroparks reservations near CVNP, with an expected killing front advancing into the national park within the next few years. The risk of expansion of long-established invasive shrubs and herbs into zones of canopy mortality calls for aggressive, pre-emptive removal and restoration strategies in these areas.

**b) Prioritization.** In addition to considering the currently established invasive species, we recommend that the source list of exotic plants used for the sampling design and PriorityDB cited in the National Park Service's *Invasive Exotic Plant Monitoring Protocol for the Heartland Network Inventory and Monitoring Program* (Natural Resource Report NPS/MWR/HTLN/NRR-2007/018) be expanded to include information from the Mid-Atlantic Exotic Pest Plant Council (<http://www.nps.gov/plants/alien/list/midatlantic.htm>). The Cuyahoga Valley National Park is in the Western Glaciated Allegheny Ecoregion (Bailey 1995), which shares much of its exotic flora with the mid-Atlantic region. Some species of concern coming from the east include lesser celandine (*Ranunculus ficaria*, syn. *Ficaria verna*), and mile-a-minute (*Polygonum perfoliatum*).

**c) Action thresholds and NPDES compliance.** Perhaps the most important contribution of an Exotic Plant Management Plan for the Heartland Network would be to use inventory and monitoring data for research into "action thresholds" for integrated pest management. The National Park Service's Biological Resource Management Division's published *11 Step Process to Developing and Implementing an Integrated Pest Management Strategy*, August 7, 2006 includes a step to "Establish 'action thresholds,' the point at which no additional damage or pest presence can be tolerated." In the accompanying website, categories of exotic weeds include only three species with an specific threshold (kudzu, saltcedar, Brazilian pepper), and six species are listed with the advice that "care should be taken to monitor small, slowly expanding populations which have not reached pest status." No details on what makes a pest status threshold are given.

It appears likely that all conservation land managers will soon have to comply with new USEPA NPDES permits on pesticide discharges to surface water.

This draft general permit requires IPM practices for invasive plant management, including action thresholds. We recognize the difficulty of determining action thresholds in natural landscapes (especially in the small natural areas of the eastern US), where site condition, landscape context, and plant community size differ markedly from large public landscapes in the west. It is likely that the National Park Service can lead the way in research about integrated vegetation management in natural areas.

- 3) **Manual, Mechanical, and Cultural Techniques Only.** We do not support this alternative because the exclusion of chemical or biological management tools will effectively hamstring early detection and rapid response methods, or containment and long-term maintenance of widespread invasive populations. Invasive plants often follow heavy equipment into natural areas, despite best management practices, along fire lines, recreational trails, roads, construction sites, etc. There are situations where mechanical or cultural disturbance may facilitate the spread or persistence of other undesirable invasive plants.

In summary, Cleveland Metroparks supports the creation of an Exotic Plant Management Plan for all the sites within the Heartland Inventory and Monitoring Network, and we strongly support the establishment of Exotic Plant Management Teams for the Cuyahoga Valley National Park. We look forward to additional years of invasive plant surveys at the park, and to joining our colleagues at CVNP in a cooperative weed management area. We appreciate the opportunity to comment upon this important issue. Please contact me at the address above if I can assist in any way.

Sincerely,



Jennifer A. Hillmer  
Invasive Plant Coordinator

cc: John Mack, Chief, Natural Resources Division

## Brecksville Horticulture

February 7, 2011

Mr. Stan Austin, Superintendent  
Cuyahoga Valley National Park  
15610 Vaughn Road  
Brecksville, OH 44141-3097

Dear Mr. Austin:

This letter is in reply to your letter of January 26, announcing the National Park Service's intention of developing an Exotic Plant Management Plan and an Environmental Assessment associated with it (reference L7617) and requesting stakeholder input. As an adjacent landowner, the City of Brecksville is greatly interested in the making of these plans and the actions that will follow from them. I also have a personal stake as a frequent park visitor and one who recognizes the importance of maintaining the region's biological diversity.

As responsible land stewards we have an obligation to manage those landscapes under our care. All the lands we oversee are disturbed sites to a greater or lesser degree. Non-natural, disturbed sites are known to be highly vulnerable to invasion. The prevalence of exotic plants in some habitats emphasizes the fact that non-management is no longer an option. This threat has been recognized and acknowledged by the NPS for many years.

Exotic plants spread without regard to political boundaries or property lines. A flourishing seedbank on 2500 acres is an ongoing threat to all adjacent land managers.

Actions taken by the City of Brecksville staff over the past decade to address the potential loss of biological diversity include: educating residents about the issues involved and actions they can take on their own property, clean-up of neglected parcels of City property by City staff to eliminate woody exotics (mostly bush honeysuckle and buckthorn), rescue and re-establishment of native plants from soon-to-be developed sites, and designated times for free residential brush pick up to give residents some logistical help as well as encouragement.

There is no one-size-fits-all method to eliminate non-native plants. Most are highly labor intensive and require close supervision to rogue out the exotics while still preserving the native flora. Casual observation does not distinguish buckthorn from spicebush or Norway maple from the sugar or black maples.



9069 Brecksville Road • Brecksville, Ohio 44141 • 440.526-4794 • FAX 440.526-8379



## Brecksville Horticulture

February 10, 2011

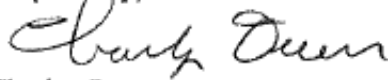
Page 2

For woody plants we generally cut them flush to the ground and immediately apply concentrated glyphosate herbicide to the cut surface. This works very well for us on everything but grape-vine and is relatively friendly to the surrounding environment. Manual pulling of garlic mustard is effective and can be confined to just the weed in question. Habitat modification is a possibility for some of the grass invaders.

Elimination of the exotic plants is only the first step in a management plan. Continued action will be required to allow native plants to re-populate the cleared areas. I strongly doubt that desirable plants can get established on a wide basis without also taking action regarding the deer population in the park.

The establishment of exotic plants in natural areas has been addressed by others, we are fortunate to have some valuable local resources in this regard. Both the Holden Arboretum and the Cleveland Museum of Natural History have ongoing management plans as well as a considerable amount of practical experience in the matter.

Respectfully,



Charles Owen  
Horticulturist/Arborist

cc: Mayor Hruby and Ron Weidig, Service Director



## **Eastern Shawnee Tribe**

### **CULTURAL PRESERVATION DEPARTMENT**

**P.O. BOX 350, SENECA, MO 64865**

**918 666 2435 EXT 247**

**[culturalpreservation@estoo.net](mailto:culturalpreservation@estoo.net)**

January 24, 2011

United States Department of the Interior  
National Park Service  
Pea Ridge National Military Park  
15930 Highway 62 East  
Garfield, Arkansas 72732

**Re: Environmental Assessment for Pea Ridge National Military Park**

Dear Mr. John C. Scott:

The Eastern Shawnee Tribe wishes to thank you for the communication dated January 14, 2011. We appreciate the stewardship of the Forest programs and implementation of programs designed to protect the forest cover, and plant species.

We would like to inform you that although this is a very important program, the Eastern Shawnee Tribe defers to the units land managers recommendation as our department advocates for the preservation of archaeological sites. The Eastern Shawnee presence was not known to be present in Benton County, Arkansas to the extent that the Quapaw and Osage Tribes were.

If I may be of further assistance, please don't hesitate to contact me via email at [culturalpreservation@estoo.net](mailto:culturalpreservation@estoo.net) or by telephone at 918-666-2435 Ext. 247.

Best Regards,

A handwritten signature in black ink, appearing to read "Robin Dushane". The signature is fluid and cursive, with the first name "Robin" being more prominent than the last name "Dushane".

Robin Dushane  
Cultural Preservation Department

Cc/jh



**The Department of  
Arkansas  
Heritage**

Mike Beebe  
Governor

Cathie Matthews  
Director

Arkansas Arts Council

Arkansas Natural Heritage  
Commission

Delta Cultural Center

Historic Arkansas Museum

Mosaic Templars  
Cultural Center

Old State House Museum



**Arkansas Historic  
Preservation Program**

1500 Tower Building

323 Center Street

Little Rock, AR 72201

(501) 324-9880

fax: (501) 324-9184

tdd: (501) 324-9811

e-mail:

[info@arkansaspreservation.org](mailto:info@arkansaspreservation.org)

website:

[www.arkansaspreservation.com](http://www.arkansaspreservation.com)

An Equal Opportunity Employer



February 16, 2011

Mr. Kevin G. Cheri  
Superintendent  
U.S. Department Of The Interior  
National Park Service  
Buffalo National River  
402 N. Walnut, Suite 136  
Harrison, Arkansas 72601

RE: Multi-County - General  
Section 106 Review - NPS; AHPP Tracking#75000  
Proposed Environmental Programmatic Agreement For  
Exotic Plant Management Plan

Dear Mr. Cheri:

This letter is written in response to your inquiry, regarding properties of architectural, historical, or archeological significance in the area of the proposed referenced project.

In order for the Arkansas Historic Preservation Program (AHPP) to complete its review of the proposed project, we will need the additional information checked below:

☒ a 7.5 minute 1:24,000 scale U.S.G.S. topographic map clearly delineating the project area;

☒ a project description detailing all aspects of the proposed project;

☐ the location, age, and photographs of structures (if any) to be renovated, removed, demolished, or abandoned as a result of this project;

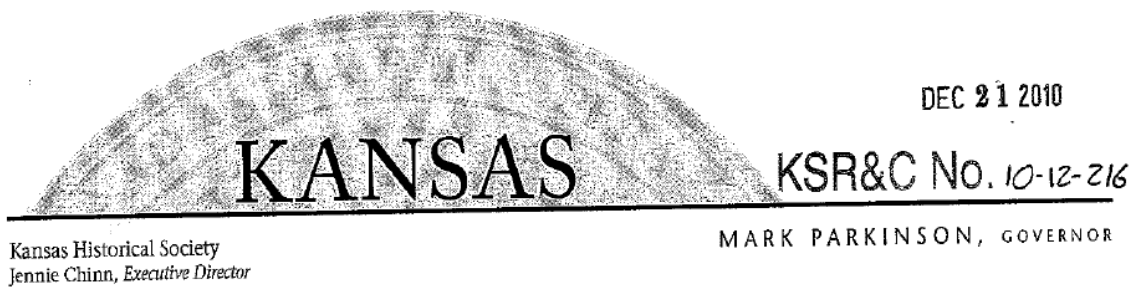
☐ photographs of any structures 50 years old or older on property directly adjacent to the project area.

Once we have received the above information, we will complete our review as expeditiously as possible. If you have any questions, please contact me at (501) 324-9880.

Sincerely,

*George McCluskey*  
George McCluskey  
Section 106 Review Coordinator





December 16, 2010

Wendy Lauritzen  
Superintendent  
Tallgrass Prairie National Preserve  
P.O. Box 585, 226 Broadway  
Cottonwood Falls, Kansas 66845-0585

RE: Exotic Plant Management Plan and Environmental Assessment  
Tallgrass Prairie National Preserve  
Chase County


Dear Ms. Lauritzen:

The Kansas State Historic Preservation Office has received your letter dated December 6, 2010 describing plans by the Tallgrass Prairie National Preserve to prepare a management plan and Environmental Assessment (EA) in order to address exotic plant management issues. While our office does not see any immediate issues related to exotic plant management at the preserve, we are willing to participate in the EA preparation process.

If you have questions regarding Section 106 procedures in Kansas, please contact SHPO Archeologist Tim Weston at 785-272-8681 (ext. 214) or Review & Compliance Coordinator Kim Gant at 785-272-8681 ext. 225.

Sincerely,

Jennie Chinn  
Executive Director and  
State Historic Preservation Officer



Patrick Zollner  
Deputy State Historic Preservation Officer

6425 SW 6th Avenue • Topeka KS 66615-1099  
Phone 785-272-8681, ext. 205 • Fax 785-272-8682 • jchinn@kshs.org • TTY 785-272-8683  
kshs.org

From: Tim Banek  
Sent: Thursday, December 23, 2010 2:18 PM  
To: 'Lana\_Henry@nps.gov'  
Cc: Gene Gardner; Rhonda Rimer; Ronda Headland  
Subject: George Washington Carver Exotic Plant Plan

Dear Ms. Henry,

I provided my comments related to the NPS exotic plant plan online. Ronda Headland emailed the information to me concerning the request for comments. I didn't see a way to provide additional documents with the online comment form. Therefore, I am emailing you directly. Attached is a PDF file of spotted knapweed (*Centaurea stoebe micranthos*) distribution in Missouri for your information. The Missouri Depts. of Conservation and Transportation along with the Missouri Extension service began releasing bioagents to control spotted knapweed in 2008. The attached map shows distribution and releases in 2009. I suspect that several of the National Parks in southern Missouri either already have spotted knapweed or they are threatened by it.

We also have an agreement to partner with the Mark Twain National Forest on their non-native plant management plan. You may want to contact Brian Davidson to take advantage of his experience in developing their plan. His office is in Rolla and his phone number is (573) 364-4621.

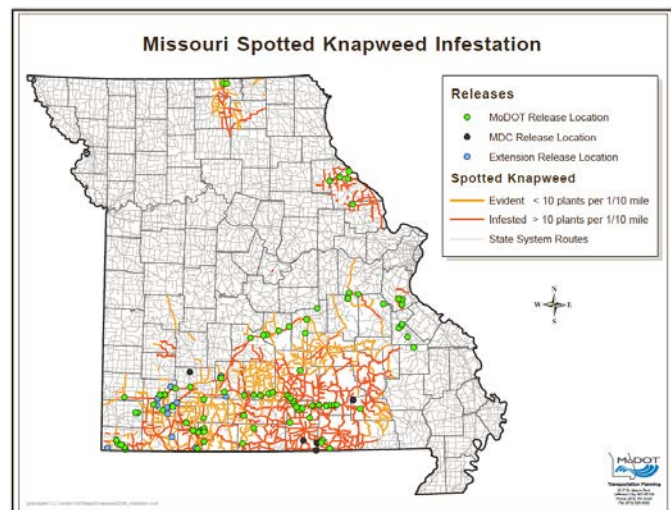
I also wanted to inform you that the Missouri Department of Conservation's Natural History Biologist, Rhonda Rimer recently transferred into the Springfield Region. Rhonda is an experienced botanist and may be able to help you, especially with rare plant management. You can reach Rhonda at the Springfield Office (417) 895-6881.

Let me know if I can assist you with the exotic plant plan and Good Luck!

Sincerely,

Timothy J. Banek

Invasive Species Coordinator  
Missouri Department of Conservation  
PO Box 180  
Jefferson City, MO 65102  
(573) 522-4115 ext. 3371  
[tim.banek@mdc.mo.gov](mailto:tim.banek@mdc.mo.gov)





SENECA NATION OF INDIANS  
TRIBAL HISTORIC PRESERVATION OFFICE  
90 OHI:YO' WAY  
SALAMANCA, NY 14779  
PHONE: (716) 945-1790 FAX: (716) 945-8133



February 15, 2011

Stan Austin  
United States Department of the Interior  
National Park Service – Cuyahoga Valley National Park  
15610 Vaughn Road  
Brecksville, OH 44141

**Re: Heartland Exotic Plant Management Plan  
Cuyahoga Valley National Park  
Cuyahoga & Summit Counties, OH  
Reference #L7617**

Dear Mr. Austin,

Thank you for providing the information for the above referenced project. Pursuant to Section 106 of the National Historic Preservation Act (36 CFR § 800) as a consulting party, the SNI Tribal Historic Preservation Office has a finding of "No Effect" on historical properties eligible for or included on the National Register of Historic Places.

If you become aware of any archaeological, scientific, pre-historical, or historical sites or structures which might be affected by the proposed work, please notify our office. Thank you.

Sincerely,

Lauren Waldinger  
Tribal Archaeologist  
Lauren.Waldinger@sni.org

THPO Ref. 11-3610



## Miami Tribe of Oklahoma

P.O. Box 1326-Miami, Oklahoma 74355

Ph: 918-542-1445 Fax: 918-542-7260



February 28, 2011

James R. Heaney  
Superintendent  
George Washington Carver National Monument  
5646 Carver Road  
Diamond, MO 64840-8314.

Re: Heartland Exotic Plant Management Plan

Mr. Heaney:

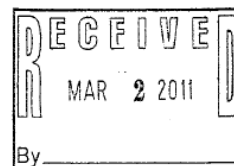
Aya, kikwesitoole. My name is George Strack and I am the Tribal Historic Preservation Officer for the Federally Recognized Miami Tribe of Oklahoma. In this capacity, I am the Miami Nation's point of contact for all Section 106 issues.

In reference to the above mentioned Heartland Exotic Plant Management Plan, the Miami Nation is not currently aware of existing documentation directly linking a specific Miami cultural or historic site to the above referenced construction site. However, as this site is within the homelands of the Miami Nation, should any human remains or Native American cultural objects falling under the Native American Graves Protection and Repatriation Act (NAGPRA) or anthropological evidence be discovered during any phase of this specific project, the Miami Nation requests immediate consultation with the entity of jurisdiction specific to the location of discovery.

The Miami Nation offers no objection to the proposed project at this time. However, again, should human remains and/or objects be uncovered, regardless of initial determination as to site dating or cultural affiliation, please contact me at 918-541-1366 or by mail at the address listed above, to initiate consultation.

Sincerely,

George J. Strack  
Tribal Historic Preservation Officer  
Miami Tribe of Oklahoma





## TRIBAL HISTORIC PRESERVATION OFFICE

Date: January 27, 2011

File: 1011-760AR-1

RE: National Park Service Programmatic Environmental Assessment for Exotic Plants Management Plan  
at Pea Ridge National Military Park

John P. Scott  
Superintendent  
Pea Ridge National Military Park  
15030 Hwy 62 East  
Garfield, AR 72732

Dear Mr. Scott,

The Osage Nation Historic Preservation Office has received notification and accompanying information for the proposed project listed as National Park Service Programmatic Environmental Assessment for Exotic Plants Management Plan at Pea Ridge National Military Park.

In accordance with the National Historic Preservation Act, (NHPA) [16 U.S.C. 470 §§ 470-470w-6] 1966, undertakings subject to the review process are referred to in §101 (d)(6)(A), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969).

The Osage Nation has a vital interest in protecting its historic and ancestral cultural resources. The Osage Nation requests the opportunity to review and comment on the draft for the proposed National Park Service Programmatic Environmental Assessment for Exotic Plants Management Plan at Pea Ridge National Military Park.

Should you have any questions or need any additional information please contact me at the number listed below. Thank you for consulting with the Osage Nation on this matter.

  
James Munkres  
Archaeologist I

627 Grandview, Pawhuska, OK 74056, (918) 287-5328, Fax (918) 287-5376





## Miami Tribe of Oklahoma

P.O. Box 1326-Miami, Oklahoma 74355

Ph: 918-542-1445 Fax: 918-542-7260

RECEIVED

MAR 07 2011

HOPEWELL CULTURE  
NATIONAL HISTORICAL PARK



February 28, 2011

Jennifer Pederson Weinberger, Superintendent  
National Park Service  
Hopewell Culture National Historical Park  
16062 State Route 104  
Chillicothe, Ohio 45601-8694

Re: Consultation for an Exotic Plant Management Plan and Environmental Assessment

Aya, kikwesitoole. My name is George Strack and I am the Tribal Historic Preservation Officer for the Federally Recognized Miami Tribe of Oklahoma. In this capacity, I am the Miami Nation's point of contact for all Section 106 issues.

The Miami Nation welcomes the opportunity to consult on the above mentioned Consultation for an Exotic Plant Management Plan and Environmental Assessment. We are not specifically aware of Miami cultural or historic sites related to the above referenced project. However, should any human remains or Native American cultural objects falling under the Native American Graves Protection and Repatriation Act (NAGPRA) or anthropological evidence be discovered during any phase of the proposed project, the Miami Nation requests immediate consultation with the entity of jurisdiction specific to the location of discovery.

The Miami Nation offers no objection to the proposed project at this time. However, again, should human remains and/or objects be uncovered, regardless of initial determination as to site dating or cultural affiliation, please contact me at 918-541-1366 or by mail at the address listed above, to initiate consultation.

Sincerely,

George J. Strack  
Tribal Historic Preservation Officer  
Miami Tribe of Oklahoma



JAN 19 2011

## TRIBAL HISTORIC PRESERVATION OFFICE

Date: January 18, 2011

File: 1011-699KS-1

RE: National Park Service Exotic Plant Management Plan and Environmental Assessment for the Tallgrass Prairie National Preserve, Strong City, Chase County, Kansas

Wendy Lauritzen  
Tallgrass Prairie National Preserve Office  
226 Broadway, P.O. Box 585  
Cottonwood Falls, KA 66845-0585

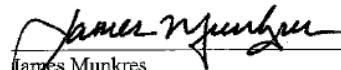
Dear Ms. Lauritzen,

The Osage Nation Historic Preservation Office has received notification and accompanying information for the proposed project listed as National Park Service Exotic Plant Management Plan and Environmental Assessment for the Tallgrass Prairie National Preserve, Strong City, Chase County, Kansas. **The Osage Nation requests a copy of the planned Environmental Assessment and any other information related to the plan.**

In accordance with the National Historic Preservation Act, (NHPA) [16 U.S.C. 470 §§ 470-470w-6] 1966, undertakings subject to the review process are referred to in S101 (d)(6)(A), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969).

The Osage Nation has a vital interest in protecting its historic and ancestral cultural resources. **The Osage Nation anticipates reviewing and commenting on the planned Environmental Assessment for the proposed National Park Service Exotic Plant Management Plan and Environmental Assessment for the Tallgrass Prairie National Preserve, Strong City, Chase County, Kansas.**

Should you have any questions or need any additional information please feel free to contact me at the number listed below. Thank you for consulting with the Osage Nation on this matter.

  
James Munkres  
Archaeologist I

627 Grandview, Pawhuska, OK 74056, (918) 287-5328, Fax (918) 287-5376

**TRIBAL HISTORIC PRESERVATION OFFICE****Date:** January 27, 2011**File:** 1011-759AR-1**RE:** National Park Service Programmatic Environmental Assessment for Exotic Plants Management Plan at Buffalo National River

Kevin G. Cheri  
Buffalo National River, NPS  
402 N. Walnut, Suite 136  
Harrison, AR 72601

Dear Mr. Cheri,

The Osage Nation Historic Preservation Office has received notification and accompanying information for the proposed project listed as National Park Service Programmatic Environmental Assessment for Exotic Plants Management Plan at Buffalo National River.

In accordance with the National Historic Preservation Act, (NHPA) [16 U.S.C. 470 §§ 470-470w-6] 1966, undertakings subject to the review process are referred to in S101 (d)(6)(A), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969).

The Osage Nation has a vital interest in protecting its historic and ancestral cultural resources. **The Osage Nation requests the opportunity to review and comment on the draft for the proposed National Park Service Programmatic Environmental Assessment for Exotic Plants Management Plan at Buffalo National River.**

Should you have any questions or need any additional information please contact me at the number listed below. Thank you for consulting with the Osage Nation on this matter.

A handwritten signature in blue ink that reads "James Munkres".

James Munkres  
Archaeologist I

## Civic Engagement

In all planning and strategy development, the National Park Service (NPS) seeks input from its stakeholders. The Environmental Assessment (EA) process allows opportunities for public dialogue about NPS management issues and strengthens ties with stakeholders. By engaging people with traditional, cultural or ethnic ties to NPS lands, and other partners and stakeholders, the NPS broadens its perspective on stewardship of public trust resources. Public involvement exemplifies the NPS desire to conduct the management of public resources in an open and inclusive manner.

Each park determined the best civic engagement activities to fulfill the external scoping and to advertise the public comment period. The Planning, Environment and Public Comment software (PEPC – external access: <http://parkplanning.nps.gov/> ; internal access: <https://pepc.nps.gov/userHome.cfm>) provides the location for internal and external documents related to civic engagement (PEPC #31771). The IPMT published documents for public communication and meetings, using the tools available in PEPC. A list of the individuals and organizations contacted by the program in conjunction with the preparation and review of this EA and plan appears in the EA. Records of civic engagement and consultation have been kept by the IPMT and copies of park specific communications are located at each park.

Results of public comment were analyzed by the IPMT and included in the final EA.

**Table E.5.** Schedule: Tasks, Civic Engagement, and Consultation

<b>Activity</b>	<b>Responsible party</b>	<b>Estimated completion</b>
Maintain PEPC entry	IPMT and Parks	Continuous
Public Involvement and Civic Engagement Plan	IPMT	initiate – July 2010
Internal Orientation and Scoping Session	IPMT	July 2010
External Scoping Sessions	Parks	Nov 2010 – March 2011
Initiate consultation by letter	Parks	November 2010
Submit results of External Scoping to IPMT	Parks	March 2011
Internal review Chapter 1	IDT	June 2011
Internal review Chapter 2, Alternatives	IDT	November 2011
Internal review Chapter 3, Affected Environment	IDT	December 2011-January 2012
Internal review Chapter 4, Environmental Consequences	IDT	July 2012
Internal review of Chapter 5, Consultation and Civic Engagement and appendices	Parks	September 2012
Consultation, review of draft	Agencies	October 2012
Complete draft EA for review	IPMT	November 2012
Begin public comment and review – 30 days	Parks	November 2012
Analyze public comment	IPMT	December 2012
Final EA and FONSI	IPMT	January 2013

**PEPC Basic Information Form****Park Name:** Midwest Region      **Project ID:** 31771**Project Title:** Heartland Exotic Plant Management Plan**Secondary Title:** Exotic, Invasive Plant Management for Heartland Network Parks

**Description:** The goal of this project is to establish an exotic plant management plan (EPMP) to control exotic plants within the fifteen Heartland Inventory and Monitoring Network (HTLN) parks. The HTLN parks extend across eight states (Arkansas, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, Ohio) and include a diversity of terrestrial and aquatic ecosystems associated with tallgrass prairies, Eastern deciduous forests, interior highlands, and the Mississippi floodplain.

The project proposes a cooperative, multi-park program for addressing exotic plant management actions to augment individual park projects addressing exotic plant management. This proposed approach to invasive/exotic plant management uses an program similar to a Exotic Plant Management Team (EPMT) to achieve economy of scale to augment exotic plant programs in parks, to monitor effects for adaptive management purposes, and to centralize data management for parks. The program would also require the allocation of resources to target species and locations where success is most feasible and critical resources (i.e. threatened species, restoration areas, significant cultural landscapes) are most threatened.

For many parks, compliance for treatment of exotic/invasive plants has been handled under a Categorical Exclusion (CE). These CEs include 3.4.e(2) Restoration of noncontroversial (based on internal scoping requirements in section 2.6) native species into suitable habitats within their historic range; and 3.4.e(3) Removal of individual members of a non-threatened/endangered species or populations of pests and exotic plants that pose an imminent danger to visitors or an immediate threat to park resources.

With the potential for augmenting exotic/invasive species management through an EPMT, the Heartland parks will have consistent and continuous management of exotic plants. Therefore, actions will be taken throughout the years that probably have little or no potential for environmental impact, but thorough assessment can be made with an Environmental Assessment (EA) to ensure that the understanding of environmental impacts is correct and that no cumulative impacts may occur with repeated action over time.

Additionally, some proposed treatments may have an impact and require mitigation for their use, which does not allow that treatment to be used under a CE. An EA or other rigorous assessment document may broaden the set of tools available for safe use in exotic plant management within parks. It also taps the expertise of botanists with experience in this field to augment the knowledge base at the parks.

**Send an email for Project Descriptions change:** No**Project Leader:** Sherry Middlemis-Brown**NEPA Specialists:** Nick Chevance**Project Category:** Plant Communities  
(Vascular and Non-Vascular)**NHPA Specialists:** Ron Cockrell**Project Type:** Implementation Plan

**Methods of Public Notification****Table E.6.** External scoping actions and announcement of EA availability for review, methods of notification.

Park	External Scoping Initiation	Type	Received and Filed	Announce EA Review	Type
<b>Arkansas Post National Memorial</b>	12/9/2010	News release to media	12-13-2010 e-copy		
	12/13/2010	Civic Engagement Plan	12/13/2010 e-copy		
	12/9/2010	Letter to stakeholders	12/13/2010 e-copy		
<b>Buffalo National River</b>	internal	Civic Engagement Plan	park files		
	1/13/2011	News release	1/13/2011		
	1/13/2011	Post cards	1/13/2011		
	1/13/2011	Recipient list	1/13/2011		
<b>Cuyahoga Valley National Park</b>	2/1/2011	Civic Engagement Plan	2/4/2011		
	1/28/2011	231 news releases	1/31/2011		
	1/28/2011	Homepage announce - jpg	1/31/2011		
	1/28/2011	97 stakeholder letters on file	1/31/2011		
<b>Effigy Mounds National Monument</b>	1/15/2011	News release	2/1/2011		
	1/15/2011	List recipients	2/1/2011		
	internal	Civic Engagement Plan	park files		
<b>George Washington Carver National Monument</b>	11/12/2010	Letter to stakeholders	12/13/2010		
	11/12/2010	Civic engagement plan	11/12/2010		
<b>Herbert Hoover National Historic Site</b>	12/6/2010	News Release	12/13/2010		
	1/24/2011	Civic Engagement Plan	1/24/2011		
	1/21/2011	News release	1/24/2011		
	1/21/2011	Twitter and homepage	jpg in file		
<b>Homestead National Monument of America</b>	12/2/2010	Facebook and Twitter meeting invitation	e-posting as jpg		
	12/7/2010	Meeting notes	2-11-2011		
	internal	Civic Engagement Plan	park files		
<b>Hopewell Culture National Historical Park</b>	11/9/2010	News release to media	rec'd		
	11/9/2010	18 stakeholders' letters	park files		
	11/9/2010	Press release to website	copy		
	11/10/2010	Civic Engagement Plan	12/6/2010		
<b>Hot Springs National Park</b>	internal	Civic Engagement Plan	park files		
	2/18/2011	News release	2/23/2011		
<b>Lincoln Boyhood National Memorial</b>	11/22/2010	News release to media	11/22/2010		
	1/31/2011	Civic Engagement Plan	1/31/2011		

Park	External Scoping Initiation	Type	Received and Filed	Announce EA Review	Type
<b>Ozark National Scenic Riverways</b>	2/20/2011	Civic Engagement Plan	2/12/2011		
	2/20/2011	News Release	park files		
	2/20/2011	Stakeholder letters	park files		
<b>Pea Ridge National Military Park</b>	2/14/2011	Civic Engagement Plan	2/14/2011		
	2/14/2011	News release			
	2/14/2011	Stakeholder letters	2/14/2011		
<b>Pipestone National Monument</b>	?	Civic Engagement Plan	park files		
	?	News release	park files		
	?	stakeholder letters	park files		
<b>Tallgrass Prairie National Preserve</b>	NA	civic engagement will only be done for draft availability	NA		
<b>Wilson's Creek National Battlefield</b>	?	Civic Engagement Plan	park files		
	?	News release	park files		
	?	stakeholder letters	park files		

**Example of External Scoping Letter:**

United States Department of the Interior  
NATIONAL PARK SERVICE

Cuyahoga Valley National Park  
15610 Vaughn Road  
Brecksville, Ohio 44141-3097

IN REPLY REFER TO: L7617

January 26, 2011  
Congressman Dennis Kucinich  
Parmatown Mall  
7904 Day Drive  
Parma, OH 44129

Dear Congressman Kucinich,

This letter is to inform you the National Park Service (NPS) is developing an Exotic Plant Management Plan (plan) and associated Environmental Assessment (EA) for 15 parks in the Midwest Region, including Cuyahoga Valley National Park located in Cuyahoga and Summit Counties, Ohio. The purpose of the plan is to identify methods to control non-native, invasive plants to improve visitor experience and the condition of natural and cultural resources at parks. The purpose of the EA is to evaluate the effects of alternative management strategies on the environment.

Cuyahoga Valley National Park (CVNP) was established as a National Recreation Area in 1974 to preserve the scenic, natural and historic setting of the Cuyahoga Valley and provide recreational and educational opportunities to the visiting public. According to a survey completed in 2007, more than 2,500 acres of the 33,000-acre CVNP may be infested with invasive, non-native plants, including trees (e.g., tree-of-heaven), shrubs (e.g., multiflora rose and autumn olive), forbs (e.g., garlic mustard) and grasses (e.g., reed canarygrass and common reed).

To facilitate sound analysis of environmental effects, the NPS is gathering preliminary information necessary for public scoping for the plan/EA. **Accordingly, we invite you and other stakeholders to provide early input regarding alternatives, environmental impact topics and general scope of the plan/EA.** Stakeholders include anyone having specific, relevant knowledge and perspectives that will help the NPS identify objectives, develop alternatives and examine strategies for implementing the plan. If you have scoping comments or suggestions, please submit them by February 15, 2011, via the plan's website or by regular mail to me at the letterhead address. To provide comments using the website, go to "parkplanning.nps.gov/cuva"; select "Heartland Exotic Plant Management Plan" from the available list; select "Open for Comment" on the left side of the page; select "Heartland Exotic Management Plan Scoping" from the list, and select "Comment on Document" to provide comments.

We look forward to receiving your input on this important project. If you have questions, please feel free to contact Chris Davis, CVNP's plant ecologist, at 330-342-0764 x5.

Sincerely,

Stan Austin  
Superintendent



**Example of External Scoping Letter for Stakeholders:**

**United States Department of the Interior  
NATIONAL PARK SERVICE  
George Washington Carver National Monument  
5646 Carver Road  
Diamond, MO 64840-8314  
(417) 325-4151**



N1616 (GWCA)  
December 6, 2010  
Mr. Jeremy Elliott-Engle  
4-H Youth Development Specialist  
University of Missouri Extension  
1900 S. Highway 71  
Neosho, Missouri 64850

Dear Jeremy:

The Heartland Exotic Plant Management Team is initiating a long-term program to manage invasive exotic species in 15 parks within the Midwest Region of the National Park Service. The parks extend across eight states and include a diversity of terrestrial ecosystems – including George Washington Carver National Monument.

The goal of this program is to establish an exotic plant management plan to control exotic plants within these park units with the minimum impact on the environment. The first project within this program is to develop an implementation plan for the program by considering various alternatives for action and assessing the environmental impacts of each alternative. Internal scoping resulted in the development of at least three alternatives for action, including: (1) No Action (use the current approach), (2) Integrated Pest Management, and (3) Manual, Mechanical, and Cultural Techniques Only (no herbicides, biological agents, or heavy equipment).

We would like to invite you and the Newton County 4-H Council to participate in early project scoping and in public comment on the draft plan. The Heartland Exotic Plant Management Plan (PEPC #31771) document can be reviewed through an online collaborative tool entitled PEPC: Planning, Environment and Public Comment program at <http://parkplanning.nps.gov/projectHome.cfm?projectID=31771>.

Please feel free to respond to the topic questions either electronically or by mail.

1. Please tell us what your concerns are about exotic plant management in these parks.
2. Please tell us your ideas of feasible and effective long-term exotic plant management for the parks.

Public comments are being accepted about concerns or potential alternatives for the plan through February 15, 2011. Comments may be made through the PEPC website or to the monument.

Thank you for your continuing support of George Washington Carver National Monument and the National Park Service. If you have any questions or wish to discuss the project in more detail, please contact me or Chief Ranger Lana Henry at 417-325-4151.

Sincerely,

James R. Heaney  
Superintendent

**Example of External Scoping Notice on Internet:**

Public Can Review and Comment on Exotic Plant Management Plan Online

[Subscribe](#)  [What is RSS](#)

**Date:** January 21, 2011

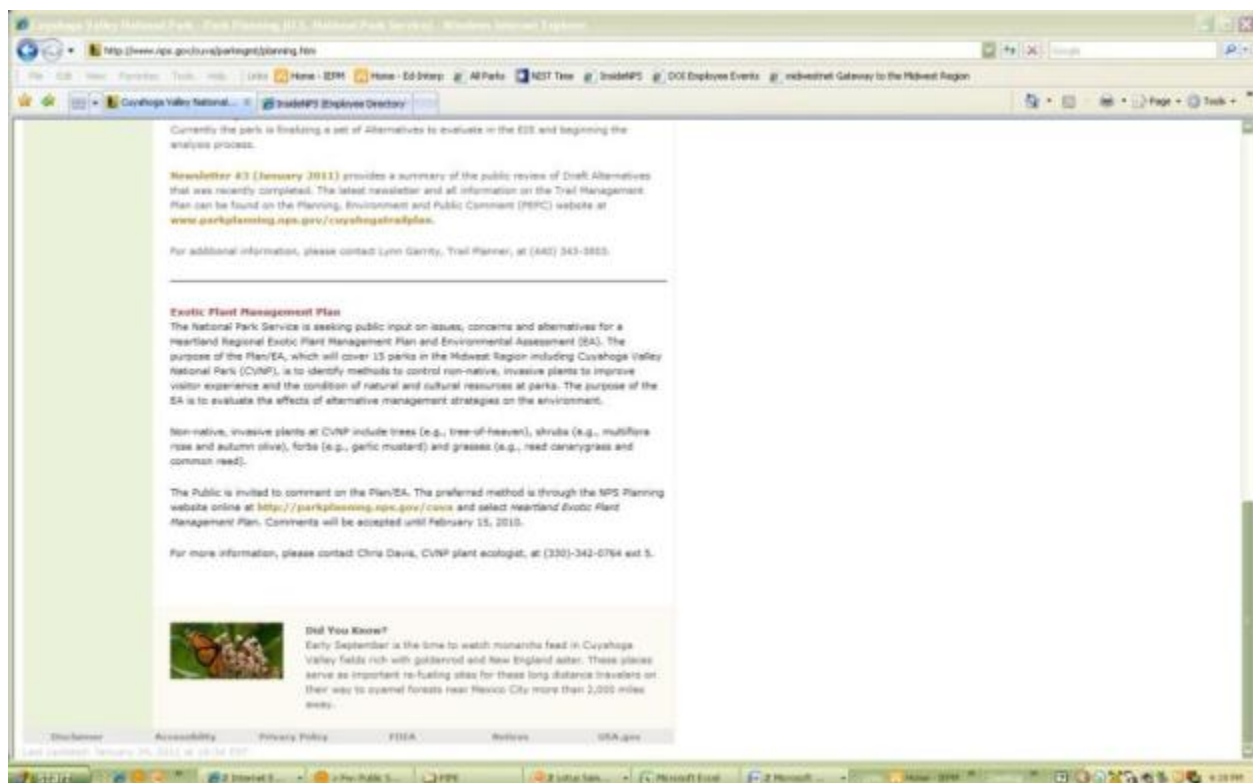
**Contact:** [Adam Prato](#), (319) 643-7855

WEST BRANCH, IOWA—The National Park Service is beginning the development of an Exotic Plant Management Plan and an Environmental Assessment (EA) that includes Herbert Hoover National Historic Site in West Branch, Iowa. The EA will address management of the park's natural areas that are home to native [plant](#) communities. Particular attention will be placed on eradication, control, and containment of invasive plants. A similar [planning](#) effort, for a Vegetation Management Plan for Herbert Hoover National Historic Site, will resume upon the findings of this EA. The Exotic Plant Management will be incorporated into the overall Vegetation Management Plan for Herbert Hoover National Historic Site.

The public may review and comment on the project online through [PEPC \(Planning, Environment and Public Comment\)](#), the online collaborative tool that gives the public unprecedented, easy access to documents used in developing and tracking projects within the National Park Service. The project is titled #31771 Heartland Exotic Plant Management Plan and may be found at <http://parkplanning.nps.gov/projectHome.cfm?projectID=31771>. Comments may also be sent by mail to: Superintendent, Herbert Hoover NHS, P.O. Box 607, West Branch, IA 52358.

“The National Park Service relies heavily on feedback from the public to guide its stewardship of America's great natural and cultural resources,” said Pete Swisher, acting superintendent of Herbert Hoover National Historic Site. “PEPC makes it easy for people to track projects at a nearby park or a favorite park several time zones away. It gives the public unprecedented access.”

Herbert Hoover National Historic Site and the Herbert Hoover Presidential Library and Museum are in West Branch, Iowa at exit 254 off I-80. Both are open daily from 9 a.m. to 5 p.m. Central Time

**Example of External Scoping Notice on Digital Media:**

**Example of External Scoping News Release**  
**National Park Service Seeks Public Comment**



**National Park Service**  
**U.S. Department of the Interior**

**Hot Springs National**  
**Park**

101 Reserve Street  
Hot Springs AR 71901

501 623-2824  
501 624-1037 FAX

The National Park Service (NPS) has initiated the development of an Exotic Vegetation Management Plan (plan) and Environmental Assessment (EA) for Hot Springs National Park and 14 other regional National Park sites. Public review and comment of this draft plan is currently being sought and may be submitted through the NPS Planning, Environment and

Public Comment (PEPC - [peps] website. PEPC is an online collaborative tool that gives easy access to documents used in developing and tracking projects within the NPS. The website is located at <http://parkplanning.nps.gov>. The plan is project #31771.

The purpose of this plan and EA is to address resource issues within park boundaries associated with vegetation management in natural areas with native plant communities. This document will guide the park in eradication, control, or containment of exotic invasive plants, particularly in natural areas of the park. Several options for attaining objectives will be considered and analyzed for their impacts on the environment. The analysis will be part of an EA.

“The National Park Service relies heavily on feedback from the public to guide its stewardship of America’s great natural and cultural resources,” said Hot Springs National Park Superintendent Josie Fernandez. “PEPC makes it easy for people to track projects at a nearby park or a favorite park several time zones away. It gives the public unprecedented access.”

At the PEPC website the public can find out more about projects at Hot Springs National Park, as well as projects in parks across the nation. Park projects can include items as routine as trail rehabilitation and utility replacement to rare projects, such as creating long-term park management plans.

For further information regarding the Exotic Vegetation Management Plan, contact Stephen Rudd, the Natural Resource Program Manager at Hot Springs National Park at (501)620-6751.

--NPS--

National Park Service Buffalo National River  
U.S. Department of the Interior 402 N. Walnut, Suite 136  
Harrison, AR 72601  
870-365-2734 – Phone  
870-365-2701 – Fax

At this time, we are initiating a public scoping period that will be open for 30 days. During this scoping period, the public is invited to identify any issues or concerns they may have with the proposed project so that they may be appropriately considered in the EA. Comments may be submitted online at: <http://parkplanning.nps.gov/projectHome.cfm?projectID=31771>, or by mailing them to: IPMT Planning at the following address: Buffalo National River, 402 N. Walnut, Suite 136, Harrison, Arkansas 72601

**All scoping comments must be received by February 15, 2011.**

**Table E.7.** Additional Stakeholder Contacts (not exhaustive)

These stakeholders were identified by parks, but are not exhaustive of the stakeholders contacted by parks. For a complete list for any one park, contact the park directly.

<b>Park</b>	<b>Additional Stakeholders</b>				
<b>HEHO</b>	Ms. Rebeckah Allgood, Herbert Hoover Presidential Library Association P.O. Box 696 302 Parkside Drive West Branch, IA 52358	Herbert Hoover Presidential Library and Museum 210 Parkside Drive West Branch, IA 52358	Hawkeye Cooperative Weed Management Area c/o Iowa Valley Resource Conservation & Development 920 48 <sup>th</sup> Avenue Amana, IA 52203	Bird Conservation Area Wildlife Research Station 1436 255 <sup>th</sup> Street Boone, IA 50036	
<b>HOCU</b>	Chillicothe Sand and Gravel Co. 1177 Hopetown Road Chillicothe, OH 45601	Mr. Hernstein 27104 E SD US 35 Chillicothe, OH 45601	Mr. T. Kellenberger 421 Off Old RT 35 Chillicothe, OH 45601	Paint Valley Schools 7454 US Rt 50 Bainbridge, OH 45612	Mark and Teresa Pelletier 2859 Sulphur Lick Road Chillicothe, OH 45601
	Rick Ray 4120 Sulphur Lick Road Chillicothe, OH 45601	Ms. Ann Shoup 6950 US HWY 50 Bourneville, OH 45617	Scito Valley Bird and Nature Club c/o Ella McMahon 89 Western Ave Chillicothe, OH 45601	Tri-County Triangle Trail c/o Delbert Doles P.O. Box 887 Chillicothe, OH 45601	Arc of Appalachia Preserve System 7550 Cave Road Bainbridge, OH 45612
	Mr. Howard Vaughan P.O. Box 234 Kingston, OH 45644	Mr. John Weaver 338 S.R. 41 South Bainbridge, OH 45612			
<b>OZAR</b>	Bob Gestel, Sierra Club 4408 Green Valley Drive Arnold, MO 63010	Greg Iffrig, L-A-D Foundation 705 Olive, Rm 724 St. Louis, MO 63110	Jerry Sugerman, Friends of the Ozark Riverways 6267 Delmar Blvd. Suite 2E St. Louis, MO 63130	Jerry King, Voice of the Ozarks PO Box 85 Eminence, MO 65466	Allen Akers, Wild Horse League P.O. Box 218 Eminence, MO 65466
<b>TAPR</b>	Alan Pollom, State Director The Nature Conservancy Kansas Field Office 700 SW Jackson, Suite 804 Topeka, KS 66603				
<b>Mis-souri parks</b>	Kathleen Logan Smith MO Coalition for the Environment 6267 Delmar Boulevard, Ste. 2E St. Louis, MO 63130	Doug Ladd The Nature Conservancy PO Box 960 Van Buren, MO 63965			

## Responses to External Scoping

### *Civic Engagement (Initiation of planning and external scoping)*

#### Requests or comments

Twenty-two comments from stakeholders and the public were entered into PEPC, including those received by voicemail, email, or other media at the park or by the EPMT.

**Table 3.4.** Comment report taken from PEPC

Topic	Responses
Affected Environment: Wildlife And Wildlife Habitat (IN)	1
Affected Environment: Other Agencies? Land Use Plans (IN)	1
Affected Environment: Water quality karst watershed (WQ)	3
Alternatives: Specific recommendations (AL)	7
ISSUES - Natural resource issues (IN)	5
Knowledge base: knowledge is inadequate to address issue; research is needed (IN)	1
Miscellaneous Topics: General Comments (MT)	3
Purpose And Need: Issues Eliminated From Further Consideration (PN)	1
Purpose and Need: Conceptual Support (PN)	5
Purpose and Need: Support for restoration of native vegetation (PN)	2
Purpose And Need: Objectives In Taking Action (PN)	3
VALUES - Value natural resources or setting (flora, fauna, views, quiet, undev. areas) (IN)	1
Water Resources: Impact Of Proposal And Alternatives (WQ)	1
Topic Question 1 (TQ)	15
Topic Question 2 (TQ)	13

#### *Comments:*

**Text:** A feasible and effective approach to exotic plant management for the Buffalo National River would be manual control, prevention, education of BNR partner groups to assist with exotic plant eradication, and perhaps some biological control methods. The Buffalo River region encompasses several diverse ecosystems and each area should be managed according to the native biological diversity inherent to that particular system. Categorical exclusions are outdated at best and need to be disregarded as an option for current management planning.

**Text:** Buffalo National River: I think it will always be a battle regardless of the technique used. We need to choose the safest means to fight it. I'm sure we could poison and destroy the environment enough to eradicate all the exotic species, but what would be the point?

**Text:** I support the Integrated Pest Management Alternative of the scoping document. I have concerns that the management plan include widespread, established invasive plants in source populations, in addition to focus on early detection and rapid response. I am also concerned about the principle of meeting "action thresholds" in IPM has not been, nor cannot be adequately addressed for ecologically invasive plant species. I want to encourage NPS to continue plans for multi-year monitoring of invasive plants at Cuyahoga Valley National Park. Finally, I would like

the Heartland Network Inventory and Monitoring program include the exotic plant list from the Mid-Atlantic Exotic Pest Plant Council in their prioritization database.

**Text:** My experience is with the Cuyahoga Valley National Park in Ohio. I believe that the CVNP has to act very aggressively to contain and reduce the threats of invasive plants - this is a deferred maintenance issue which deserves adequate staffing and funding. I want to see CVNP as a central stakeholder in a cooperative weed management area. The Cleveland Metroparks has initiated an aggressive invasive plant management program, based in part on the NPS EPMT model. The deployment of an Exotic Plant Management Team to the Cuyahoga Valley for several years in succession is critically needed. Of particular urgency is to find and remove source populations of invasive shrubs and other understory pests in areas where emerald ash borer infestations will remove the forest canopy.

**Text:** In the Buffalo National River I would like to see exotic plant species managed by a manual work force using on sight eradication.

**Text:** CVNP: My main concern, based on 20 years of effort on my own 35 acres in NE Ohio (conservation easement), is the inevitability of a poor return on investment if eradication efforts are not prioritized on the basis of species threat to native ecosystems. Specifically, the displacement potential of an invasive should be the metric guiding allocation of resources. My property is a good example I think. Approximately 1/2 of the land is wetland or lowland silt loam, seasonally wet, then dry. The native vegetation is arrowwood viburnum/golden rod, almost exclusively. Left to succession it would slowly become a red maple/black gum swamp forest. The nearly 100% loss of arrowwood to the viburnum leaf beetle (VLB: see Cornell website) has opened the door to accelerated invasion by buckthorn and garlic mustard. Under these circumstances with a workforce of 1 I entirely ignore both multiflora rose and autumn olive - both non-natives but very non-aggressive in this soil. It makes no sense to take them out unless a native is replanted as a substitute (e.g. silky dogwood). Additionally and importantly both have major wildlife benefit on this soil which will not support a native diversity. When controlling invasives, pick your fight carefully. We are badly outnumbered !

**Text:** Buffalo National River. I am concerned: That this program and these projects will make the situation worse. That the current policy of integrated pest management will continue. That no EIS will be produced in spite of the huge impact this program will have on the natural environment in Arkansas and the other 7 states. That methods like synthetic chemicals and burning the forest, which harm the natural environment, will continue in spite of their obvious failures.

**Text:** The first thing to do is to bring intelligence to bear on the problem. Determine what is causing the problem of non-native plant proliferation. Learn how the situation has developed, and what is helping each exotic to expand and how. Learn both what is common to the expansion of all exotics, and what is specific to each of these non-native species. Work to understand the problem, with the aim of discovering what actions might help. Developing an implementation plan first, is completely backwards. A comprehensive literature search, and carefully designed laboratory research should always precede very small experimental field research. First, do no harm.



**Text:** The increased use of prescribed fire, and / or, herbicide applications are of concern in the Buffalo National River watershed.

**Text:** Biological and manual means of control viewed favorably. Limited use of fire when appropriate. Managing and controlling vectors and invasive plant introductions strongly favored. Watershed education favored (again, BNR watershed).

**Text:** It seems there may be a nice opportunity to reintroduce interesting plant species. If the public and schools were made aware of this work, it could create some excitement and interest. Local colleges should be made aware so that appropriate classes could be involved, at least, as observers.

**Text:** Pea Ridge National Military Park: Without an exotic vegetation management plan and environmental assessment, Park management and staff will be hampered in their efforts towards controlling and/or eradicating exotic species. This is especially true when it comes to the invasive eastern red cedar (a real pain to control).

**Text:** I support this management plan and its cautious approach.

**Text:** Pea Ridge National Military Park: The proposed program will provide the Park the necessary information and methodology needed to eradicate, control and/or contain exotic species.

**Text:** I don't have any serious concerns and support the Park Service's efforts in removing exotic invasive species.

**Text:** Buffalo National River: I, too, am concerned about invasive exotic plants in and around our park, but I am more concerned about keeping our waters clean and safe. If the care and concern displayed by Carroll Electric, county and state road crews, and their contractors is any indication as to how this plan will be implemented, I am very concerned. Having clean safe water far outweighs having to slowly battle invasive species. I'm sure spraying herbicides is much easier than manually dealing with it, but we won't care about that when our water is contaminated. Carroll Electric has destroyed the natural habitat around the Ponca Access and streams within the watershed with their broad use of herbicides and equipment. Absolutely no care was taken to protect it. Contractor crews are only concerned with completing the job, the quickest and easiest way. If this is the plan, I oppose it. I personally think NPS should be granted more power to protect the watershed, and that power should be taken from others to destroy it.

### **Content Analysis Report (respondents and response types)**

*Document ID: 34872*

*Document Title: Heartland Exotic Plant Management Plan External Scoping*

*Comment Distribution by Status*

<b>Status</b>	<b>Number of Comments</b>
Coded	30__
<b>Total</b>	<b>30__</b>

*Correspondence Distribution by State*

State	Percentage	Number of Correspondence
AR	41.7 %	10
OH	29.2 %	7
CA	8.3 %	2
MO	8.3 %	2
IA	4.2 %	1
ME	4.2 %	1
MI	4.2 %	1
<b>Total</b>	—	<b>24</b>

*Correspondence Distribution by Country*

Country	Percentage	Number of Correspondence
USA	100.0 %	24
<b>Total</b>	—	<b>24</b>

*Correspondence Signature Count by Organization Type*

Organization Type	Correspondences	Signatures
Civic Groups	1	1
Conservation/Preservation	2	2
NPS Employee	1	1
Recreational Groups	1	1
Town or City Government	1	1
Unaffiliated Individual	18	18
<b>Total</b>	<b>24</b>	<b>24</b>

**Draft IPMP / EA Availability**

Letters were sent to all consulting agencies on AAA AA, 2012, requesting that agencies review the draft IPMP / EA by obtaining a copy through the PEPC website or from the IPMT coordinator. Consultation ended on XXX XX, 2012. Some corrections had been made to the list of consulting agency addresses between initiation and draft availability, but the agencies remain the same.

**Comments from Review of draft EA**

Enter comment

## Appendix F: Regulatory Measures

A number of federal, state, local regulatory measures for management of invasive species, noxious weeds, and invasive plants are applicable to all alternatives considered for this project. Regulatory measures include laws, executive orders, presidential proclamations, regulations and policies. Federal regulatory measures are those federal laws, Executive Orders (E.O.), Presidential Proclamations, regulations or rules, and policies (see glossary for definitions) that guide agencies in their actions.

### National Environmental Policy Act (NEPA)

The [National Environmental Policy Act of 1969<sup>1</sup>](#) (NEPA) is an umbrella legislation that requires the federal government to use all practicable means to create and maintain conditions in the human environment. This law applies to the decision-making process in this plan and to ensuring that laws, regulations, and policies protecting the human environment are followed.

### Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

This law, as amended through P.L. 110-246 in 2008, and the regulations established by the U.S. Environmental Protection Agency (EPA) ([FIFRA, Sections 116-117, 165, 170-172<sup>2</sup>](#)) act as primary guidance governing pesticide registration and usage, the training and certification of pesticide applicators, and criminal and civil penalties associated with misuse of pesticides. The law defines the term pesticide as:

*“Any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant,”*

Both FIFRA and NPS policy use this definition of “pesticide” in their guidance. Under all Alternatives in this EA, herbicides are the only class of pesticides that will be used to treat invasive plants chemically. Herbicides are chemicals used to kill specific target plants. Two classes of pesticides exist: (1) selective that target a limited group of species or a single species, and (2) non-selective that kill all plant material with which they make contact. For consistency with NPS terminology, the word pesticide will be used to refer to herbicides in this document.

The EPA is authorized to register pesticides for specified uses. Pesticide registration is the process through which EPA examines the ingredients of a pesticide; the site or crop on which it is to be used; the amount, frequency, and timing of its use; and storage and disposal practices. The EPA evaluates the pesticide to ensure that it will not have unreasonable adverse effects on humans, the environment, and non-target species. Except for a small number of low-toxicity active ingredients that have been exempted, a pesticide cannot be legally used if it has not been registered with EPA’s Office of Pesticide Programs (EPA 2003).

Once registered, a label is developed for each pesticide. Pesticide labels include directions for the protection of workers who apply the pesticide, for reducing exposure to non-applicators, and for reducing potential impacts to the environment. EPA also has the authority to suspend or cancel

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<sup>1</sup> [http://www.cr.nps.gov/local-law/fhpl\\_ntlenvirnpolicy.pdf](http://www.cr.nps.gov/local-law/fhpl_ntlenvirnpolicy.pdf)

<sup>2</sup> <http://www.epa.gov/agriculture/lfra.html>

the registration of a pesticide if subsequent information shows that continued use would pose unreasonable risks.

Some key elements of FIFRA include:

- Pesticide products must obtain an EPA registration before manufacture, transport, and sale and the registration is based on a risk/benefit standard .
- Manufacturers must provide data as required by EPA at any time for the purpose of acquiring and maintaining registration .
- The EPA will regulate pesticide use through labeling, packaging, composition, and disposal .
- The EPA has emergency exemption authority--permits approval of unregistered uses of registered products on a time limited basis.
- The EPA has the ability to suspend or cancel a product's registration: appeals process, adjudicatory functions, etc.

Violations of pesticide label directions constitute a violation of FIFRA. The storage and disposal of most pesticides is also regulated under FIFRA, with specific direction provided on pesticide labels. Because labels contain important application, safety, and storage and disposal information, labels must be kept with the product.

### **Occupational Health and Safety (OSHA) Hazard Communication Standard**

Under the OSHA Hazard Communication Standard ([Section 1910.1200](#)<sup>3</sup>), employers must provide workers with training, protective equipment, and information about hazardous substances. The employer is also required to maintain Material Safety Data Sheets (MSDSs) about these substances and to provide the employee with a copy of the sheets if requested. The MSDS for some common chemicals can be obtained at the following websites:

- Greenbook - <http://www.greenbook.net/>.
- Seed Search - <http://www.cdms.net/manuf/acProducts.asp>.

The MSDS for a specific product is usually available from the manufacturer. Park resource managers must maintain a current set of MSDSs for any pesticides used within their park. Maintaining a copy of the label with the MSDS is encouraged.

### **Executive Order 13112**

Section 2 of [E.O. 13112](#)<sup>4</sup> (1999) on Invasive Species, signed February 1999, directs federal agencies to identify actions that may affect the status of invasive species and to take action to

- Prevent the introduction of invasive species.
- Detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner.
- Monitor invasive species populations accurately and reliably.

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<sup>3</sup> [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=standards&p\\_id=10099](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=standards&p_id=10099)

<sup>4</sup> <http://www.invasivespeciesinfo.gov/laws/execorder.shtml>

- Provide for restoration of native species and habitat conditions in plant communities that have been invaded.
- Conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species.
- Promote public education on invasive species and the means to address them.

E.O. 13112 also established an interagency Invasive Species Council and authorized the Council to develop and implement a National Management Plan (NMP) to coordinate federal agency efforts. The first edition of this plan was finalized on January 18, 2001. The plan is updated every 2 years and serves as a blueprint for all federal action on invasive species. Many states have created invasive species boards or councils based on the federal model.

### **Plant Protection Act of 2000**

The Plant Protection Act of 2000, [P.L. 106-224](#)<sup>5</sup> consolidates and modernizes [all major statutes pertaining to plant protection and quarantine](#)<sup>6</sup> (Federal Noxious Weed Act, of 1974 Plant Quarantine Act). It provides The U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) with the authority to regulate biological control agents, or “any enemy, antagonist or competitor used to manage a plant pest or noxious weed. It authorizes APHIS to take both emergency and extraordinary emergency actions to address incursions of noxious weeds. The law authorizes APHIS to address all types of weed issues and increase maximum civil penalty for violation.

The APHIS Plant Protection and Quarantine (PPQ) is responsible for granting permission for the use of biological control agents within the U.S. Permit. Once a target invasive plant and biological control agent is identified, the PPQ goes through extensive host-specificity testing. This testing is designed to ensure that introduced biological weed control agents are limited in host range and do not threaten endangered, native, or crop plants. Precautions are also taken to ensure that the introduced agents are neither infected by parasites nor diseased so that when an introduction is made, only one organism is introduced. This requires that several generations of the proposed agent be reared in the lab.

The development of a list of host plants for host-specificity testing is aided by the involvement of an interagency committee. The Technical Advisory Group for Biological Control Agents of Weeds (TAG) is a voluntary interagency committee first formed in 1957 to provide advice to researchers. Members of TAG review petitions for biological control of invasive plants and provide an exchange of views, information and advice to researchers and those in APHIS responsible for issuing permits for importation, testing, and field release of biological control agents of invasive plants.

Once the USDA has approved an exotic biological control agent, a permit must also be obtained if this agent will be transported across state lines. The PPQ will review the request, assess the risk, and assign mitigating safeguards. Next, the appropriate State Plant Regulatory Official

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<sup>5</sup> <http://www.aphis.usda.gov/brs/pdf/PlantProtAct2000.pdf>

<sup>6</sup> <http://www.invasivespeciesinfo.gov/laws/publiclaws.shtml>

reviews and comments on the request. After the State Official responds, the PPQ considers the comments, and either issues or denies the permit.

### **National Pollutant Discharge Elimination System (NPDES)**

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. In most cases, the NPDES permit program is administered by [authorized states](#)<sup>7</sup>. Since its introduction in 1972, the NPDES permit program is responsible for significant improvements to our Nation's water quality.

On October 31, 2011, EPA issued a final NPDES Pesticide General Permit (PGP) for point source discharges from the application of pesticides to waters of the United States. Because of a court decision, NPDES permits are generally required for pesticide discharges into waters. This will relate to operators that apply pesticides that result in discharges from the following use patterns: (1) mosquito and other flying insect pest control; (2) weed and algae control; (3) animal pest control; and (4) forest canopy pest control. The permit requires permittees to minimize pesticide discharges using pest management measures, monitor for, and report any adverse incidents. Some permittees are also required to submit Notice of Intent (NOI) prior to beginning to discharge and implement integrated pest management (IPM)-like practices. Record-keeping and reporting requirements will provide valuable information to EPA and the public regarding where, when, and how much pesticides are being discharged to waters of the U.S. Pesticide application use patterns not covered by EPA's PGP may need to obtain coverage under an individual permit or alternative general permit if they result in point source discharges to waters of the U.S.

### **Other Federal Laws and Regulations Guiding Invasive Plant Actions**

Many other laws and regulations guide activities that select priority invasive species for treatment and the methods that may be used in treatment. The following list is not exhaustive, and the IPMT will remain vigilant of and will conform to changes or additions to laws and regulations. Many of the following are the responsibility of NPS partners, and not that of the NPS. None-the-less, the NPS is a partner and stakeholder in the effective administration of these laws. Many laws enacted prior to 2000 are consolidated within the Plant Protection Act of 2000 and so not listed below.

- [Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance October 2009](#)<sup>8</sup> Section 2 (e), promotes pollution prevention and eliminate of waste by: (vii) implementing integrated pest management and other appropriate landscape management practices.
- [Noxious Weed Control and Eradication Act \(2004; PDF | 64 KB\)](#)<sup>9</sup>; Authority: P.L. 108-412 (Oct 30, 2004); amends the Plant Protection Act; the Secretary of Agricultural establishes a program of financial and technical assistance to control or eradicate noxious weeds.

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<sup>7</sup> <http://cfpub.epa.gov/npdes/statestats.cfm>

<sup>8</sup> <http://edocket.access.gpo.gov/2009/pdf/E9-24518.pdf>

<sup>9</sup> [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108\\_cong\\_public\\_laws&docid=f:publ412.108.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_public_laws&docid=f:publ412.108.pdf)

- [Safe Accountable, Flexible, Efficient Transportation Equity Act \(SAFETEA-LU\) : A Legacy for Users, §6006 \(2005; PDF | 5.5 MB\)<sup>10</sup>](#); P.L. 109-59 (Aug 10, 2005); implementing 23 U.S.C. § 329, a new provision of law added to Title 23 by §6006 of SAFETEA-LU; activities to control noxious weeds and establish native species are eligible for Federal aid funding through the National Highway System and Surface Transportation System.
- [Federal Food, Drug, and Cosmetic Act<sup>11</sup>](#) (1938, ch. 675, § 1, 52 Stat. 1040, and 21 U.S.C. §301 et seq., 2002) set tolerances, or maximum residue limits, for pesticide residues on foods, and although it is one of the authorities under which the EPA regulates pesticides, it has little bearing on invasive plant control in this IPMP / EA.

The Federal Register Environmental Documents contains full-text of selected documents related to environmental issues after October 1994. The Code of Federal Regulations (CFR) is a codification of the rules published in the Federal Register by Executive departments and agencies of the Federal Government. The EPA's pesticide registration data requirements can be found in 40 CFR (Protection of the Environment) Part 158.

Laws and regulations, not seemingly associated with invasive plant treatment, may influence treatments and treatment schedules. Examples of these laws include:

- [The Antiquities Act of 1906 16 U.S.C. 431-433<sup>12</sup>](#) and the [Archeological Resources Protection Act of 1979 \(P.L. 96-95; 16 U.S.C. 470aa-mm\)](#) as amended protect archeology, antiquities, monuments, or prehistoric ruins on federal lands from appropriation, excavation, injury, or destruction.
- [Comprehensive Environmental Response, Compensation, and Liability Act of 1980<sup>13</sup>](#) (CERCLA; 42 U.S.C. §9601 et seq., 1980), commonly known as Superfund, created a tax on the chemical and petroleum industries and provided broad Federal authority to respond to releases or threatened releases of hazardous substances that may endanger public health or the environment.
- [Clean Air Act \(42 U.S.C. 7401-7671q, as amended in 1990\)<sup>14</sup>](#): Establishes a nationwide program for the prevention and control of air pollution. The EPA has been charged with implementing this act, but states, counties, and local governments can institute bans on the use of certain exhaust emitting machinery, when atmospheric conditions warrant it.
- [Clean Water Act \(33 U.S.C. §1251 et seq.\) of 1972<sup>15</sup>](#): the CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was

<sup>10</sup> [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_public\\_laws&docid=f:publ059.109.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_public_laws&docid=f:publ059.109.pdf)

<sup>11</sup> <http://www.fda.gov/RegulatoryInformation/Legislation/FederalFoodDrugandCosmeticActFDCA/default.htm>

<sup>12</sup> <http://www.cr.nps.gov/local-law/anti1906.htm>

<sup>13</sup> <http://www.epa.gov/superfund/policy/cercla.htm>

<sup>14</sup> <http://www.epa.gov/air/caa/>

<sup>15</sup> <http://www.epa.gov/lawsregs/laws/cwa.html>



significantly reorganized and expanded in 1972. The EPA implements the CWA, but often delegates authority for implementation to the states.

- [Endangered Species Act \(ESA\) of 1973 \(16 U.S.C. 1531-1544, 87 Stat. 884\)](#)<sup>16</sup>, as amended: prohibits any action that can adversely affect an endangered or threatened species or its habitat, including the use of the pesticides. The EPA must ensure that use of pesticides it registers will not result in such harm.
- [Environmental Quality Improvement Act of 1970 \(42 U.S.C. 56 § 4371\)](#)<sup>17</sup>: Directs all Federal agencies, whose activities may affect the environment, to implement policies established under existing law to protect the environment. This is an amendment to the National Environmental Policy Act.
- [Executive Order 11593](#)<sup>18</sup>, Protection and Enhancement of the Cultural Environment, stipulates that the federal government shall provide leadership in preserving, restoring and maintaining the historic and cultural environment of the nation.
- [Executive Orders 11644](#)<sup>19</sup> and [11989](#)<sup>20</sup>, Off-Road Vehicle Use, requires NPS to designate specific areas for off-road vehicle use. These areas must be “located to minimize damage to soil, watershed, vegetation, or other resources.” This also applies to the use of off-road vehicles for application of invasive plant treatment.
- [Executive Orders 11988](#)<sup>21</sup> and [Executive Order 11990](#)<sup>22</sup> (1977), Floodplain Management and Wetland Protection: these executive orders direct federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with modifying or occupying floodplains and wetlands. No such modifications are proposed in any of the Alternatives, but any treatment considered consistent with this IPMP/EA would not and cannot result in any long-term or short-term adverse modifications to floodplains and wetlands. These modifications are structural or physical; they do not include alterations in vegetation community composition that results in restoration of the floodplain, wetland, or riparian area.
- [Executive Order 12898](#)<sup>23</sup> (1994), Environmental Justice, directs each Federal agency to make environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

<sup>16</sup> <http://epw.senate.gov/esa73.pdf>

<sup>17</sup> <http://uscode.house.gov/download/pls/42C56.txt>

<sup>18</sup> [http://www.fsa.usda.gov/Internet/FSA\\_File/eo11593.pdf](http://www.fsa.usda.gov/Internet/FSA_File/eo11593.pdf)

<sup>19</sup> [http://www.google.com/url?q=http://www.archives.gov/federal-register/codification/executive-order/11644.html&sa=U&ei=c\\_3lTqLHDczMtgebvZ2kAQ&ved=0CA8QFjAA&usg=AFQjCNG9bUE5Xe7rlyz7IWkP9UDYPCjxyA](http://www.google.com/url?q=http://www.archives.gov/federal-register/codification/executive-order/11644.html&sa=U&ei=c_3lTqLHDczMtgebvZ2kAQ&ved=0CA8QFjAA&usg=AFQjCNG9bUE5Xe7rlyz7IWkP9UDYPCjxyA)

<sup>20</sup>

[http://www.google.com/url?q=http://www.fedcenter.gov/Bookmarks/index.cfm%3Fid%3D584&sa=U&ei=s\\_3lTvKhDcGCtgefVvScAg&ved=0CCcQFjAE&usg=AFQjCNHPUZCXGivoumc0ijA9DetlS1wXGw](http://www.google.com/url?q=http://www.fedcenter.gov/Bookmarks/index.cfm%3Fid%3D584&sa=U&ei=s_3lTvKhDcGCtgefVvScAg&ved=0CCcQFjAE&usg=AFQjCNHPUZCXGivoumc0ijA9DetlS1wXGw)

<sup>21</sup> <http://www.archives.gov/federal-register/codification/executive-order/11988.html><http://www.archives.gov/federal-register/codification/executive-order/11988.html>

<sup>22</sup> <http://www.archives.gov/federal-register/codification/executive-order/11990.html>

<sup>23</sup> <http://www.epa.gov/fedreg/eo/eo12898.htm>



- [Executive Order 13007](http://www.achp.gov/EO13007.html)<sup>24</sup> (1996), Indian Sacred Sites directs federal land managing agencies to (1) accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites.
- [Federal Cave Resources Protections Act of 1988 \(16 U.S.C. § 4301-4310\)](http://www.nature.nps.gov/rm77/caves/Authority.cfm)<sup>25</sup>, as amended 1990; and implementing regulations 43 CFR Part 37): secure, protect, and preserve significant caves on federal lands (interpreted by NPS as all caves on NPS administered lands). The law must be considered in preparation and implementation of land management plans to ensure that these caves are protected and maintained to the extent practical.
- [Government Performance and Results Act of 1993](http://govinfo.library.unt.edu/npr/library/misc/s20.html)<sup>26</sup> (GPRA): Requires the NPS to set goals (strategic and annual performance plans) and report results (annual performance reports).
- [National Historic Preservation Act of 1966, as amended \(16 U.S.C. 470 et seq.\)](http://www.nps.gov/history/local-law/nhpa1966.htm)<sup>27</sup>; [Archeological and Historic Preservation Act of 1974 \(P.L. 93-291 and 16 U.S.C. 469-469c\)](http://www.nps.gov/archeology/tools/Laws/ahpa.htm)<sup>28</sup>: Establishes policies that preserve “the historical and cultural foundations of the Nation” and irreplaceable examples important to our national heritage, as well as “the preservation of historical and archeological data (including relics and specimens).”
- [National Parks Omnibus Management Act of 1998 \(P.L. 105-391\)](http://www.nps.gov/gis/data_standards/omnibus_management_act.html)<sup>29</sup>: Requires Secretary of Interior to improve NPS' ability to provide state-of-the-art management, protection, and interpretation of and research on NPS resources.
- [Native American Graves Protection and Repatriation Act 1990 \(25 U.S.C. 3001 et seq.\)](http://www.nps.gov/nagpra/mandates/index.htm)<sup>30</sup>: Requires NPS to provide for the protection of Native American graves, including cultural items, such as funerary objects and other sacred objects.
- [Resource Conservation and Recovery Act \(42 U.S.C. §6901 et seq. 1976\)](http://www.epa.gov/lawsregs/laws/rcra.html)<sup>31</sup> gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste.
- [The Wild and Scenic Rivers Act of 1968 \(P.L. 90-542, as amended, 16 U.S.C. 1271-1287\)](http://uscode.house.gov/download/pls/16C28.txt)<sup>32</sup>: requires the following,

*“It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be*

<sup>24</sup> <http://www.achp.gov/EO13007.html>

<sup>25</sup> <http://www.nature.nps.gov/rm77/caves/Authority.cfm>

<sup>26</sup> <http://govinfo.library.unt.edu/npr/library/misc/s20.html>

<sup>27</sup> <http://www.nps.gov/history/local-law/nhpa1966.htm>

<sup>28</sup> <http://www.nps.gov/archeology/tools/Laws/ahpa.htm>

<sup>29</sup> [http://www.nps.gov/gis/data\\_standards/omnibus\\_management\\_act.html](http://www.nps.gov/gis/data_standards/omnibus_management_act.html)

<sup>30</sup> <http://www.nps.gov/nagpra/mandates/index.htm>

<sup>31</sup> <http://www.epa.gov/lawsregs/laws/rcra.html>

<sup>32</sup> <http://uscode.house.gov/download/pls/16C28.txt>

*preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations."*

- [Wilderness Act of 1964 \(16 U.S.C. 1131 et seq.\)](#)<sup>33</sup>: defines wilderness, and requires federal officials to manage Wilderness Areas in a manner conducive to retention of their wilderness character and federal officials must consider the effect upon wilderness attributes from management activities on adjacent lands. It established the National Wilderness Preservation System, to include federal lands designated as "wilderness" by Congress. The Act defines wilderness,

*"in contrast with those areas where man and his own works dominate the landscape, . . . as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain." The Wilderness Act defines the purpose of wilderness as "devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use."*

## State

Implementation of the IPMP/EA will conform to applicable state laws. It is the NPS's general policy to comply with stringent state requirements, where applicable. For example, some states have established legislation and regulations that further define pesticide registration, pesticide usage, training and certification of pesticide applicators, and the criminal enforcement and civil penalties associated with the misuse of pesticides. All pesticide application will be conducted by or under the supervision of a certified pesticide applicator in accordance with state laws. All NPS employees that have pesticide application as a significant element of their position descriptions are encouraged to obtain state certification for pesticide application.

Some states have passed legislation that requires applicators to post information to identify treated areas. Some legislation also specifies that areas proposed for treatment must be posted for a minimum period before the area is treated.

The Heartland parks included in this project are located in eight states. Each of these states has legislation that identifies noxious weeds. A noxious weed is specified by law as having an impact on human health, economically important crops, or other interest of the state. Definitions vary from state to state and according to legal interpretations, but rarely is the plants impact on native communities the primary reason (or in many cases even a consideration) for listing. Some states have enacted laws addressing specific weed problems, such as Missouri Laws 263.190 on managing nuisance thistles. The NPS is a partner with the states in the control or eradication of noxious weeds.

## Local

Implementation of the IPMP/EA will conform to applicable local laws. Under the IPMP/EA, Heartland parks will comply with stringent local requirements, where applicable. For example, cities and counties may have established local ordinances and regulations that further define pesticide use. Under both alternatives, each park will review all applicable local regulations on a regular basis.

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<sup>33</sup> <http://wilderness.nps.gov/document/wildernessAct.pdf>

## National Park Service Policies and Guidelines

The NPS has a strong and clear policy on managing invasive plants in the parks. Parks are guided by three primary internal documents to manage these plants:

- [NPS Management Policies 2006](#)<sup>34</sup>.
- [Adaptive Management](#)<sup>35</sup> (516 Departmental Manual 4.16; 69 Fed. Reg. 10,866, at 10,880, Mar. 8, 2004) uses a system of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and facilitating management changes to ensure that outcomes are met or to reevaluate the outcomes.
- [Director's Order](#)<sup>36</sup> 77 (DO-77, under development), as currently provided in Reference Manual 77: Natural Resources Management is the NPS guidance to natural resource protection until the completion of DO-77).
- Individual Park's natural Resource Management Plans or Resources Stewardship Strategies, and vegetation management plans, invasive plant management plans, fire management plans or similar implementation plans relating to the management of invasive plant species.

**NPS Management Policies 2006:** General policies for management of invasive plants and restoration of native vegetation are provided in the NPS Management Policies 2006 (NPS 2006:42 - 50), Section 4.4. Management of Exotic Species appears in Section 4.4.4 (p. 47). The most relevant sections are summarized below.

- Definition of Native and Exotic Species -- Page 43, Section 4.4.4.1.3 includes the definitions of native species and exotic species that were adopted for this IPMP/EA.
- Management of Exotic Species -- Page 47, Section 4.4.4 requires parks to manage invasive species to prevent the displacement of native species, when displacement can be prevented.

**Removal of Exotic Species Already Present** – Page 48, Section 4.4.4.2 allows parks to remove invasive species that are already present within parks. NPS management policies list specific criteria that must be met before an invasive species may be managed, as presented in Chapter 1.3 of this document. For a species determined to be invasive and where management appears to be feasible and effective, this section also provides guidance to the parks on how to determine invasive plant management priorities.

**Pest Management:** Page 48, Section 4.4.5 provides guidance on general pest management. Pests are living organisms that interfere with the purposes or management objectives of a specific site within a park, or that jeopardize human health or safety. Native pests will be managed according to the invasive species policies provided on page 47, Section 4.4.4 and Section 4.4.5.1 that

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<sup>34</sup> <http://www.nps.gov/policy/mp2006.pdf>

<sup>35</sup> <http://www.doi.gov/initiatives/AdaptiveManagement/>

<sup>36</sup> <http://www.nps.gov/applications/npspolicy/DOrders.cfm>

allows management of native species when they are determined to be pests. Native species will be allowed to “function unimpeded,” except when deemed a pest that may be controlled to

- Conserve threatened, rare, or endangered species, or unique specimens or communities.
- Preserve, maintain, or restore the historical integrity of cultural resources.
- Conserve and protect plants, animals, and facilities in developed areas.
- Prevent outbreaks of a pest from invading uninfected areas outside the park.
- Manage a human health hazard when advised to do so by the U.S. Public Health Service (including Centers for Disease Control and NPS public health program).
- Protect against a significant threat to human safety.

Native species that are deemed pest species, where treatment will meet one of the above objectives, shall be called invasive species in this IPMP/EA.

*Integrated Pest Management Program:* Page 48, Section 4.4.5.2 provides the definition and guidelines for Integrated Pest Management (IPM) adopted for this project. This is defined at length in Alternative 2: Integrated Pest Management (Preferred Alternative).

*Biological Control:* Page 49, Section 4.4.5.4 stipulates the guidelines for use of a biological control agent or bioengineered product for pest management must conform to DO-77-7 and NPS Policies in Section 4.4.4, and as with pesticide use, be approved by a designated IPM specialist in accordance with DO-77.

*Pesticide Use (Section 4.4.5.3), and Purchase and Storage (Section 4.4.5.5):* Page 49, Sections 4.4.5.3 and 4.4.5.5 address the use, purchase, and storage of pesticides. A pesticide, as defined by the FIFRA, is any substance or mixture that is used in any manner to destroy, repel, or control the growth of any viral, microbial, plant, or animal pest. Under this definition, guidance may also be applied to biological agents and bioengineered products.

A park resource manager must first determine that the use of pesticides or biological control agents is necessary, and that all other available options are either not acceptable or not feasible. Use of the substance must then be approved for the purpose proposed by the manager. Apart from few exceptions (see discussion of DO-77 below), all prospective uses of pesticides in each park must be submitted in a pesticide use proposal to be reviewed on a case-by-case basis by the regional and possibly the national IPM coordinator. These proposals take into account environmental effects, cost and staffing, and other relevant considerations.

Section 4.4.5.5 provides guidance on the storage of pesticides:

*“No pesticides may be purchased unless they are authorized and are expected to be used within one year from the date of purchase. Pesticide storage, transport, and disposal will comply with procedures established by (1) the Environmental Protection Agency; (2) the individual states in which parks are located; and (3) Director’s Order #30A: Hazardous and Solid Waste Management, Director’s Order 77-1: Wetland Protection, and Director’s Order 77-7: Integrated Pest Management.”*

*NPS-conducted or -sponsored Studies:* NPS Management Policies 2006, page 40, Section 4.2.1 promotes natural resource studies that are consistent with NPS guidelines and contribute an

understanding of park resources. They supply park management, the scientific community, and the public with the knowledge needed to make good resource management decisions. Both short- and long-term studies are an important part of the monitoring necessary to adaptively manage resources and plan invasive species treatment. The NPS will promote the cooperative relationships with scientific institutions and educational facilities that assist parks in obtaining information and in disseminating information that contributes to the prevention, eradication, control, or containment of invasive species infestations.

*Restoration:* Restoration of native species can be an effective method of creating competition for invasive species and preventing infestation by invasive species. Restoration may be a second treatment after the use of removal techniques for maintaining a treatment site. Page 39, Section 4.1.5 stipulates that NPS will reestablish natural functions and processes in parks for the recovery of landscape and biological community structure. Efforts may include, for example

- Removal of invasive species;
- Restoration of areas disturbed by NPS administrative, management, or development activities;
- Restoration of native plants and animals; and/or
- Restoration of natural visibility.

The NPS will strive to restore extirpated native plant species following certain criteria provided on page 45, in Section 4.4.2.2. Along with the restoration of native systems comes the need to manage those systems effectively. Page 44, Section 4.4.2 provides guidance for using natural processes to maintain native plant species and influence natural fluctuations in populations of species. It also gives guidelines on removal of individuals or parts thereof.

**Director's Order 77, Natural Resources Management:** DO-77 as articulated in Reference Manual 77 (RM-77). National Park Service-77 (NPS-77) of 1991 provided natural resource management guidelines that DO-77 will supersede once signed. As part of the new guidance, DO-77-7: *Integrated Pest Management (IPM)* will supplement and clarify existing NPS policies on IPM. The NPS Associate Director for Natural Resources Stewardship and Science will also develop and issue a revised Reference Manual 77-7, providing parks with additional information and procedures for carrying out NPS responsibilities included in NPS-77, DO-77-7, and Management Policies 2006. Once formalized, policy and guidance included in DO-77-7 and RM 77-7 would apply to any actions taken under the IPMP/EA. Since DO-77-7 has not been approved at the time of this writing, the IPMP/EA is based on existing policy included in NPS-77 and NPS Management Policies 2006. However, some concepts that are included in draft versions of DO-77-7 were incorporated into the IPMP/EA to provide additional guidance.

*Review and Approval to Use Pesticides:* Reference Manual-77 provides guidance on the review and approval process for pesticides, biological control, and other treatments. The natural resource manager at a park can approve treatments that do not involve the use of pesticides or biological control. However, if pesticides or biological control treatments will be used, a use proposal must be sent to the regional IPM coordinator. The regional IPM coordinator may then forward requests to the national IPM coordinator in Washington D.C., as appropriate. Each park that proposes the use of pesticides or biological control agents must also follow established state and federal regulations.

Pesticides must be reviewed and approved prior to use if they meet one or more of the following:

- Are applied to any lands, waters, or structures that are owned, managed, or regulated by the NPS.
- Are purchased by NPS or cooperating association funds.
- Are used on privately owned lands or lands managed by another government agency and are located within a park boundary, and NPS approval is required under the terms of a legally binding agreement between the park and the landowner.
- Are purchased by the park for employees (e.g., insect repellants and bear deterrents).

The following pesticides do not require approval (unless approval is required by a regional director or superintendent):

- Personal insect repellants and bear deterrents that are purchased by park employees or visitors from their own funds and applied to their own persons, pets, and privately owned livestock.
- Personal insect repellants and bear deterrents sold by concessioners.
- Disinfectants and cleaning solutions used in restrooms and restaurants, even though these products have EPA pesticide registration numbers.

To obtain approval for pesticide use, each park is required to prepare a pesticide use proposal. An Intranet based system has been developed whereby resource managers can submit these requests electronically. The regional and, as necessary, the national IPM coordinator then review these requests.

Except as noted below, regional IPM coordinators review pesticide use proposals and either approve them, approve them with conditions, or deny them (and provide alternative methods). Currently, the following pesticide use proposals also require a second level of review by the national IPM coordinator:

- Pesticide uses that involve aquatic applications or situations in which the applied pesticide could reasonably be expected to get into waters or wetlands.
- Pesticide uses that may affect rare, threatened, or endangered species or associated critical habitat.
- Pesticide use involving aerial application.
- Restricted-use pesticides as defined by the EPA.

In the future, broadcast applications over a specified acreage may also require approval from the national IPM coordinator under DO-77-7. In practice, approval should be obtained from the national IPM coordinator for any chemical treatment of 400 or more contiguous acres. Regional IPM coordinators are well versed in current requirements for approval and move requests that require national level approval to that level.

The decision by either the regional IPM coordinator or national IPM coordinator to approve a pesticide use proposal is based on its conformance with NPS policies and guidelines, a determination of whether other alternatives are available or feasible, and whether the pesticide is

registered for the proposed use. If proposals are denied, the regional or national IPM coordinator will provide a written explanation of the denial and suggestions for suitable alternatives.

Pesticide use proposals must be approved annually with each approval expiring on December 31 of the year of approval. Requests may be submitted at any time during the year, but still expire on December 31. Approval may be obtained for situations that were not anticipated, including emergencies. These “emergency” pesticide use proposals may be submitted via telephone, fax, or email to the regional IPM coordinator, or in their absence, the national IPM coordinator.

*Reporting Pesticide Use:* Under RM-77, parks are required to maintain records of pesticide use in an annual report. Pesticide use reports are submitted electronically using the Intranet based IPM system. Pesticide use reports must be entered into this system by March 15 for the prior year.

*Review and Approval to Use Biological Control Agents:* Any park proposing to release a biological control agent must receive approval from the regional or national IPM coordinator. Biological control use requests are first submitted to the regional IPM coordinator. The regional IPM coordinator may deny the proposal, modify the proposal in cooperation with the park and forward the modified request, or forward the request (without modification) to the national IPM coordinator for review and approval. State permitting may also be required prior to the release of a biological control agent.

*Other Pesticide Related Guidelines:* Reference Manual-77 also provides guidelines for pesticide purchase, pesticide storage, disposal of pesticides, pesticide safety, and contracted pest management services. These guidelines have been incorporated into the health and safety practices provided in Appendix G.

*Exotic Species Management:* Reference Manual-77 contains guidance on a number of invasive species management topics. These topics include prevention of invasive species invasions, management of established invasive species, biological control, IPM, pesticide use, and environmental compliance and planning documents. This guidance has been used to develop this IPMP/EA. The guidance also includes information for NPS concessioners that manage pests on NPS property or in NPS buildings.

Additionally, the NPS has developed guidance based on RM-77 to help educate concessioners on NPS procedures for managing pests. The guidance document is titled, *Understanding the National Park Service’s Integrated Pest Management Program* (NPS 2003) and can be accessed at <http://www.planning.nps.gov/concessions/document/CoEMPGuidanceIPM.pdf>. All concessioners are required to review and comply with this document or subsequent versions prior to conducting any invasive plant management activities. This IPMP/EA excludes this area of compliance.

**Other Guidance** with Tangential Association with Invasive Plant Management Actions

- [DO-41, Wilderness Preservation and Management](#)<sup>37</sup>: Provides accountability, consistency, and continuity to the National Park Service's wilderness management program, and to guide Servicewide efforts in meeting the letter and spirit of the 1964 Wilderness Act.
- [DO-46, Wild and Scenic Rivers](#)<sup>38</sup>: Provides accountability, consistency, and continuity to the National Park Service's Wild and Scenic Rivers Program (being developed).
- [DO-47, Sound Preservation and Noise Management](#)<sup>39</sup>: Provides operational policies that will require, as practicable, the protection, maintenance, or restoration of the natural soundscape resource in a condition unimpaired by inappropriate or excessive noise sources.
- [DO-50, \(A\)](#)<sup>40</sup> relates to workers compensation; (B) covers the occupation safety and health program for NPS employees; and (C) treats prevention of visitor incidents, to protect human life and provide for injury-free visits.
- [DO-50C](#)<sup>41</sup>, Public Risk Management Program, concerns visitor and public safety issues.
- [NPS-75](#)<sup>42</sup> (reissued under DO-77), Natural Resources Inventory and Monitoring: Establishes an Inventory and Monitoring Program that charts the course and provides the leadership and information resources needed by the National Park Service to preserve and protect the natural resources placed under its trust.

**Cultural Resource Guidance** includes, but is not limited to

- [NPS Management Policies 2006](#)<sup>43</sup>, NPS will “preserve and foster appreciation of the cultural resources in its custody, and will demonstrate its respect for the peoples traditionally associated with those resources, through appropriate programs of research, planning, and stewardship.”
- [DO-28](#)<sup>44</sup>, Cultural Resources Management; [DO- 28A](#)<sup>45</sup>, Archeology; [DO – 28B](#)<sup>46</sup>, Ethnography.
- [Secretary of the Interior’s Standards and Guidelines for Archeological Documentation](#)<sup>47</sup> [48 FR 44734-737].

<sup>37</sup> <http://www.nps.gov/policy/DOrders/RM41.doc>

<sup>38</sup> <http://www.nps.gov/nrcr/programs/rtca/nri/eligb.html>

<sup>39</sup> <http://www.nps.gov/policy/DOrders/DOrder47.html>

<sup>40</sup> <http://www.nps.gov/policy/DOrders/DOrder50A.html>

<sup>41</sup> <http://www.nps.gov/policy/DOrders/DO-50C.pdf>

<sup>42</sup> <http://www.nature.nps.gov/nps75/nps75.pdf>

<sup>43</sup> <http://www.nps.gov/policy/mp2006.pdf>

<sup>44</sup> <http://www.nps.gov/policy/DOrders/DOrder28.html>

<sup>45</sup> <http://www.nps.gov/policy/DOrders/DOrder28A.html>

<sup>46</sup> <http://www.inside.nps.gov/waso/waso.cfm?prg=726&lv=3>

<sup>47</sup> [http://www.google.com/url?q=http://www.nps.gov/history/local-law/arch\\_stnds\\_7.htm&sa=U&ei=G\\_\\_ITuGSKY2-tgfaqvT3BA&ved=0CBAQFjAA&usg=AFQjCNHfBPynbyO0bb1xYcHS7b\\_C8P6eQ](http://www.google.com/url?q=http://www.nps.gov/history/local-law/arch_stnds_7.htm&sa=U&ei=G__ITuGSKY2-tgfaqvT3BA&ved=0CBAQFjAA&usg=AFQjCNHfBPynbyO0bb1xYcHS7b_C8P6eQ)



- [Secretary of the Interior's Standards for the Treatment of Historic Properties](http://www.access.gpo.gov/nara/cfr/waisidx_05/36cfr68_05.html)<sup>48</sup> [36 CFR Part 68], the Secretary of the Interior is responsible for establishing professional standards and providing advice on the preservation of cultural resources listed in or eligible for listing in the National Register of Historic Places.

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<sup>48</sup> [http://www.access.gpo.gov/nara/cfr/waisidx\\_05/36cfr68\\_05.html](http://www.access.gpo.gov/nara/cfr/waisidx_05/36cfr68_05.html)



## Appendix G: Safety Plan and Procedures

### QUICK ACCESS TO SAFETY MEASURES

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### Purpose

Safety of the public and NPS employees is the highest priority of the invasive plant management program. The IPMT coordinator will integrate occupational safety and health into all activities and functions of the Invasive Plant Management Teams in compliance with Director's Orders #50A and #50B. Job Hazard Analyses will be conducted to minimize the occupational risks to employees.

This safety plan outlines general and park specific safety guidelines for the Heartland Network. General guidelines that pertain to all field projects are described here in order to minimize potential health and safety risk. Safety of field personnel should always be the first concern while conducting a project. Invasive plant treatment and monitoring projects necessitate exposure of field personnel to potentially hazardous conditions across seasons and climatic conditions in addition to unforeseen, potentially catastrophic, short-term natural events (e.g., floods, storms) that may occur.

As a result, field work requires planning that anticipates the risks and dangers that field personnel may be exposed to, so precautions may be taken to limit threats to safety as much as possible. The most direct route from various sampling sites to the nearest emergency facility and emergency phone numbers must be documented in advance of field work. Familiarity with the safety plan is required of all personnel. A copy of the plan for ready reference should always accompany field personnel to the field.

Emergency plans with emergency contacts, storm shelters, and nearest hospitals are listed by park in a Field Safety Reference packet that contains the Heartland Network Safety Plan and Procedures and additional standard operations for safety issues. The Field Safety Reference will be available in each vehicle or base of operation for the Invasive Plant Management Team. Parks

will use their own approved health and safety operating procedures, when they lead in an invasive plant project.

### **Scope and Applicability**

Field personnel need to be physically able to work under demanding conditions and be well prepared to handle contingencies or emergencies. The following are suggested requirements for all field personnel:

- Up-to-date First Aid Training.
- Up-to-date CPR certification.
- Up-to-date certification for all pesticide applicators equipment operators.
- Completed satisfactory interview about health and safety with the field crew supervisor, including routine safety precautions and a discussion of actions to be taken in an emergency.
- Familiarization with this Heartland Inventory and Monitoring Network Health and Safety Plan (signature required), this supplement for all Heartland Invasive Plant Management Team crews, and Standard Operating Procedures for the IPMT.

The IPMT coordinator has no authority to set procedures for field crews led by the parks within their own park.

### **Procedures and General Requirements**

#### ***Best Safety Practices***

All safety precautions provided under the various categories in this document and in the Heartland Inventory and Monitoring Network Health and Safety Plan will be followed.

- Prior to field work, all workers must review the Network safety plans. Signed acknowledgement of receipt and review of the document is required.
- Crew members are responsible for bringing personal protective equipment (PPE), field clothing, footwear, and medicine needed in the field. Crew members are ultimately responsible for using their own PPE in the field.
- Work supervisor is responsible for ensuring that all crew members have all needed PPE with them and are ready to use it properly.
- Prior to beginning field work each day, potential field hazards will be identified, mitigation measures suggested, and emergency procedures outlined.

#### ***Communication***

- Field crews will carry a radio with them in the field. See SOP #1 “Using the DPHx Portable Radio” for proper use of Heartland Network radios.
- Project leaders will carry a cell phone or have access to one while working in the field.

#### ***Dangerous Plants/Animals***

Some sites will have risks associated with dangerous animals and/or plants. Poison ivy, poison oak, and poison sumac are likely to be common. Other common plants of concern include wild parsnip, stinging nettle, and various vines, shrubs and trees with thorns. Faunal risks in the Network include venomous snakes (e.g. cottonmouth, copperheads, and several rattlesnake

species), and rabid mammals of any number of species. To minimize the risks associated with dangerous animals and plants during the field season, the following measures are recommended:

- All field personnel should receive training in field identification, avoidance of, and first aid for, dangerous plants and animals which may be encountered during the field season. The crew leader should make all crew members aware of situation specific dangers as they are noted. Similarly, crew members should inform the crew leader as soon as they are discovered.
- Crewmembers should inform their crew leader of any known allergies and keep appropriate medical relief, such as an epinephrine-pen, with them.
- The field first aid kit should contain a supply of itch relief medication and triple anti-biotic ointment. Use of systemic anti-histamines will be the prerogative of the crewmember, but use may cause drowsiness that could lead to unsafe work conditions. Generally, a topical anti-inflammatory, antihistamine, or anti-itch cream is preferred.
- FDA-approved repellent should be used to prevent insect bites. Use all repellents according to manufacturers' directions.
- Use prescribed method of removing ticks (see Heartland Inventory and Monitoring Network Health and Safety Plan) or treating insect or arachnid bites.

### **Equipment Operation**

- Only a certified sawyer may operate the chainsaw.
- Always wear the appropriate PPE, including eye and ear protection.
- Fuel equipment in a well-ventilated area, away from sparks and open flames. Always transport fuel in approved and labeled containers.
- When cutting with a chainsaw, be aware of surroundings (e.g. power lines, vehicles, other employees).

### **First Aid**

During any field work, there is a possibility that first aid will need to be administered.

- First aid is chemical- specific. Read labels and material safety data sheets (MSDSs), and keep labels and MSDSs in the Field Safety Reference packet. Familiarize crew with pesticide emergency processes and be prepared to act quickly if needed.
- Notify supervisor immediately of any emergency or spill. Emergency aid forms must be completed.
- Maintain a stocked first aid kit in the field (if away from vehicle) and in the field vehicle.
- In case of a medical emergency, no one will be left alone at the job site and no one will travel to medical facilities alone.

### **Medical Emergencies**

In the event of a medical or other emergency, the person with the highest medical certification should take all appropriate immediate actions.

- In the event the emergency occurs at a remote location, all necessary information to guide assistance personnel should be provided, including map coordinates or other landmarks.

- Contact the park via radio or cell phone immediately. The field crew leader should contact the park superintendent and inform him/her of the situation.

***Pesticide Application***

Prior to chemical treatment in a park, the IPMT coordinator will discuss safety issues with park representatives to coordinate closures or temporary sign installation. All OSHA standards for using power equipment and chemicals in the work environment will be strictly followed during the course of a project. MSDS sheets and labels, including those that are state specific, will be kept in the Field Safety Reference packet.

- General use pesticides will be selected whenever feasible, over restricted use pesticides. If restricted use pesticides are required, a relatively low toxicity chemical will be given priority consideration.
- All handling of chemicals will follow product label specifications.
- All crew members working with pesticides will wear appropriate PPE. Unless the label specifies otherwise, applicators should wear protective goggles or face shields, rubber or neoprene gloves, an impervious cap with a brim and drip guard, long pants, a long-sleeved shirt, and rubber boots during mixing, loading, application, and cleanup. The applicator should use a respirator approved for the type of pesticide being applied, when advised on the label.
- Pesticides should never be transported inside the cab or passenger compartment of a vehicle. Transport pesticides in secured containment tubs outside of any passenger area.
- Daily cleaning, inspection and repair will be completed by each applicator.
- Do not use faulty or damaged equipment. Repair or replace it immediately. Tag or label any equipment that is not suitable for use. Maintain a supply of common repair parts for the backpack sprayers and boom sprayer.
- Inform the supervisor if any repair parts or safety items need to be purchased
- In addition to the safety of the applicator, the safety of park visitors and others must be considered. If the pesticide label specifies a reentry period, treated areas must be posted with signs warning visitors and others not to enter the treated area in areas. The signs should indicate that the area has been treated with a pesticide, what materials were used, and the name and telephone number of a contact person.
- Remove PPE immediately after completing pesticide application. Wash the outside of gloves before removing. Pesticide application equipment should never be worn home or washed in home laundry facilities.
- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. As soon as possible after project completion, wash thoroughly and change into clean clothing. Clothing that may have been exposed to herbicide should be laundered separately from other clothing using detergent and hot water. Remove clothing immediately if herbicide gets inside.
- A 5- gallon backpack sprayer weighs 45 to 50 lbs. The pack straps should be adjusted to fit crew member's waist, shoulders, and chest prior to walking. Applicator should receive assistance in lifting and adjusting apparatus, when possible.

### Pesticide Storage

- Pesticide storage facilities must be locked, fireproof, and ventilated; proper warning signs must be posted.
- Pesticides must be stored separately from all other substances, and the directions provided on the labeling must be followed. In addition, each type of pesticide must be stored on separate shelves.
- Any structure used for storage of pesticides should be posted, and copies of labels, MSDSs, and inventories should be kept in a locked container outside the storage facility.

### Pesticide Mixing

- Read the pesticide label and follow all directions. Consult the MSDS for additional safety protocol.
- All crew members working with pesticides will wear appropriate PPE. Mixers and loaders should take the additional precaution of wearing an impervious apron.
- No mixing near water sources such as wells, springs, and streams. Never allow the filler hose/nozzle to contact the chemical or spray tank. Mix all solutions with the tank in a rubber containment tub or on a concrete pad.
- Always use a marker dye when spraying any chemical.
- Only the amount of pesticide required for the treatment area should be mixed to limit the amount of excess pesticide generated during treatment.

### Pesticide Disposal and Clean Up

- Small remaining quantities of mixed pesticides and any rinsate from the container or spray equipment may be applied to the treatment area.
- Excess pesticide may be given to another agency or disposed of according to state laws and regulations. Donation of surplus chemicals should be documented and records kept for 3 years.
- When spray tanks are empty, triple rinse (clean water - detergent solution - clean water) them in the field and spray rinsate on various approved treatment sites.
- All spray equipment will be cleaned before storage or repair.
- Schedule work to attempt to have empty spray equipment by the end of spray hours; in the event this does not happen, tag tanks to indicate content. Use the tanks at next feasible opportunity.
- Triple- rinse all pesticide containers immediately, puncture the container so it cannot be used and dispose of it according to the label. Pour the container rinsate into the spray equipment so it can be applied to the target plant species.
- Wear appropriate PPE when cleaning equipment.

### Pesticide Spill Emergency Response Plan

A pesticide spill emergency response plan is located in the Field Safety Reference packet.

- Consult the pesticide container label and appropriate MSDS to determine response and safety protocol.
- Report the spill as warranted by information provided on the pesticide container label and MSDS.

- Wear appropriate PPE to handle a spill. Carry spill response duffle bag at all times and be familiar with its contents.
- To prevent the spill from spreading, emergency supplies on hand should include:
  - ✓ shovel empty
  - ✓ containers
  - ✓ hoses/hose clamps
  - ✓ duct tape
  - ✓ plastic tarp/sheeting
  - ✓ heavy plastic bags
  - ✓ caulking/sealant
  - ✓ spare screws/nuts/bolts
  - ✓ absorbent material
  - ✓ dedicated miscellaneous tools
- Methods for stopping/containing spills:
  - ✓ Prevent additional spillage.
  - ✓ If in a building or a pickup bed, use absorbent material to soak up liquid.
  - ✓ If on the ground, use the shovel and scrape earth to form dikes to contain the liquid. Use plastic sheeting and absorbent material if it will help.
  - ✓ Flag the area of spill to indicate parameters.
  - ✓ As soon as the spill is contained, contact the Chief of Resource Management who will, in turn, determine whether the spill is minor and can be handled using readily available equipment and materials, or major, requiring notification of appropriate authorities.
- Methods for collection of spilled pesticides and materials:
  - ✓ If not in contact with soil, collect spilled liquids with absorbent material and put into heavy plastic bags or empty containers; tag container, indicating contents.
  - ✓ If in contact with the soil, collect liquids with absorbent material; gather all material, including soil that encountered the spilled pesticides, and put into empty containers; tag the container indicating contents.
- Plan for storage, handling, and disposal of spilled pesticides and materials.

***Terrain Hazards***

- When necessary, the crew leader will make a determination as to whether access to the project site is safe under current conditions or expected conditions, during the work day.
- To the greatest extent possible, travel between the vehicle and the sample site should occur only during daylight hours. Multiple trips to the site may be required to safely transport needed equipment.
- Only in unusual circumstances (as determined by the crew leader) should a crew member travel alone over hazardous terrain.

***Training***

- The IPMT coordinator will ensure that IPMT staff are trained and certified to the level needed in order to operate equipment safely, such as UTVs, chainsaws, brush cutters, etc., or apply pesticides.
- The IPMT coordinator and work group supervisors will attend the 40-hour integrated pest management training to incorporate the best practices with regard to use of



personal protective equipment, hazardous waste storage and disposal, method selection, monitoring, and reporting requirements.

**Vehicle Safety**

- All drivers shall be properly licensed. Drivers must be alert and familiar with vehicle operation when driving. Any crew member may refuse to drive or ride under conditions in which they feel uncomfortable.
- Up-to-date defensive driving training is required for all drivers.
- Vehicles will be inspected daily for safe operating condition. Drivers shall perform a pre-operational check of their vehicles (oil, tire pressure, fluids). Report all needed repairs to the crew leader promptly. Do not use equipment that is unsafe. If the sampling vehicle is not safe to operate, the vehicle should not be operated until the condition is rectified.
- All personnel shall ride inside the vehicle. All drivers and passengers shall wear seat belts and/or shoulder harnesses.
- Equip the vehicle with a properly charged fire extinguisher and first aid kit.

**Vehicles – Off-road**

Operations of off-road vehicles will follow the policies established by each park. In addition, the following standards will be met.

- Only trained and certified personnel will operate off-road vehicles and equipment. Operators will be made aware of hazards in the work area or in route to the work area.
- Equipment will be used in accordance with best practices, as stipulated in Chapter 2.
- UTVs are preferred over All-Terrain Vehicles, because of the greater stability and attached roll-cage on the UTV.
- UTVs used for chemical application are operated at low speeds. Most sprayers are calibrated for a 5 mph application speed.
- Equip the vehicle with a properly charged fire extinguisher and first aid kit.
- UTVs will be used in approved areas only. Briefings will be held daily to ensure that the driver knows proper locations for use and associated hazards.
- Head protection will be worn during operation. A motorcycle-type helmet will be worn when loading or unloading, and when traveling to or from a work areas. A motorcycle-type helmet will not be used during the spraying of pesticides, particularly when a respirator is required. These helmets do not allow a seal to be made between respirator and face. Additionally, the padded interior of this type of helmet absorbs volatilized or minute droplets of pesticide, trapping the chemical against the head and face. A request for waiver for the use of this type of helmet will be submitted to the region for approval before this situation is encountered.

**Weather Conditions**

- Crew leaders will monitor weather conditions with weather band radio, adjusting treatment schedules as appropriate to minimize the chance of a field crew being exposed to an electrical storm or other dangerous weather conditions. Dangers posed by wind conditions, potential for chemical volatilization, and other weather

conditions will be taken into account in determining the tasks to be completed during the field day.

- Expected heat stress levels will be based on weather forecasts and work schedules will be adjusted accordingly. Heat will also affect pesticide effectiveness and volatilization. The effect of volatilization on crews and applicators should be considered in treatment schedules.
- If a thunderstorm approaches, take immediate cover. Stay out of dangerous areas until the storm has completely passed.
- A **tornado watch** means weather conditions are such that tornadoes or severe storms can be expected to develop. During the watch, be vigilant for the sudden appearance of violent winds, rain, hail, funnel shaped clouds, or ominous appearance of the sky.
- A **tornado warning** means that a tornado has been observed in that area. Move immediately to a shelter or other protective cover.
- The most prevalent hazard during the field season is likely to be exposure to heat during summer months. Wear a hat, sunscreen, and loose clothing and drink water and electrolytes. Observe your fellow employees for signs of heat related illness and apply first aid at the first signs of heat stroke or heat exhaustion.

## EMERGENCY NUMBERS

- |                                      |                                  |
|--------------------------------------|----------------------------------|
| • Pesticide Poison Information:      | 800- 732- 2200                   |
| • National Response Center:          | 800- 424- 8802                   |
| • CHEMTREC:                          | 800- 424- 9300                   |
| • IPMT Coordinator:                  | 417- 732- 6438                   |
| • Park Safety Officer                | Enter for each park upon arrival |
| • County Sheriff or Municipal Police | Enter for each park upon arrival |

## State Emergency Management

### Arkansas Department of Emergency Management

Bldg. # 9501

Camp Joseph T. Robinson

North Little Rock, Arkansas 72199-9600

(501) 683-6700

(501) 683-7890 FAX

[www.adem.arkansas.gov/](http://www.adem.arkansas.gov/)

### Iowa Homeland Security & Emergency Management Division

7105 NW 70th Ave, Camp Dodge

Building W-4

Johnston, Iowa 50131

(515) 725-3231

(515) 281-3260 FAX

[www.iowahomelandsecurity.org](http://www.iowahomelandsecurity.org)

### Indiana State Emergency Management Agency

302 West Washington Street

Room E-208 A

Indianapolis, Indiana 46204-2767

(317) 232-3986

(317) 232-3895 FAX

[www.ai.org/sema/index.html](http://www.ai.org/sema/index.html)

### Kansas Division of Emergency Management

2800 S.W. Topeka Boulevard

Topeka, Kansas 66611-1287

(785) 274-1409

(785) 274-1426 FAX

[www.kansas.gov/kdem](http://www.kansas.gov/kdem)

Minnesota Homeland Security and  
Emergency Management Division

Minnesota Dept. of Public Safety  
444 Cedar Street, Suite 223  
St. Paul, MN 55101-6223  
Office: (651) 201-7400  
Fax: (651) 296-0459  
[www.hsem.state.mn.us](http://www.hsem.state.mn.us)

Missouri Emergency Management  
Agency

2302 Militia Drive  
P.O. Box 116  
Jefferson City, Missouri 65102  
(573) 526-9100  
(573) 634-7966 FAX  
[sema.dps.mo.gov](http://sema.dps.mo.gov)

Nebraska Emergency Management  
Agency

1300 Military Road  
Lincoln, Nebraska 68508-1090  
(402) 471-7421  
(402) 471-7433 FAX  
[www.nema.ne.gov](http://www.nema.ne.gov)

Ohio Emergency Management Agency

2855 West Dublin-Granville Road  
Columbus, Ohio 43235-2206  
Office: (614) 889-7150  
Fax: (614) 889-7183  
[ww.ema.ohio.gov/ema.asp](http://ww.ema.ohio.gov/ema.asp)

**State HazMat Coordinator (State Emergency Response Commission)**Arkansas State SERC Contacts

Arkansas Department of Emergency  
Management  
David Maxwell, SERC Chair  
Building 9501, Camp Robinson  
North Little Rock, AR 72219  
Contact: Kenny Harmon  
Phone: 501.683.6700  
Web Page:  
<http://www.adem.arkansas.gov/>

Kansas State SERC Contacts

Kansas Commission on Emergency  
Planning and Response  
c/o Kansas Division of Emergency  
Management  
2800 SW Topeka Blvd  
Topeka, KS 6661  
1 Office: (785) 274-1418  
Fax: (785) 274-1426  
Website: [kansastag.ks.gov](http://kansastag.ks.gov)

Indiana State SERC Contacts

Patrick Ralston, Chairman  
Indiana Emergency Response  
Commission  
Indiana Government Center South  
302 West Washington Street, Room E208  
Indianapolis, IN 46204-2738

Minnesota State SERC Contacts

Kevin Leuer  
Minnesota Emergency Response  
Commission  
444 Cedar Street  
Suite 223  
St. Paul, MN 55101

Iowa State SERC Contacts

Christie Scase, Chair Iowa SERC  
Department of Justice  
Hoover Building 2nd floor  
Des Moines, IA 50319

Missouri State SERC Contacts

Dawn Warren, Executive Director  
Missouri Emergency Response  
Commission  
2302 Militia Drive  
Jefferson City, MO 65102  
Email: [Dawn.Warren@sema.dps.mo.gov](mailto:Dawn.Warren@sema.dps.mo.gov)

**Nebraska State SERC Contacts**

Tonya Ngotel, SERC Coordinator  
Nebraska Emergency Management  
Agency  
1300 Military Road  
Lincoln, NE 68508  
Phone: 402.471.7176  
Email: [tonya.ngotel@nebraska.gov](mailto:tonya.ngotel@nebraska.gov)

**Ohio State SERC Contacts**

Cindy DeWulf, Co-Chairperson  
State Emergency Response Commission  
Ohio Environmental Protection Agency  
50 West Town Street/PO Box 1049  
Columbus, OH 43216-1049  
Phone: 614.644.2260

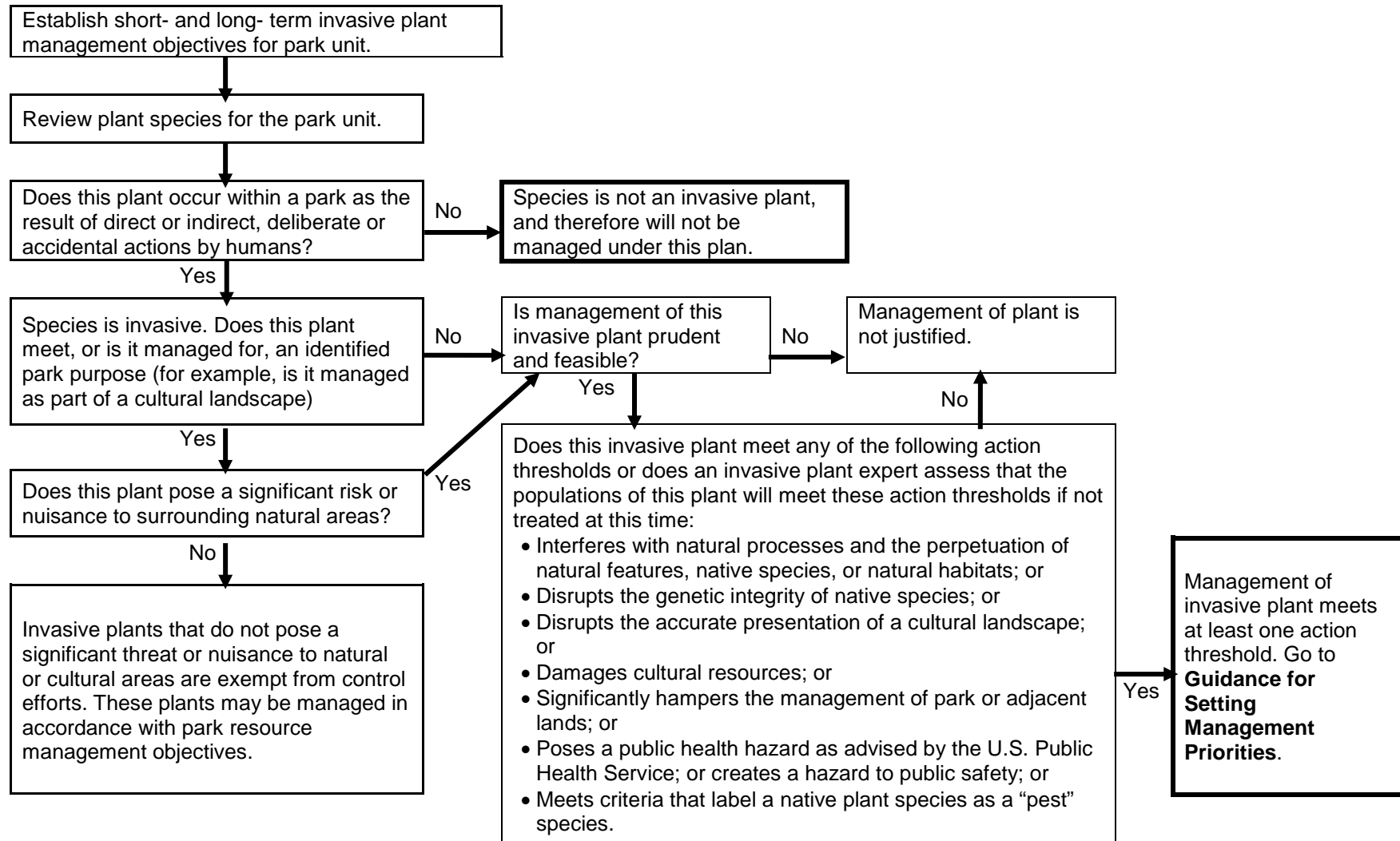
Nancy Dragani, Co-Chairperson  
State Emergency Response Commission  
Ohio Emergency Management Agency  
2855 West Dublin-Granville Road  
Columbus, OH 43235-2206  
Phone: 614.889.7150

**NPS IPM information and links:**

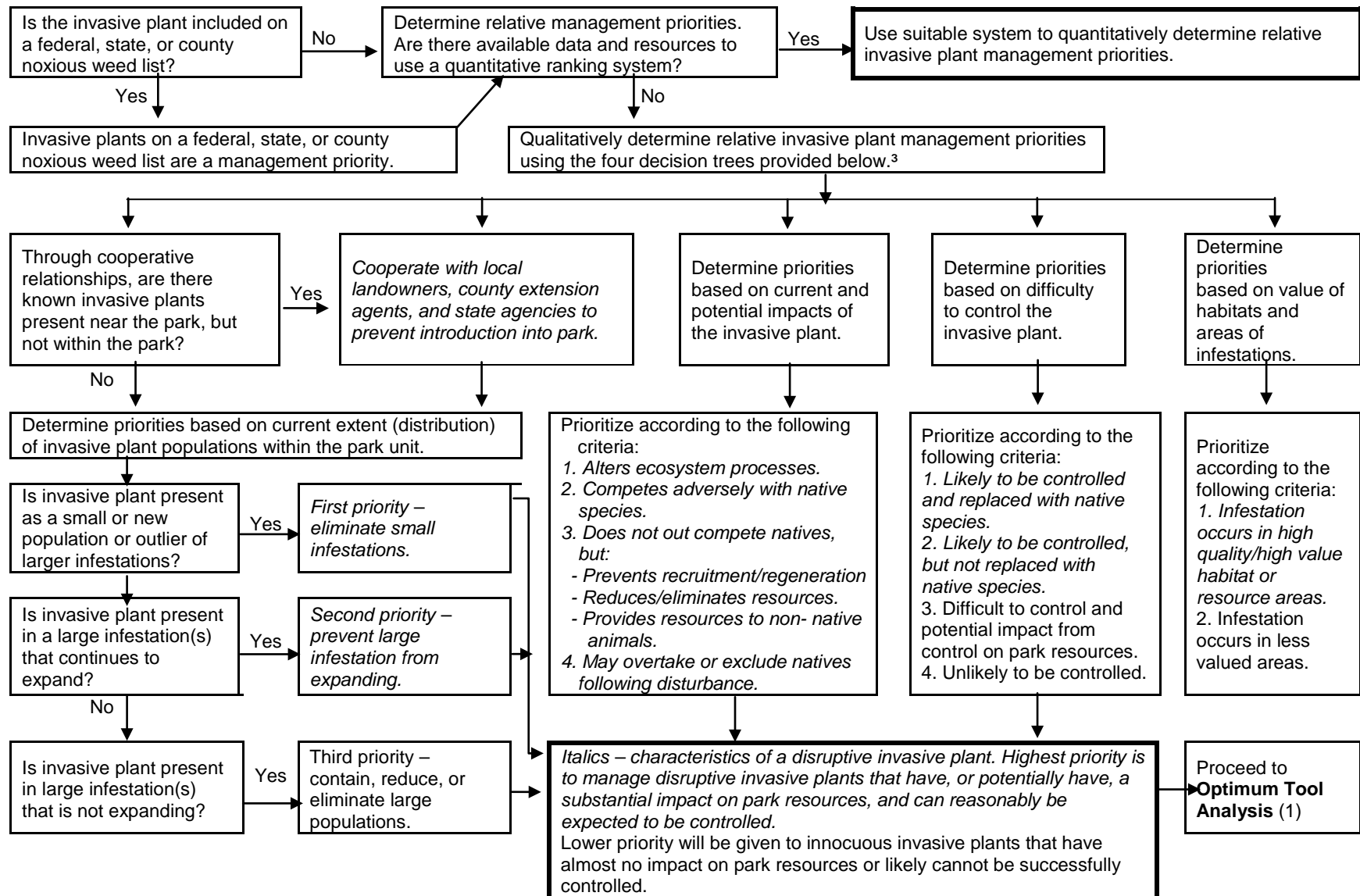
<http://www.nps.gov/nero/ipm/pestinfo.htm>

## Appendix H: Decision Tree and Mitigations

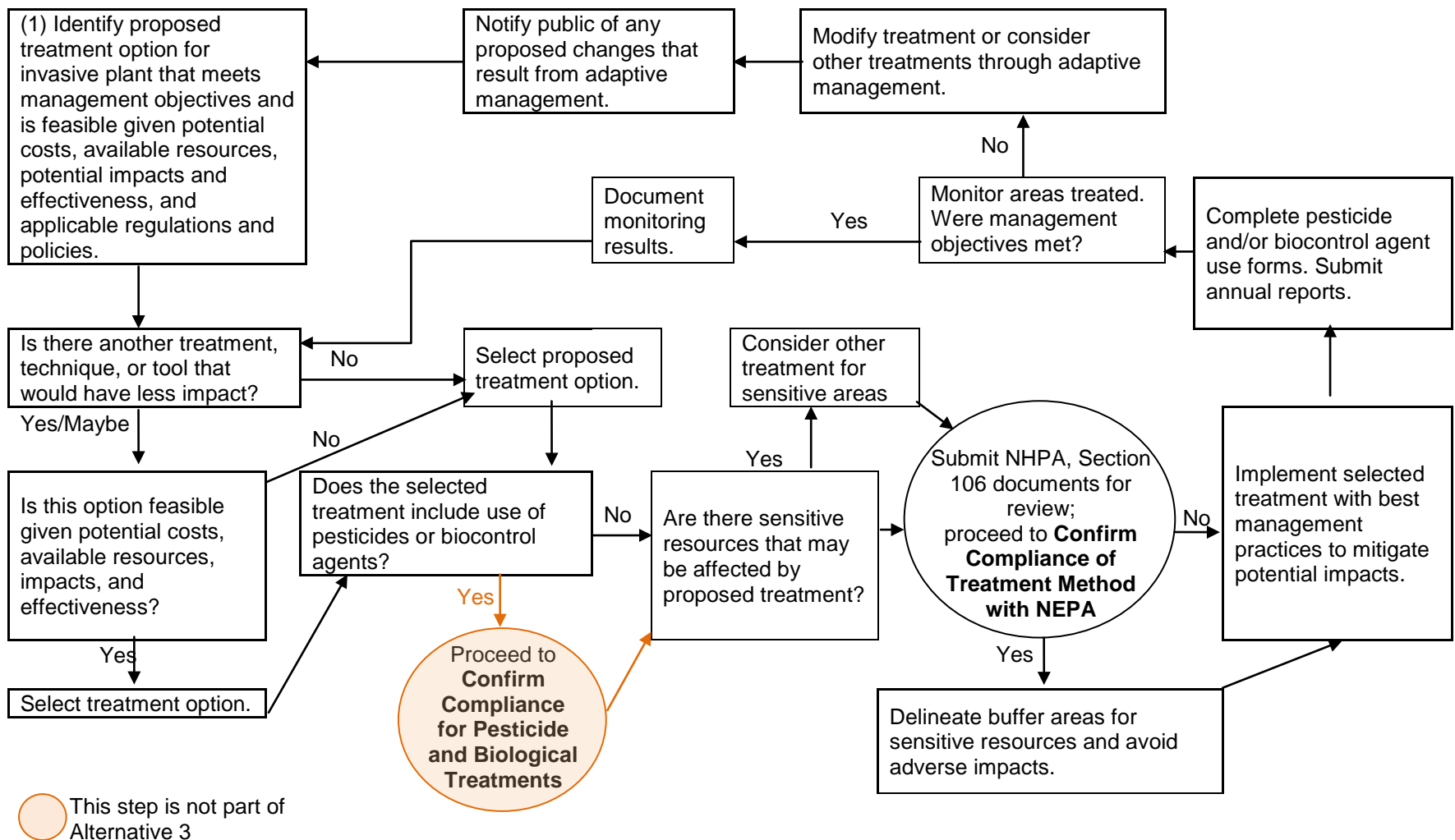
Identify Invasive Plants that Meet Action Thresholds



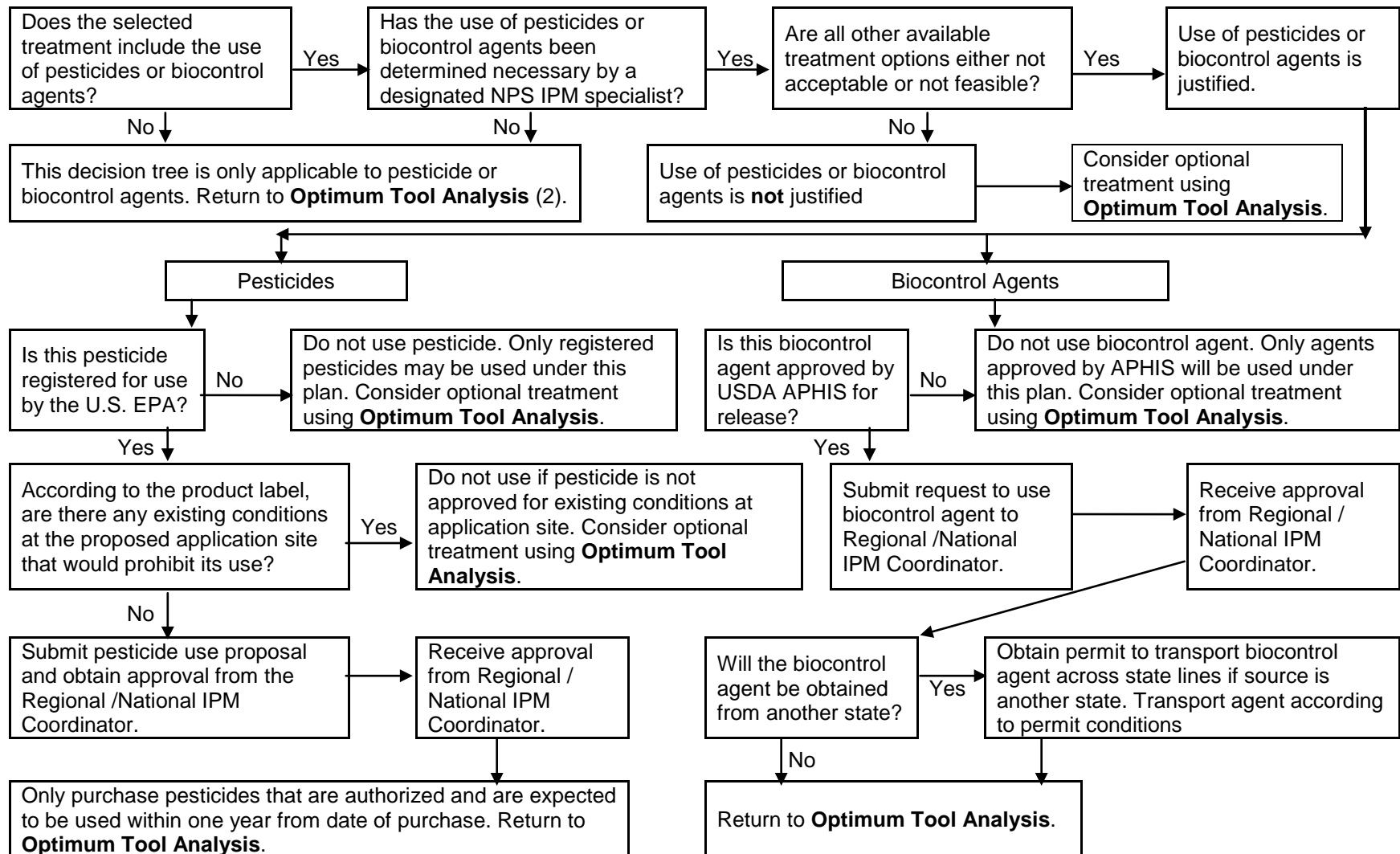
## Guidance for Setting Management Priorities



## Optimum Tool Analysis for Treatment Options

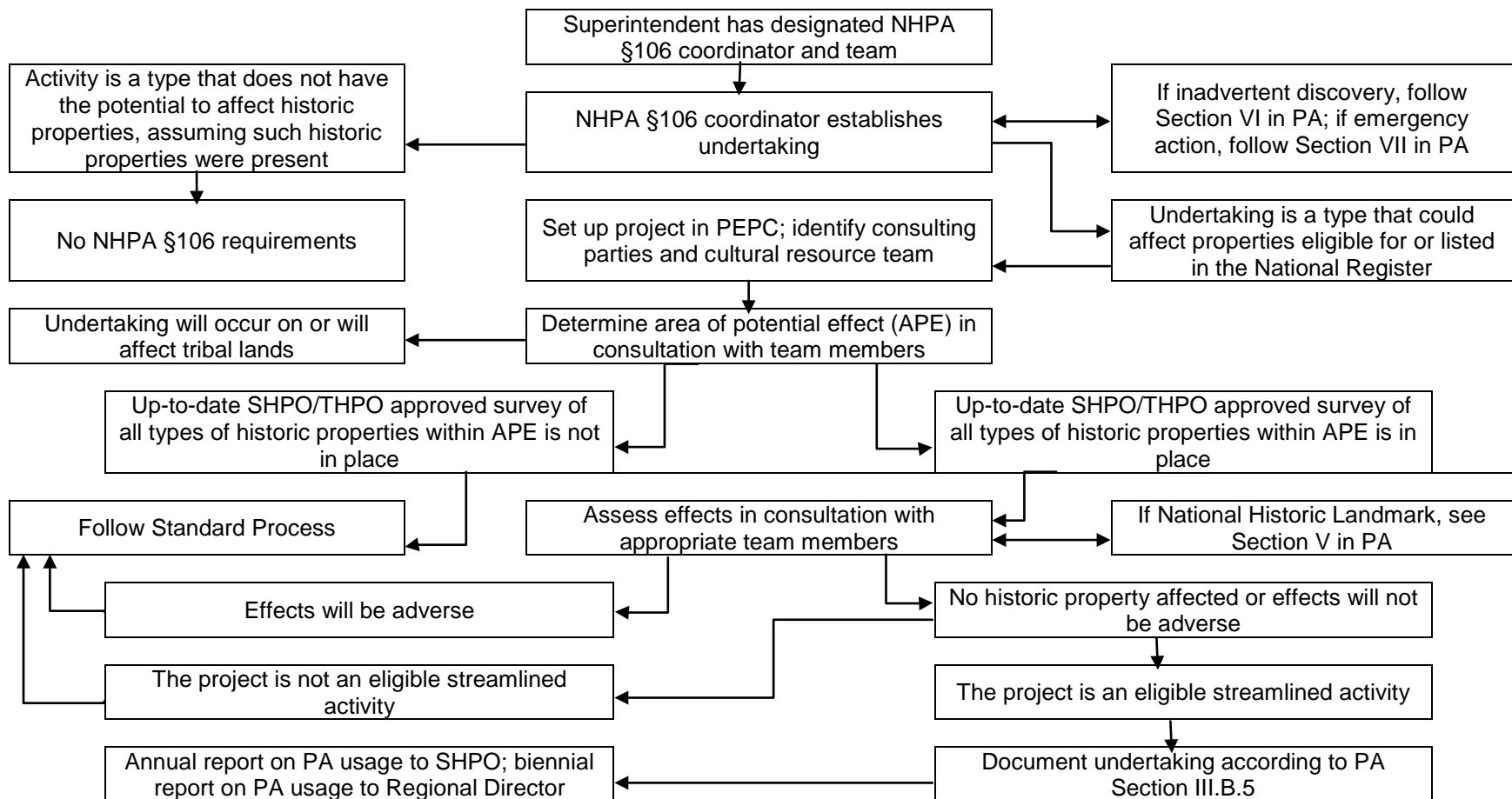


## Confirm Compliance of Pesticide and Biocontrol Treatments

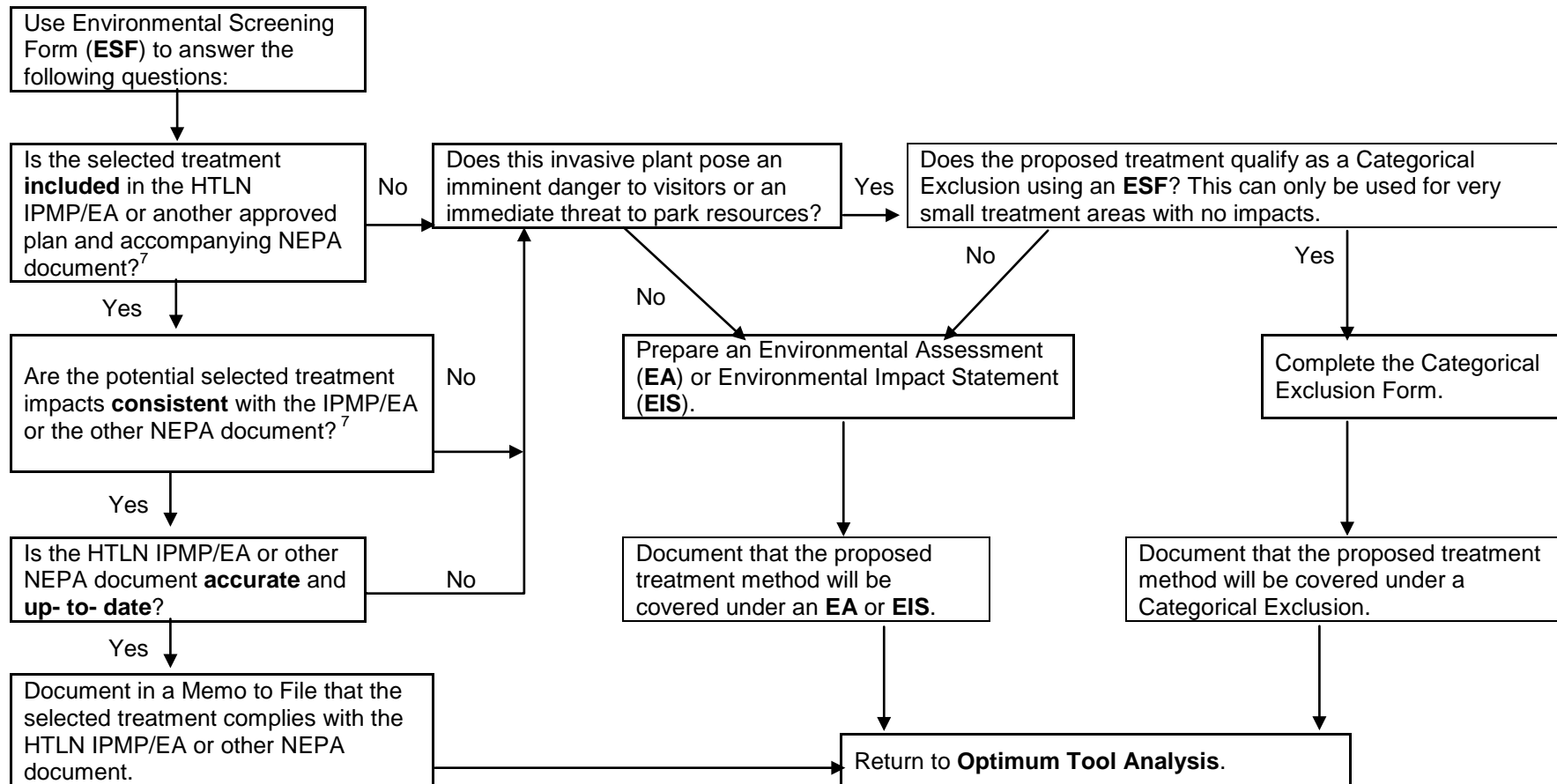




## NHPA §106 Compliance Process under the 2008 Programmatic Agreement



## Confirm Compliance of Treatment Method with an Existing NEPA Document



**Best Practices**

Standard best practices would be incorporated into treatment selection and implementation. Reference numbers would be used to call attention to specific best practices within an annual work plan and in compliance documentation. The IPMT would implement these practices and would consider any other special circumstances during project implementation. As time passes, the EPMT coordinator may add new best practices as technologies and understanding improves.

Biocontrol Treatment Criteria

BC1 – All biocontrol agents will be approved by APHIS prior to their release.

BC2 – Biocontrol agents should be released in each climatic zone that is occupied by the host, so that the natural enemy has a chance to develop in all areas where the host occurs.

BC3 – More than one release in an area may be necessary for successful establishment.

BC4 – Releases should be synchronized with the period when the host is present.

BC5 – Biocontrol agents should be released at times of the day when they will not disperse from the treatment area.

BC6 – Surveys for biocontrol agents should be completed several times during the season to monitor biocontrol agents.

Cultural Method Criteria

CC1 - Any materials used in revegetation, including mulch, organic fertilizers, and straw, will be free of non-native plant seeds or materials. An exception to this occurs when non-native species are required to provide integrity to a historic appearance, to protect resources of the area, or as a temporary nursery crop.

CC2 – Local genotypes will be used for seeding or planting designed to restore a site, when available.

CC3 – As a preventive measure, adhere to the equipment sanitation BPs.

CC4 – Nursery crops will be used to stabilize sites, where there is potential for damage to soils during restoration and revegetation.

Cultural Resource Protection

CR1 – Specific invasive plant management activities will avoid any structures, known archeology, and other resources that could be damaged by the type of treatment used. This includes the use of cutting tools to sever taproots in areas with shallow artifacts or paleontological resources, or the use of UTVs where remnant foundations may be obscured from sight. Application of pesticides in areas that contain sensitive paleontological resources or other potentially chemically active or corrodible materials will be limited (see Pesticide Treatment Criteria).

CR2 – Prior to any surface disturbance, such as tilling, all locations within the area of potential effect will be reviewed to determine the presence of cultural resources as part of NHPA §106

review. If any cultural resources are present, their eligibility for the National Register of Historic Places (NRHP) will need to be determined prior to ground disturbing treatment. Properties that are determined not eligible may be treated with an approved plan. Properties that are determined to be eligible must be avoided, or, if they cannot be avoided, damage to the resource must be mitigated through an approved archeological data recovery plan prior to treatment. All of these reviews will be done in coordination with the park archeologist or archeologists at the MWAC.

CR3 – Project or annual work plans that list the target species, locations, and treatment type would be reviewed for NHPA §106 compliance and potential impacts to known and unknown cultural resources. If cultural resources were inadvertently uncovered during activities, the NPS would suspend operations at the site and contact the park resource manager. This includes the discovery of species that may indicate the presence of archeological or historical sites that could be affected adversely during treatment.

CR4 – In cultural landscapes, invasive plants will be evaluated to determine their cultural or historical significance prior to treatment. This determination will be made in consultation with the appropriate cultural resource specialists in the park or regional offices. This will also apply to the occurrence of invasive species that may indicate the presence of unidentified home sites or other historic or pre-historic remnants.

CR5 – Invasive plants will be evaluated by the resource manager in consultation with the appropriate cultural resource specialist in the park or regional office to determine their ethnographic value, based on consultation with tribes. Plants that are used or harvested for traditional uses will not be treated in those areas where collection is made (see Ethnographic Resource Protection BPs).

#### Decision Process

DP1 – The decision tree for selection of tools will be rigorously followed.

DP2 – Monitoring, evaluation, and record keeping will be incorporated in decision-making process.

#### Equipment Sanitation

ES1 - Equipment used for invasive plant management will be washed prior to entering a park to reduce the potential for accidentally introducing invasive plants from another area.

ES2 – Before moving from the treatment site, all equipment, boots, and clothing must be inspected and cleaned of all vegetation debris and soil.

ES3 – When possible, vehicles, including UTVs, operating within a single park will be washed daily.

#### Erosion and Sediment Control

ES1 – Trucks and UTVs will be operated to minimize disturbance to vegetation and soils. Trucks and UTVs will not be operated under conditions where soil is susceptible to compaction, erosion, or creation of wheel ruts. The number of vehicle and UTV passes off-road will be minimized to the extent possible.

ES2 – Personnel and equipment will avoid areas having sensitive soils or areas that are prone to erosion.

ES3 – Any stream crossings to access treatment areas will be traversed at a right angle to the crossing.

ES4 – Trucks and UTVs will be routed to avoid palustrine (wet or marshy) wetlands, and standing water or saturated soils.

ES5 – Treatment actions will not lead to extensive erosion. This requires consideration of connected treatments, such as prescribed fire, that may predispose areas to erosion.

#### Ethnographic Resource Protection

TR1 –The IPMT operators and applicators will receive training on identification of traditional use plants and will avoid treating non-target plants. The IPMT will use vegetation-monitoring surveys to identify areas with ethnographically important species.

TR2 – Mechanical methods such as tilling will not be used as a method in areas known to support traditional use plants. Off-road-vehicles and heavy equipment will be used on a limited basis in areas where traditional use plants are known to occur.

#### Health and Safety Protection

HS1 – All management actions will be done with worker and public safety as the highest priority. As new OSHA guidelines are developed, or as new technologies and knowledge changes, the EPMT will implement the appropriate safety standards for protection of workers, visitors, and the public.

HS2 – No power equipment will be used in the treatment of invasive species during air pollution advisories for ground-level ozone or particulate pollution at the location of the intended action. Action will be postponed until the lifting of the advisory.

HS3 – All participants in treatment actions will use the appropriate PPE while engaging in management actions. A health and safety plan is included with this IPMP/EA in Appendix G.

HS4 – All equipment operators will be properly trained and meet the standards set by the NPS. All operators will be briefed on hazards and resource protection strategies.

HS5 – Plans will be followed to address accidental pesticide spills, as well as health and safety issues associated with hazardous materials. Safety and emergency response plans are located in Appendix G.

HS6 – Extensive treatment will not occur during periods of high visitation.

#### Manual Treatment Criteria

MaC1 – When hand-pulling plants, all propagules will be piled and burned on site or bagged and moved off site when possible. Bagged plants will either be incinerated or receive standard garbage disposal. For large woody shrubs that will be difficult to move, treatments should be scheduled prior to seed set.

MaC2 – The weed torch will be used only during times of low fire danger, on sites with low potential to carry a fire, and with a wildland firefighter on site.

MaC3 – Personnel and equipment will avoid areas having sensitive soils or areas that are prone to erosion.

#### Mechanical Treatment Criteria

MeC1 – All mowing will occur prior to seed set.

MeC2 – Equipment with potential for crushing or dislodging subsurface resources will not be used on sites sensitive to this type of disturbance.

MeC3 – Equipment will enter the treatment area through a pre-planned route that minimizes impacts to known and potential resources.

MeC4 – Slit seeders and seed drills will only be used where subsurface resources were deeper than the disturbance zone of the apparatus.

MeC5 – Equipment such as weed whips will be used with caution and care will be taken in maneuvering equipment near historic material.

#### Pesticide Treatment Criteria

PDC1 – Reduced application rates of pesticides will be used wherever possible. Reduced application rates are often more effective than higher application rates because translocation is enhanced prior to loss of physiologic function. Higher rates may burn off leaves and reduce translocation.

PDC2 – Pesticides will be applied only during periods of suitable meteorological conditions. Drift from a treated area increases during high winds or low humidity. Pesticides should also not be applied during periods of dead calm (this could indicate an inversion).

PDC3 – Pesticides will only be applied when conditions allow for complete and even coverage and do not lead to pesticide drift on to non-target sensitive resources or areas used by humans.

PDC4 – Pesticide applicators will account for weather at time of application, including wind speed, wind direction, inversions, humidity, and precipitation in relation to the presence of sensitive resources near the treatment area and direction provided on labels.

PDC5 – Pesticides will be applied using coarse sprays to minimize the potential for drift. Avoid combinations of pressure and nozzle type that would result in fine particles (mist). Add thickeners if the product label permits.

PDC6 – Lower volatility formulations will be used under conditions, such as high temperatures, that might result in a high risk of volatilization.

PDC7 – Treatment activities will be halted, if necessary, to prevent runoff during rain or drift during high wind events.

PDC8 – Pesticides will be selected based on the soil texture, depth of and distance to water, and environmental conditions. In areas where there is the potential to affect surface water or ground water resources, pesticide pH and soil pH will be considered in selecting the pesticide with the lowest leaching potential. Highly water-soluble pesticides will not be used in areas where there is potential to affect surface water or ground water resources. Pesticides with high soil retention will be used in areas where there is potential to affect surface water or ground water resources.

PDC9 – Mixing and loading of tanks will occur 300 feet from live water where possible. In no case will it occur closer than within 100 feet of water. Use of closed systems for mixing and transferring pesticide will reduce the probability of spills. Place mixing/loading equipment on an impervious pad to contain spills whenever possible or when called for on label.

PDC10 – Allow pesticides to dry before re-entry in the site (usually about 2 hours).

PDC11 – Only pesticides certified for use in aquatic environments will be selected for use in wetlands and riparian areas. When possible, wetlands will receive pesticide application during drawdown conditions. Open water will not receive pesticide treatment.

#### Handheld Sprayer Use

HS1 – Each handheld sprayer will be maintained and calibrated prior to use.

HS2 – During all applications, droplet size will be controlled to decrease the risk of pesticide drift to non-target species or outside the immediate treatment area. Droplet size is controlled by nozzle settings.

#### Boom Sprayer Use

BS1 – Each boom sprayer will be maintained and calibrated prior to use.

BS2 – During all applications, droplet size will be controlled to decrease the risk of pesticide drift to non-target species or outside the immediate treatment area. Droplet size is controlled by nozzle settings.

BS3 – Pesticides will be sprayed with a boom only when wind conditions are less than 10 mph, or as required per label.

BS4 – The lowest boom and release height possible, consistent with operator safety, will be used.

#### Pesticide Strategic Criteria

PSD1 – Pesticide use will only be considered if there is not another appropriate option sufficient to meet the management objectives. Pesticide use will be evaluated through NPS PUPS. Parks will obtain approval of the regional IPM coordinator for all pesticide use for actions resulting from this IPMP/EA. All pesticide mitigations, as they appear on the product label, will be considered during pesticide selection and will be applied in the field. See Table 2.2.2 for examples of mitigations for pesticides projected for use in this alternative.

PSD2 – Pesticides will be applied according to application rates specified on the product label by a trained pesticide applicator.

PSD3 – When possible, treat existing and detect new infestation sites while they are still relatively small and manual and mechanical methods can be employed.

PSD4 – When pesticide methods are used and when feasible, an application method will be chosen that directly targets the invasive plant, with little overspray.

PSD5 – Pesticides will be applied during periods when their mode of action is most effective.

PSD6 – Broadcast sprayers for pesticide treatments will only be used for large, dense infestations of invasive plants. When a large area must be sprayed, and when feasible, apply pesticide when most adjacent native plants are dormant (usually early spring or late fall).

PSD7 – When pesticide must be applied during the growing season, a selective pesticide will be used, if available, or a selective method of application will be used to reduce effects to non-target vegetation.

PSD8 – Pesticides will not be applied directly to water in lentic or lotic systems. Pesticides intended for use near surface water or areas of high leaching rate will be selected for those areas. Such pesticides degrade rapidly in the environment, adhere to sediments, and are not highly toxic to aquatic species.

### ***Mitigations***

Mitigations are actions that address specific resource concerns or environmental conditions. Treatments may be excluded from some areas because of the potential impact on resources. See Table H1 for examples of buffers and exclusions. All pesticide mitigations on labels will be followed.

### **Annual Work Plan and Implementation**

AWPMit1 – IPMT staff conduct projects only after delineating areas requiring a certain level of protection for sensitive resources, including cultural resources. These maps, which will be produced over the next five years, are not published within this EA because they include locations of known archeological artifacts, endangered or threatened species, and other resources, whose exact locations are protected.

AWPMit2 – The decision trees will be strictly followed in developing work plans. Best Practices will be rigorously enforced for all actions taken by the IPMT crew that is under the coordinator's supervision.

### **Aquatic Resources**

ARMit1 – Vehicles, including UTVs, will not be driven up or down stream channels when in transit to or from project sites.

ARMit2 – Equipment will avoid wetland areas with standing water or saturated soils, to the extent practical.

ARMit3 – Apply pesticides only to areas outside of high water mark along watercourses.



**Table H1:** Table of active ingredients and their environmental hazards and mitigations

Source: U.S. E.P.A. approved Specimen Labels

The following pesticides have been identified as effective for the recognized invasive species and priority locations. This list is not exhaustive and the IPMT coordinator reserves the right to submit requests to the IPM coordinator to use other pesticides as data become available about efficacy.

Active Ingredient	Environmental Hazard	Mitigation
<b>2,4-d</b>	2,4-d will injure or kill non-target plants it contacts; do not apply where proximity of desirable plants is likely to result in exposure to spray or spray drift. See Environmental Hazards section of the label. Depending on formulation, it can be highly toxic to practically non-toxic to aquatic vertebrates, but no greater than moderately toxic to aquatic invertebrates and terrestrial animals. The use of ester formula may result in contamination of groundwater particularly in areas where soils are permeable (e.g. sandy soil) and/or the depth to the water table is shallow.	Measures to control spray drift are expected to reduce the risk of 2,4-D to non-target plants. The turf rate reduction from 2.0 to 1.5 lbs. ae/acre per year will reduce exposure to non-target organisms. Master label rates are lower than existing rates for several different use sites, including fallow land/stubble, non-cropland, turf, aquatic applications (surface), pasture, and others. These lower rates will reduce exposure to non-target organisms. Adverse effects on aquatic animals are not likely with formulations of 2,4-D salts. The ester formulations of 2,4-d are much more toxic to aquatic animals. Do not apply ester formulations in aquatic environments. To reduce runoff from treated areas into aquatic habitats avoid application to areas with moderate to steep slope, compacted soil, or clay. Avoid application of this product when heavy rain is forecast. Contamination of aquatic areas because of runoff may be reduced by including a strip of untreated vegetation between the treated area and the edge of the water body. To prevent runoff, avoid spraying on driveways, sidewalks or other hard surfaces. Do not irrigate within 24 hours after application.
<b>Amino-pyralid</b>	Aminopyralid is toxic to some plants at very low concentrations.	Do not apply in aquatic environments. Do not exceed rate of 0.11 lb. ae/acre/year. Care should be used when applying within the rooting zone of trees (i.e., in the canopy drip line). Consult the label for tolerance of tree species. Do not use in areas that will be hayed.
<b>Fluroxopyr</b>	Fluroxopyr is toxic to aquatic invertebrates and fish. Product has tendency to runoff to surface water. Use in permeable soils, particularly where water table is shallow, may result in groundwater contamination.	Do not apply in aquatic environments, where runoff may occur, or where on permeable soils. Do not exceed rate of 0.5 lb. ae/acre/year. Do not hay for 14 days following application.
<b>Glypho-sate</b>	Glyphosate may be slightly toxic to aquatic species, surfactants in some formulations may interfere with cutaneous respiration.	Only use aquatic formulations in aquatic environments. Use the least toxic formulation that is appropriate for a particular project. Do not exceed rate of 1.5 lb. ae/acre/year.
<b>Imazapic</b>	Both chemicals are moderately toxic to fish, but does not move laterally in surface water	Do not apply in aquatic environments. Care should be used when applying within the rooting zone of trees (i.e., in canopy drip line). Consult the label for tolerance of tree species. Do not use in forests.

Active Ingredient	Environmental Hazard	Mitigation
		Do not hay for 7 days following application. Do not apply when rain is forecast within 48 hours. Do not apply in areas with shallow groundwater. Do not exceed rate of 0.1875 lb. ae/acre/year.
<b>Imazapyr</b>	Can move to streams; most movement was found in runoff from storms.	Do not apply directly to aquatic environments Do not exceed rate of 1.5 lb. ae/acre/year.
<b>Sethoxydin</b>	Sethoxydin is toxic to aquatic animals.	Do not apply in aquatic environments. Do not exceed rate of 0.1875 lb. ae/acre/year.
<b>Triclopyr</b>	Triclopyr is toxic to fish. Use in permeable soils, particularly where water table is shallow, may result in groundwater contamination.	Do not apply ester formulation in aquatic environments or highly permeable soils Do not apply ester formulation when temperatures are greater than 85 F (29.4 C). Do not exceed 2 lb. ae/acre/year. Care should be used when applying within the rooting zone of trees (i.e., in canopy drip line). Consult the label for tolerance of tree species. Do not hay for 14 days following application.

ARMit4 – To minimize erosion, do not treat large patches of invasive plants within high water mark along watercourses.

ARMit5 – To minimize erosion, minimize physical disturbances within 30 ft. of high water mark along watercourses.

ARMit6 – impacts to wetlands will be avoided. Mitigation ARMit2 prevents vehicles from entering wetlands. Recommendations to minimize other impacts include:

- Perform activities in wetlands during frozen ground conditions, if feasible.
- Minimize temporary access roads that lead to wetlands and use removable or degradable construction materials.

### Cultural Resources

CRMit1 – Pesticides will not be applied within 10 ft. of historic material or buildings and wind speed during application must be less than 10 mph when working within 25 ft. of such historic materials or buildings.

CRMit2 – Restoration will be consistent with desired conditions determined for that site, and guided by the Cultural Landscape Report and treatment plan.

### Endangered, Threatened, and Species of Concern

A full listing of endangered species, threatened species, and species of concern, including federal candidate species and state-listed species, occurs in Appendix L. Based on this list and the HTLN and park monitoring data, the species potentially affected will be listed in the annual work plan and consultation with USFWS will ensue, as appropriate.

ESMit1 – Pesticide applicators will receive training on identification of threatened and endangered plants and animals known to exist or with high probability of occurring in the treatment area. If species were found in the field, treatments would halt until buffer areas are established. During the growing season (non-dormant), 30-foot no-spray zone for handheld sprayers and a 200-foot no-spray zone for boom-sprayers would surround threatened or endangered plants. Buffers for animal species are listed with the species mitigations.

ESMit2 - Some invasive plant management activities may be necessary within buffer zones established for each species. Any activities within buffer zones may result in take, as defined by the ESA. These actions will be coordinated with the appropriate USFWS Field Office before implementation.

ESMit3 – Tilling, seed drilling, or vehicle use will not occur within a 100-foot buffer of areas, where threatened or endangered plants are known to occur or have a high potential to occur without prior consultation with the USFWS. These actions will not occur during critical times for ground nesting birds of concern, listed herpetofauna, or listed burrowing animals, where they occur.

ESMit4 – Although candidate species are not afforded any protection under the ESA, efforts will be made to avoid or minimize potential impacts to these species, as if they were listed species. State species of concern, including state endangered, state threatened, state candidate, or state

species of concern, are not part of a federal designation of threatened or endangered species made by the USFWS. The IPMP/EA will provide these species with the same protections as federal species of concern. Parks will identify state species of concern based on lists developed by each state and by recognized conservation organizations, such as Partners for Flight.

ESMit5 – Precautions as outlined for the Kirtland's Warbler and migratory bird species will be applied to all bird species of concern.

ESMit6 – Identifying a previously unknown occurrence of an endangered species habitat will elicit notification of the park resource manager and the USFWS.

ESMit7 – Special protections will be afforded aquatic resources associated with habitat for threatened, endangered, or species of concern. When threatened, endangered or candidate species have been identified within a stream, a no-spray buffer of 30 feet for handheld sprayers and 200 feet for boom sprayers will be established to protect those species.

The following specific mitigations and BPs apply to listed species. Other listed species that are similar to those below will be similarly protected.

Bats – Gray Bat (*Myotis grisescens*), Indiana Bat (*Myotis sodalis*), and Ozark Big-eared Bat (*Corynorhinus townsendii ingens*)

BatMit1 – Avoid application of pesticides within 100 ft. of cave openings, sinkholes, or other karst features.

BatMit2 – Apply pesticides only to areas outside of high water mark along watercourses.

BatMit3 – If large trees were cut, effects on federally endangered Indiana bat at CUVA, LIBO, and other parks in range would be considered and work sites would be surveyed in coordination with the USFWS. At this time, large trees are not targeted for removal. If large (>12 in. diameter) invasive trees were felled, they would constitute less than 25% of the available mature canopy within an acre radius of the felled tree(s). Invasive trees targeted for removal that are smaller than 12 inches diameter and that meet the criteria for Indiana bat summer roosting habitat will be removed outside the summer roosting season to avoid direct impacts to male Indiana bats. These trees should be removed after September 30 and prior to April 1 in areas where Indiana bats occur.

BatMit4 – Workers will not enter caves during field operations.

BatMit5 – Only invasive trees will be felled.

Rattlesnakes – Timber Rattlesnake (*Crotalus horridus*) and Eastern Massasauga (*Sistrurus catenatus*)

RSMit1 – Pesticides will not be applied within a no-spray buffer of 30 feet for handheld sprayers and 200 feet for boom sprayers around wetlands known to harbor the eastern massasauga.

RSMit2 – Mechanical treatments will be avoided within 100 feet of wetlands known to harbor eastern massasauga or within 100 feet of timber rattlesnakes and/or their dens.

RSMit3 – To the extent possible, all activities near rattlesnake habitat should only occur between November 1 and March 1.

RSMit7 – All workers in these areas will be informed of potential presence of the respective rattlesnake species in the work area, and will be instructed not to harm or kill such snakes.

Arkansas Darter (*Etheostoma cragini*) and Topeka Shiner (*Notropis topeka*)

FishMit1 – These species require a no-spray buffer of 30 feet for handheld sprayers and 200 feet for boom sprayers established where they are known to occur.

FishMit2 – Follow BPs for aquatic resources that are intended to maintain water quality.

Ozark Hellbender (*Cryptobranchus alleganiensis bishopi*)

HBMit1 – No invasive plant treatments will be applied within 300ft. of known Ozark hellbender locations.

HBMit2 – Apply pesticides only to areas outside of high water mark along watercourses.

HBMit3 – To minimize erosion, do not treat large patches of invasive plants within 30 ft. of high water mark along watercourses.

HBMit4 – Follow BPs for aquatic resources that are intended to maintain water quality.

Higgins-eye Pearly Mussel (*Lampsilis higginsii*) and Rare Bivalves

BVMit1 – To minimize erosion, do not treat large patches of invasive plants within 30 ft. of high water mark along watercourses.

BVMit2 – Follow BPs for aquatic resources that are intended to maintain water quality.

BVMit3 – Where rare bivalves are known to occur in the Sciota River at HOCU and Yellow River at EFMO, maintain a 30-foot no-spray buffer for handheld sprayers and a 200-foot buffer for boom sprayers.

Least Tern (*Sterna antillarum*) and Piping Plover (*Charadrius melodus*)

LTMit1 – Workers will not disturb sand bars, gravel bars, or mud flats during field operations.

Missouri Bladderpod

Conservation measures developed by the park or recommended by USFWS for threatened and endangered species would be implemented. Additionally:

MBMit1 – Within glades known to support Missouri bladderpod, only spot treatments that avoid Missouri bladderpod plants are permitted and will be done in accordance with stipulated buffers when plants are not dormant.

MBMit2 – Any broadcast pesticide treatments within glades known to support Missouri bladderpod are limited to June-August, the dormant season.

MBMit3 – Workers will identify the Missouri bladderpod to the extent possible (depending on the life-stage) in order to avoid trampling.

MBMit4 – Tilling will not be used as a cultural control within glades known to support Missouri bladderpod.

Western Prairie Fringed Orchid (*Platanthera praclaera*)

Conservation measures developed by the park or recommended by USFWS for threatened and endangered species would be implemented. Additionally:

WPFOMit1 – Within prairies known to support western prairie fringed orchids, only spot treatments that avoid the western prairie fringed orchids are permitted and will be done in accordance with stipulated buffers, when plants are not dormant.

WPFOMit2 – Workers will identify the western prairie fringed orchid to the extent possible (depending on the life-stage) in order to avoid trampling.

WPFOMit4 – Tilling will not be used as a cultural control within prairies known to support western prairie fringed orchid.

Caves and Karst Resources

KarMit1 – Pesticide application will not be permitted in areas where pesticides could reach the karst conduits. Cave drip sites and uncapped permeable rock layers will be avoided entirely. Mitigations for rare bats will be followed, as appropriate.

KarMit2 – Surface disturbing activities above or adjacent to cave and karst resources that eliminate all vegetative cover near karst conduits will be prohibited.

Migratory Birds and other Federally Protected Birds

MBMit1 – Several species of concern may migrate through parks in spring and autumn and care will be taken to avoid affecting these species while treating invasive plants from approximately March through May and late August through early October (dates are geographically dependent). Due to the transient nature of migrating birds, delay of treatment in a roosting area may be adequate to avoid impacts.

MBMit2 – In areas actively used by breeding birds, mowing, tree cutting, and brush cutting will not be done during breeding bird season to the extent practical. If necessary, woody plants will be inspected for bird nesting activity prior to cutting. If nests are found, no cutting will occur. If no nests are discovered, cutting may be done and pesticides may be used in cut-stump, basal-bark, injection, and/or spot-application treatments, methods that reduce the likelihood of contacting birds. Application of treatments could occur outside of bird breeding season (roughly March 1 - July 15, depending on park location) within breeding habitat. Care will be taken when affecting large trees from February 1 through July 15 (see BEMit) to avoid affecting raptors.

Bald eagle (*Haliaeetus leucocephalus*) and Other Raptors Project Design Criteria

BEMit1 – During the breeding season, maintain a 330-ft buffer around nests when working without noise-producing equipment. No restrictions are required outside of the breeding season for such equipment.

BEMit2 – When using noise-producing equipment during the breeding season, maintain a ½-mile buffer around active nests or roosting areas where bald eagles congregate.

BEMit3 – Removal of living large trees with greater than 12 inches diameter at 48 inches height (DBH) along streams, wetlands, lakes, or other water features will be avoided to help preserve bald eagle nesting habitat. Suitable roosting habitat will be preserved as well. Any removal of large (>12 in. diameter) invasive trees will constitute less than 25% of the available mature canopy within an acre radius of the felled trees.

BEMit4 – Apply pesticides only to areas outside of high water mark along watercourses.

#### Wilderness and Wild and Scenic Protection

WildMit1 – The Minimum Requirement Analysis will be used to select the “minimum tool”, or treatment or combinations of treatments that pose the least risk to wilderness values in designated wilderness, while still accomplishing invasive plant management objectives.

WildMit2 – Efforts will be made to minimize the number of trips and to reduce the visibility, duration, and sounds of activities in designated wilderness and near Wild and Scenic Rivers. Whenever possible, invasive plant management activities in wilderness will be timed to avoid peak visitor-use periods.

WildMit3 – Unavoidable impacts, such as vehicle tracks, will be mitigated immediately after invasive plant control activities are completed. Mitigation methods will be included in the administrative record for the Minimum Requirement Analysis.

WildMit3 – Any Wilderness visitor complaints regarding invasive plant management activities will be passed on to the Wilderness Coordinator and handled under the park established policies and protocols. The IPMT coordinator will be made aware of the complaint and will work with the park to minimize future disturbance to visitor experience





## Appendix I: List of Cultural Resources

### List of Classified Structures,

#### Structures and Landscapes Eligible or on the National Register, and Identified Archeological Sites

The List of Classified Structures (LCS) is an evaluated inventory of all historic and prehistoric structures that have historical, architectural, and/or engineering significance within parks in which the National Park Service has, or plans to acquire, any legally enforceable interest.

Structures are constructed works that serve some form of human activity and are generally immovable. They include buildings and monuments, dams, millraces and canals, nautical vessels, bridges, tunnels and roads, railroad locomotives, rolling stock and track, stockades and fences, defensive works, mounds, ruins of all structural types that still have integrity as structures, and outdoor sculpture. The full LCS for any park may be obtained at

<http://www.hscl.cr.nps.gov/insidenps/summary.asp> (accessed March 7, 2012).

The Cultural Landscapes Inventory (CLI) is a comprehensive inventory of all culturally and historically significant landscapes within the National Park System. The CLI records each landscape's location, historical development, existing conditions, and management information. For landscapes found to be potentially eligible for the National Register of Historic Places, the CLI provides an analysis of landscape characteristics and features, allowing for an evaluation of historic integrity and significance. On an individual park level, the CLI provides park managers with a vast array of information specific to the landscape of their park. These inventories are not all accessible to the public.

The Archeological Sites Management Information System (ASMIS), compilation of the Cultural Sites Inventory (CSI) documentation notebooks, and digitizing of maps into a GIS provide the core of archeological data storage for the National Park System. The ASMIS holds the collection of site location data. The ASMIS site designations are presented here without the site locations, which must remain confidential for the protection of the resources.

### ARPO

ARPO Identity	Name	Significance Level	Potential for impact and type
AC Marker	<a href="#">Osotouy Site Archeological Conservancy Marker</a>	Not Sig. <sup>49</sup>	Mitigated
HB-4	<a href="#">Well</a>	Contributing	Mitigated
HB-5	<a href="#">Road</a>	Contributing	No expectation of impact
HB-6	<a href="#">Confederate Earthworks</a>	Contributing	Mitigated
Mound A	<a href="#">Osotouy Mound A</a>	National	Mitigated
Mound B	<a href="#">Osotouy Mound B</a>	National	Mitigated
Mound C	<a href="#">Osotouy Mound C</a>	National	Mitigated
Mound D	<a href="#">Osotouy Mound D</a>	Contributing	Mitigated
Mound E	<a href="#">Osotouy Mound E</a>	National	Mitigated

<sup>49</sup> Not Sig = Not Significant

***BUFF LCS – unedited by park (totally inclusive)***

<b>BUFF Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
01B	<a href="#">Boxley Valley: Edgmon, Doy Feed House/Cattle Shed</a>	State	Unknown
10A	<a href="#">Boxley Valley: Duty, Orphea House</a>	State	Unknown
10B	<a href="#">Boxley Valley: Duty, Orphea Barn</a>	State	Unknown
10C	<a href="#">Boxley Valley: Duty, Orphea Granary/Stable</a>	State	Unknown
10D	<a href="#">Boxley Valley: Duty, Orphea Wash House</a>	State	Unknown
10E	<a href="#">Boxley Valley: Duty, Orphea Smokehouse</a>	State	Unknown
10F	<a href="#">Boxley Valley: Duty, Orphea Brooder House</a>	State	Unknown
10G	<a href="#">Boxley Valley: Duty, Orphea Fruit Cellar/Garage</a>	State	Unknown
10H	<a href="#">Boxley Valley: Duty, Orphea Old House</a>	State	Unknown
10J	<a href="#">Boxley Valley: Duty, Orphea Barn in Field</a>	State	Unknown
11A	<a href="#">Boxley Mill</a>	State	Unknown
11B	<a href="#">Boxley Valley: Villines, Clyde and Nellie House</a>	State	Unknown
11E	<a href="#">Clyde and Nellie Barn Near House</a>	State	Unknown
11G	<a href="#">Boxley Valley: Villines, Clyde and Nellie Barn</a>	State	Unknown
11H	<a href="#">Villines, Clyde and Nellie Fishing Cabin</a>	State	Unknown
11I	<a href="#">Boxley Valley: Villines, Clyde &amp; Nellie Stone Shed</a>	State	Unknown
11J	<a href="#">Villines, Clyde and Nellie Fishing Cabin</a>	State	Unknown
11K	<a href="#">Boxley Mill Pond &amp; Dam</a>	State	Unknown
11L	<a href="#">Boxley Mill Race</a>	State	Unknown
11N	<a href="#">Boxley Valley: Villines, Clyde/Nellie Spring House</a>	State	Unknown
12A	<a href="#">Boxley Valley: Villines, J.L. House</a>	State	Unknown
12B	<a href="#">Boxley Valley: Villines, J.L. Barn</a>	State	Unknown
12D	<a href="#">Boxley Valley: Villines, J.L. Smokehouse &amp; Cellar</a>	State	Unknown
12E	<a href="#">Boxley Valley: Villines, J.L. Garage</a>	State	Unknown
13A	<a href="#">Boxley Valley: Villines, Robert House</a>	State	Unknown
13B	<a href="#">Boxley Valley: Villines, Robert Barn</a>	State	Unknown
13C	<a href="#">Boxley Valley: Villines, Robert Wagon Shed</a>	State	Unknown
13D	<a href="#">Boxley Valley: Villines, Robert Second Farm House</a>	State	Unknown
13E	<a href="#">Boxley Valley: Villines, Robert Fruit Cellar</a>	State	Unknown
15A	<a href="#">Boxley Valley: Duty, Lieu House</a>	State	Unknown
15B	<a href="#">Boxley Valley: Duty, Lieu Barn</a>	State	Unknown
15C	<a href="#">Boxley Valley: Duty, Lieu Garage</a>	State	Unknown
15E	<a href="#">Boxley Valley: Duty, Lieu Fruit Cellar</a>	State	Unknown
15F	<a href="#">Boxley Valley: Duty, Lieu Smokehouse</a>	State	Unknown
16A	<a href="#">Boxley Valley: Duty, Lieu Old House</a>	State	Unknown
17A	<a href="#">Boxley Valley: Scroggins, Frank House</a>	State	Unknown
17B	<a href="#">Boxley Valley: Scroggins, Frank Barn</a>	State	Unknown
17C	<a href="#">Boxley Valley: Scroggins, Frank Pump House</a>	State	Unknown
17D	<a href="#">Boxley Valley: Scroggins, Frank Shed</a>	State	Unknown
18A	<a href="#">Boxley Valley: Ramsey, Audie House</a>	State	Unknown
18B	<a href="#">Boxley Valley: Ramsey, Audie Spring House</a>	State	Unknown
18C	<a href="#">Boxley Valley: Ramsey, Audie Cellar/Shed</a>	State	Unknown
19A	<a href="#">Boxley Valley: Villines, R. Hezekiah House</a>	State	Unknown
19B	<a href="#">Boxley Valley: Villines, R. Hezekiah Old Store</a>	State	Unknown
19C	<a href="#">Boxley Valley: Villines, R. Hezekiah Garage</a>	State	Unknown
19E	<a href="#">Boxley Valley: Villines, R. Hezekiah Barn</a>	State	Unknown
1A	<a href="#">Boxley Valley: Whiteley School</a>	State	Unknown

<b>BUFF Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
1C	<a href="#">Boxley Valley: Edgmon, Doy Barn</a>	State	Unknown
1D	<a href="#">Boxley Valley: Edgmon, Doy Rock Wall</a>	State	Unknown
1F	<a href="#">Boxley Valley: Edgmon, Doy Fruit Cellar</a>	State	Unknown
1G	<a href="#">Boxley Valley: Edgmon, Doy Low Water Crossing</a>	State	Unknown
2-01 HB	<a href="#">Buffalo River SP CCC Housekeeping Cabin #6</a>	State	Unknown
2-04 HB-2	<a href="#">Buffalo River State Park CCC Lodge</a>	State	Unknown
2-10 HB	<a href="#">Buffalo River State Park CCC Pavilion</a>	State	Unknown
2-27 HB-4	<a href="#">Buffalo River SP CCC Housekeeping Cabin #1</a>	State	Unknown
2-28 HB-5	<a href="#">Buffalo River SP CCC Housekeeping Cabin #2</a>	State	Unknown
2-29 HB-6	<a href="#">Buffalo River SP CCC Housekeeping Cabin #3</a>	State	Unknown
2-30 HB-7	<a href="#">Buffalo River SP CCC Housekeeping Cabin #4</a>	State	Unknown
2-31 HB-8	<a href="#">Buffalo River SP CCC Housekeeping Cabin #5</a>	State	Unknown
20A	<a href="#">Boxley Valley: Villines, Waymon House</a>	State	Unknown
20B	<a href="#">Boxley Valley: Villines, Waymon Study</a>	State	Unknown
21A	<a href="#">Boxley Valley: Villines, Joe S. House</a>	State	Unknown
24A	<a href="#">Boxley Valley: Shroll, Jess Barn</a>	State	Unknown
25A	<a href="#">Boxley Valley: Villines, William Log Barn/House</a>	State	Unknown
25B	<a href="#">Villines, William Harness Shed</a>	State	Unknown
25C	<a href="#">Villines, William Corn Crib</a>	State	Unknown
26B	<a href="#">Boxley Valley: Arrington Creek Barn</a>	State	Unknown
26D	<a href="#">Boxley Valley: Arrington Creek Barn/Shop</a>	State	Unknown
26H	<a href="#">Boxley Valley: Arrington Crk Frt Cellar/Stone Wall</a>	State	Unknown
26I	<a href="#">Boxley Valley: Arrington Creek House #2</a>	State	Unknown
27	<a href="#">Morning Star Roadbed With Retaining Walls</a>	State	Unknown
27A	<a href="#">Boxley Valley: Villines, James A. House</a>	State	Unknown
27B	<a href="#">Boxley Valley: Villines, James A. Barn</a>	State	Unknown
27C	<a href="#">Boxley Valley: Villines, James A. Smokehouse</a>	State	Unknown
27D	<a href="#">Boxley Valley: Villines, James A. Corn Crib</a>	State	Unknown
27E	<a href="#">Boxley Valley: Villines, James A. WPA Outhouse</a>	State	Unknown
27F	<a href="#">Boxley Valley: Villines, James A. Fruit Cellar</a>	State	Unknown
27G	<a href="#">Boxley Valley: Villines, James A. Chicken House</a>	State	Unknown
28	<a href="#">Morning Star Mines</a>	State	Unknown
28A	<a href="#">Boxley Valley: Clark House</a>	State	Unknown
28B	<a href="#">Boxley Valley: Clark, Sam Springhouse</a>	State	Unknown
29A	<a href="#">Boxley Valley: Villines, Henry Springhouse</a>	State	Unknown
2A	<a href="#">Boxley Valley: Edgmon, J.T House Ruin</a>	State	Unknown
2B	<a href="#">Boxley Valley: Edgmon, J.T. Fruit Cellar</a>	State	Unknown
2E	<a href="#">Boxley Valley: Edgmon, J.T. Barn</a>	State	Unknown
2F	<a href="#">Boxley Valley: Edgmon, J.T. Scale House &amp; Chute</a>	State	Unknown
2G	<a href="#">Boxley Valley: Edgmon, J.T. Spring</a>	State	Unknown
30	<a href="#">Morning Star Mine Trail</a>	State	Unknown
31	<a href="#">Ben Carney Mine</a>	State	Unknown
32	<a href="#">Capps Mine</a>	State	Unknown
33	<a href="#">Capps Mine Roadbed</a>	State	Unknown
36A	<a href="#">Boxley Valley: Fults/Seamon House</a>	State	Unknown
36B	<a href="#">Boxley Valley: Fults/Seamon Chicken Coop</a>	State	Unknown
36E	<a href="#">Boxley Valley: Fults/Seamon Outhouse</a>	State	Unknown
37B	<a href="#">Boxley Valley: Eubank Well</a>	State	Unknown
37D	<a href="#">Boxley Valley: Eubank Fruit Cellar</a>	State	Unknown
37E	<a href="#">Boxley Valley: Eubank Shed</a>	State	Unknown

<b>BUFF Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
37F	<a href="#">Boxley Valley: Eubank Outhouse</a>	State	Unknown
39C	<a href="#">Boxley Valley: Edgmon, Pickle Barn</a>	State	Unknown
39E	<a href="#">Boxley Valley: Edgmon, Pickle Well</a>	State	Unknown
39G	<a href="#">Boxley Valley: Edgmon, Pickle Stone Wall</a>	State	Unknown
3A	<a href="#">Boxley Valley: Fowler, Troy House</a>	State	Unknown
3B	<a href="#">Boxley Valley: Fowler, Troy Barn</a>	State	Unknown
3C	<a href="#">Boxley Valley: Fowler, Troy Old House</a>	State	Unknown
3G	<a href="#">Boxley Valley: Fowler, Troy Stone Walls</a>	State	Unknown
3H	<a href="#">Boxley Valley: Fowler, Troy Saltpeter Kettle</a>	State	Unknown
3I	<a href="#">Boxley Valley: Fowler, Troy Culvert</a>	State	Unknown
4-62HB-22	<a href="#">Erbie District: Farmer, J.W. House</a>	Local	Unknown
4-63HB-23	<a href="#">Erbie District: Farmer Cabin</a>	Local	Unknown
4-64HB-24	<a href="#">Erbie District: Farmer Barn</a>	Local	Unknown
4-65HB-25	<a href="#">Erbie District: Farmer Smokehouse</a>	Local	Unknown
4-66HB-26	<a href="#">Erbie District: Farmer Feedhouse</a>	Local	Unknown
4-67HB-27	<a href="#">Erbie District: Farmer Springhouse Ruin</a>	Local	Unknown
4-68HB-28	<a href="#">Erbie District: Farmer Privy</a>	Local	Unknown
4-84HB-44	<a href="#">Erbie District: Jones, Rulus Stock Pond &amp; Dam</a>	Local	Unknown
4-86HB-46	<a href="#">Erbie District: Hickman House Site</a>	Local	Unknown
40A	<a href="#">Boxley Valley: Villines, Dennis Old House</a>	State	Unknown
40D	<a href="#">Boxley Valley: Villines, Henry Outbuilding</a>	State	Unknown
40E	<a href="#">Boxley Valley: Villines, Jeff Corn Crib</a>	State	Unknown
41A	<a href="#">Boxley Valley: Ponca Low Water Bridge</a>	State	Unknown
41B	<a href="#">Boxley Valley: Leatherwood Creek Culvert</a>	State	Unknown
44A	<a href="#">Boxley Valley: Old Boxley Bridge Abutments</a>	State	Unknown
47C	<a href="#">Hall Property Rock Shelter</a>	State	Unknown
48	<a href="#">McIntosh Mine</a>	State	Unknown
48A	<a href="#">Boxley Valley: Guthrie, Pleas House</a>	State	Unknown
48C	<a href="#">Boxley Valley: Guthrie, Pleas Fruit Cellar</a>	State	Unknown
49/50	<a href="#">McIntosh Mill Area Mine Shaft &amp; Tunnel</a>	State	Unknown
49A	<a href="#">Boxley Valley: Marion, Hurley House</a>	State	Unknown
49D	<a href="#">Boxley Valley: Marion, Hurley Rock Wall</a>	State	Unknown
4A	<a href="#">Boxley Valley: Edgmon, Marion House</a>	State	Unknown
4B	<a href="#">Boxley Valley: Edgmon, Marion Old Barn</a>	State	Unknown
4C	<a href="#">Boxley Valley: Edgmon, Marion Store/Garage</a>	State	Unknown
4D	<a href="#">Boxley Valley: Edgmon, Marion Granary</a>	State	Unknown
4E	<a href="#">Boxley Valley: Edgmon, Marion Caretaker's House</a>	State	Unknown
58	<a href="#">White Eagle Mine</a>	State	Unknown
62	<a href="#">New Town Road</a>	State	Unknown
64	<a href="#">Edith Mine</a>	State	Unknown
68	<a href="#">Red Cloud Mine</a>	State	Unknown
70	<a href="#">Lonnie Boy Mine</a>	State	Unknown
75	<a href="#">Silver Hollow Mine</a>	State	Unknown
78	<a href="#">Ore Wagon Road</a>	State	Unknown
79	<a href="#">Monte Cristo Mine</a>	State	Unknown
7A	<a href="#">Boxley Valley: Casey, A.F. House</a>	State	Unknown
7B	<a href="#">Boxley Valley: Casey, A.F. Spring House</a>	State	Unknown
7C	<a href="#">Boxley Valley : Casey, A.F. Fruit Cellar</a>	State	Unknown
7D	<a href="#">Boxley Valley: Casey, A.F. Log Building</a>	State	Unknown
7E	<a href="#">Boxley Valley: Casey, A.F. Outhouse</a>	State	Unknown

<b>BUFF Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
7F	<a href="#">Boxley Valley: Casey, A.F. Smokehouse</a>	State	Unknown
7H	<a href="#">Boxley Valley: Casey, A.F. Main Barn</a>	State	Unknown
7L	<a href="#">Boxley Valley: Casey, A.F. Well</a>	State	Unknown
8A	<a href="#">Boxley Valley: Casey, Arvel and Elsie House</a>	State	Unknown
8B	<a href="#">Boxley Valley: Casey, Arvel and Elsie Store/Cafe</a>	State	Unknown
8C	<a href="#">Boxley Valley: Casey, Arvel and Elsie Big Barn</a>	State	Unknown
8D	<a href="#">Boxley Valley : Casey, Arvel and Elsie Barn</a>	State	Unknown
8E	<a href="#">Boxley Valley: Casey, Arvel Sawmill</a>	State	Unknown
8F	<a href="#">Boxley Valley: Casey, Arvel and Elsie Granary</a>	State	Unknown
8G	<a href="#">Boxley Valley: Casey, Arvel and Elsie Pump House</a>	State	Unknown
8I	<a href="#">Boxley Valley: Casey, Arvel and Elsie Smokehouse</a>	State	Unknown
9A	<a href="#">Boxley Valley: Fowler, Junior Farmhouse</a>	State	Unknown
A1	<a href="#">Brown School</a>	Local	Unknown
A8	<a href="#">Old Arnold House</a>	Local	Unknown
AB-South-1	<a href="#">Arnold Bend House South of Cemetery</a>	Local	Unknown
AB-South-2	<a href="#">Arnold Bend House South of Cemetery Outbuilding</a>	Local	Unknown
AB-South-3	<a href="#">Arnold Bend House South of Cemetery Well</a>	Local	Unknown
B2-1	<a href="#">Morning Star Barn Ruin</a>	State	Unknown
B2-10	<a href="#">Rush Creek Road</a>	State	Unknown
B2-11	<a href="#">McIntosh Livery Ruins</a>	State	Unknown
B2-12	<a href="#">Yellow Rose Mine</a>	State	Unknown
B2-13	<a href="#">Yellow Rose Processing Mill</a>	State	Unknown
B2-14	<a href="#">Red Cloud Processing Mill</a>	State	Unknown
B2-15	<a href="#">Clabber Tunnels</a>	State	Unknown
B2-16	<a href="#">Clabber Field Mine Shaft</a>	State	Unknown
B2-17	<a href="#">Lonnie Boy Pumphouse</a>	State	Unknown
B2-18	<a href="#">Rush Railroad Grade</a>	State	Unknown
B2-19	<a href="#">Clabber Creek Roadbeds</a>	State	Unknown
B2-2	<a href="#">Rush Smelter</a>	State	Unknown
B2-20	<a href="#">McIntosh Road</a>	State	Unknown
B2-21	<a href="#">Edith Mine Processing Mill</a>	State	Unknown
B2-22	<a href="#">White Eagle Mill Piers</a>	State	Unknown
B2-23	<a href="#">Morning Star Mill Piers</a>	State	Unknown
B2-24	<a href="#">McIntosh Hotel</a>	State	Unknown
B2-25	<a href="#">McIntosh Mill Piers and Foundation</a>	State	Unknown
B2-3	<a href="#">Rush Blacksmith Shop</a>	State	Unknown
B2-4	<a href="#">Hicks General Store Ruin</a>	State	Unknown
B2-5	<a href="#">New Town Ruin</a>	State	Unknown
B2-53H	<a href="#">Taylor-Medley General Store</a>	State	Unknown
B2-54H	<a href="#">Storekeeper's House (#1)</a>	State	Unknown
B2-55H	<a href="#">Brantley House Ruin</a>	State	Unknown
B2-56H	<a href="#">Kastning House (#3)</a>	State	Unknown
B2-57H	<a href="#">Wash House (#4)</a>	State	Unknown
B2-58H	<a href="#">Bundy House (#5)</a>	State	Unknown
B2-59	<a href="#">Chase &amp; Mulholland Store Ruin</a>	State	Unknown
B2-6	<a href="#">Morning Star Tramway</a>	State	Unknown
B2-60	<a href="#">Courthouse Site Rock Retaining Wall</a>	State	Unknown
B2-61	<a href="#">Hicks Hotel Building Foundation</a>	State	Unknown
B2-62	<a href="#">Hicks Hotel Mortared Flowerbeds</a>	State	Unknown
B2-63	<a href="#">Hillside Prospects and Digs</a>	State	Unknown

<b>BUFF Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
B2-64	<a href="#">Monte Cristo Mine Steam Compressor &amp; Shed</a>	State	Unknown
B2-65	<a href="#">Monte Cristo Mine Steel Piping</a>	State	Unknown
B2-66	<a href="#">Monte Cristo Section - Clabber Creek Road</a>	State	Unknown
B2-67	<a href="#">Morning Star Hotel Ruins</a>	State	Unknown
B2-68	<a href="#">Morning Star Mill Manager's House Site</a>	State	Unknown
B2-69	<a href="#">Morning Star Oil House Foundation Piers</a>	State	Unknown
B2-7	<a href="#">Morning Star Mining Co. Office Foundation</a>	State	Unknown
B2-70	<a href="#">Pop Campbell House Site Ruins</a>	State	Unknown
B2-71	<a href="#">Raby House Ruins</a>	State	Unknown
B2-72	<a href="#">Morning Star Pumphouse</a>	State	Unknown
B2-73	<a href="#">Morning Star Rock House</a>	State	Unknown
B2-75	<a href="#">White Eagle New Mill Piers</a>	State	Unknown
B2-8	<a href="#">Footbridge Pillar</a>	State	Unknown
B2-9	<a href="#">Hicks Hill Road</a>	State	Unknown
B2-BP-1	<a href="#">Buffalo River State Park CCC Fireplaces</a>	State	Unknown
B2-X	<a href="#">Buffalo River State Park CCC Culverts</a>	State	Unknown
B3-09H	<a href="#">Collier Homestead House</a>	State	Unknown
B3-10H	<a href="#">Collier Homestead Smokehouse</a>	State	Unknown
B3-112H	<a href="#">Williams, Valentine and Mollie House</a>	State	Unknown
B3-11H	<a href="#">Collier Homestead Barn</a>	State	Unknown
B3-12H	<a href="#">Collier Homestead Cistern</a>	State	Unknown
B3-14H	<a href="#">Luther Arnold House</a>	Local	Unknown
B3-14H-1	<a href="#">Luther Arnold Pole Barn</a>	Local	Unknown
B3-14H-2	<a href="#">Luther Arnold Wells</a>	Local	Unknown
B4-111H	<a href="#">Evans-White House</a>	Not Sig <sup>50</sup>	Unknown
B4-112H	<a href="#">Evans-White Fruit Cellar</a>	Not Sig	Unknown
B4-29H	<a href="#">Erbie District: Jones, Rulus Smokehouse</a>	Local	Unknown
B4-45H	<a href="#">Erbie District: Reavis, John House</a>	Local	Unknown
B4-51H	<a href="#">Parker-Hickman Chicken House</a>	Local	Unknown
B4-52H	<a href="#">Parker-Hickman Machine Shed</a>	Local	Unknown
B4-54H	<a href="#">Parker-Hickman Board Barn</a>	Local	Unknown
B4-54H-A	<a href="#">Parker-Hickman Historic Fences &amp; Cattle Guard</a>	Local	Unknown
B4-54H-B	<a href="#">Parker-Hickman Stock Pen and Loading Chute</a>	Local	Unknown
B4-55H	<a href="#">Parker-Hickman Log Barn</a>	Local	Unknown
B4-56H	<a href="#">Parker-Hickman House</a>	Local	Unknown
B4-57H	<a href="#">Parker-Hickman Smokehouse</a>	Local	Unknown
B4-58H	<a href="#">Parker-Hickman WPA Outhouse</a>	Local	Unknown
B4-60A	<a href="#">Henderson, Eva Barnes Well</a>	Local	Unknown
B4-60B	<a href="#">Henderson, Eva Barnes Fruit Cellar</a>	Local	Unknown
B4-60H	<a href="#">Henderson, Eva Barnes House</a>	Local	Unknown
B4-74H-1	<a href="#">Erbie District: Erbie Church Rockwork</a>	Local	Unknown
B4-74HB-34	<a href="#">Erbie District: Erbie Church</a>	Local	Unknown
B4-77H	<a href="#">Erbie District: Jones, Rulus House</a>	Local	Unknown
B4-78H	<a href="#">Erbie District: Jones, Rulus Barn</a>	Local	Unknown
B4-80H	<a href="#">Erbie District: Jones, Rulus Pumphouse</a>	Local	Unknown
B4-91H	<a href="#">Shaddox Cabin</a>	Not Sig	Unknown

<sup>50</sup> Not Sig = Not Significant



<b>BUFF Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
B4-96H	<a href="#">Henderson, Eva Barnes Log Cabin/Barn</a>	Local	Unknown
B4-A	<a href="#">Old Villines Place</a>	Not Sig	Unknown
B4-B	<a href="#">Old Villines Place/Springhouse</a>	Not Sig <sup>51</sup>	Unknown
B4-C	<a href="#">Old Villines Place/Hog Barn</a>	Not Sig	Unknown
BC	<a href="#">Cold Springs School</a>	Local	Unknown
BR-BP-12	<a href="#">Buffalo River State Park CCC Dry Laid Stone Walls</a>	State	Unknown
BR-BP-13	<a href="#">Buffalo River State Park Duplex 11-12</a>	Local	Unknown
BR-BP-14	<a href="#">Buffalo River State Park Duplex 13-14</a>	Local	Unknown
BR-BP-15	<a href="#">Buffalo River State Park Duplex 7-8</a>	Local	Unknown
BR-BP-16	<a href="#">Buffalo River State Park Duplex 9-10</a>	Local	Unknown
BR-BP-17	<a href="#">Buffalo River State Park Historic Water Tank</a>	Local	Unknown
BR-BP-2	<a href="#">Buffalo River State Park CCC Parking Pads</a>	State	Unknown
BR-BP-21	<a href="#">Buffalo River State Park CCC Mortared Stone Walls</a>	State	Unknown
BR-BP-23	<a href="#">Buffalo River State Park Water &amp; Sewer System</a>	Local	Unknown
BR-BP-3	<a href="#">Buffalo River State Park CCC Pumphouse</a>	State	Unknown
BR-BP-4	<a href="#">Buffalo River State Park CCC Quarry Access Road</a>	Local	Unknown
BR-BP-5	<a href="#">Buffalo River State Park CCC Roadways</a>	State	Unknown
BR-BP-6	<a href="#">Buffalo River State Park CCC Utility Building</a>	State	Unknown
BR-BP-7	<a href="#">Buffalo River State Park CCC Water Fountain</a>	State	Unknown
BR-BP-8	<a href="#">Buffalo River State Park Concession Building</a>	Local	Unknown
BR-BP-9	<a href="#">Buffalo River State Park Concrete Water Tank</a>	Local	Unknown
CEM-1	<a href="#">Christy Cemetery Stones</a>	Local	Unknown
CEM-13	<a href="#">Laffoon Cemetery 19th Century Grave Markers</a>	State	Unknown
CEM-13-A	<a href="#">Laffoon Cemetery 20th Century Grave Markers</a>	State	Unknown
CEM-13-B	<a href="#">Laffoon Cemetery Field Stone Grave Markers</a>	State	Unknown
CEM-13-C	<a href="#">Laffoon Cemetery Laffoon Family Grave Markers</a>	State	Unknown
CEM-18	<a href="#">Boxley Valley: Villines Cemetery Memorial</a>	Not Sig	Unknown
CEM-19	<a href="#">Boxley Valley: Whiteley Cemetery Stones</a>	Not Sig	Unknown
CEM-2	<a href="#">Lawrence Cemetery Stones</a>	Local	Unknown
CEM-20	<a href="#">Erbie District: Cherry Grove Cemetery Stones</a>	Local	Unknown
CEM-21	<a href="#">Erbie District: Jones Cemetery Stones</a>	Local	Unknown
CEM-22	<a href="#">Erbie District: Young Cemetery Stones</a>	Local	Unknown
CEM-23	<a href="#">Erbie District: Adair Cemetery Stones</a>	Local	Unknown
CEM-23-A	<a href="#">Erbie District: Adair Family Grave Markers</a>	Local	Unknown
CEM-23-B	<a href="#">Erbie District: Adair Cemetery Inscribed Markers</a>	Local	Unknown
CEM-24	<a href="#">Erbie District: McFadin Cemetery Stones</a>	Local	Unknown
CEM-25	<a href="#">Collins Cemetery Stones</a>	Local	Unknown
CEM-25-A	<a href="#">Collins Cemetery Edgar Family Headstones</a>	Local	Unknown
CEM-25-B	<a href="#">Collins Cemetery Collins Family Grave Markers</a>	Local	Unknown
CEM-25-C	<a href="#">Collins Cemetery Fieldstone Grave Markers</a>	Local	Unknown
CEM-25-D	<a href="#">Collins Cemetery Tiered Ledger Stones</a>	Local	Unknown
CEM-25-E	<a href="#">Collins Cemetery: Riggs &amp; Upton Grave Markers</a>	Local	Unknown
CEM-25-F	<a href="#">Collins Cemetery Cast Concrete Grave Marker</a>	Local	Unknown
CEM-26	<a href="#">Morris Cemetery Stones</a>	Local	Unknown
CEM-27	<a href="#">Hensley Cemetery Stones</a>	Local	Unknown
CEM-28	<a href="#">Nars Cemetery Stones</a>	Local	Unknown

<sup>51</sup> Not Sig = Not Significant

<b>BUFF Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
CEM-29	<a href="#">Arnold Cemetery</a>	Local	Unknown
CEM-3	<a href="#">Slay Cemetery Stones</a>	Local	Unknown
CEM-3-A	<a href="#">Slay Cemetery: Carter, John Rufus Grave Marker</a>	Local	Unknown
CEM-3-B	<a href="#">Slay Cemetery: Mitchell Family Grave Markers</a>	Local	Unknown
CEM-3-C	<a href="#">Slay Cemetery: Moore Family Grave Markers</a>	Local	Unknown
CEM-3-D	<a href="#">Slay Cemetery: Robertson Family Grave Markers</a>	Local	Unknown
CEM-3-E	<a href="#">Slay Cemetery: White Family Grave Markers</a>	Local	Unknown
CEM-3-F	<a href="#">Slay Cemetery: Manes Family Grave Markers</a>	Local	Unknown
CEM-3-G	<a href="#">Slay Cemetery: Scott Family Grave Markers</a>	Local	Unknown
CEM-4	<a href="#">Old Arnold Cemetery Stones</a>	Local	Unknown
CEM-5	<a href="#">White Cemetery Stones</a>	Local	Unknown
CEM-7	<a href="#">Horton Cemetery Stones</a>	Not Sig <sup>52</sup>	Unknown
CEM-Cow-1	<a href="#">Cow Creek Cemetery Stones</a>	Not Sig	Unknown
CEM-Deff-1	<a href="#">Deffenbaugh Cemetery Stones</a>	Not Sig	Unknown
CEM-HALL-1	<a href="#">Hall Cemetery Stones</a>	Local	Unknown
CEM-HALL-2	<a href="#">Hall Cemetery 19th Century Commercial Markers</a>	Local	Unknown
CEM-HALL-3	<a href="#">Hall Cemetery 20th Century Commercial Markers</a>	Local	Unknown
CEM-HALL-4	<a href="#">Hall Cemetery Cast Concrete Grave Markers</a>	Local	Unknown
CEM-HALL-5	<a href="#">Hall Cemetery Cast Iron Grave Marker</a>	Local	Unknown
CEM-HALL-6	<a href="#">Hall Cemetery Coffin Stones</a>	Local	Unknown
CEM-HALL-7	<a href="#">Hall Cemetery Stone Vaults</a>	Local	Unknown
CEM-HALL-8	<a href="#">Hall Cemetery Vernacular Fieldstone Grave Markers</a>	Local	Unknown
CEM-HAMILTON	<a href="#">Hamilton Cemetery Stones</a>	Not Sig <sup>53</sup>	Unknown
CEM-LANE BEND	<a href="#">Lane Bend Cemetery Stones</a>	Not Sig	Unknown
CEM-SANDERS	<a href="#">Sanders Cemetery Stones</a>	Not Sig	Unknown
CEM-SHADDOX	<a href="#">Shaddox Cemetery Stones</a>	Local	Unknown
ER-15	<a href="#">Erbie District: Jones, Rulus Cattle Shed</a>	Local	Unknown
ER-4	<a href="#">Parker-Hickman Feeding Structures</a>	Local	Unknown
ER-7	<a href="#">Parker-Hickman Corn Crib</a>	Local	Unknown
ER-McFadin-1	<a href="#">Erbie District: McFadin House Site Ruins</a>	Local	Unknown
ER-Reavis-1	<a href="#">Erbie District: Reavis, John, Well &amp; Cistern</a>	Local	Unknown
ER-RJ-1	<a href="#">Erbie District: Jones, Rulus Cistern &amp; Well</a>	Local	Unknown
ER-Tinsley-1	<a href="#">Erbie District: Tinsley Barn Foundation</a>	Local	Unknown
ER-Tinsley-2	<a href="#">Erbie District: Tinsley Milkhouse Foundation</a>	Local	Unknown
ER-Tinsley-3	<a href="#">Erbie District: Tinsley Spring Box</a>	Local	Unknown
HB-00	<a href="#">Erbie District: Shake Roof Cabin</a>	Local	Unknown
HUCH-1	<a href="#">Erbie District: Huchingson Spring</a>	Local	Unknown
Ponca-CP-1	<a href="#">Center Point School Ruin</a>	Not Sig	Unknown
Valley-Y-1	<a href="#">Valley Y Ranch Main Dwelling/Guest House Addition</a>	State	Unknown
Valley-Y-10	<a href="#">Valley Y Ranch Main Entrance Gate</a>	State	Unknown
Valley-Y-11	<a href="#">Valley Y Ranch Access Road</a>	State	Unknown
Valley-Y-12	<a href="#">Valley Y Ranch Front House Entrance Gate &amp; Fencing</a>	State	Unknown

<sup>52</sup> Not Sig = Not Significant<sup>53</sup> Not Sig = Not Significant



<b>BUFF Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
Valley-Y-13	<a href="#">Valley Y Ranch Internal Road Network</a>	State	Unknown
Valley-Y-14	<a href="#">Valley Y Ranch Culvert</a>	State	Unknown
Valley-Y-15	<a href="#">Valley Y Ranch Main Dwelling Gutter System</a>	State	Unknown
Valley-Y-16	<a href="#">Valley Y Ranch Spring Water Channel System</a>	State	Unknown
Valley-Y-17	<a href="#">Valley Y Ranch Post and Rail Fencing</a>	State	Unknown
Valley-Y-18	<a href="#">Valley Y Ranch Rock Walls</a>	State	Unknown
Valley-Y-19	<a href="#">Valley Y Ranch Lampposts and Handrail</a>	State	Unknown
Valley-Y-2	<a href="#">Valley Y Ranch Main Stable</a>	State	Unknown
Valley-Y-20	<a href="#">Valley Y Ranch Sidewalks and Stairs</a>	State	Unknown
Valley-Y-3	<a href="#">Valley Y Ranch Blacksmith Shop</a>	State	Unknown
Valley-Y-4	<a href="#">Valley Y Ranch Wishing Well</a>	State	Unknown
Valley-Y-5	<a href="#">Valley Y Ranch Spring House</a>	State	Unknown
Valley-Y-6	<a href="#">Valley Y Ranch Manager's House</a>	State	Unknown
Valley-Y-7	<a href="#">Valley Y Ranch Garage</a>	State	Unknown
Valley-Y-8	<a href="#">Valley Y Ranch Machine Shop</a>	State	Unknown
Valley-Y-9	<a href="#">Valley Y Ranch Tractor Shed</a>	State	Unknown
XXXX	<a href="#">Hicks Wall</a>	State	Unknown
	Buffalo River State Park Historic District		
	Collier Homestead		
	Erbie Area Landscape		
	Parker Hickman Log Cabin and Farm		
	Rush Historic District		
	Valley Y Ranch at Steel Creek		

**CUVA LCS<sup>54</sup>**

<b>CUVA Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impacts</b>
CUVA00276	<a href="#">Terra Vista Archeological Site 1</a>	Local	Unknown
CUVA00277	<a href="#">Terra Vista Archeological Site 2</a>	Local	Unknown
HS-102	<a href="#">Lock #24 (O. &amp; E. Canal)</a>	National	Unknown
HS-102A	<a href="#">Lock # 24 Spillway (O&amp;E Canal)</a>	Not Evaluated	Unknown
HS-103	<a href="#">Lock #25 (O. &amp; E. Canal)</a>	National	Unknown
HS-104	<a href="#">Lock #26-Pancake Lock (O. &amp; E. Canal)</a>	State	Unknown
HS-106	<a href="#">Lock #27-Johnny Cake Lock (O. &amp; E. Canal)</a>	State	Unknown
HS-106A	<a href="#">Lock # 27 Spillway</a>	State	Unknown
HS-107	<a href="#">Lock #28-Deep Lock (O. &amp; E. Canal)</a>	State	Unknown
HS-107A	<a href="#">Lock #28 Spillway</a>	State	Unknown
HS-109	<a href="#">Canal Structures,O. &amp; E. ,Miscellaneous</a>	Not Evaluated	Unknown
HS-110	<a href="#">Lock #29 &amp; Aqueduct-Peninsula Lock (O. &amp; E. Canal)</a>	State	Unknown
HS-111	<a href="#">Lock-#30 Feeder Lock (O. &amp; E. Canal)</a>	State	Unknown
HS-112	<a href="#">Lock #31-Lonesome Lock (O. &amp; E. Canal)</a>	State	Unknown
HS-112A	<a href="#">Lock # 31 Spillway</a>	State	Unknown
HS-113	<a href="#">Stumpy Basin (O. &amp; E. Canal)</a>	National	Unknown
HS-114	<a href="#">Lock #32 (O. &amp; E. Canal)</a>	State	Unknown

<sup>54</sup> Davis, Christopher. May 27, 2011. Email -- You will see many structures remain that might be affected; however, any such effects would be beneficial and would help CUVA improve and/or maintain the condition of listed structures. I coordinated these conclusions with Paulette Cossel, CUVA's historical architect/106 coordinator.

<b>CUVA Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impacts</b>
HS-114A	<a href="#">Spillway - Near Lock #32</a>	Local	Unknown
HS-115	<a href="#">Lock #33 (O. &amp; E. Canal)</a>	State	Unknown
HS-116	<a href="#">Lock #34-Red Lock (O. &amp; E. Canal)</a>	State	Unknown
HS-117	<a href="#">Lock #35 (O. &amp; E. Canal)</a>	State	Unknown
HS-118	<a href="#">Lock #36 (O. &amp; E. Canal)</a>	National	Unknown
HS-119	<a href="#">Canal Segment #36 (O. &amp; E. Canal)</a>	National	Unknown
HS-121	<a href="#">Lock #37 (14 Mile Lock) &amp; Spillway (O. &amp; E. Canal)</a>	National	Unknown
HS-121A	<a href="#">Lock # 37 Spillway</a>	State	Unknown
HS-122	<a href="#">Canal Segment #37a (O. &amp; E. Canal)</a>	National	Unknown
HS-124	<a href="#">Canal Segment #37b (O. &amp; E. Canal)</a>	National	Unknown
HS-126	<a href="#">Lock #38-12 Mile Lock &amp; Spillway (O. &amp; E. Canal)</a>	National	Unknown
HS-126A	<a href="#">Lock # 38 Spillway</a>	State	Unknown
HS-127	<a href="#">Canal Segment #38 (O. &amp; E. Canal)</a>	National	Unknown
HS-128	<a href="#">Lock #39-11 Mile Lock &amp; Spillway (O. &amp; E. Canal)</a>	National	Unknown
HS-128A	<a href="#">Lock # 39 Spillway</a>	State	Unknown
HS-129	<a href="#">Lock 39 Wasteway</a>	State	Unknown
HS-241	<a href="#">Kendall Lake Toboggan Run Remnant (Va Kendall)</a>	Local	Unknown
HS-245	<a href="#">Kendall Lake and Dam (Virginia Kendall Unit)</a>	Local	Unknown
HS-254A	<a href="#">Ledges Trail System and Steps (Virginia Kendall)</a>	Local	Unknown
HS-336	<a href="#">Brandywine Creek Mills Site</a>	Local	Unknown
HS-336A	<a href="#">Brandywine Falls Bridge</a>	Local	Unknown
HS-409C	<a href="#">Abraham Ulyatt Cistern</a>	Local	Unknown
HS-414C	<a href="#">Nathaniel Point Walkways</a>	Local	Unknown
HS-443B	<a href="#">George Stanford Earth Dam</a>	Local	Unknown
HS-486A	<a href="#">Savacoal Walkway</a>	Local	Unknown
HS-511	<a href="#">Jyurovat, Andrew Walkway</a>	Local	Unknown

**EFMO LCS**

No treatment will occur on or in the immediate vicinity of any LCS listed structures, including all mounds. They are not individually listed here.

<b>EFMO Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impacts</b>
CLI	Yellow River landscape		
CLI	Sny Magill landscape		

**GWCA LCS**

<b>GWCA Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impacts</b>
HS-05	<a href="#">Carver, Moses, Late Period Dwelling</a>	Contributing	Mitigated
HS-26	<a href="#">Carver, George Washington, Bust</a>	Contributing	Mitigated
HS-27	<a href="#">Dedication Plaque</a>	Contributing	Mitigated
HS-30	<a href="#">Carver, Boy, Statue</a>	Contributing	Mitigated
HS-31	<a href="#">Carver, Moses, Family Cemetery</a>	Contributing	Mitigated
HS-31A	<a href="#">Carver, Moses, Cemetery Wall</a>	Contributing	Mitigated
HS-35	<a href="#">Monument Site Boundary Markers</a>	Not Sig <sup>55</sup>	Mitigated

<sup>55</sup> Not Sig = Not Significant

GWCA Identity	Name	Significance Level	Potential for Impacts
HS-36	<a href="#">Williams Springhouse Foundation</a>	Not Sig	Mitigated
HS-37	<a href="#">Williams Pond Dam</a>	Not Sig	Mitigated
Entire monument is a cultural landscape			

**HEHO LCS**

HEHO Identity	Name	Significance Level	Potential for Impacts
HS-50	<a href="#">Hoover Creek Retaining Wall</a>	Contributing	Mitigated
Entire historic site is a cultural landscape			

**HOME LCS**

HOME Identity	Name	Significance Level	Potential for Impacts
HS-09	<a href="#">Freeman School Girls Privy</a>	Contributing	Mitigated
HS-10	<a href="#">Freeman School Boys Privy</a>	Contributing	Mitigated
HS-16	<a href="#">Freeman, Daniel and Agnes, Foot Stones</a>	Contributing	Mitigated
HS-17	<a href="#">DAR Monument</a>	Contributing	Mitigated
HS-19	<a href="#">Freeman Family Grave Marker</a>	Contributing	Mitigated
HS-7A	<a href="#">Freeman School Playground Equipment Pole</a>	Contributing	Mitigated
CLI	Freeman Homestead Cabin Site		
CLI	Brick House Site		
CLI	Agnes Freeman Cabin Site		
CLI	Squatters Cabin Site		
CLI	Osage Orange Hedgerow		
CLI	Entire monument is a cultural landscape		

**HOCU LCS**

HOCU Identity	Name	Significance Level	Potential of Impacts
HB-E01	<a href="#">High Bank Works Group</a>	National	Mitigated
HE-E01	<a href="#">Circle "A" Enclosure - Hopeton Earthworks</a>	Contributing	Mitigated
HE-E02	<a href="#">Great Circle Enclosure - Hopeton Earthworks</a>	Contributing	Mitigated
HE-E03	<a href="#">Square Enclosure - Hopeton Earthworks</a>	Contributing	Mitigated
HE-E04	<a href="#">Circle "B" Enclosure - Hopeton Earthworks</a>	Contributing	Mitigated
HE-E05	<a href="#">Circle "C" Enclosure - Hopeton Earthworks</a>	Contributing	Mitigated
HE-E06	<a href="#">Parallel Walls Earthwork - Hopeton Earthworks</a>	Contributing	Mitigated
HE-E07	<a href="#">Small Circle Enclosure - Hopeton Earthworks</a>	Contributing	Mitigated
HMG-E01	<a href="#">Hopewell Site - Hopewell Mound Group</a>	National	Mitigated
SE-E01	<a href="#">Seip Earthworks Unit</a>	National	Mitigated
CLI	Mound City Group		
CLI	Hopeton Earthworks		
CLI	Hopewell Earthworks		

**HOSP LCS**

HOSP Identity	Name	Significance Level	Potential for Impact
40	<a href="#">Hot Springs Mountain Road Stonework</a>	Contributing	Mitigated
41	<a href="#">Pagoda</a>	Contributing	Mitigated

<b>HOSP Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
43	<a href="#">Gulpha Gorge Stone Walls</a>	Local	Mitigated
44	<a href="#">Gulpha Gorge Low Water Crossing</a>	Local	Mitigated
45	<a href="#">Oertel Trail System</a>	Contributing	Mitigated
52	<a href="#">Tank House Hot Springs Mountain</a>	Contributing	Mitigated
55	<a href="#">Trail Shelter</a>	Contributing	Mitigated
56	<a href="#">Trail Shelter</a>	Contributing	Mitigated
HB-109.A	<a href="#">Stone Bridge</a>	State	Mitigated
HB-109.C	<a href="#">Dam</a>	State	Mitigated
HB-109.D	<a href="#">Mill</a>	State	Mitigated
HB-109.E	<a href="#">Pedestrian Bridge</a>	State	Mitigated
HS-81	<a href="#">Tank House West Mountain</a>	Local	Mitigated
Q-41	<a href="#">Gulpha Gorge Ranger's Residence</a>	Local	Mitigated
RD-1	<a href="#">West Mountain Drive, Route #0011</a>	State	Mitigated
RD-1-A	<a href="#">West Mountain Summit Road-Rt. 101</a>	Local	Mitigated
RD-1-B	<a href="#">West Mountain Parking Area</a>	Local	Mitigated
RD-1-C	<a href="#">West Mountain Summit Parking Area</a>	Local	Mitigated
RD-2	<a href="#">Hot Springs Mountain Road</a>	State	Mitigated
SH-1	<a href="#">West Mountain Shelter House</a>	Local	Mitigated
CLI	Bathhouse Row		Mitigated
CLI	Gulpha Gorge		

**LIBO LCS**

<b>LIBO Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impacts</b>
HS-01A	<a href="#">East and west culverts near railroad</a>	Contributing	Mitigated
HS-01Ab	<a href="#">Culvert by parking meadow</a>	Contributing	Mitigated
HS-01Ac	<a href="#">Culverts in memorial area</a>	Contributing	Mitigated
HS-01B	<a href="#">Memorial Water System Access Structure</a>	Contributing	Mitigated
HS-12	<a href="#">Spencer County Memorial Monument</a>	Contributing	Mitigated
HS-12A	<a href="#">Birthplace Stone and Marker</a>	Contributing	Mitigated
HS-12B	<a href="#">Jones Store Rock and Marker</a>	Contributing	Mitigated
HS-12C	<a href="#">Vincennes Stone and Marker</a>	Contributing	Mitigated
HS-12D	<a href="#">Berry-Lincoln Store Stone and Marker</a>	Contributing	Mitigated
HS-12E	<a href="#">Lexington Kentucky Bricks and Marker</a>	Contributing	Mitigated
HS-12G	<a href="#">Old Capitol Stone and Marker</a>	Contributing	Mitigated
HS-12H	<a href="#">Gettysburg Rock and Marker</a>	Contributing	Mitigated
HS-12I	<a href="#">White House Stone and Marker</a>	Contributing	Mitigated
HS-12J	<a href="#">Anderson Cottage Stone and Marker</a>	Contributing	Mitigated
HS-12K	<a href="#">Washington D.C. Peterson House Stone and Marker</a>	Contributing	Mitigated
HS-12L	<a href="#">Trail of Twelve Stones</a>	Contributing	Mitigated
HS-37	<a href="#">Walnut Tree Marker</a>	Contributing	Mitigated
HS-38	<a href="#">Old Lincoln Trace</a>	Not Sig <sup>56</sup>	Mitigated
HS-39	<a href="#">State Road Culvert</a>	Contributing	Mitigated
CLI	Entire memorial is a cultural landscape		

<sup>56</sup> Not Sig = Not Significant

**OZAR LCS**

<b>OZAR Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impacts</b>
223B	<a href="#">Akers Ferry Old River Road</a>	Local	Mitigated
223C	<a href="#">Akers Ferry Stone Steps</a>	Local	Mitigated
247	<a href="#">Akers District: Mt. Zion Church</a>	Local	Mitigated
247A	<a href="#">Akers District: Mt. Zion Church Privy</a>	Local	Mitigated
247B	<a href="#">Akers Cemetery Fence</a>	Local	Mitigated
445A	<a href="#">Partney Farm Privy</a>	Local	Mitigated
445B	<a href="#">Partney Farm Stock Pond</a>	Local	Mitigated
445D & 445E	<a href="#">Partney Farm Chilton Cemetery</a>	Local	Mitigated
455	<a href="#">Partney Farm Root Cellar</a>	Local	Mitigated
BS-new-A	<a href="#">Big Spring CCC Rock Quarry Remnants</a>	State	Mitigated
BS-new-B	<a href="#">Big Spring CCC Quarry Powder Magazine</a>	State	Mitigated
BS-new-C	<a href="#">Big Spring CCC Camp Ruin - Dining Hall Remnant</a>	State	Mitigated
BS-new-D	<a href="#">Big Spring CCC Camp Ruin - Foundation</a>	State	Mitigated
BS-new-E	<a href="#">Big Spring CCC Camp Ruin - Fire Ring</a>	State	Mitigated
BS-new-F	<a href="#">Big Spring CCC Camp Ruin - Trough Structure</a>	State	Mitigated
BS-new-G	<a href="#">Big Spring CCC Camp Ruin - Stone Retaining Wall</a>	State	Mitigated
BS-new-H	<a href="#">Big Spring CCC Camp Ruin - Water Tower Posts</a>	State	Mitigated
BS-new-I	<a href="#">Big Spring CCC Camp Ruin - Concrete Slab</a>	State	Mitigated
BS-new-J	<a href="#">Big Spring CCC Camp Ruin - Shower House Foundation</a>	State	Mitigated
BS-new-K	<a href="#">Big Spring CCC Camp Ruin - Septic Tanks</a>	State	Mitigated
BS-new-L	<a href="#">Big Spring May/Winters Quarters Garage Foundation</a>	State	Mitigated
CEM-LG	<a href="#">Lower Grassy Cemetery</a>	Not Sig <sup>57</sup>	Mitigated
CEM-LG-A	<a href="#">Lower Grassy Cemetery: Deatherage Grave Markers</a>	Not Sig	Mitigated
CEM-LG-B	<a href="#">Lower Grassy Cemetery: Martin Family Grave Markers</a>	Not Sig	Mitigated
CEM-LG-C	<a href="#">Lower Grassy Cemetery: Randolph Grave Markers</a>	Not Sig	Mitigated
CEM-LG-D	<a href="#">Lower Grassy Cemetery: Individual Grave Markers</a>	Not Sig	Mitigated
Culpepper-1	<a href="#">Culpepper Cemetery</a>	Not Sig	Mitigated
Dyer-1	<a href="#">Dyer Cemetery</a>	Not Sig	Mitigated
Dyer-1-A	<a href="#">Dyer Cemetery: Cooley, Nellie Grave Marker</a>	Not Sig	Mitigated
Dyer-1-B	<a href="#">Dyer Cemetery: Coop Family Grave Markers</a>	Not Sig	Mitigated
Dyer-1-C	<a href="#">Dyer Cemetery: Duncan Family Grave Markers</a>	Not Sig	Mitigated
Dyer-1-D	<a href="#">Dyer Cemetery: Dyer Family Grave Markers</a>	Not Sig	Mitigated
Dyer-1-E	<a href="#">Dyer Cemetery: Hardwick Family Grave Markers</a>	Not Sig	Mitigated
Dyer-1-F	<a href="#">Dyer Cemetery: Ipock Family Grave Markers</a>	Not Sig	Mitigated
Dyer-1-G	<a href="#">Dyer Cemetery: Stuart Baby Grave Marker</a>	Not Sig	Mitigated
HS-1404	<a href="#">Big Spring Fire Lookout Tower</a>	State	Mitigated
HS-1404-A	<a href="#">Big Spring Fire Tower, Grass Road</a>	State	Mitigated
HS-1404-B	<a href="#">Big Spring Fire Tower, Gravel Road</a>	State	Mitigated
HS-1404-C	<a href="#">Big Spring Fire Tower, Privy Site #1</a>	Local	Mitigated
HS-1404-D	<a href="#">Big Spring Fire Tower, Privy Site #2</a>	State	Mitigated
HS-1404-E	<a href="#">Big Spring Fire Tower, Rock Quarry Remnants</a>	State	Mitigated
HS-1404-F	<a href="#">Big Spring Fire Tower, Stone Retaining Wall</a>	State	Mitigated
HS-18A	<a href="#">Chilton-Williams Complex: Williams Cistern</a>	Local	Mitigated
HS-208	<a href="#">Round Spring Historic Shelter</a>	Not Sig	Mitigated

<sup>57</sup> Not Sig = Not Significant

OZAR Identity	Name	Significance Level	Potential for Impacts
HS-220	<a href="#">Round Spring Old General Store</a>	Not Sig	Mitigated
HS-222	<a href="#">Round Spring: Carrs Concession Building (Store #2)</a>	Local	Mitigated
HS-222-A	<a href="#">Round Spring Cavern Steps</a>	Not Sig <sup>58</sup>	Mitigated
HS-225	<a href="#">Welch Cave Hospital</a>	Not Evaluated	Mitigated
HS-229	<a href="#">Pulltite Cabin</a>	Local	Mitigated
HS-230	<a href="#">Cedargrove Schoolhouse Ruins</a>	Local	Mitigated
HS-231	<a href="#">Cedar Grove Community Ruins</a>	Local	Mitigated
HS-233	<a href="#">Lower Parker Schoolhouse</a>	Local	Mitigated
HS-233A	<a href="#">Lower Parker Schoolhouse Girl's Privy</a>	Contributing	Mitigated
HS-233B	<a href="#">Lower Parker Schoolhouse Boy's Privy</a>	Contributing	Mitigated
HS-242	<a href="#">Devil's Well Wallace Barn</a>	Not Sig	Mitigated
HS-244	<a href="#">Nichols Cabin/House</a>	State	Mitigated
HS-244B	<a href="#">Nichols Crib Barn</a>	State	Mitigated
HS-244C	<a href="#">Nichols Road</a>	State	Mitigated
HS-245	<a href="#">Nichols Corn Crib</a>	State	Mitigated
HS-246	<a href="#">Maggard Cabin</a>	Local	Mitigated
HS-311A	<a href="#">Owls Bend School, Outbuilding Foundation</a>	Local	Mitigated
HS-313	<a href="#">Ramsey Barn</a>	Not Sig	Mitigated
HS-315	<a href="#">Chilton-Williams Complex: Chilton House</a>	Local	Mitigated
HS-318	<a href="#">Chilton-Williams Complex: Lesh/Williams House</a>	Local	Mitigated
HS-319	<a href="#">Chilton-Williams Complex: Barn Foundation</a>	Local	Mitigated
HS-320	<a href="#">Chilton-Williams Complex: Equipment Storage Shed</a>	Local	Mitigated
HS-321	<a href="#">Chilton-Williams Complex: Small Barn #1</a>	Local	Mitigated
HS-322	<a href="#">Chilton-Williams Complex: Corn Crib #1</a>	Local	Mitigated
HS-323	<a href="#">Chilton-Williams Complex: Corn Crib #2</a>	Local	Mitigated
HS-324	<a href="#">Chilton-Williams Complex: Williams Shed</a>	Local	Mitigated
HS-324A	<a href="#">Chilton-Williams Feeder</a>	Local	Mitigated
HS-326	<a href="#">Chilton-Williams Complex: Smokehouse</a>	Local	Mitigated
HS-327	<a href="#">Chilton-Williams Complex: Tool Shed</a>	Local	Mitigated
HS-328	<a href="#">Chilton-Williams Complex: Small Barn #2</a>	Local	Mitigated
HS-329	<a href="#">Chilton-Williams Complex: Chicken House</a>	Local	Mitigated
HS-337	<a href="#">Chilton-Williams Complex: Storm Cellar</a>	Local	Mitigated
HS-339	<a href="#">Chilton-Williams Complex: Concrete Silo #1</a>	Local	Mitigated
HS-340	<a href="#">Chilton-Williams Complex: Silo #2</a>	Local	Mitigated
HS-342	<a href="#">Buttin Rock School</a>	Local	Mitigated
HS-342A	<a href="#">Buttin Rock School Boy's Privy - Ruin</a>	Local	Mitigated
HS-342B	<a href="#">Buttin Rock School Girl's Privy</a>	Local	Mitigated
HS-342C	<a href="#">Buttin Rock School Well</a>	Contributing	Mitigated
HS-343	<a href="#">Klepzig House Ruin</a>	Local	Mitigated
HS-345	<a href="#">Klepzig Log Cabin - Ruin</a>	Not Sig <sup>59</sup>	Mitigated
HS-346	<a href="#">Klepzig Machine Shed Ruin</a>	Not Sig	Mitigated
HS-347	<a href="#">Klepzig Barn and Granary Ruins</a>	Local	Mitigated
HS-348	<a href="#">Klepzig Smokehouse</a>	Local	Mitigated
HS-348A	<a href="#">Klepzig Mill Chicken Coop Ruin</a>	Contributing	Mitigated

<sup>58</sup> Not Sig = Not Significant<sup>59</sup> Not Sig = Not Significant



OZAR Identity	Name	Significance Level	Potential for Impacts
HS-349	<a href="#">Klepzig Stock Shed and Granary Ruin</a>	Not Evaluated	Mitigated
HS-350	<a href="#">Klepzig Springhouse</a>	Local	Mitigated
HS-351	<a href="#">Reed Log House</a>	State	Mitigated
HS-351A	<a href="#">Reed Cistern</a>	State	Mitigated
HS-355	<a href="#">Klepzig Mill</a>	State	Mitigated
HS-355A	<a href="#">Klepzig Mill Dam</a>	Contributing	Mitigated
HS-355B	<a href="#">Klepzig Mill Headrace</a>	Contributing	Mitigated
HS-355C	<a href="#">Klepzig Mill Retaining Wall &amp; Steps</a>	Contributing	Mitigated
HS-355D	<a href="#">Klepzig Road</a>	Contributing	Mitigated
HS-356	<a href="#">Buttin Rock Road</a>	Local	Mitigated
HS-356A	<a href="#">Buttin Rock Road Cattle Guard/Culvert</a>	Contributing	Mitigated
HS-401	<a href="#">Big Spring Rental Cabin #401</a>	State	Mitigated
HS-401B	<a href="#">Big Spring Cabin Road System</a>	State	Mitigated
HS-402	<a href="#">Big Spring Rental Cabin #402</a>	State	Mitigated
HS-403	<a href="#">Big Spring Rental Cabin #403</a>	State	Mitigated
HS-404	<a href="#">Big Spring Rental Cabin #404</a>	State	Mitigated
HS-405	<a href="#">Big Spring Rental Cabin #405</a>	State	Mitigated
HS-406	<a href="#">Big Spring Rental Cabin #406</a>	State	Mitigated
HS-407	<a href="#">Big Spring Rental Cabin #407</a>	State	Mitigated
HS-408	<a href="#">Big Spring Rental Cabin #408</a>	State	Mitigated
HS-409	<a href="#">Big Spring Rental Cabin #409</a>	State	Mitigated
HS-410	<a href="#">Big Spring Rental Cabin #410</a>	State	Mitigated
HS-411	<a href="#">Big Spring Rental Cabin #411</a>	State	Mitigated
HS-412	<a href="#">Big Spring Rental Cabin #412</a>	State	Mitigated
HS-413	<a href="#">Big Spring Rental Cabin #413</a>	State	Mitigated
HS-414	<a href="#">Big Spring Rental Cabin #414</a>	State	Mitigated
HS-415	<a href="#">Big Spring Cabin #415</a>	State	Mitigated
HS-416	<a href="#">Big Spring Cabin #416</a>	State	Mitigated
HS-417	<a href="#">Big Spring Maintenance Shop</a>	State	Mitigated
HS-418	<a href="#">Big Spring Maintenance Storage Building</a>	State	Mitigated
HS-419	<a href="#">Big Spring Garage</a>	State	Mitigated
HS-420	<a href="#">Big Spring State Park Museum Building</a>	State	Mitigated
HS-422	<a href="#">Big Spring Dining Lodge &amp; Help's Quarters</a>	State	Mitigated
HS-422A	<a href="#">Big Spring Dining Lodge Retaining Wall &amp; Fountain</a>	State	Mitigated
HS-423	<a href="#">Big Spring Latrine</a>	State	Mitigated
HS-423A	<a href="#">Big Spring Retaining Wall &amp; Abutments</a>	State	Mitigated
HS-425	<a href="#">Big Spring Pavilion</a>	State	Mitigated
HS-425A	<a href="#">Big Spring Nature Trail System</a>	State	Mitigated
HS-427	<a href="#">Big Spring Chubb Hollow Open Shelter House #427</a>	State	Mitigated
HS-427A	<a href="#">Big Spring Chubb Hollow Stone Culvert</a>	State	Mitigated
HS-428	<a href="#">Big Spring Peavine Pavilion</a>	State	Mitigated
HS-432	<a href="#">Big Spring Entrance Building</a>	State	Mitigated
HS-432A	<a href="#">Big Spring Entrance Portal Walls</a>	State	Mitigated
HS-432B	<a href="#">Big Spring Dump Incinerator</a>	State	Mitigated
HS-443	<a href="#">Big Spring Pump House</a>	State	Mitigated
HS-444	<a href="#">Big Spring May/Winters Quarters</a>	State	Mitigated
HS-445	<a href="#">Partney Farm House</a>	Local	Mitigated
HS-445-F	<a href="#">Partney Farm Chilton House Site Ruin</a>	Local	Mitigated
HS-445-G	<a href="#">Partney Farm Chilton House Site Spring Box</a>	Local	Mitigated

OZAR Identity	Name	Significance Level	Potential for Impacts
HS-445-RWall	<a href="#">Partney Farm Retaining Wall</a>	Local	Mitigated
HS-454	<a href="#">Partney Farm Shed</a>	Local	Mitigated
HS-456	<a href="#">Big Spring Chubb Hollow Foot Bridge</a>	State	Mitigated
HS-464	<a href="#">Shockley Barn</a>	Not Sig <sup>60</sup>	Mitigated
HS-469	<a href="#">Big Spring Foot Bridge</a>	State	Mitigated
HS-470	<a href="#">Atlantic &amp; Pacific Railroad</a>	Local	Mitigated
HS-501	<a href="#">Alley Spring Roller Mill</a>	State	Mitigated
HS-501A	<a href="#">Alley Spring Pond, Dam, Turbine Pit &amp; Raceway</a>	State	Mitigated
HS-501B	<a href="#">Alley Spring Revetment Wall</a>	State	Mitigated
HS-501C	<a href="#">Alley Spring Roller Mill Stone Walkway</a>	State	Mitigated
HS-501D	<a href="#">Alley Spring Mill Main Bridge Abutment</a>	State	Mitigated
HS-501H	<a href="#">Alley Spring Trail System East</a>	State	Mitigated
HS-501I	<a href="#">Alley Spring Scenic Overlook</a>	State	Mitigated
HS-501J	<a href="#">Alley Spring Trail System West</a>	State	Mitigated
HS-502	<a href="#">Alley Spring District Maintenance Shop</a>	State	Mitigated
HS-503	<a href="#">Alley Spring Picnic Shelter</a>	State	Mitigated
HS-504	<a href="#">Alley Spring Park Keeper's House</a>	State	Mitigated
HS-504B	<a href="#">Alley Spring Seasonal Cabin Steps and Pathway</a>	State	Mitigated
HS-505	<a href="#">Alley Spring CCC Seasonal Cabin 505</a>	State	Mitigated
HS-506	<a href="#">Alley Spring Seasonal Cabin 506</a>	State	Mitigated
HS-507	<a href="#">Alley Spring Pump House</a>	State	Mitigated
HS-508	<a href="#">Alley School House</a>	Not Evaluated	Mitigated
HS-508A	<a href="#">Alley Schoolhouse Sidewalk &amp; Drive</a>	State	Mitigated
HS-511	<a href="#">Alley Spring Ranger Station</a>	State	Mitigated
HS-511A	<a href="#">Alley Spring Ranger Station Steps</a>	State	Mitigated
HS-520	<a href="#">Alley Spring Story's Creek Schoolhouse</a>	Not Sig <sup>61</sup>	Mitigated
HS-564	<a href="#">Buck Hollow: Cardinal Acres Cabin 1</a>	Local	Mitigated
HS-564-Road	<a href="#">Buck Hollow: Cardinal Acres Road</a>	Local	Mitigated
HS-565	<a href="#">Buck Hollow: Cardinal Acres Cabin 3</a>	Local	Mitigated
HS-565A	<a href="#">Buck Hollow: Cardinal Acres Culvert</a>	Local	Mitigated
HS-565C	<a href="#">Buck Hollow: Cardinal Acres Privy #1</a>	Local	Mitigated
HS-565E	<a href="#">Buck Hollow: Cardinal Acres Privy #2</a>	Local	Mitigated
HS-565F	<a href="#">Buck Hollow: Cardinal Acres, House Site A</a>	Local	Mitigated
HS-565G	<a href="#">Buck Hollow: Cardinal Acres, House Site B</a>	Local	Mitigated
HS-565H	<a href="#">Buck Hollow: Cardinal Acres, House Site C</a>	Local	Mitigated
HS-565I	<a href="#">Buck Hollow: Cardinal Acres, House Site D</a>	Local	Mitigated
HS-565J	<a href="#">Buck Hollow: Cardinal Acres, House Site E</a>	Local	Mitigated
HS-565K	<a href="#">Buck Hollow: Cardinal Acres, House Site F</a>	Local	Mitigated
HS-565L	<a href="#">Buck Hollow: Cardinal Acres, Concrete Cisterns</a>	Local	Mitigated
HS-567	<a href="#">Buck Hollow: Cardinal Acres Pumphouse Ruin</a>	Local	Mitigated
HS-567A	<a href="#">Buck Hollow: Cardinal Acres Retaining Walls</a>	Local	Mitigated
HS-DIKES	<a href="#">Big Spring Stone Dikes</a>	State	Mitigated
HS-Fountains	<a href="#">Big Spring Fountains</a>	State	Mitigated
HS-Parking	<a href="#">Big Spring Main Parking Area</a>	State	Mitigated

<sup>60</sup> Not Sig = Not Significant<sup>61</sup> Not Sig = Not Significant



OZAR Identity	Name	Significance Level	Potential for Impacts
HS-PATH	<a href="#">Big Spring Cabin Path System &amp; Stairs</a>	State	Mitigated
HS-Road	<a href="#">Chilton-Williams Farm Road</a>	Local	Mitigated
Kelley-1	<a href="#">Kelleys Cemetery</a>	Not Sig <sup>62</sup>	Mitigated
Medlock	<a href="#">Medlock Cemetery (Flying W Ranch)</a>	Not Sig	Mitigated
U6	<a href="#">Akers Ferry Cairns</a>	Local	Mitigated
U600	<a href="#">Akers Cemetery: Banks, Lummas, Headstone</a>	Local	Mitigated
U601	<a href="#">Akers Cemetery: Banks, Sarah, Headstone</a>	Local	Mitigated
U602	<a href="#">Akers Cemetery: Banks, Marion, Headstone</a>	Local	Mitigated
U603	<a href="#">Akers Cemetery: McEntire Headstone</a>	Local	Mitigated
U604	<a href="#">Akers Cemetery: Briggs, Vester, Headstone</a>	Local	Mitigated
U605	<a href="#">Akers Cemetery: Farris, J. M., Family Plot Marker</a>	Local	Mitigated
U606	<a href="#">Akers Cemetery: Hodges, Dora, Headstone</a>	Local	Mitigated
U607	<a href="#">Akers Cemetery: Hodges, Samuel, Headstone</a>	Local	Mitigated
U608	<a href="#">Akers Cemetery: Akers, Ralph Vernon Headstone</a>	Local	Mitigated
U609	<a href="#">Akers Cemetery: Purcell, Thomas, Headstone</a>	Local	Mitigated
U610	<a href="#">Akers Cemetery: Purcell, Marion, Headstone</a>	Local	Mitigated
U611	<a href="#">Akers Cemetery: Purcell, F.M. &amp; Sarah Headstone</a>	Local	Mitigated
U612	<a href="#">Akers Cemetery: Purcell, Arch &amp; Clem Headstone</a>	Local	Mitigated
U613	<a href="#">Akers Cemetery: Hodges, Billie Joe, Headstone</a>	Local	Mitigated
U614	<a href="#">Akers Cemetery: Hodges, Thomas &amp; Nora, Headstone</a>	Local	Mitigated
U616	<a href="#">Akers Cemetery: Riley, Sara &amp; James, Headstone</a>	Local	Mitigated
U617	<a href="#">Akers Cemetery: Riley Family Plot Marker</a>	Local	Mitigated
U618	<a href="#">Akers Cemetery: Riley, John Wesley, Headstone</a>	Local	Mitigated
U619	<a href="#">Akers Cemetery: Purcell Family Headstones</a>	Local	Mitigated
U621-28	<a href="#">Akers Cemetery: Dooley Family Plot Marker</a>	Local	Mitigated
U629	<a href="#">Akers Cemetery: Mendenhall, Lucy Headstone</a>	Local	Mitigated
U630	<a href="#">Akers Cemetery: Welch, R. E., Headstone</a>	Local	Mitigated
U631	<a href="#">Akers Cemetery: Summers, William, Headstone</a>	Local	Mitigated
U632	<a href="#">Akers Cemetery: Stringer, Dell A., Headstone</a>	Local	Mitigated
U633	<a href="#">Akers Cemetery: Purcell, Jane &amp; George, Headstone</a>	Local	Mitigated
U634	<a href="#">Akers Cemetery: Maggard, F.E. &amp; Louisa Headstone</a>	Local	Mitigated
U635	<a href="#">Akers Cemetery: Dooley, Maudeline, Headstone</a>	Local	Mitigated
U637	<a href="#">Akers Cemetery: Terrill, Mamie, Headstone</a>	Local	Mitigated
U638	<a href="#">Akers Cemetery: Terrill, Virginia, Headstone</a>	Local	Mitigated
U639	<a href="#">Akers Cemetery: Mascher, Lyle, Headstone</a>	Local	Mitigated
U640	<a href="#">Akers Cemetery: Headstone (Concrete &amp; Marble)</a>	Local	Mitigated
U641	<a href="#">Akers District: Old Gladden Creek Road</a>	State	Mitigated
U642	<a href="#">Akers District: Old Gladden Creek Road Bridge</a>	State	Mitigated
U645	<a href="#">Akers Cemetery: Chrisco, Allen &amp; Wilma Headstones</a>	Local	Mitigated
U646	<a href="#">Akers Cemetery: Dooley Family Grave Markers</a>	Local	Mitigated
U647	<a href="#">Akers Cemetery: Flat In-Ground Vernacular Markers</a>	Local	Mitigated
U648	<a href="#">Akers Cemetery: Holland, Cecil R, Headstone</a>	Local	Mitigated
U649	<a href="#">Akers Cemetery: Jennings, Manda Headstone</a>	Local	Mitigated
U650	<a href="#">Akers Cemetery: Welch Family Grave Markers</a>	Local	Mitigated
U651	<a href="#">Akers Cemetery: Ferguson Family Grave Markers</a>	Local	Mitigated
U652	<a href="#">Akers Cemetery: Terrill, Besford, Jr., Headstone</a>	Local	Mitigated

<sup>62</sup> Not Sig = Not Significant

OZAR Identity	Name	Significance Level	Potential for Impacts
U653	<a href="#">Akers Cemetery: Hodges Family Grave Markers</a>	Local	Mitigated
U653	<a href="#">Akers Cemetery: Pankey, J.R. &amp; Dolly, Grave Marker</a>	Local	Mitigated
U654	<a href="#">Akers Cemetery: Smith, Mary &amp; Bob Headstone</a>	Local	Mitigated
U660	<a href="#">Akers Cemetery: Maggard, Gaylord &amp; Loreen Cenotaph</a>	Local	Mitigated
Weese-1	<a href="#">Weese Cemetery</a>	Not Sig <sup>63</sup>	Mitigated
Weese-1-A	<a href="#">Weese Cemetery: Individual Markers</a>	Not Sig	Mitigated
Weese-1-B	<a href="#">Weese Cemetery: Atchison (Atchenson) Family</a>	Not Sig	Mitigated
Weese-1-C	<a href="#">Weese Cemetery: Cox Family Grave Markers</a>	Not Sig	Mitigated
Weese-1-D	<a href="#">Weese Cemetery: Enloe Family Grave Markers</a>	Not Sig	Mitigated
Weese-1-E	<a href="#">Weese Cemetery: Light Family Grave Markers</a>	Not Sig	Mitigated
Weese-1-F	<a href="#">Weese Cemetery: Mailes Family Grave Markers</a>	Not Sig	Mitigated
Weese-1-G	<a href="#">Weese Cemetery: Stulce Family Grave Markers</a>	Not Sig <sup>64</sup>	Mitigated
Weese-1-H	<a href="#">Weese Cemetery: Webber Family Grave Markers</a>	Not Sig	Mitigated
Weese-1-I	<a href="#">Weese Cemetery: Weber Family Grave Markers</a>	Not Sig	Mitigated
Weese-1-J	<a href="#">Weese Cemetery: Weese Family Grave Markers</a>	Not Sig	Mitigated
Weese-1-K	<a href="#">Weese Cemetery: Smith Family Grave Markers</a>	Not Sig	Mitigated
Weese-1-L	<a href="#">Weese Cemetery: Stewart Family Grave Markers</a>	Not Sig	Mitigated
Weese-1-M	<a href="#">Weese Cemetery: Wood Family Grave Markers</a>	Not Sig	Mitigated
CLI	Alley Spring State Park Historic District		
CLI	Big Spring Historic District		
CLI	Chilton-Williams Farm Complex		
CLI	Maggard Cabin Site		
CLI	Mt. Zion Church Site		
CLI	Nichols Farm		
CLI	Partney Farm		
CLI	Pulltite Cabin Site		
CLI	Reed Log House Site		
CLI	Welch Cave site		

**PERI LCS**

PERI Identity	Name	Significance Level	Potential for Impact
HB-01	<a href="#">Huntsville Road</a>	National	Mitigated
HB-05	<a href="#">Elkhorn Tavern</a>	Not Sig	Mitigated
HB-08	<a href="#">Ford Road</a>	National	Mitigated
HB-14	<a href="#">Union Trenches</a>	Contributing	Mitigated
HB-21	<a href="#">Telegraph Road</a>	Contributing	Mitigated
HB-22-A	<a href="#">Tannery House Foundation</a>	Contributing	Mitigated
HB-22-B	<a href="#">Tannery Well</a>	Contributing	Mitigated
HB-24	<a href="#">Ford Cemetery</a>	Not Sig	Mitigated
HB-25	<a href="#">Leetown Cemetery</a>	Contributing	Mitigated
CLI	Entire park is a cultural landscape		

<sup>63</sup> Not Sig = Not Significant<sup>64</sup> Not Sig = Not Significant

**PIPE LCS**

<b>PIPE Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
HS-10	<a href="#">Circle Trail</a>	Contributing	Mitigated
HS-11	<a href="#">South Quarry Line Trail</a>	Contributing	Mitigated
HS-7	<a href="#">CCC Footbridges</a>	Contributing	Mitigated
CLI	Entire monument is a cultural landscape		

**TAPR LCS**

<b>TAPR Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
HS 106	<a href="#">Loose Laid Stone Fences</a>	Contributing	Mitigated
HS 109	<a href="#">Spring Hill Ranch Outhouse</a>	National	Mitigated
HS 110	<a href="#">Spring Hill Ranch Barn</a>	National	Mitigated
HS 111	<a href="#">Spring Hill Ranch Silo</a>	Contributing	Mitigated
HS 112	<a href="#">Spring Hill Ranch Stone Corrals</a>	National	Mitigated
HS 113	<a href="#">Stone Retaining Walls Near Barn</a>	Contributing	Mitigated
HS 114	<a href="#">Shed #3</a>	Contributing	Mitigated
HS 117	<a href="#">Chute Shed</a>	Contributing	Mitigated
HS 126	<a href="#">Spring Hill Ranch Cistern</a>	National	Mitigated
HS 127	<a href="#">Spring Box</a>	Contributing	Mitigated
HS 201	<a href="#">Lower Fox Creek Schoolhouse</a>	National	Mitigated
HS 202	<a href="#">Schoolhouse Water Well and Pump</a>	Contributing	Mitigated
HS 115	Spring Hill Ranch Corrals	Unknown	Mitigated
HS 116	Scale House	Unknown	Mitigated
HS 401-7, HS412, and unnumbered	Loose Laid Stone Fences (preserve-wide)		Mitigated
HS 408	Red House Ruins	Unknown	Mitigated
HS 409	Red House Spring Box	Unknown	Mitigated
HS 410	Red House Barn Foundation	Unknown	Mitigated
HS 411	Red House Corrals	Unknown	Mitigated
No number	Windmill Stone Spring Box	Unknown	Mitigated
No number	Windmill Spring Box	Unknown	Mitigated
No number	Gas House (Big) Homestead Foundations, Site 1		Mitigated
No number	Gas House (Big) Homestead Foundations, Site 2		Mitigated
No number	West Branch (Big) Homestead Foundations	Unknown	Mitigated
No number	Davis Gas Field Infrastructure	Unknown	Mitigated
HS 501	Well House #1	Unknown	Mitigated
HS 501	Well House #2	Unknown	Mitigated
HS 503	Railroad Spur and Stockyard	Unknown	Mitigated
No number	Bottomland Corral and Feed Lot	Unknown	Mitigated
No number	Pole Barn	Unknown	Mitigated
No number	Rock Cairns	Unknown	Mitigated
No number	Two Section Corrals	Unknown	Mitigated
No number	Two Section Homestead Foundations	Unknown	Mitigated
No number	Lantry Lane Stone Culvert	Unknown	Mitigated
HS 301	Lantry Barn	Unknown	Mitigated
HS 302	Lantry Poultry House	Unknown	Mitigated
HS 303	Lantry Tack Barn	Unknown	Mitigated
HS 304	Lantry Earth Bern Flood Control Structure	Unknown	Mitigated

<b>TAPR Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
No number	Lantry Loading Dock	Unknown	Mitigated

**WICR LCS**

<b>WICR Identity</b>	<b>Name</b>	<b>Significance Level</b>	<b>Potential for Impact</b>
23	<a href="#">McElhaney House</a>	Local	Mitigated
24	<a href="#">McElhaney Barn</a>	Local	Mitigated
25	<a href="#">McElhaney Storm Cellar</a>	Local	Mitigated
26	<a href="#">McElhaney Smokehouse</a>	Local	Mitigated
27	<a href="#">McElhaney Cistern</a>	Contributing	Mitigated
28	<a href="#">McElhaney Sidewalk</a>	Local	Mitigated
29	<a href="#">Stone Field Wall #1</a>	Contributing	Mitigated
30	<a href="#">Stone Field Wall #2</a>	Contributing	Mitigated
HS-05	<a href="#">Ray, John A., House</a>	Contributing	Mitigated
HS-10	<a href="#">General Lyon Marker</a>	Contributing	Mitigated
HS-11	<a href="#">Telegraph Road</a>	National	Mitigated
HS-13	<a href="#">Ray, John A., Spring House</a>	Contributing	Mitigated
HS-15	<a href="#">Gibson's Mill &amp; Headrace Ruins</a>	Contributing	Mitigated
HS-15-A	<a href="#">Gibson's Mill House Site Ruin</a>	Contributing	Mitigated
HS-17A	<a href="#">Short Spring Box</a>	Contributing	Mitigated
HS-21A	<a href="#">Manley Cemetery: Manley, Caleb &amp; Rebecca Headstone</a>	Contributing	Mitigated
HS-21B	<a href="#">Manley Cemetery: Manley, Martha Headstone</a>	Contributing	Mitigated
HS-21C	<a href="#">Manley Cemetery: Prunty, D. C., Headstone</a>	Contributing	Mitigated
HS-21D	<a href="#">Manley Cemetery: Jennings, William Headstone</a>	Contributing	Mitigated
HS-21E	<a href="#">Manley Cemetery: Howe Family Headstones</a>	Contributing	Mitigated
HS-22A	<a href="#">Edgar Cemetery: Edgar, Susanah &amp; J.J., Headstone</a>	Contributing	Mitigated
HS-22B	<a href="#">Edgar Cemetery: Couch, Elisha P., Headstone</a>	Contributing	Mitigated
HS-22C	<a href="#">Edgar Cemetery: Couch, Sarah J., Headstone</a>	Contributing	Mitigated
HS-22D	<a href="#">Edgar Cemetery: Couch, Elisha M., Headstone</a>	Contributing	Mitigated
HS-22E	<a href="#">Edgar Cemetery: White, Elzira B., Headstone</a>	Contributing	Mitigated
HS-22F	<a href="#">Edgar Cemetery: Elmer, Hubert, Headstone</a>	Contributing	Mitigated
HS-22G	<a href="#">Edgar Cemetery: Edgar, John &amp; Centha, Headstone</a>	Contributing	Mitigated
HS-22H	<a href="#">Edgar Cemetery: Edgar, Jannie L., Headstone</a>	Contributing	Mitigated
Memorial 1	<a href="#">Battle of Oak Hills Commemorative Marker</a>	Not Sig <sup>65</sup>	Mitigated
CLI	Entire battlefield is a cultural landscape		

<sup>65</sup> Not Sig = Not Significant

## Appendix J: Tribal Affiliation

Park	Affiliated tribes
<b>ARPO</b>	Quapaw Tribe of Indians of Oklahoma
<b>BUFF</b>	Absentee Shawnee, Caddo Indian Tribe of Oklahoma, Cherokee Nation of Oklahoma, Eastern Shawnee Tribe of Oklahoma, Osage Tribe of Oklahoma, Quapaw Tribe of Oklahoma, The Shawnee Tribe, Tunica-Biloxi Tribe, United Keetoowah Band of Cherokee Indians in Oklahoma, Wichita and Affiliated Tribes
<b>CUYA</b>	Absentee-Shawnee Tribe of Indians of Oklahoma, Delaware Nation of Oklahoma, Delaware Tribe of Indians (Oklahoma), Eastern Shawnee Tribe of Oklahoma, Seneca-Cayuga Tribe of Oklahoma, Shawnee Tribe, Wyandotte Nation of Oklahoma
<b>EFMO</b>	Ho-Chunk Nation, Iowa Tribe of Kansas and Nebraska, Iowa Tribe of Oklahoma, Lower Sioux Indian Community, Otoe-Missouria Tribe of Indians of Oklahoma, Prairie Island Indian Community, Sac & Fox Nation of Oklahoma, Sac & Fox Tribe of the Mississippi in Iowa, Sac and Fox Nation of Missouri in Kansas and Nebraska, Shakopee Mdewakanton Sioux Community, Upper Sioux Community, Minnesota, Winnebago Tribe of Nebraska
<b>GWCA</b>	Park recognizes the Eastern Shawnee Tribe of Oklahoma, Miami Tribe of Oklahoma, Modoc Tribe of Oklahoma, Osage Nation, Peoria Tribe of Oklahoma, Quapaw Tribe of Oklahoma, Shawnee Tribe, THPO of Citizen Potawatomi Nation, THPO of Absentee Shawnee Tribe of Oklahoma, THPO of Choctaw Nation of Oklahoma, Cherokee Nation, Wyandotte Nation
<b>HEHO</b>	none
<b>HOME</b>	Pawnee Nation of Oklahoma, Otoe-Missouri Tribe
<b>HOCU</b>	Absentee-Shawnee Tribe of Indians of Oklahoma, Delaware Nation, Delaware Tribe of Indians, Eastern Shawnee Tribe of Oklahoma, Miami Tribe of Oklahoma, Ottawa Tribe of Oklahoma, Seneca-Cayuga Tribe of Oklahoma, Shawnee Tribe, Wyandotte Nation
<b>HOSP</b>	Caddo Indian Tribe, Osage Tribe of Oklahoma, Quapaw Tribe of Indians of Oklahoma
<b>LIBO</b>	none
<b>OZAR</b>	Absentee-Shawnee Tribe of Indians of Oklahoma, Cherokee Nation of Oklahoma, Delaware Nation of Oklahoma, Delaware Tribe of Indians, Eastern Shawnee Tribe of Oklahoma, Osage Tribe of Oklahoma, Osage Nation, Quapaw Tribe of Indians of Oklahoma, Shawnee Tribe, United Keetoowah Band of Cherokee Indians in Oklahoma
<b>PERI</b>	Cherokee Nation of Oklahoma, United Keetoowah Band of Cherokee Indians in Oklahoma
<b>PIPE</b>	Flandreau Santee Sioux Tribe of South Dakota, Lower Sioux Indian Community, Santee Sioux Tribe of Nebraska, Shakopee Mdewakanton Sioux Community, Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, South Dakota, Upper Sioux Community, Minnesota, Yankton Sioux Tribe of South Dakota
<b>TAPR</b>	Kaw Tribe of Oklahoma, Osage Tribe of Oklahoma, Pawnee Tribe of Oklahoma, Wichita Tribe of Oklahoma
<b>WICR</b>	Cherokee Nation of Oklahoma, United Keetoowah Band of Cherokee Indians in Oklahoma



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Map 1a. Digital image of the features at Arkansas Post National Memorial

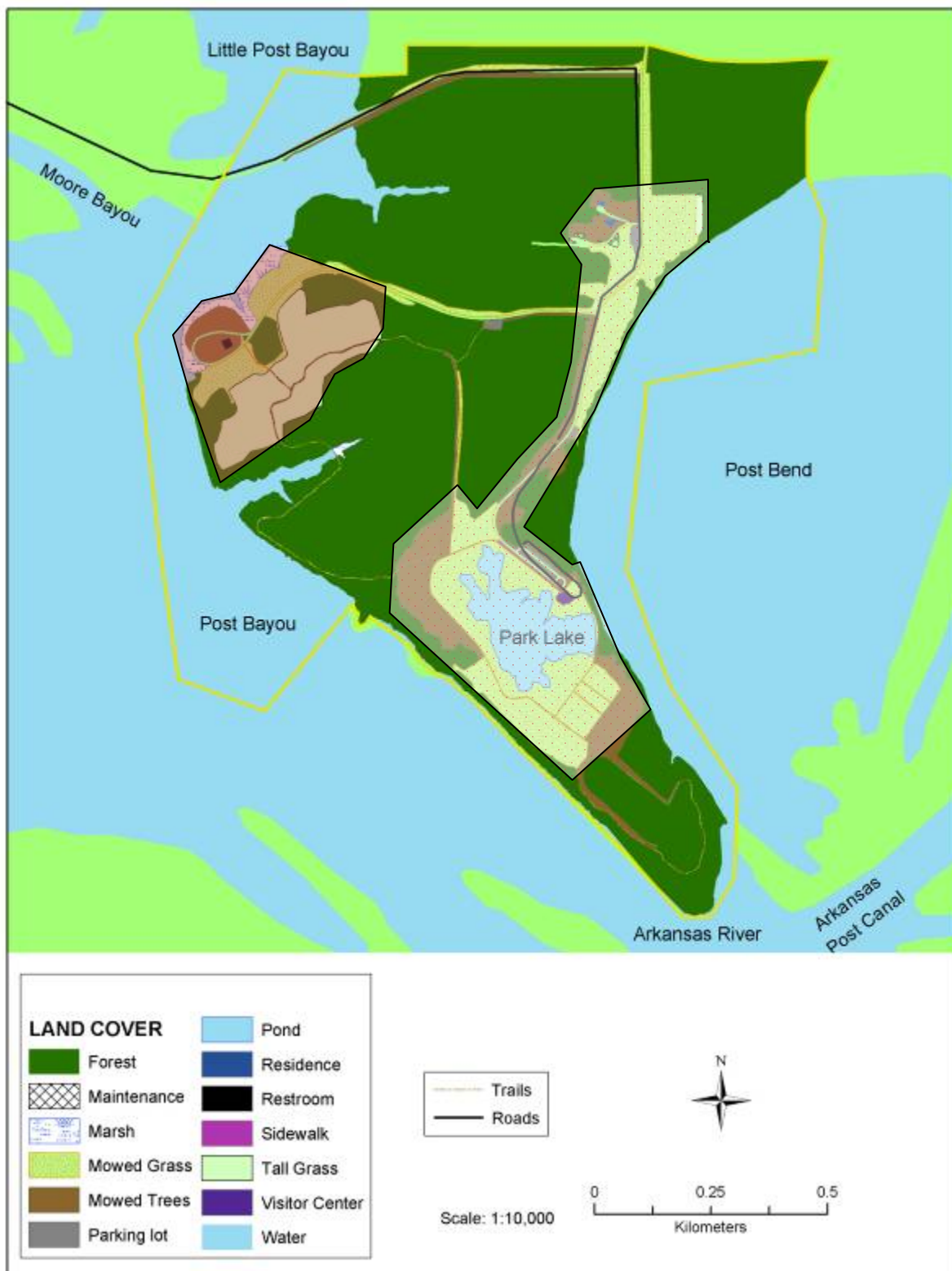
(Source: State of Arkansas digital orthoquadrangles, 2002)





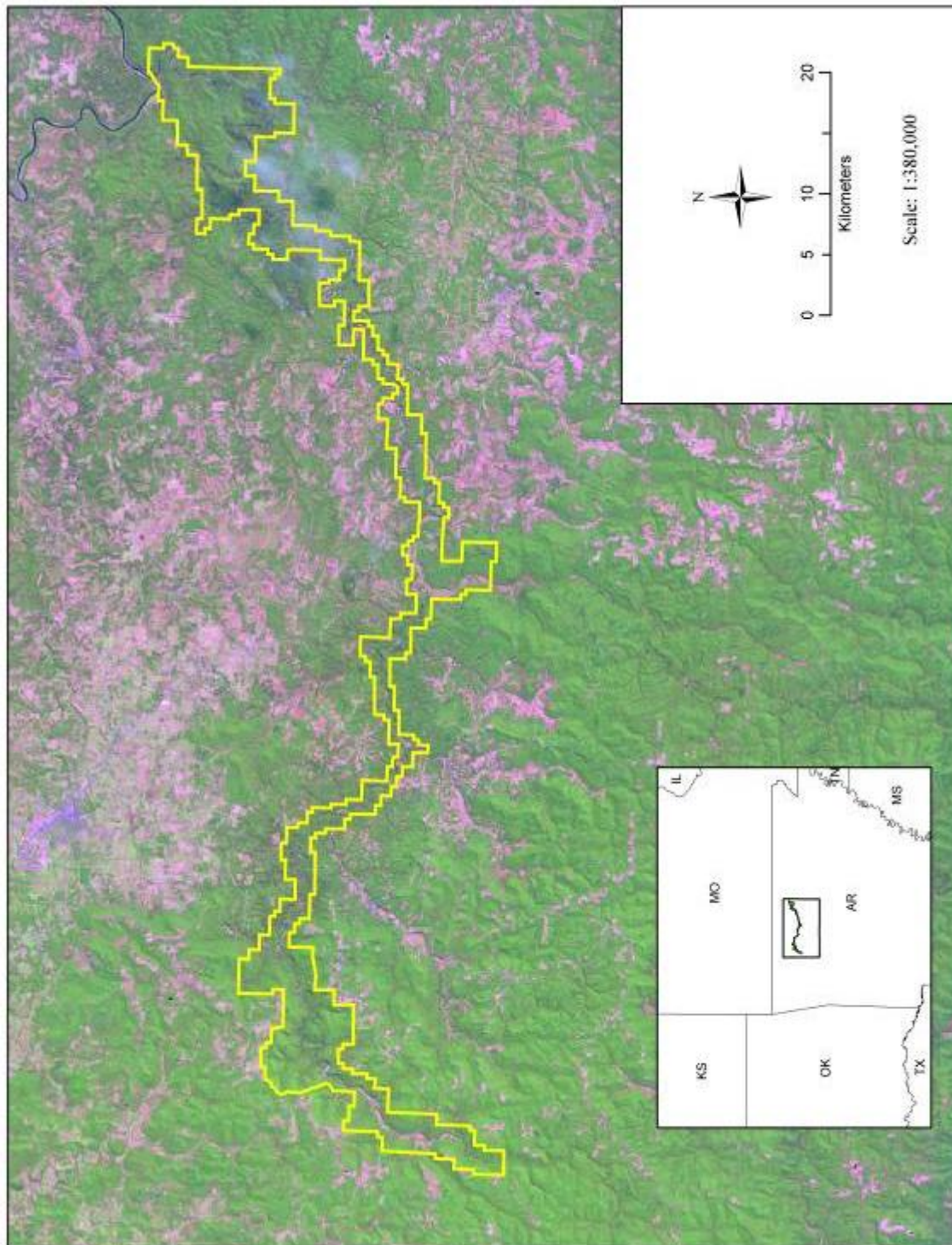
Map 1b. Land cover, roads, trails, and water bodies at Arkansas Post National Memorial Unit

(Sources: Vegetation: NPS, November 2000; Roads: Unknown; Trails: NPS, July 2001; Water Bodies: TIGER, January 2000)



Map 2a. Digital image of the features at Buffalo National River

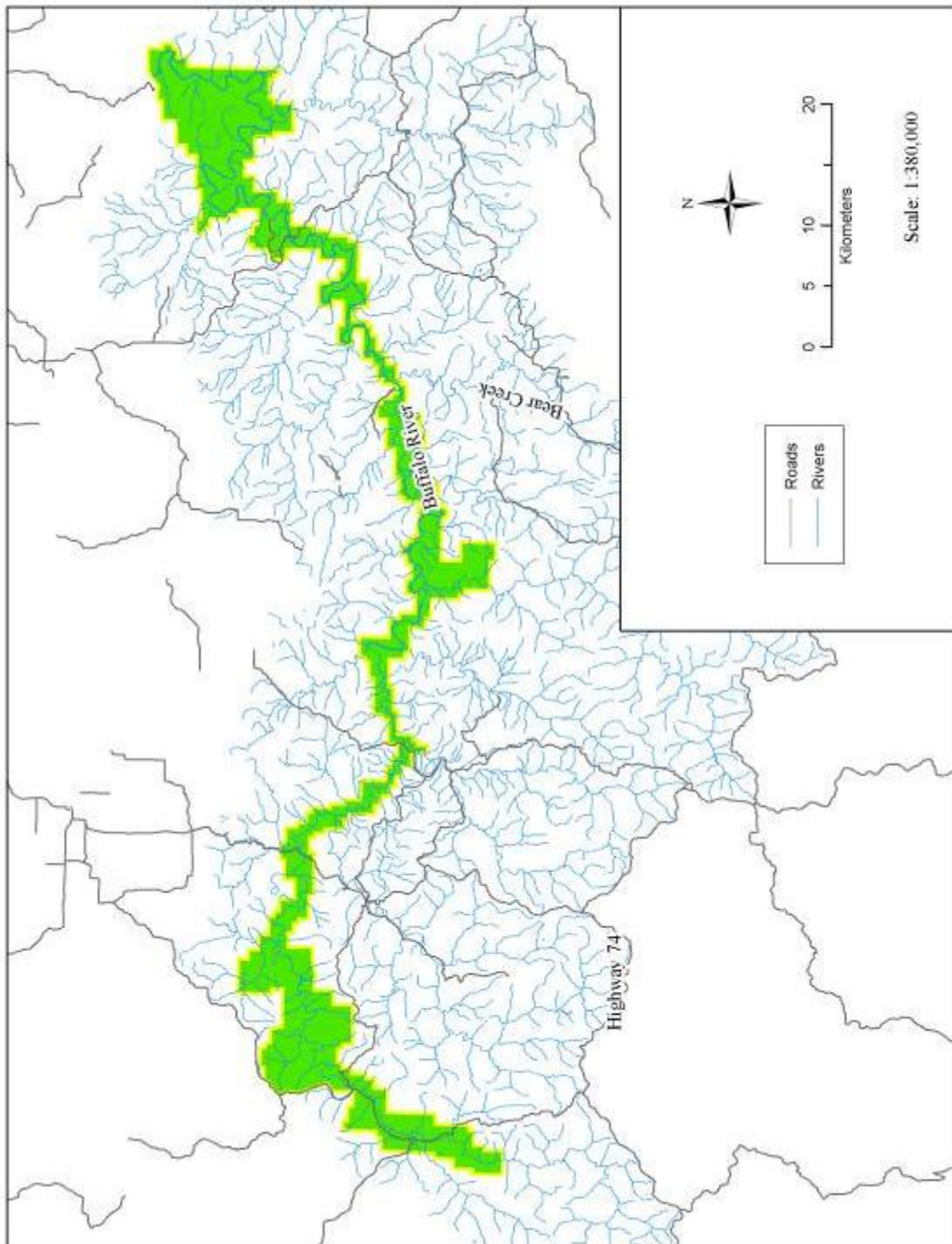
(Source: Landsat TM-7, August 2000)





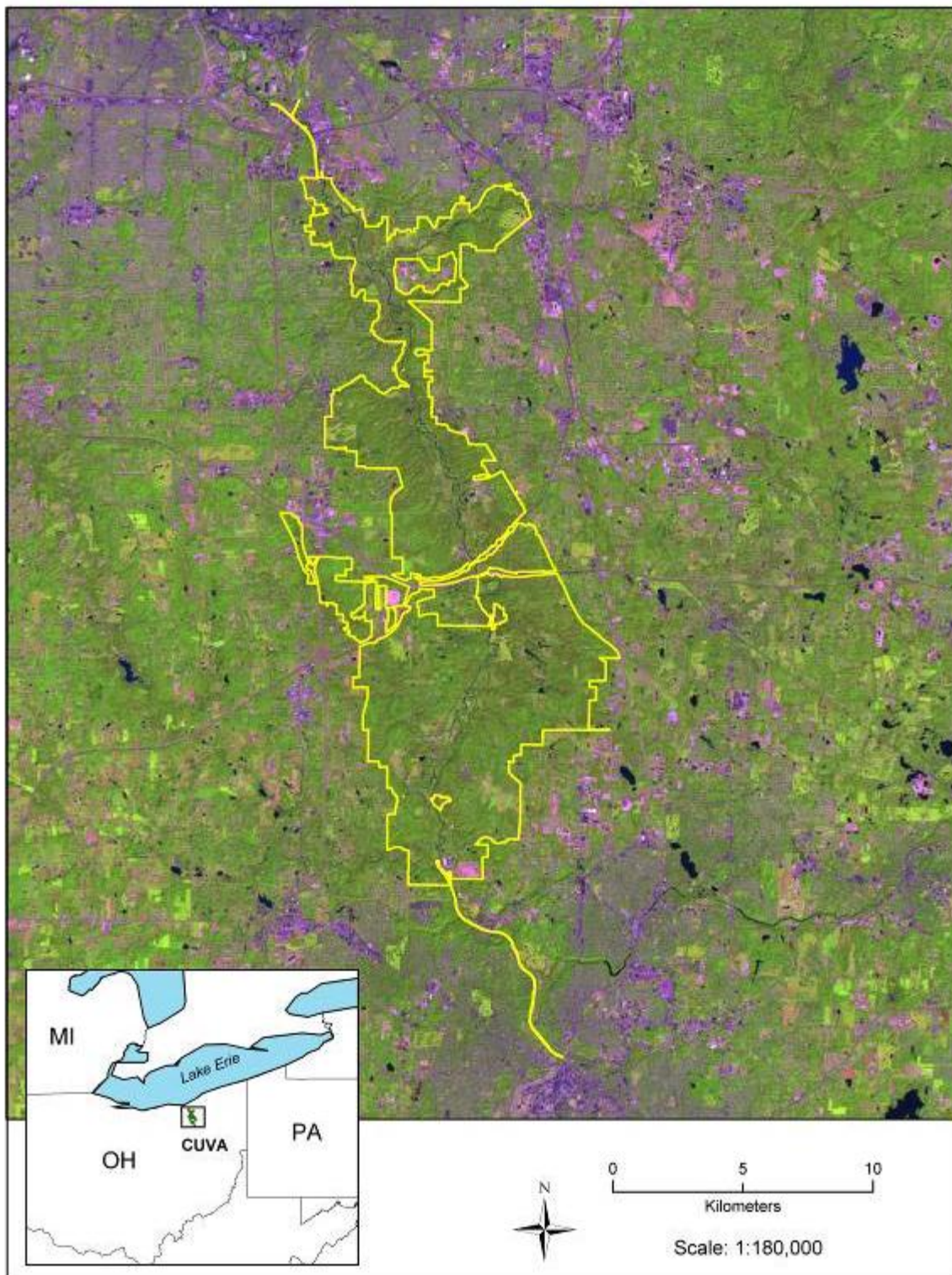
Map 2b. Roads and Rivers at Buffalo National River

(Source – Rivers: TIGER Lines, 2000; Roads: Arkansas Highway and Transportation Department, 2000)



Map 3a. Digital image of the features at Cuyahoga Valley National Park

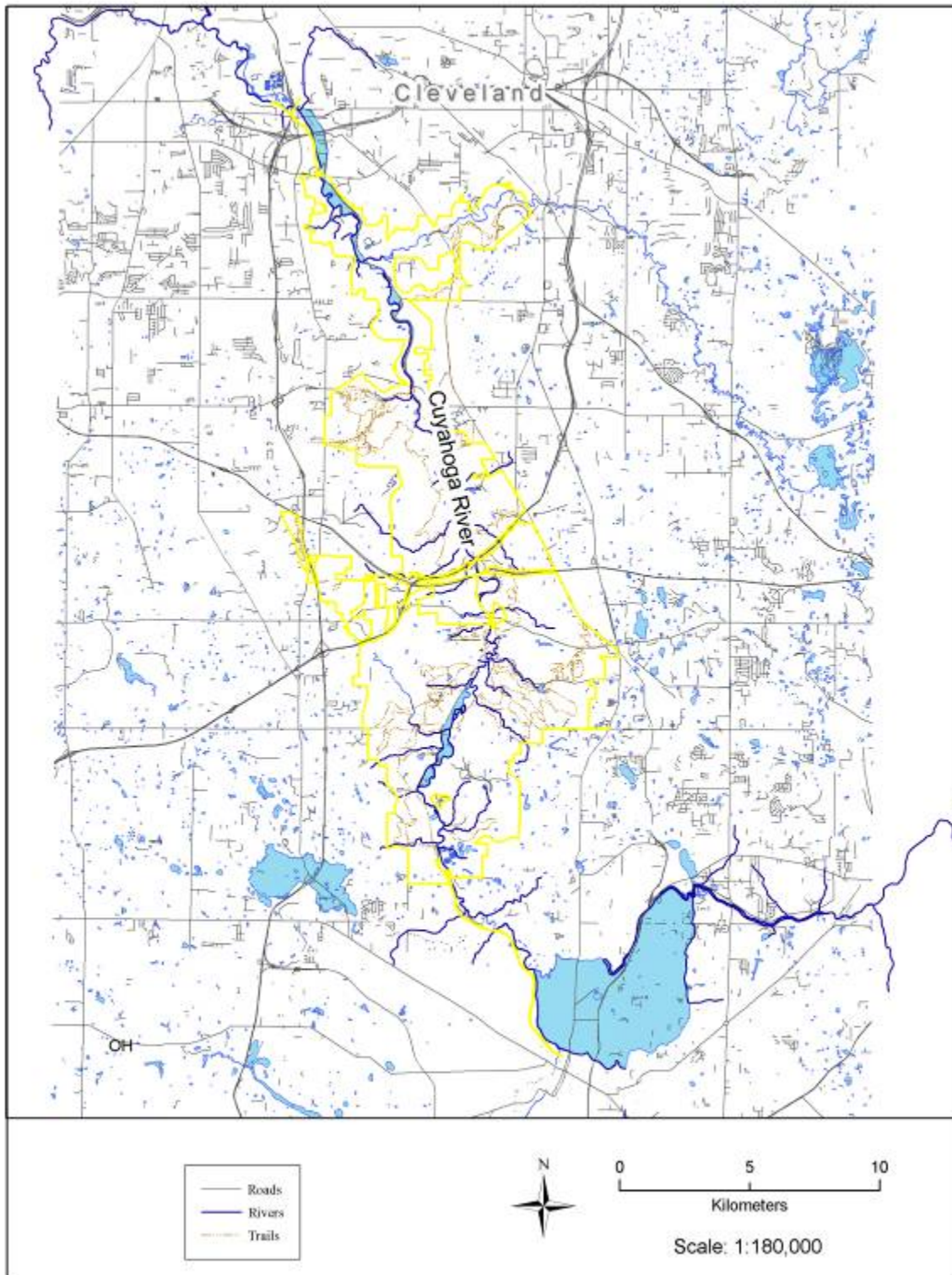
(Source: Landsat TM-7, August 2000)





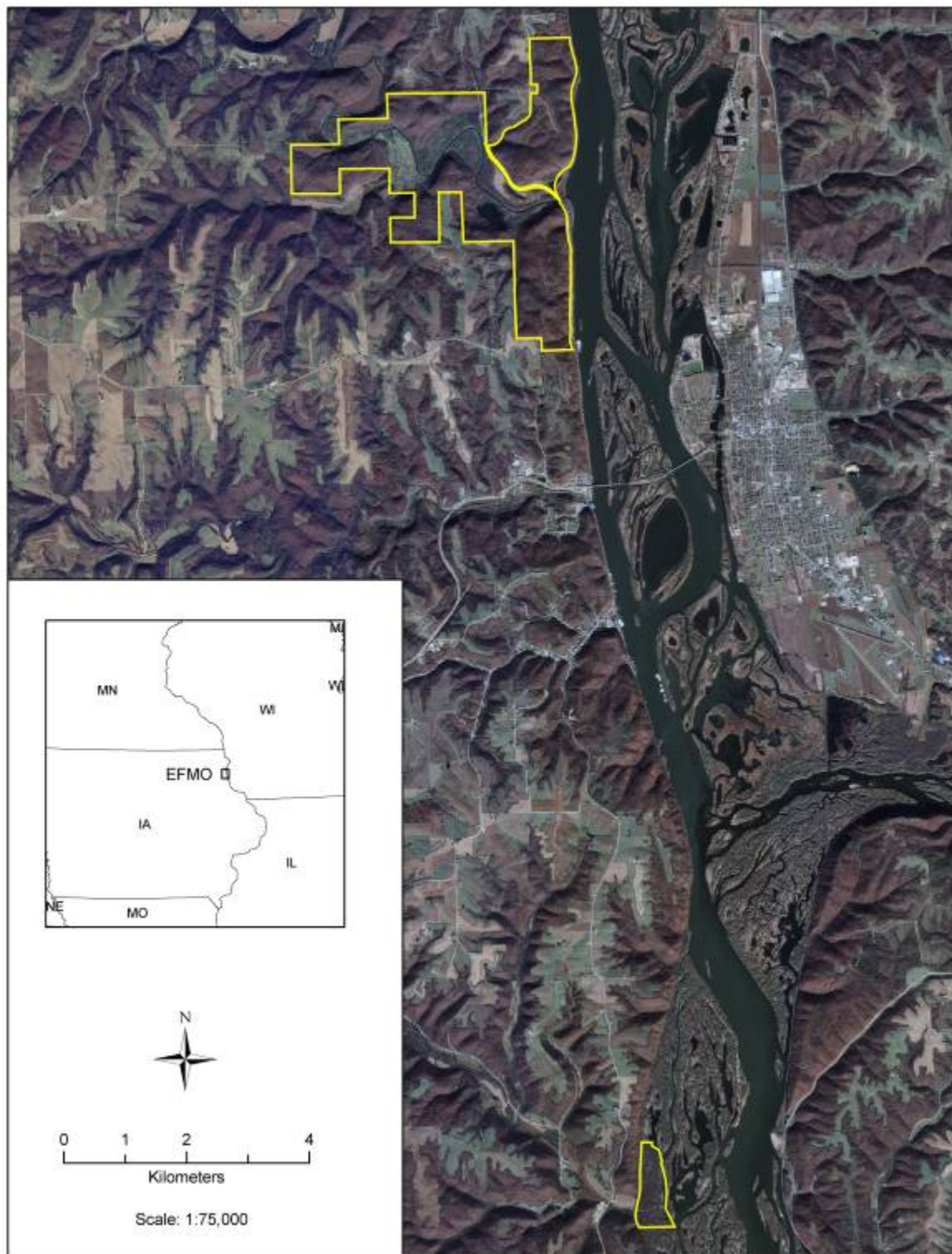
Map 3b. Roads, Trails and Rivers at Cuyahoga Valley National River

(Source: Rivers – Tiger Lines 1992; Roads; Trails: NPS, July 2001)



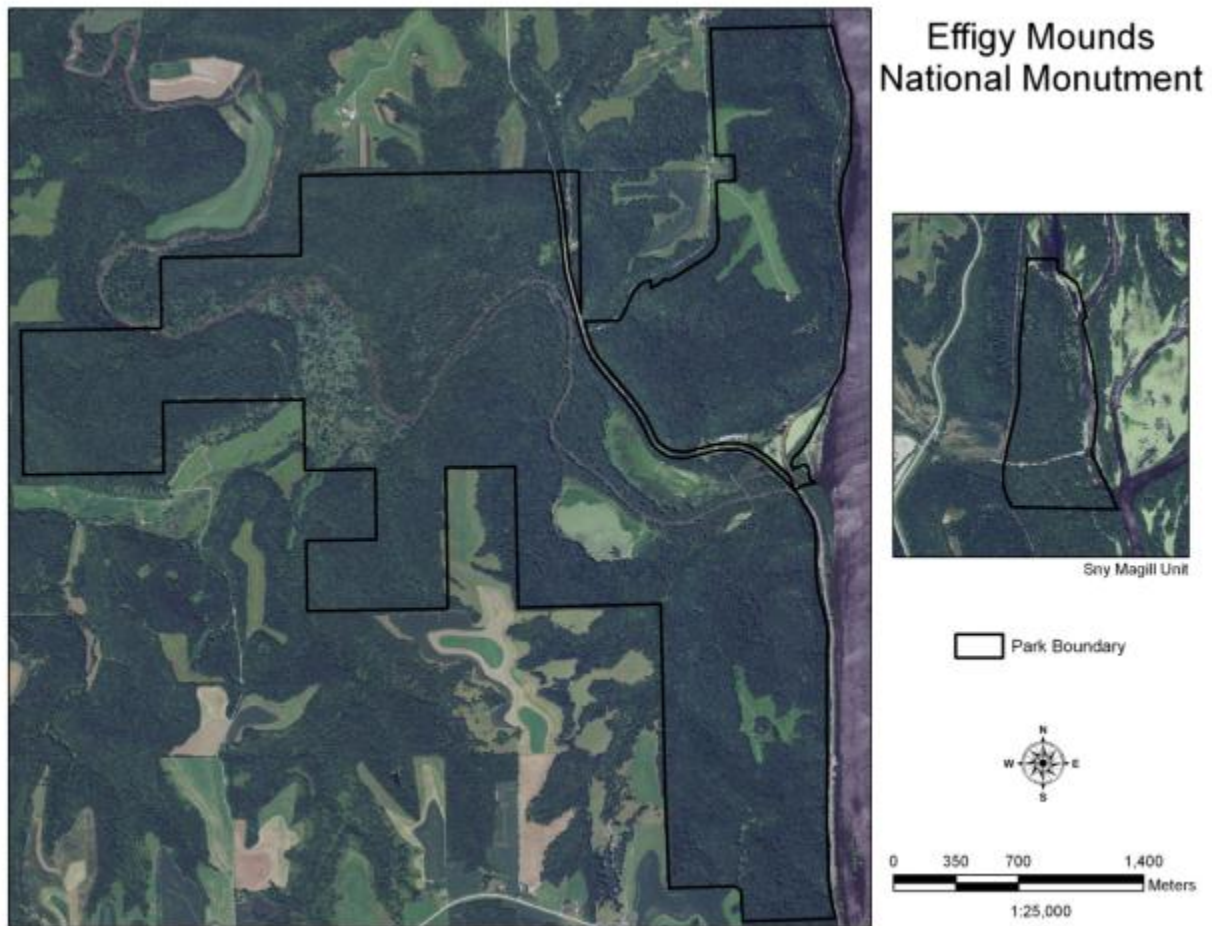
Map 4a. Digital image of the features at Effigy Mounds National Monument

(Source: Ikonos Satellite Image, November 2001)





Map 4b      Satellite image of Effigy Mounds National Monument depicting vegetation types



Map 5a. Digital image of the features at George Washington Carver National Monument

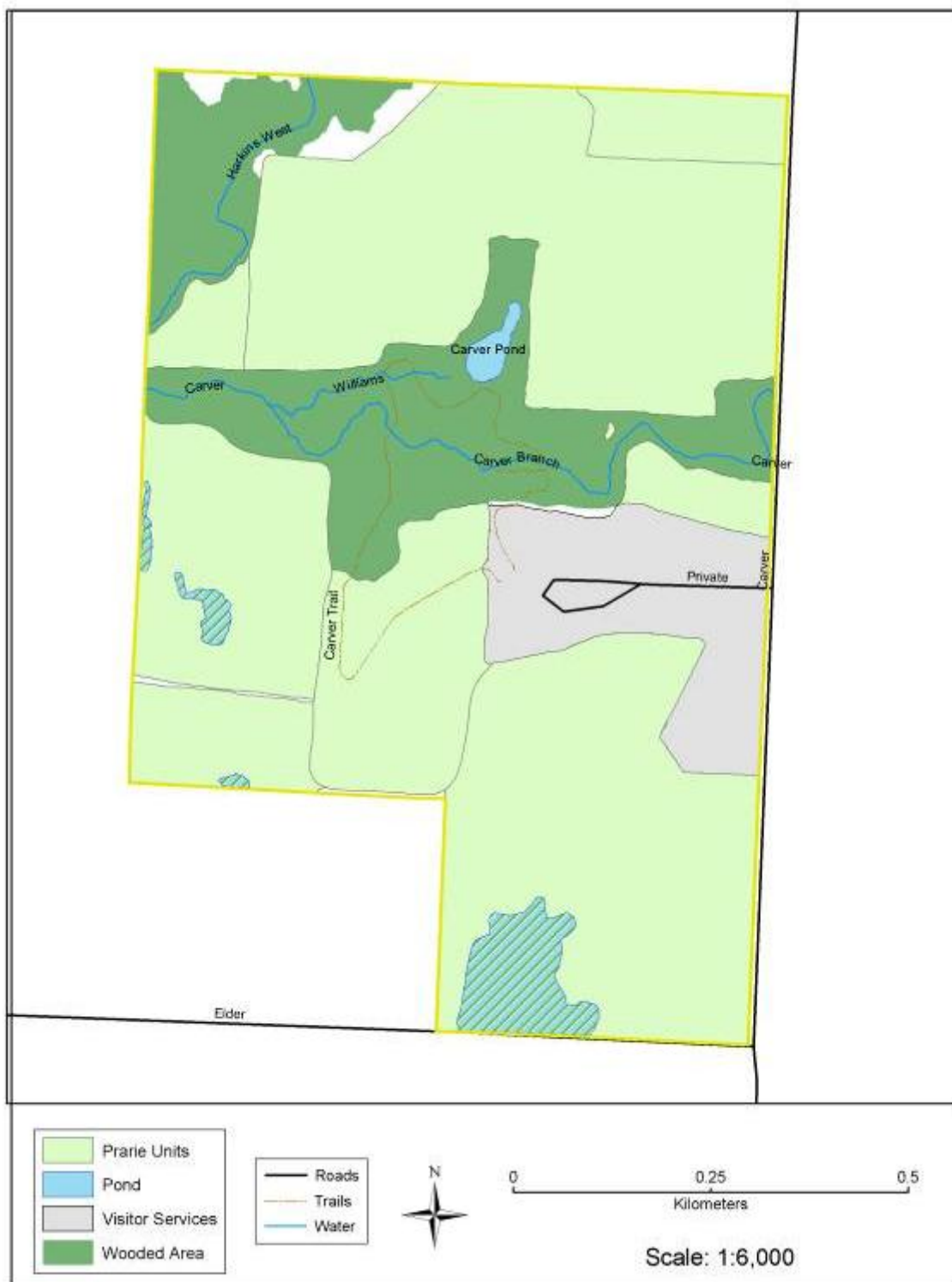
(Source: Ikonos Infrared Satellite Imagery, November 2001)





Map 5b. Land Cover, trails, roads and rivers at George Washington Carver National Monument

(Source – Landcover, trails, and rivers, June 1996; Roads TIGER/Line Files, 1995)



Map 6a. Digital image of the features of Herbert Hoover National Historic Site

(Source: Ikonos Infrared Satellite Imagery, November 2001)

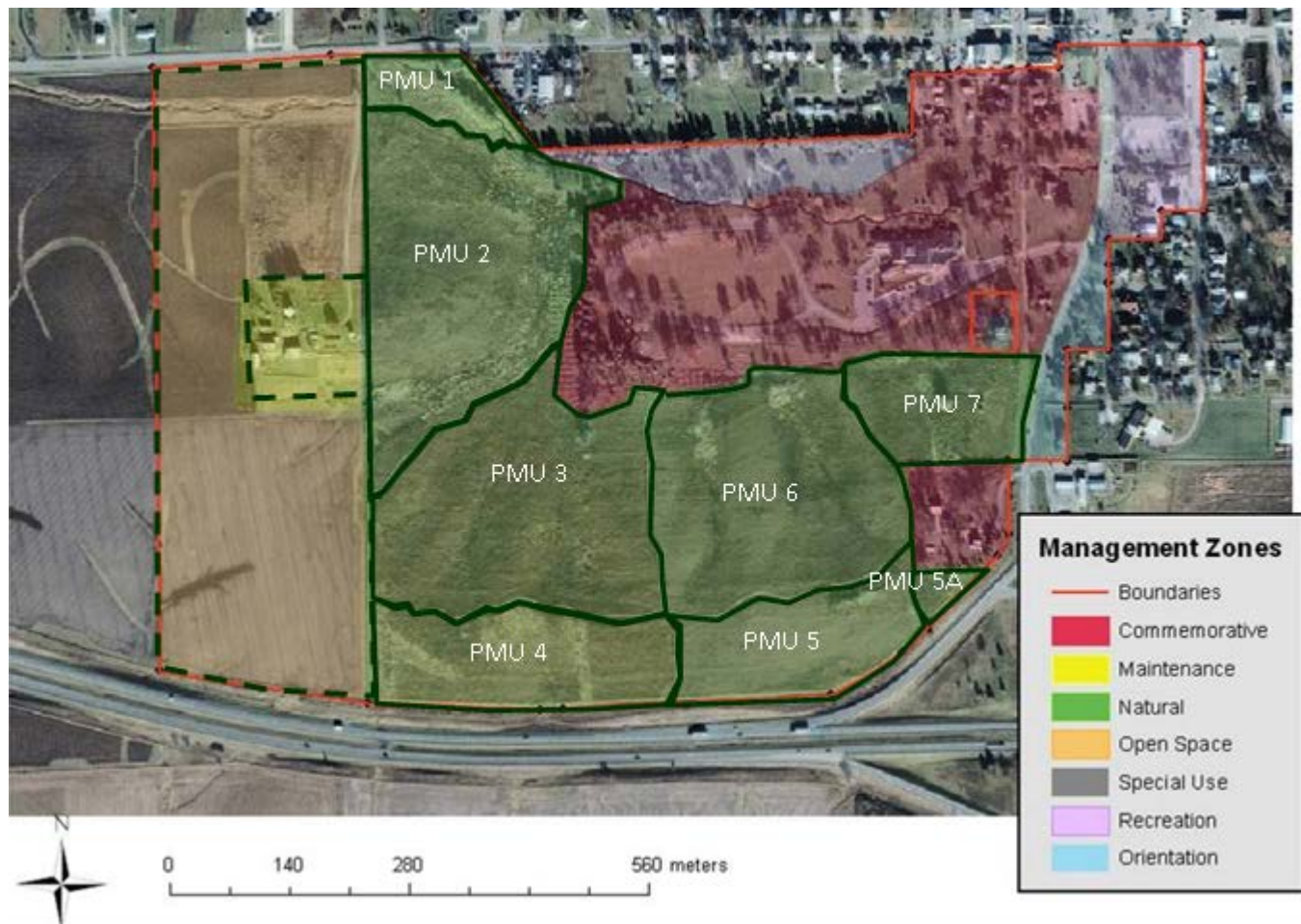




Map 6b. Management Zones and units at Herbert Hoover National Historic Site

(Source – park management plan overlay on Ikonos Infrared Satellite Imagery, November 2001).

Natural Zone and Open Space Zone were identified for invasive plant management. Areas abutting these two zones will also be maintained to reduce invasion into the adjacent zone.



Map 7a. Digital image of the features at Homestead National Monument of America

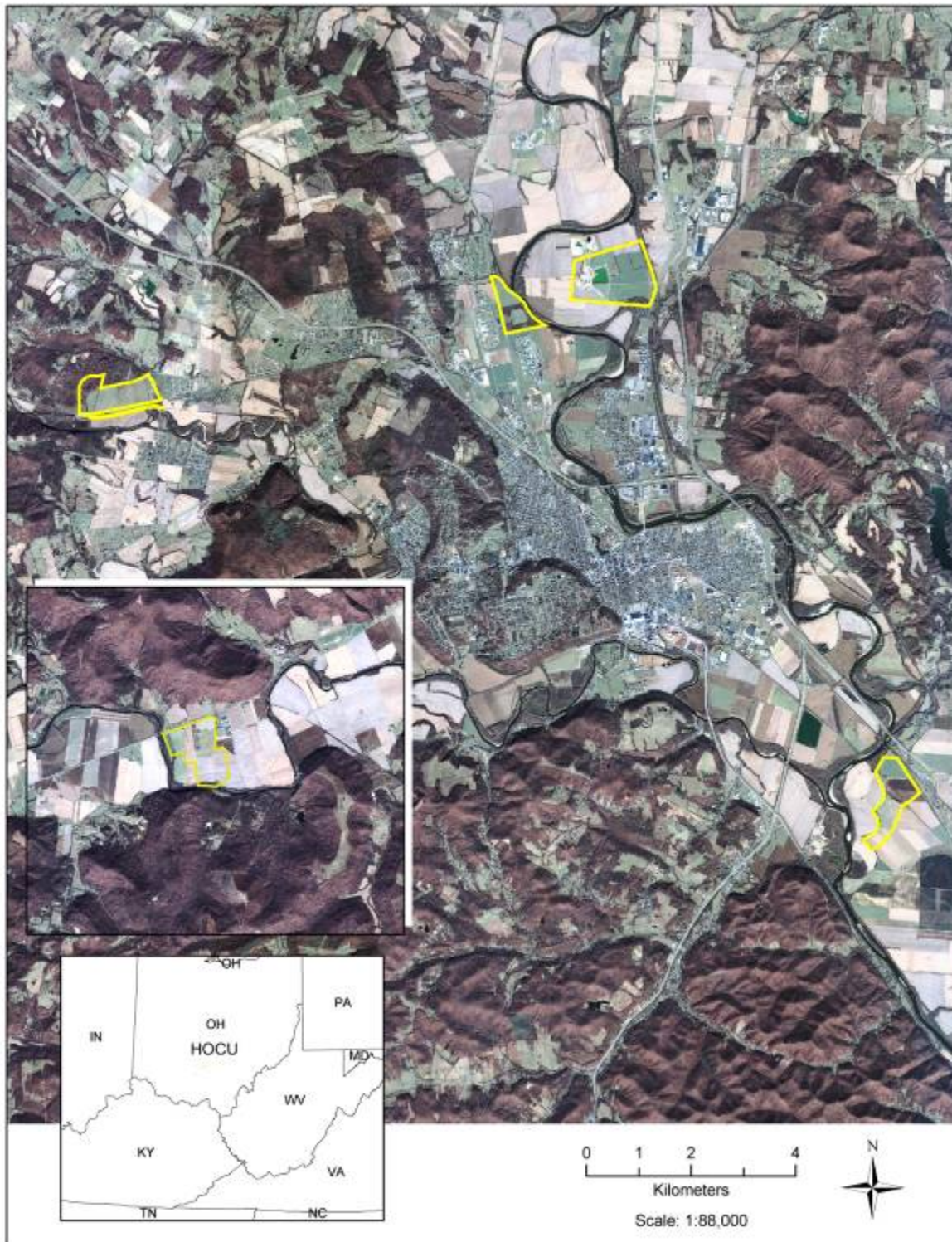
(Source: USGS digital ortho quadrangle 1993)



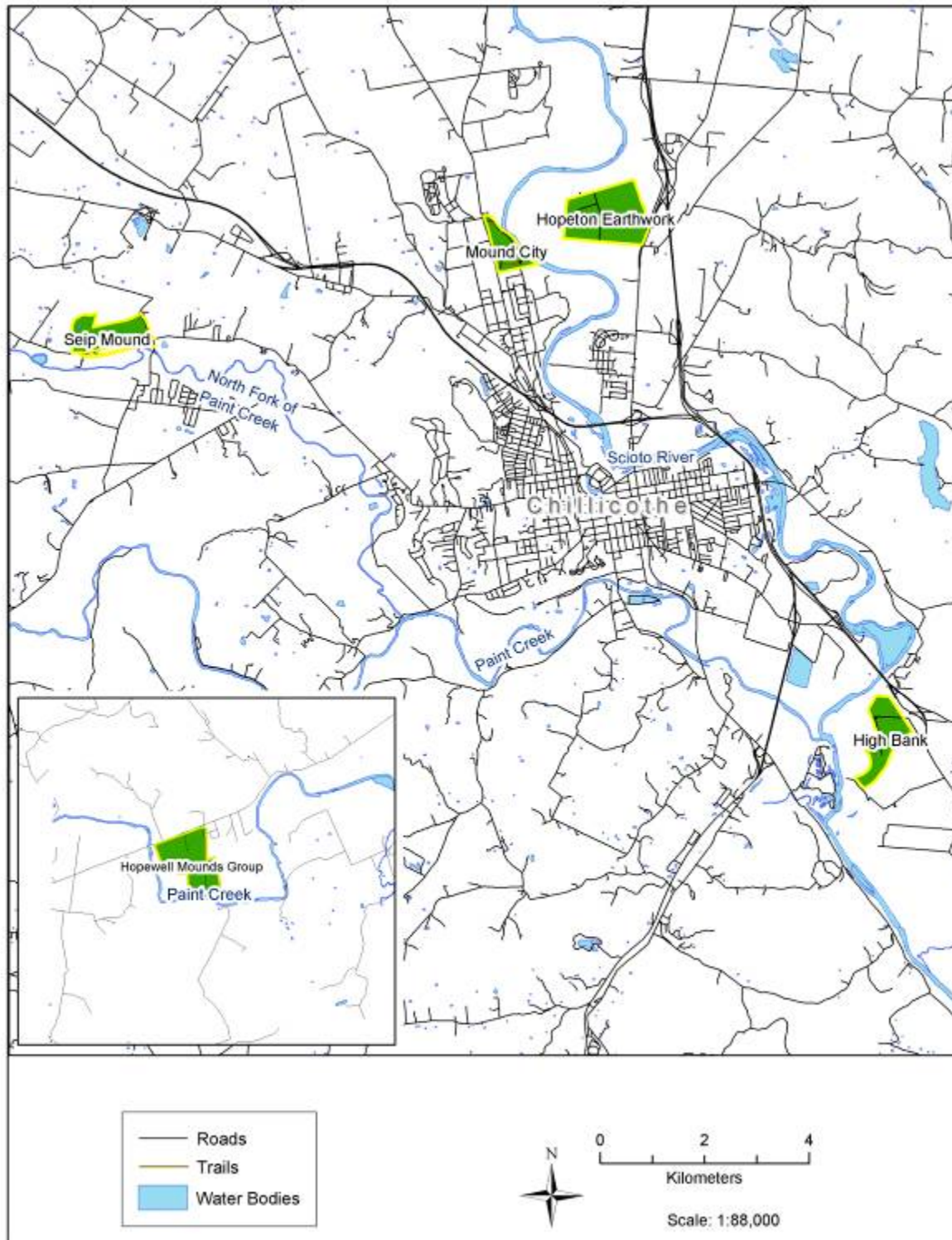


Map 8a. Digital image of the features at Hopewell Culture National Historical Park

(Source: Ikonos visible satellite image, December 2001)



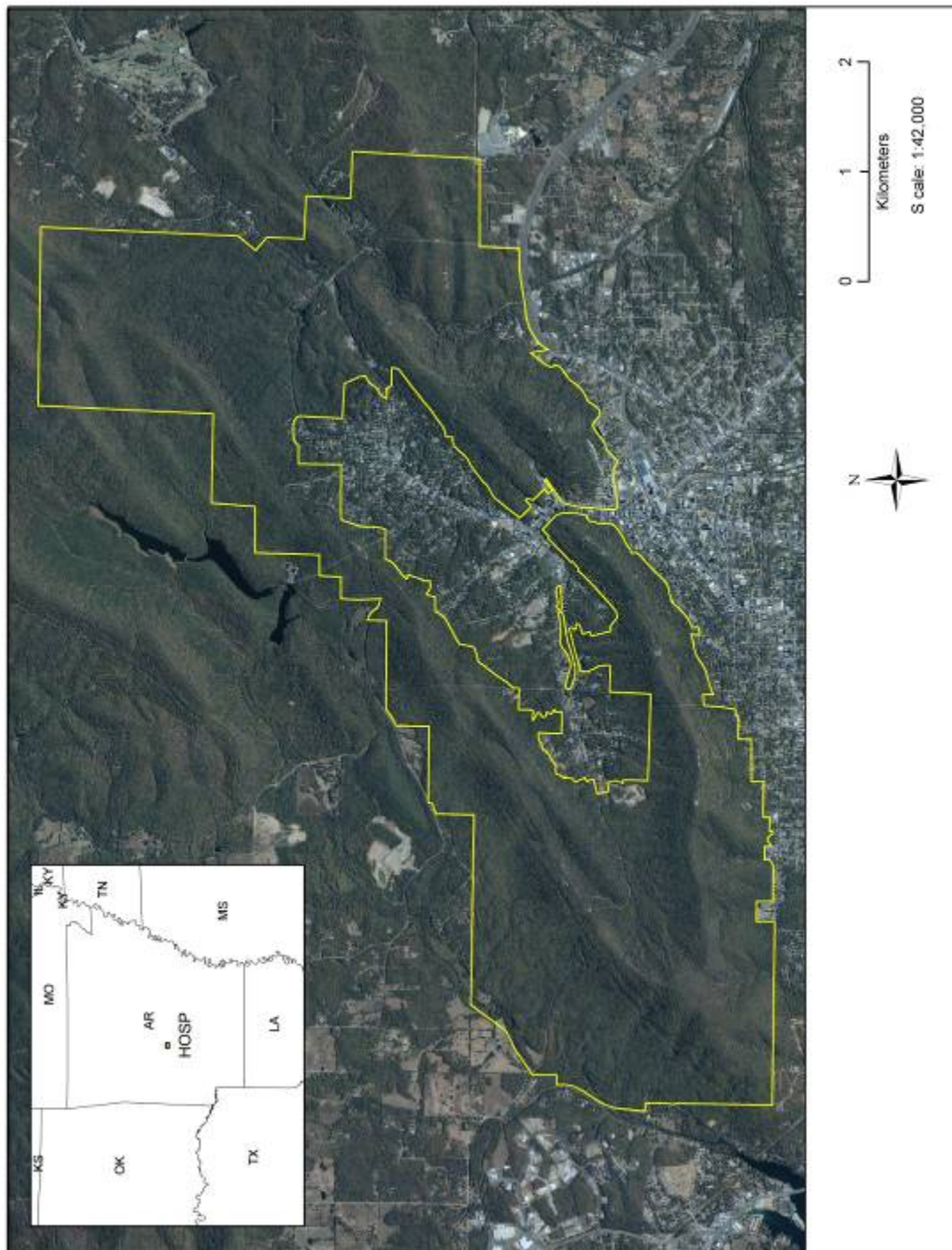
Map 8b. Roads, river and trails at Hopewell Culture National Historical Park  
(Source - Roads: USGS 1984; Trails July 2001; Water Bodies: USGS 1984)





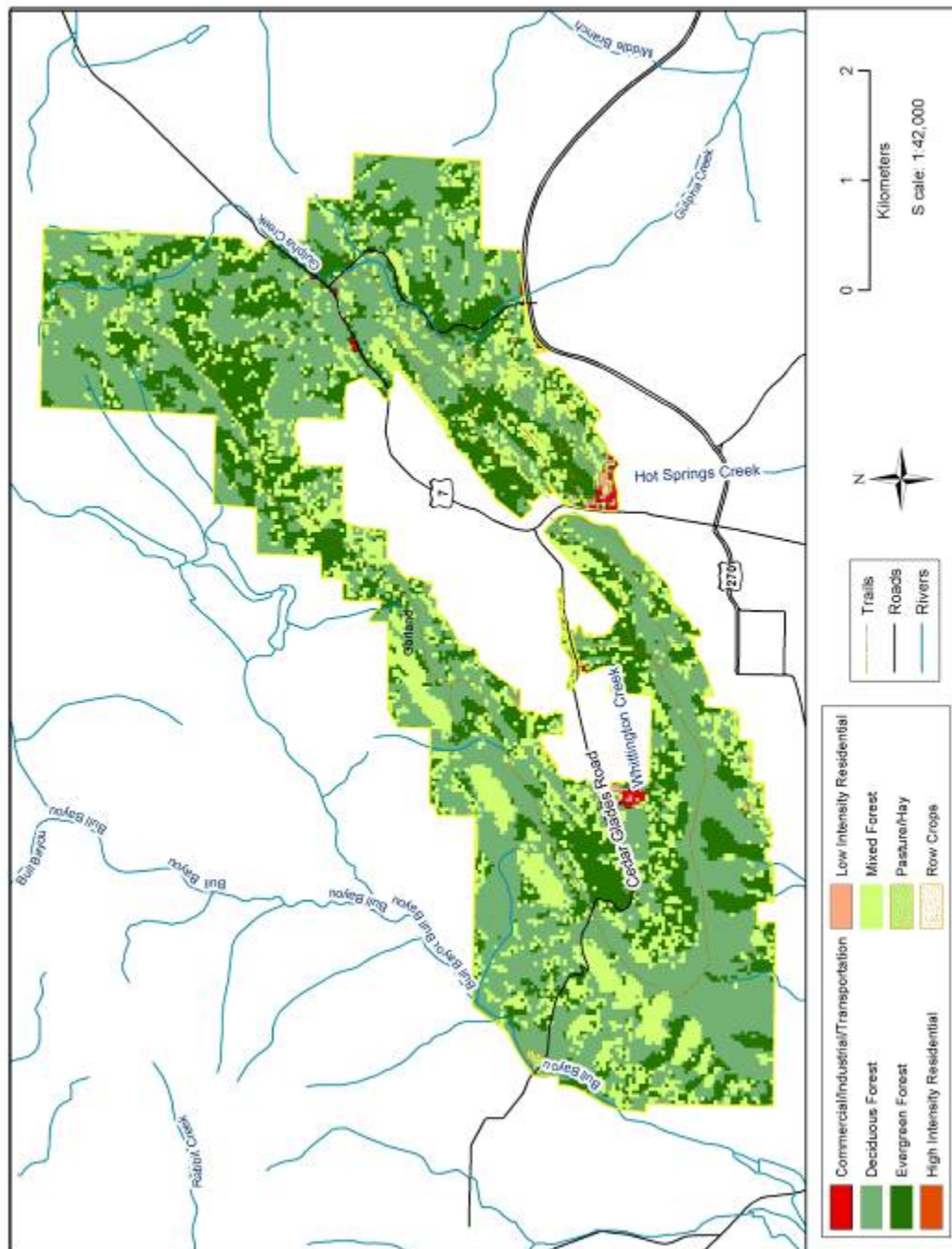
Map 9a. Digital image of the features at Hot Springs National Park

(Source: Ikonos visible satellite image, December 2001)



Map 9b. Land cover, trails, roads and rivers at Hot Springs National Park

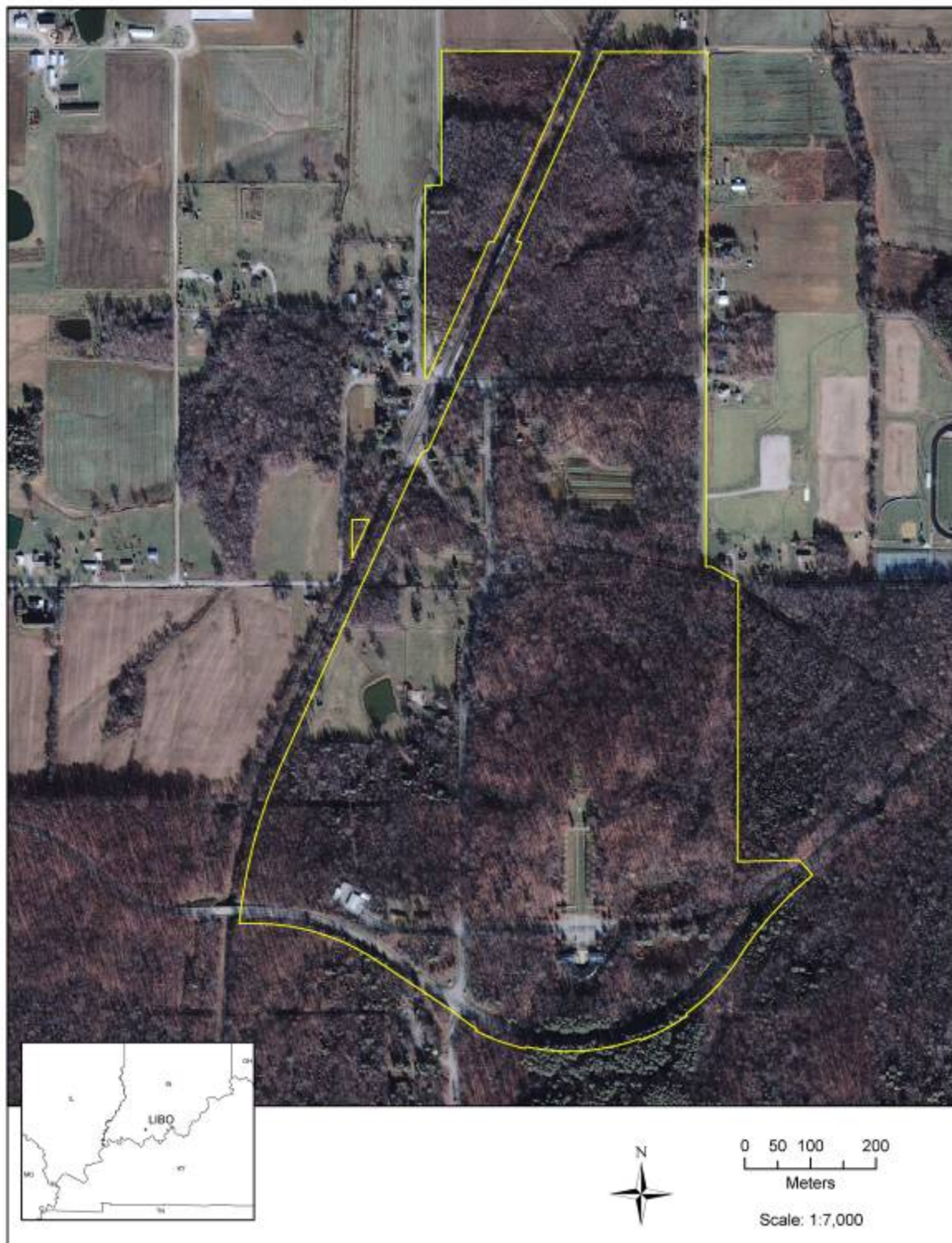
(Source – Landcover: MRLC 2000; Roads TIGER/line 2000; Rivers: Tigerline 2000; Trails: NPS 2001)





Map 10a. Digital images of the features at Lincoln Boyhood National Memorial

(Source: Ikonos visible satellite image, December 2001)



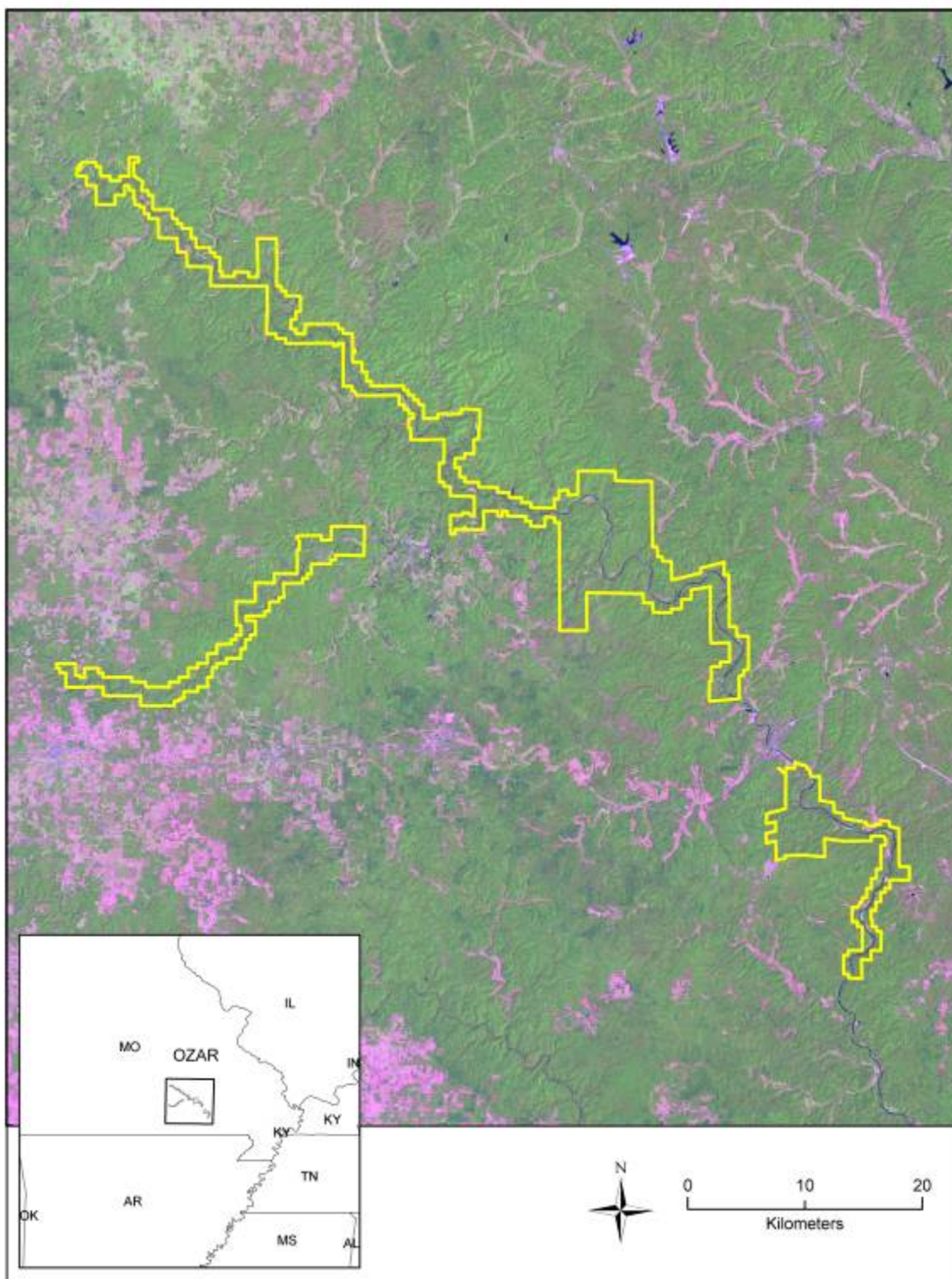
Map 10b. Land cover, trails, roads and water bodies at Lincoln Boyhood National Memorial





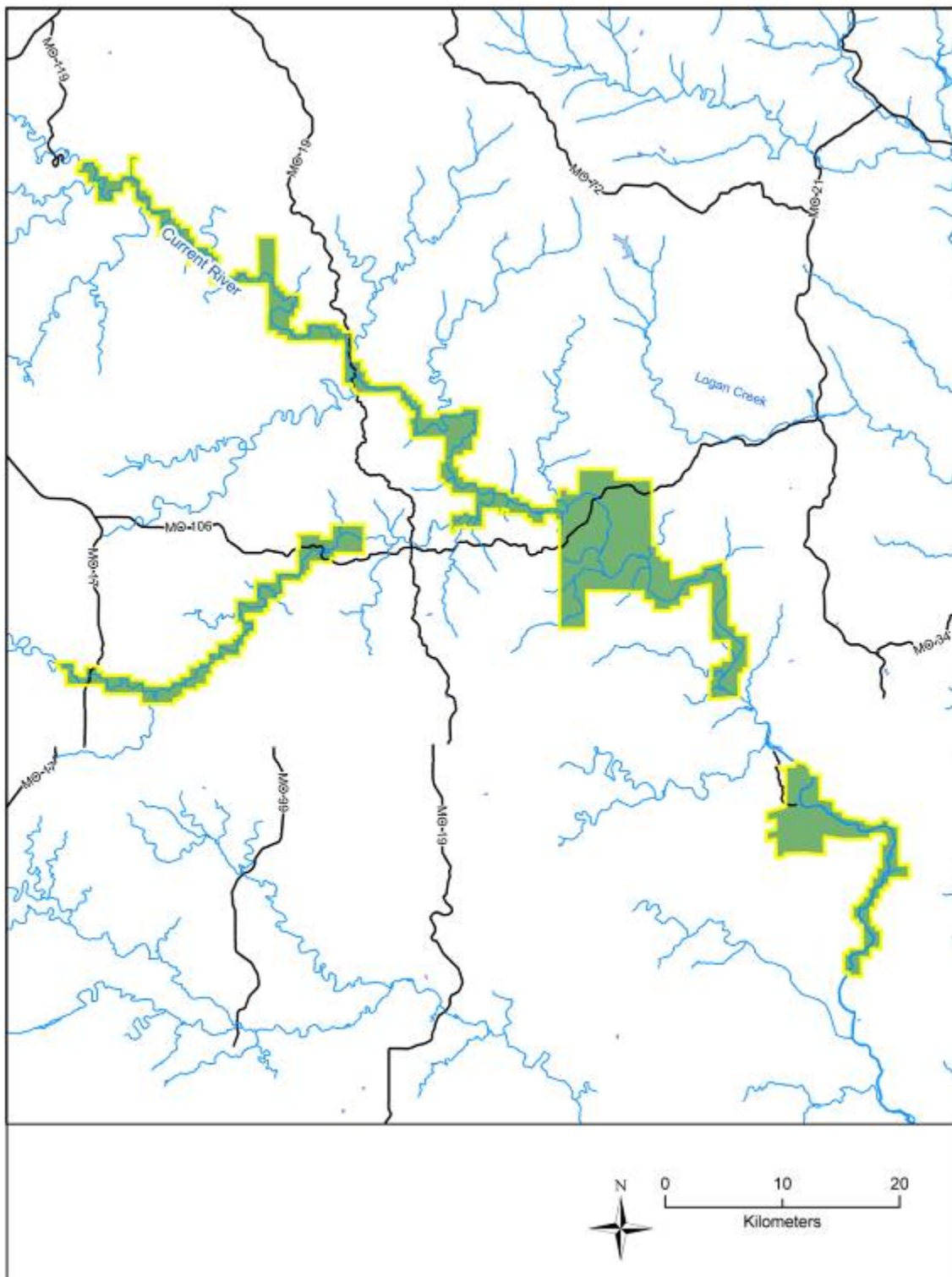
Map 11a. Digital images of the features at Ozark National Scenic Riverway

(Source: Landsat TM-7, August 2000)



Map 11b. Roads and rivers at Ozark National Scenic Riverway

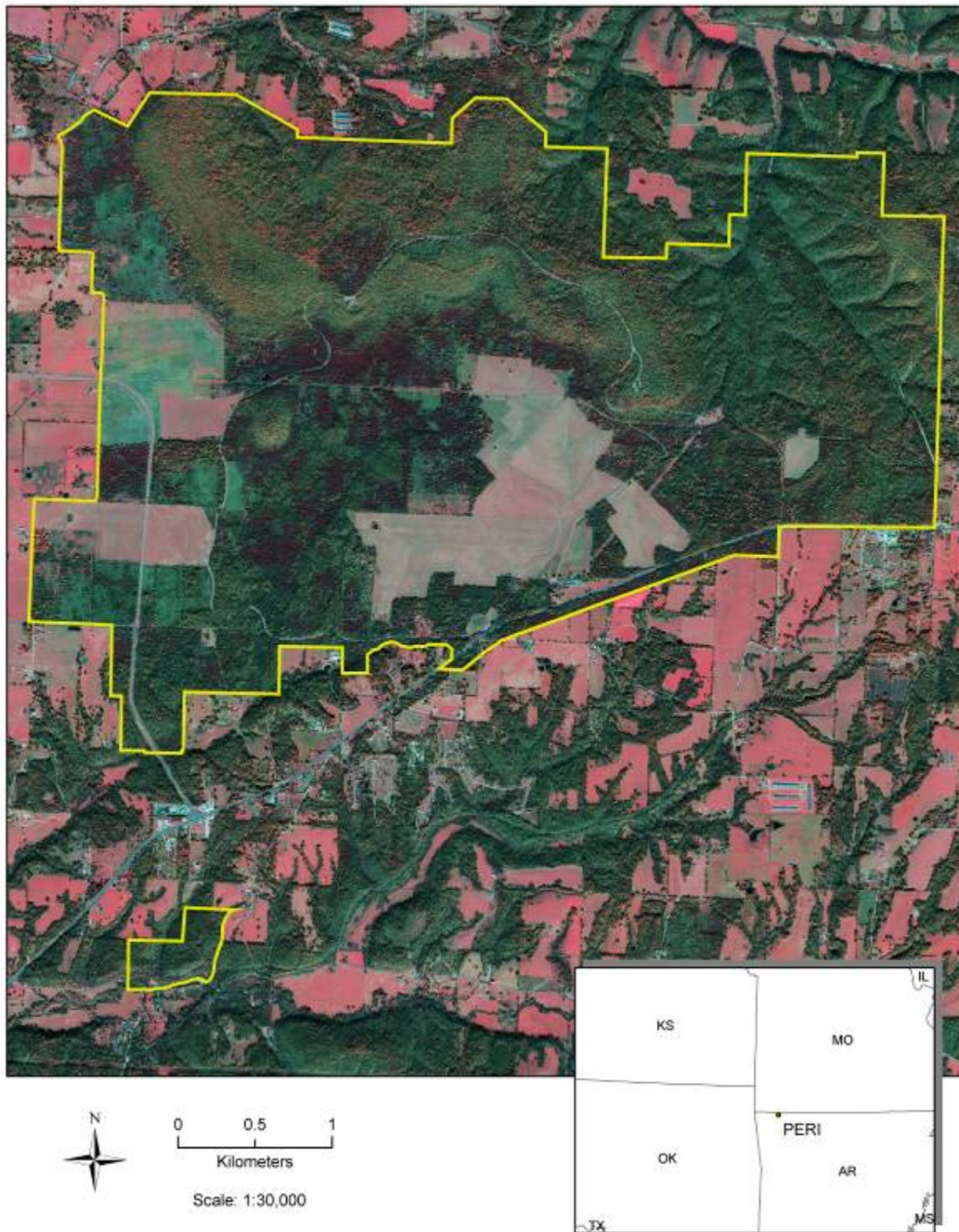
(Source – Roads: MODOT 2002; Rivers:USGS 1994)





Map 12a. Digital image of the features at Pea Ridge National Military Park

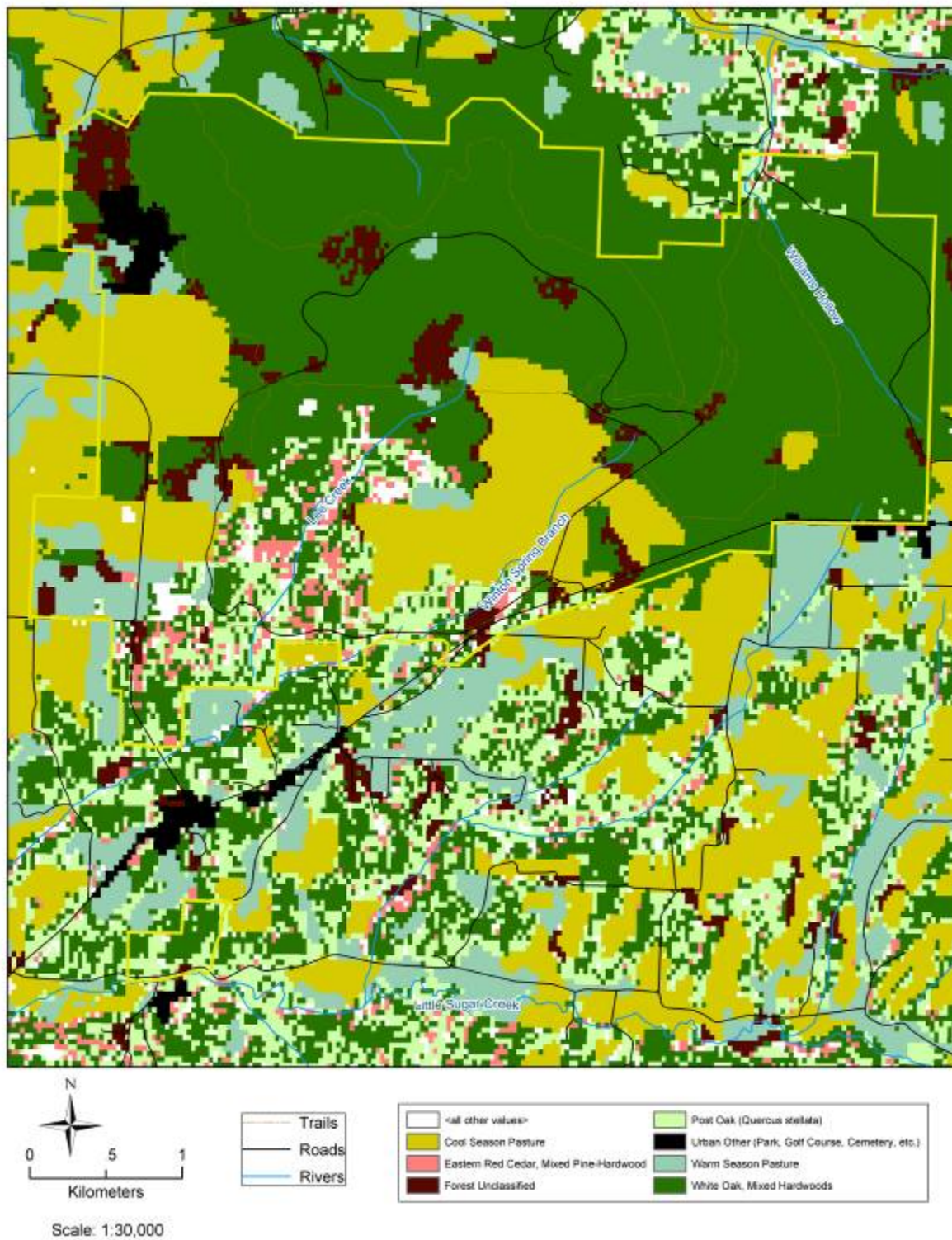
(Source: Ikonos Infrared Satellite Image, December 2001)





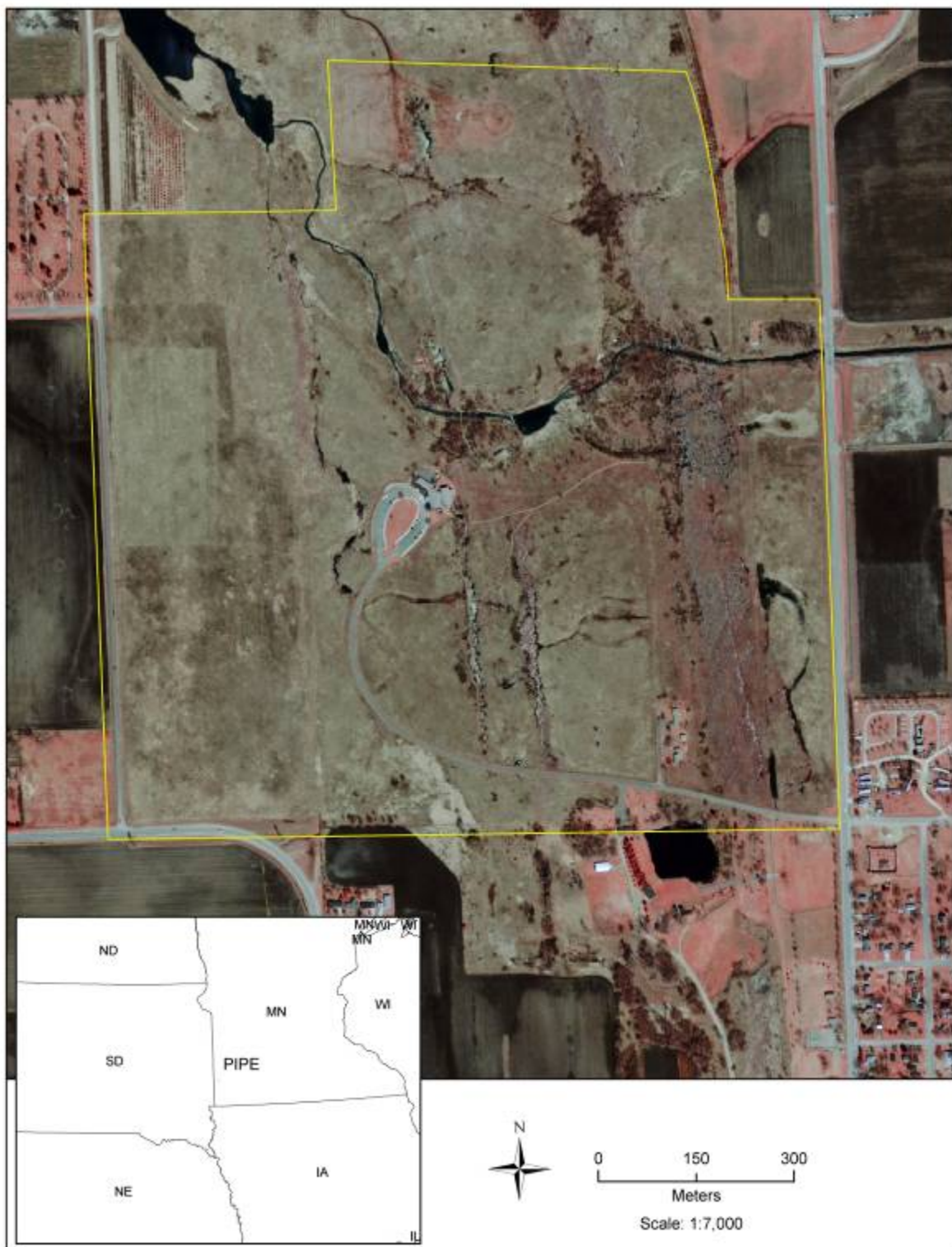
Map 12b. Land cover, trails, roads, and rivers of Pea Ridge National Military Park

(Source - Trails NPS August 2001; Roads: TIGER/lines 2000; Rivers: TIGER/lines 2000; Land cover: CAST 1999)



Map 13a. Digital image of the features of Pipestone National Monument

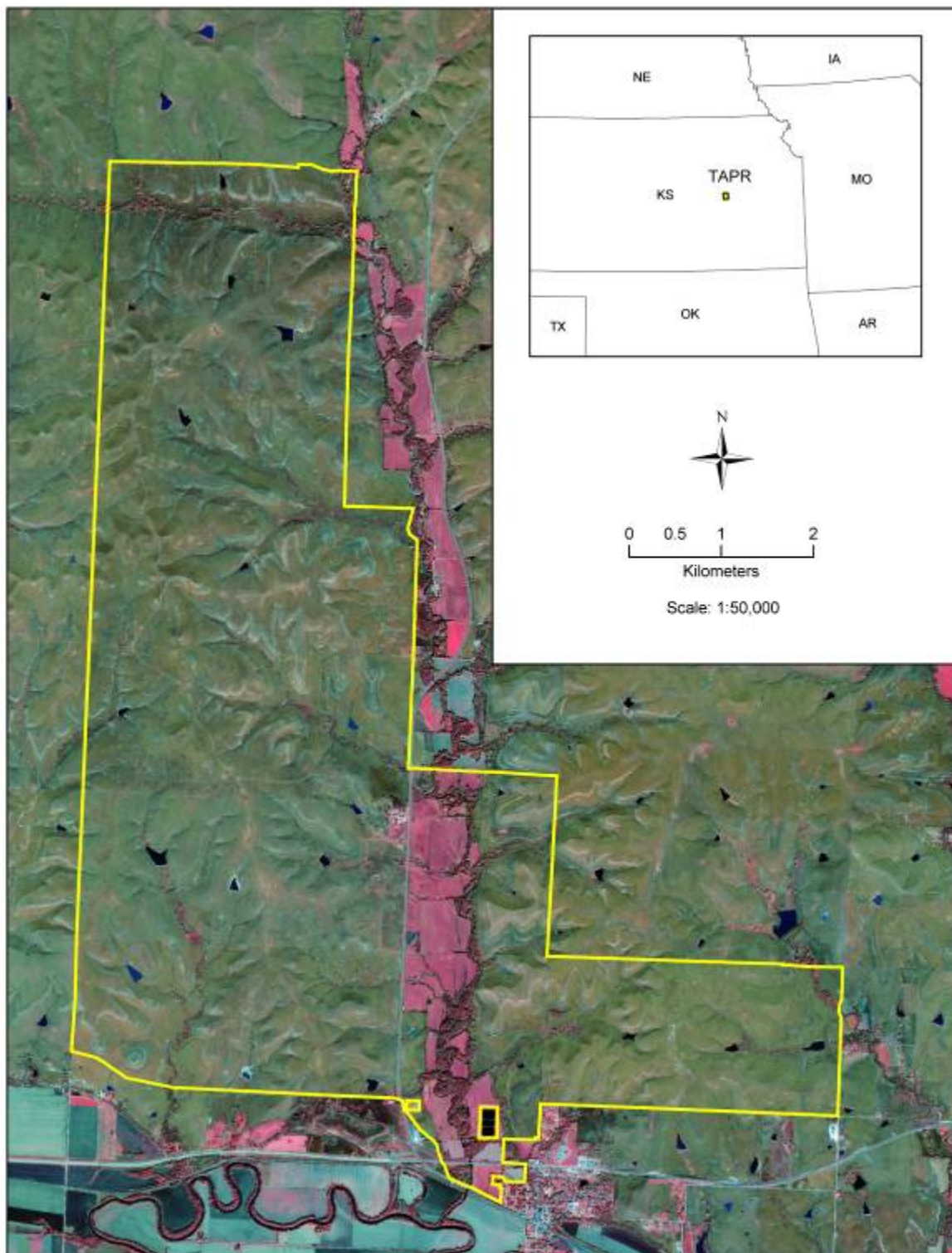
(Source: Ikonos Infrared Satellite Imagery, April 2001)





Map 14a. Digital image of the features of Tallgrass Prairie National Preserve

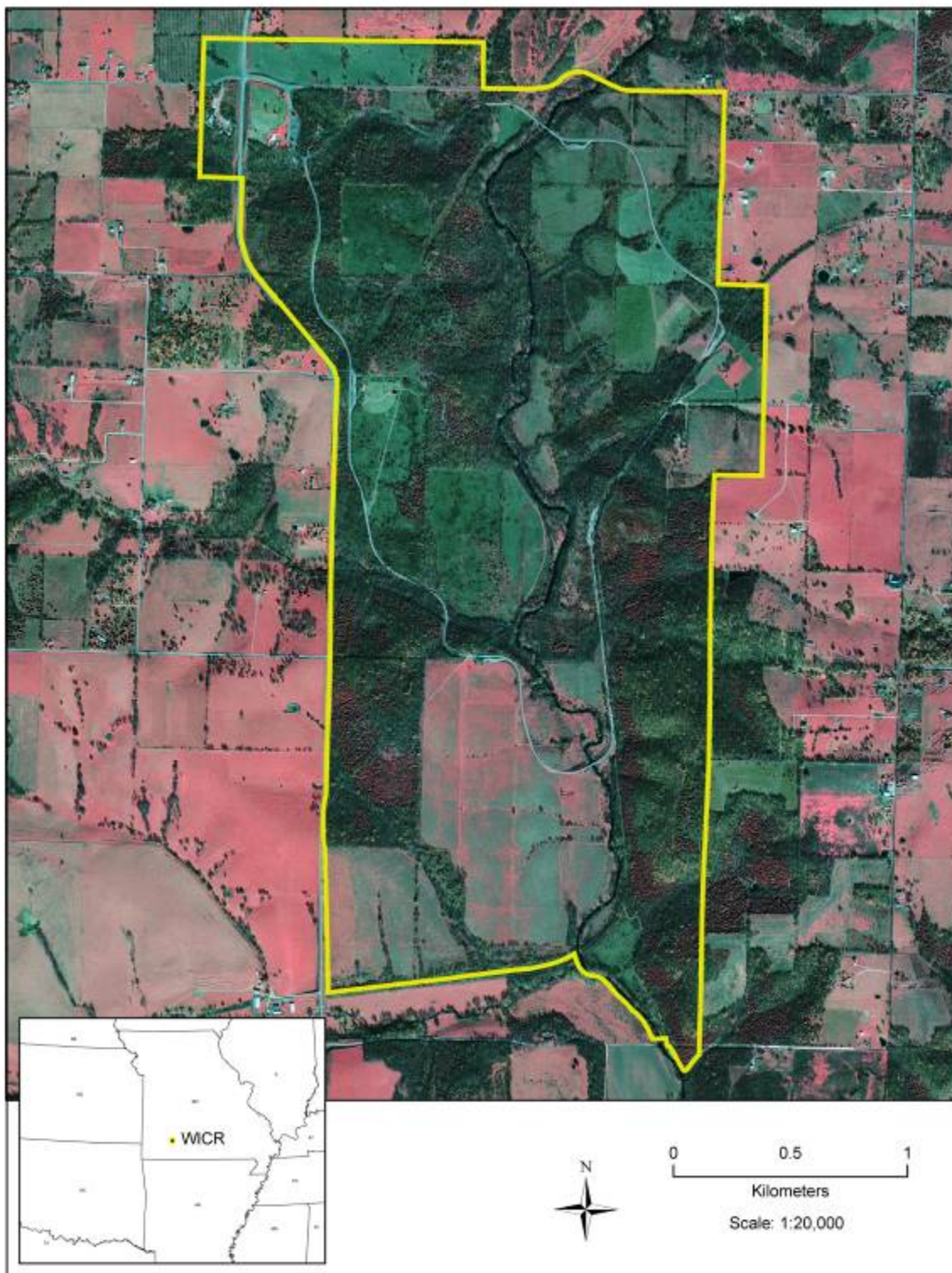
(Source: Ikonos Infrared Satellite Imagery, January 2002)





Map 15a. Digital image of the features of Wilson's Creek National Battlefield

(Source: Ikonos Infrared Satellite Imagery, November 2001)





## Appendix L: Listed Federal and State Species

### Vascular Plant and Fauna Species, and Birds of Continental Concern

The following lists are compiled from the NPSpecies (accessed April 11, 2011) park species lists and cross-referencing to federal and state endangered and threatened species list published by each state. Federal lists include endangered, threatened, and candidate species documented as present or for fauna, as probably present in the park and potentially affected by actions proposed in this plan.

The state lists include species documented as present and listed as endangered, threatened, or in another category with a great need for conservation. States call these categories by various, non-standardized names. Migratory, vagrant, and transient birds of state-level conservation status were excluded from the list. These birds will not be more than negligibly affected by actions taken in invasive plant management, because they could avoid treatment areas. The size and types of treatment proposed in this IPMP would not significantly alter roosting or feeding opportunities. Breeding or resident birds with state status are included in the following lists.

#### Federal listing of vascular plants

Status key:

T = Threatened

Family	Scientific Name	Common name(s)	Status	Occurrence	Park	Federal or State
Brassicaceae	<i>Lesquerella filiformis</i>	Missouri bladderpod	T	Present	WICR	Federal
Orchidaceae	<i>Platanthera praeclara</i>	Western prairie fringed orchid	T	Present	PIPE	Federal

#### State listing of vascular plants

Unconfirmed species are not included.

Family	Scientific Name	Common name(s)	Abundance	Park
Acoraceae	<i>Acorus americanus</i>	sweetflag	Uncommon	CUVA
Alismataceae	<i>Sagittaria rigida</i>	sessile-fruited arrowhead	Rare	CUVA
Apiaceae	<i>Perideridia americana</i>	Eastern yampah	Rare	PERI
Aspleniaceae	<i>Asplenium X gravesii</i>	Graves' spleenwort	Rare	HOSP
Aspleniaceae	<i>Asplenium pinnatifidum</i>	lobed spleenwort	Rare	HOSP, PERI
Aspleniaceae	<i>Asplenium X ebenoides</i>	Scott's spleenwort	Rare	HOSP
Asteraceae	<i>Antennaria neglecta</i>	field pussytoes	Rare	PERI
Asteraceae	<i>Echinacea purpurea</i>	Purple coneflower	Common	EFMO, HEHO
Asteraceae	<i>Silphium terebinthinaceum</i>	prairie rosinweed	Common	HEHO, EFMO
Asteraceae	<i>Solidago squarrosa</i>	leafy goldenrod	Rare	CUVA
Asteraceae	<i>Thelesperma filifolium</i> var. <i>filifolium</i>	greenthread	Rare	WICR
Berberidaceae	<i>Caulophyllum thalictroides</i>	blue cohosh	Uncommon	BUFF
Betulaceae	<i>Betula papyrifera</i>	paper birch	Rare	LIBO
Bignoniaceae	<i>Catalpa speciosa</i>	Northern catalpa	Rare	LIBO
Brassicaceae	<i>Leavenworthia uniflora</i>	Michaux's glade cress	Rare	BUFF

Family	Scientific Name	Common name(s)	Abundance	Park
Cactaceae	<i>Opuntia macrorhiza</i>	plains prickly pear	Uncommon	PIPE
Campanulaceae	<i>Campanula rotundifolia</i>	Harebell	Unknown	OZAR
Caprifoliaceae	<i>Symphoricarpos orbiculatus</i>	Indian currant coralberry	Uncommon	PIPE
Celastraceae	<i>Euonymus obovatus</i>	running strawberry bush	Unknown	BUFF
Cistaceae	<i>Lechea intermedia</i>	round-fruited pinweed	Rare	CUVA
Clusiaceae	<i>Hypericum denticulatum</i>	coppery St. Johns-wort	Rare	LIBO
Commelina-ceae	<i>Tradescantia ozarkana</i>	Ozark spiderwort	Rare	BUFF
Convolvulaceae	<i>Evolvulus nuttallianus</i>	shaggy dwarf morningglory	Rare	PERI
Cornaceae	<i>Cornus rugosa</i>	roundleaf dogwood	Rare	CUVA
Cupressaceae	<i>Juniperus ashei</i>	Ashe's juniper	Unknown	PERI
Cupressaceae	<i>Juniperus communis</i>	ground juniper	Rare	CUVA
Cupressaceae	<i>Juniperus horizontalis</i>	horizontal juniper	Rare	EFMO
Cupressaceae	<i>Taxodium distichum</i>	bald cypress	Rare	LIBO
Cupressaceae	<i>Thuja occidentalis</i>	Eastern white cedar	Rare	HOCU, LIBO
Cupressaceae	<i>Thuja occidentalis</i>	arborvitae	Occasional	CUVA
Cyperaceae	<i>Carex swanii</i>	swan's sedge	Rare	HOSP
Cyperaceae	<i>Eleocharis ovata</i>	ovoid spikerush, ovate spikerush	Rare	HOCU
Cyperaceae	<i>Carex alata</i>	broadwing sedge	Unknown	CUVA
Cyperaceae	<i>Carex arctata</i>	drooping woodland sedge	Rare	CUVA
Cyperaceae	<i>Carex argyrantha</i>	silvery sedge	Rare	CUVA
Cyperaceae	<i>Carex aurea</i>	golden-fruited sedge	Rare	CUVA
Cyperaceae	<i>Carex bebbii</i>	Bebb's sedge	Rare	CUVA
Cyperaceae	<i>Carex cephaloidea</i>	thinleaf sedge	Rare	CUVA
Cyperaceae	<i>Carex hitchcockiana</i>	Hitchcock's sedge	Common	BUFF
Cyperaceae	<i>Carex laxiculmis</i> var. <i>laxiculmis</i>	spreading sedge	Uncommon	PERI
Cyperaceae	<i>Carex mesochorea</i>	midland sedge	Rare	BUFF
Cyperaceae	<i>Carex retroflexa</i>	reflexed sedge	Rare	HOCU
Cyperaceae	<i>Carex shortiana</i>	Short's sedge	Rare	BUFF
Cyperaceae	<i>Carex willdenowii</i>	Willdenow's sedge	Rare	BUFF
Cyperaceae	<i>Cyperus acuminatus</i>	sedge	Rare	PIPE
Cyperaceae	<i>Eleocharis lanceolata</i>	lance-like spike rush	Unknown	OZAR
Cyperaceae	<i>Eleocharis ovata</i>	ovate spikerush	Uncommon	CUVA
Dryopteridaceae	<i>Cystopteris fragilis</i>	brittle bladder-fern	Uncommon	CUVA
Elaeagnaceae	<i>Shepherdia canadensis</i>	Canadian buffalo-berry	Rare	CUVA
Equisetaceae	<i>Equisetum variegatum</i>	variegated scouring rush	Rare	CUVA
Ericaceae	<i>Rhododendron maximum</i>	white laurel	Rare	CUVA
Fabaceae	<i>Desmodium glabellum</i>	hairy tick-trefoil	Uncommon	CUVA
Fabaceae	<i>Lupinus perennis</i>	wild lupine	Rare	EFMO
Fagaceae	<i>Castanea dentata</i>	American chestnut	Rare	CUVA, LIBO
Fagaceae	<i>Castanea pumila</i> var. <i>ozarkensis</i>	Ozark chinquapin	Uncommon	BUFF, HOSP
Fagaceae	<i>Castanea pumila</i> var. <i>ozarkensis</i>	Ozark chinquapin, Ozark chinkapin	Rare	PERI
Fagaceae	<i>Juglans cinerea</i>	butternut	Rare	LIBO
Fumariaceae	<i>Corydalis sempervirens</i>	rock-harlequin, pink corydalis	Rare	CUVA
Gentianaceae	<i>Gentianopsis crinita</i>	fringed gentian	Uncommon	CUVA
Iridaceae	<i>Nemastylis nuttallii</i>	Nuttall's pleatleaf	Rare	BUFF

Family	Scientific Name	Common name(s)	Abundance	Park
Isoetaceae	<i>Isoetes melanopoda</i>	blackfoot quillwort	Rare	PIPE
Juncaceae	<i>Juncus greenei</i>	Greene's rush	Rare	CUVA
Marsileaceae	<i>Marsilea vestita</i>	hairy water-clover	Rare	PIPE
Ophioglossaceae	<i>Botrychium multifidum</i>	leathery grapefern	Rare	EFMO
Orchidaceae	<i>Cypripedium candidum</i>	small white lady's-slipper	Rare	EFMO
Orchidaceae	<i>Platanthera peramoena</i>	purple fringeless orchid	Rare	LIBO
Orchidaceae	<i>Platanthera praeclara</i>	Western prairie fringed orchid	Rare	PIPE
Orchidaceae	<i>Platanthera psycodes</i>	purple fringed orchid	Rare	EFMO
Orchidaceae	<i>Spiranthes lacera</i>	slender ladies-tresses	Rare	EFMO
Orchidaceae	<i>Spiranthes lucida</i>	shining ladies'-tresses	Rare	CUVA
Orchidaceae	<i>Spiranthes magnicamporum</i>	Great Plains ladiestresses	Rare	CUVA
Orchidaceae	<i>Spiranthes ovalis</i>	lesser ladies' tresses	Rare	CUVA, LIBO, HOCU
Pinaceae	<i>Pinus strobus</i>	Eastern white pine	Uncommon	LIBO
Plantaginaceae	<i>Plantago elongata</i>	longleaf plantain	Rare	PIPE
Poaceae	<i>Bouteloua gracilis</i>	blue gramma grass	Rare	WICR
Poaceae	<i>Buchloe dactyloides</i>	buffalo-grass	Rare	PIPE, WICR
Poaceae	<i>Elymus trachycaulus</i>	slender wild rye, slender wheatgrass	Rare	CUVA
Poaceae	<i>Oryzopsis asperifolia</i>	large-leaved mountain-rice	Rare	CUVA
Poaceae	<i>Panicum philadelphicum</i>	Philadelphia panicgrass	Rare	CUVA
Poaceae	<i>Poa languida</i>	weak bluegrass, weak spear-grass	Uncommon	CUVA
Poaceae	<i>Schedonnardus paniculatus</i>	tumble-grass	Uncommon	PIPE
Poaceae	<i>Setaria geniculata</i>	marsh bristlegrass	Uncommon	LIBO
Poaceae	<i>Sphenopholis pensylvanica</i>	swamp-oats	Rare	CUVA
Polemoniaceae	<i>Phlox carolina</i> ssp. <i>carolina</i>	Carolina phlox	Unknown	OZAR
Pontederiaceae	<i>Heteranthera limosa</i>	blue mud plantain	Rare	PIPE
Primulaceae	<i>Dodecatheon amethystinum</i>	jeweled shooting star	Rare	EFMO
Pteridaceae	<i>Argyrochosma dealbata</i>	powdery falsecloak fern	Unknown	BUFF
Pteridaceae	<i>Pellaea atropurpurea</i>	purple cliffbrake	Rare	EFMO
Pyrolaceae	<i>Chimaphila umbellata</i>	pipissisewa	Rare	CUVA
Ranunculaceae	<i>Aconitum uncinatum</i>	Southern monkshood	Unknown	OZAR
Ranunculaceae	<i>Delphinium newtonianum</i>	Newton's larkspur	Rare	BUFF
Ranunculaceae	<i>Hydrastis canadensis</i>	goldenseal	Rare	LIBO
Rhamnaceae	<i>Rhamnus lanceolata</i>	lanceleaf buckthorn	Rare	LIBO
Rosaceae	<i>Crataegus pruinosa</i>	hawthorn	Rare	EFMO
Rosaceae	<i>Geum virginianum</i>	Pale avens	Unknown	OZAR
Rubiaceae	<i>Galium arkansanum</i> var. <i>pubiflorum</i>	Arkansas bedstraw	Rare	HOSP
Rubiaceae	<i>Galium asprellum</i>	rough bedstraw	Common	EFMO
Saxifragaceae	<i>Heuchera villosa</i> var. <i>arkansana</i>	Arkansas alumroot	Rare	BUFF
Scrophulariaceae	<i>Bacopa rotundifolia</i>	wet waterhyssop, disk water-hyssop	Rare	PIPE
Scrophulariaceae	<i>Limosella aquatica</i>	Northern mudroot	Rare	PIPE

Family	Scientific Name	Common name(s)	Abundance	Park
Scrophulariaceae	<i>Penstemon canescens</i>	Eastern gray beardtongue	Unknown	CUVA
Scrophulariaceae	<i>Penstemon cobaea</i>	penstemon cobaea	Common	BUFF
Thelypteridaceae	<i>Thelypteris noveboracensis</i>	New York fern	Rare	HOSP
Vitaceae	<i>Vitis aestivalis</i>	summer grape	Rare	EFMO
Xyridaceae	<i>Xyris torta</i>	yellow-eyed grass	Rare	EFMO

**Federal listed wildlife and fish species**

Status key: E = Endangered DM = Delisted SC = Candidate SAT = Similar Appearance (Threatened)

Type: Breeding (B) or Incidental occurrence (IO)

Probably present species are unconfirmed, but may occur based on range maps for the species.

Cate- gory	Order	Family	Scientific Name	Common Name	Sta- tus	Occur- rence	Park	Type
Amphi- bian	Caudata	Cryptobran- chidae	<i>Cryptobranchus alleganiensis bishopi</i>	Ozark hellbender	E	Present	OZAR	B
Bird	Ciconii- formes	Accipitridae	<i>Haliaeetus leucocephalus</i> <sup>66</sup>	American bald eagle	DM	Present	ARPO	B
Bird	Ciconii- formes	Laridae	<i>Sterna antillarum</i>	least tern	E	Present	ARPO, EFMO	IO
Fish	Cyprini- formes	Cyprinidae	<i>Notropis topeka</i>	Topeka shiner	E	Present	PIPE, TAPR	B
Fish	Perciformes	Percidae	<i>Etheostoma cragini</i>	Arkansas darter	C	Present	GWCA	B
Fish	Percopsi- formes	Amblyop- sidae	<i>Amblyopsis rosae</i>	Ozark cavefish	T	Probably present	WICR, BUFF	?
Fish	Siluriformes	Ictaluridae	<i>Noturus trautmani</i>	Sciota madtom	E	Probably present	HOCU	IO
Mam- mal	Chiroptera	Vespertilio- nidae	<i>Corynorhinus townsendii ingens</i>	Ozarks Big- eared Bat	E	Probably present	BUFF	?
Mam- mal	Chiroptera	Vespertil- ionidae	<i>Myotis grisescens</i>	gray bat	E	Present	BUFF, OZAR	B
Mam- mal	Chiroptera	Vespertil- ionidae	<i>Myotis grisescens</i>	gray bat	E	Probably present	GWCA, LIBO, PERI, WICR	?
Mam- mal	Chiroptera	Vespertil- ionidae	<i>Myotis sodalis</i>	Indiana bat	E	Present	CUVA, OZAR	B
Mam- mal	Chiroptera	Vespertilio- nidae	<i>Myotis sodalis</i>	Indiana bat	E	Probably present	BUFF, GWCA, LIBO, PERI, WICR	IO
Reptile	Crocodylia	Alligator- idae	<i>Alligator mississippiensis</i> <sup>67</sup>	American alligator	SAT	Present	ARPO	B

<sup>66</sup> The species has been delisted (DM), but is still federally protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c). It has been included for ARPO, where it has nested, because it is a high profile species.

<sup>67</sup> The SAT species are not ecologically threatened themselves, but are listed due to their similarity in appearance and habitat to other species that are listed for protection. Because breeding individuals have been observed at ARPO, the listing has been retained in this document.

Reptile	Squamata	Viperidae	<i>Crotalus horridus</i>	timber rattle-snake	C	Probably present	HOCU <sup>68</sup>	?
Reptile	Squamata	Viperidae	<i>Sistrurus catenatus catenatus</i>	Eastern massasauga	C	Probably present	CUVA	?
Invertebrate	Unionoida	Unionidae	<i>Lampsilis higginsii</i>	Higgin's-eye pearly mussel	E	Probably present	EFMO	IO

### State listed wildlife and fish species

Category	Family	Scientific Name	Common Name	Park
Amphibian	Ranidae	<i>Rana sylvatica</i>	wood frog	BUFF, PERI
Amphibian	Ambystomatidae	<i>Ambystoma annulatum</i>	ringed salamander	BUFF, OZAR
Amphibian	Cryptobranchidae	<i>Cryptobranchus alleganiensis bishopi</i>	Ozark hellbender	OZAR
Amphibian	Plethodontidae	<i>Eurycea spelaeus</i>	Grotto salamander	OZAR
Amphibian	Plethodontidae	<i>Plethodon angusticlavius</i>	Ozark zig-zag	BUFF
Amphibian	Plethodontidae	<i>Plethodon kisatchie</i>	Louisiana slimy salamander	ARPO
Amphibian	Proteidae	<i>Necturus maculosus louisianensis</i>	Red River mudpuppy	OZAR
Amphibian	Salamandridae	<i>Notophthalmus veridescens</i>	central newt	EFMO
Bird	Anatidae	<i>Cygnus buccinator</i>	trumpeter swan	OZAR
Bird	Accipitridae	<i>Accipiter cooperii</i>	cooper's hawk	ARPO, BUFF, OZAR
Bird	Accipitridae	<i>Accipiter striatus</i>	sharp-shinned hawk	BUFF, CUVA, GWCA, OZAR
Bird	Accipitridae	<i>Buteo lineatus</i>	red-shouldered hawk	EFMO
Bird	Accipitridae	<i>Buteo swainsoni</i>	Swainson's hawk	GWCA
Bird	Accipitridae	<i>Circus cyaneus</i>	Northern harrier	BUFF, CUVA, GWCA, HEHO, OZAR, PERI
Bird	Accipitridae	<i>Haliaeetus leucocephalus</i>	American bald eagle	BUFF, CUVA, EFMO, HOSP, OZAR, TAPR
Bird	Accipitridae	<i>Ictinia mississippiensis</i>	Mississippi kite	LIBO
Bird	Accipitridae	<i>Pandion haliaetus</i>	osprey	BUFF, CUVA, OZAR
Bird	Ardeidae	<i>Ardea alba</i>	Great egret	ARPO, BUFF
Bird	Ardeidae	<i>Ardea herodias</i>	great blue heron	ARPO, BUFF, GWCA, PERI
Bird	Ardeidae	<i>Botaurus lentiginosus</i>	American bittern	CUVA, GWCA
Bird	Ardeidae	<i>Egretta caerulea</i>	little blue heron	GWCA
Bird	Ardeidae	<i>Egretta tricolor</i>	tricolor heron	ARPO
Bird	Ardeidae	<i>Ixobrychus exilis</i>	least bittern	CUVA
Bird	Ardeidae	<i>Nycticorax nycticorax</i>	black-crowned night heron	CUVA
Bird	Caprimulgidae	<i>Caprimulgus vociferus</i>	whip-poor-will	TAPR

<sup>68</sup> The USFWS acknowledges a potential for this species to occur in HOCU, but the park's managers have determined that habitat does not exist for this species.



Category	Family	Scientific Name	Common Name	Park
Bird	Falconidae	<i>Falco peregrinus</i>	peregrine falcon	BUFF, EFMO, HOCU
Bird	Falconidae	<i>Falco sparverius</i>	American kestrel	BUFF, HOSP
Bird	Laridae	<i>Chlidonias niger</i>	black tern	CUVA
Bird	Laridae	<i>Larus pipixcan</i>	Franklin's gull	PIPE
Bird	Phalacrocoracidae	<i>Phalacrocorax auritus</i>	double-crested cormorant	ARPO
Bird	Podicipedidae	<i>Podilymbus podiceps</i>	pied-billed grebe	ARPO, BUFF, GWCA
Bird	Scolopacidae	<i>Catoptrophorus semipalmatus</i>	willet	BUFF
Bird	Scolopacidae	<i>Gallinago gallinago</i>	common snipe	CUVA
Bird	Scolopacidae	<i>Scolopax minor</i>	American woodcock	BUFF, HOSP
Bird	Threskiornithidae	<i>Eudocimus albus</i>	white ibis	ARPO
Bird	Cuculidae	<i>Coccyzus erythrophthalmus</i>	black-billed cuckoo	BUFF
Bird	Odontophoridae	<i>Colinus virginianus</i>	Northern bobwhite	HOCU
Bird	Rallidae	<i>Gallinula chloropus</i>	common moorhen	ARPO
Bird	Rallidae	<i>Porphyrio martinica</i>	purple gallinule	ARPO
Bird	Rallidae	<i>Porzana carolina</i>	sora	CUVA, GWCA
Bird	Rallidae	<i>Rallus elegans</i>	king rail	ARPO
Bird	Rallidae	<i>Rallus limicola</i>	Virginia rail	CUVA
Bird	Cardinalidae	<i>Passerina ciris</i>	painted bunting	BUFF
Bird	Certhiidae	<i>Certhia americana</i>	brown creeper	GWCA
Bird	Certhiidae	<i>Cistothorus palustris</i>	marsh wren	CUVA
Bird	Certhiidae	<i>Cistothorus platensis</i>	sedge wren	CUVA, HOCU
Bird	Certhiidae	<i>Troglodytes troglodytes</i>	winter wren	CUVA
Bird	Emberizidae	<i>Ammodramus henslowii</i>	Henslow's sparrow	BUFF, CUVA, GWCA, HEHO, HOCU, PIPE, TAPR
Bird	Emberizidae	<i>Ammodramus savannarum</i>	savanna sparrow	PERI
Bird	Emberizidae	<i>Chondestes grammacus</i>	lark sparrow	BUFF
Bird	Emberizidae	<i>Junco hyemalis</i>	dark-eyed junco	CUVA, HOCU
Bird	Fringillidae	<i>Dendroica cerulea</i>	cerulean warbler	BUFF, CUVA, LIBO, OZAR
Bird	Fringillidae	<i>Dendroica pensylvanica</i>	chestnut-sided warbler	ARPO, GWCA, BUFF
Bird	Fringillidae	<i>Dendroica petechia</i>	yellow warbler	ARPO, BUFF
Bird	Fringillidae	<i>Dendroica virens</i>	black-throated green warbler	ARPO, BUFF
Bird	Hirundinidae	<i>Riparia riparia</i>	bank swallow	ARPO
Bird	Icteridae	<i>Dolichonyx oryzivorus</i>	bobolink	ARPO, TAPR
Bird	Laniidae	<i>Lanius ludovicianus</i>	loggerhead shrike	GWCA
Bird	Motacillidae	<i>Anthus spragueii</i>	Sprague's pipit	ARPO
Bird	Muscicapidae	<i>Catharus guttatus</i>	hermit thrush	CUVA
Bird	Parulidae	<i>Limnothlypis swainsonii</i>	Swainson's warbler	ARPO, BUFF, OZAR
Bird	Parulidae	<i>Protonotaria citrea</i>	prothonotary warbler	HOCU

Category	Family	Scientific Name	Common Name	Park
Bird	Parulidae	<i>Setophaga ruticilla</i>	American redstart	ARPO, BUFF
Bird	Parulidae	<i>Vermivora chrysoptera</i>	golden-winged warbler	ARPO, BUFF, CUVA
Bird	Parulidae	<i>Vermivora pinus</i>	blue-winged warbler	ARPO, BUFF, PERI
Bird	Parulidae	<i>Wilsonia canadensis</i>	Canada warbler	CUVA
Bird	Parulidae	<i>Wilsonia citrina</i>	hooded warbler	LIBO
Bird	Troglodytidae	<i>Thryomanes bewickii</i>	bewick's wren	ARPO, BUFF
Bird	Turdidae	<i>Catharus fuscescens</i>	veery	BUFF
Bird	Tyrannidae	<i>Empidonax traillii</i>	willow flycatcher	BUFF
Bird	Vireonidae	<i>Vireo bellii</i>	Bell's vireo	ARPO, GWCA WICR
Bird	Vireonidae	<i>Vireo philadelphicus</i>	Philadelphia vireo	ARPO, BUFF
Bird	Picidae	<i>Melanerpes erythrocephalus</i>	red-headed woodpecker	ARPO, BUFF, HOSP
Bird	Picidae	<i>Picoides villosus</i>	hairy woodpecker	ARPO, BUFF, HOSP
Bird	Picidae	<i>Sphyrapicus varius</i>	yellow-bellied sapsucker	CUVA
Bird	Strigidae	<i>Asio flammeus</i>	short-eared owl	TAPR
Bird	Tytonidae	<i>Tyto alba</i>	barn owl	ARPO, BUFF
Fish	Amblyopsidae	<i>Typhlichthys subterraneus</i>	Southern cavefish	OZAR
Fish	Catostomidae	<i>Carpionodes velifer</i>	highfin carpsucker	OZAR
Fish	Catostomidae	<i>Cycleptus elongatus</i>	Blue sucker	OZAR
Fish	Catostomidae	<i>Erimyzon sucetta</i>	lake chubsucker	OZAR
Fish	Catostomidae	<i>Minytrema melanops</i>	spotted sucker	TAPR
Fish	Catostomidae	<i>Moxostoma macrolepidotum</i>	shorthead redhorse	BUFF
Fish	Centrarchidae	<i>Centrarchus macropterus</i>	flier	OZAR
Fish	Cyprinidae	<i>Erimystax harrisi</i>	Ozark chub	BUFF
Fish	Cyprinidae	<i>Hybognathus nuchalis</i>	Mississippi silvery minnow	OZAR
Fish	Cyprinidae	<i>Luxilus cardinalis</i>	cardinal shiner	TAPR
Fish	Cyprinidae	<i>Nocomis asper</i>	redspot chub	PERI
Fish	Cyprinidae	<i>Notropis ozarcanus</i>	Ozark shiner	BUFF, OZAR
Fish	Cyprinidae	<i>Notropis texanus</i>	Weed shiner	OZAR
Fish	Esocidae	<i>Esox americanus</i>	grass pickerel	EFMO
Fish	Esocidae	<i>Esox masquinongy</i>	muskellunge	CUVA
Fish	Ictaluridae	<i>Noturus flavater</i>	slender madtom	OZAR
Fish	Ictaluridae	<i>Noturus lachneri</i>	Ouachita madtom	HOSP
Fish	Percidae	<i>Etheostoma euzonum erizonum</i>	Current River saddled darter	OZAR
Fish	Percidae	<i>Etheostoma cragini</i>	Arkansas darter	GWCA
Fish	Percidae	<i>Percina uranidea</i>	stargazing darter	OZAR
Fish	Petromyzontidae	<i>Ichthyomyzon gagei</i>	Southern brook lamprey	OZAR
Fish	Petromyzontidae	<i>Lampetra aepyptera</i>	least brook lamprey	BUFF

Category	Family	Scientific Name	Common Name	Park
Fish	Petromyzontidae	<i>Lampetra appendix</i>	American brook lamprey	OZAR
Fish	Polyodontidae	<i>Polyodon spathula</i>	American paddlefish	OZAR
Mammal	Cricetidae	<i>Reithrodontomys humulis</i>	Eastern harvest mouse	ARPO
Mammal	Leporidae	<i>Sylvilagus aquaticus</i>	swamp rabbit	OZAR
Mammal	Mephitidae	<i>Spilogale putorius interrupta</i>	Plains spotted skunk	OZAR
Mammal	Muridae	<i>Neotoma floridana</i>	Eastern wood rat	OZAR
Mammal	Muridae	<i>Ochrotomys nuttalli</i>	golden mouse	OZAR
Mammal	Muridae	<i>Oryzomys palustris</i>	marsh rice rat	OZAR
Mammal	Muridae	<i>Synaptomys cooperi</i>	Southern bog lemming	EFMO
Mammal	Mustelidae	<i>Taxidea taxus</i>	American Badger	OZAR
Mammal	Mustelidae	<i>Mustela frenata</i>	long-tailed weasel	OZAR
Mammal	Mustelidae	<i>Mustela nivalis</i>	least weasel	PIPE
Mammal	Sciuridae	<i>Glaucomys volans</i>	Southern flying squirrel	EFMO
Mammal	Talpidae	<i>Condylura cristata</i>	short-nosed mole	CUVA
Mammal	Vespertilionidae	<i>Lasionycteris noctivagans</i>	Silver-haired bat	OZAR
Mammal	Vespertilionidae	<i>Lasiurus borealis</i>	red bat	LIBO
Mammal	Vespertilionidae	<i>Myotis austroriparius</i>	Southeastern myotis	ARPO, HOSP
Mammal	Vespertilionidae	<i>Myotis grisescens</i>	gray bat	BUFF, OZAR, WICR
Mammal	Vespertilionidae	<i>Myotis leibii</i>	Eastern small-footed bat	BUFF
Mammal	Vespertilionidae	<i>Myotis sodalis</i>	Indiana bat	BUFF, CUVA, OZAR
Reptile	Colubridae	<i>Nerodia cyclopion</i>	green water snake	ARPO
Reptile	Colubridae	<i>Opheodrys aestivus</i>	rough greensnake	LIBO
Reptile	Colubridae	<i>Opheodrys vernalis</i>	smooth green snake	HEHO
Reptile	Colubridae	<i>Pituophis catenifer sayi</i>	bullsnake	HEHO
Reptile	Colubridae	<i>Regina grahamii</i>	Graham's crayfish snake	ARPO
Reptile	Crotaphytidae	<i>Crotaphytus collaris</i>	Eastern collared lizard	BUFF
Reptile	Chelydridae	<i>Macrochelys temminckii</i>	Alligator snapping turtle	OZAR
Reptile	Chelydridae	<i>Chelydra serpentina</i>	snapping turtle	PIPE
Reptile	Emydidae	<i>Clemmys guttata</i>	spotted turtle	CUVA
Reptile	Emydidae	<i>Emydoidea blandingii</i>	Blanding's turtle	CUVA
Reptile	Emydidae	<i>Graptemys pseudogeographica</i>	false map turtle	HOCU
Reptile	Emydidae	<i>Terrapene carolina</i>	common box turtle	CUVA, HOCU
Non-vertebrate	Asellidae	<i>Caecidotea serrata</i>	Serrated cave isopod	OZAR
Non-vertebrate	Cambaridae	<i>Cambarus hubrichti</i>	Salem cave crayfish	OZAR
Non-vertebrate	Pupillidae	<i>Veritigo merimecensis</i>	bluff veritigo	EFMO
Non-vertebrate	Mecoptera	<i>Panorpa braueri</i>	panorpid scorpionfly	OZAR
Non-vertebrate	Unionidae	<i>Ligumia recta</i>	Black sandshell	OZAR
Non-vertebrate	Unionidae	<i>Alasmidonta marginata</i>	Elktoe	OZAR

Category	Family	Scientific Name	Common Name	Park
Non-vertebrate	Unionidae	<i>Ptychobranhus occidentalis</i>	Ouachita kidneyshell	OZAR
Non-vertebrate	Unionidae	<i>Toxolasma lividus</i>	Purple lilliput	OZAR
Non-vertebrate	Unionidae	<i>Alasmidonta viridis</i>	Slippershell mussel	OZAR
Non-vertebrate	Unionidae	<i>Cumberlandia monodonta</i>	spectaclecase	EFMO
Non-vertebrate	Unionidae	<i>Lampsilis teres anodontoides</i>	yellow sandshell	EFMO
Non-vertebrate	Unionidae	<i>Lampsilis teres teres</i>	slough sandshell	EFMO
Non-vertebrate	Unionidae	<i>Strophitus undulatus</i>	strange floater	EFMO



Species	ARPO	EFMO	GWCA	HEHO	HOCU	HOME	LIBO	PERI	PIPE	TAPR	WICR
Prairie Warbler					X			X			X
Prothonotary Warbler	X	X					X			X	X
Red-bellied Woodpecker	X	X	X	X	X	X	X	X		X	X
Red-headed Woodpecker	X	X	X			X	X	X		X	
Red-shouldered Hawk		X	X								X
Swainson's Hawk											X
Swamp Sparrow				X							
Tennessee Warbler		X		X	X	X					
White-eyed Vireo	X	X			X		X	X		X	X
Willow Flycatcher		X		X	X						
Wood Thrush	X	X			X		X	X			X
Worm-eating Warbler		X				X		X			
Yellow-bellied Flycatcher			X								
Yellow-bellied Sapsucker		X				X		X		X	
Yellow-headed Blackbird									X		
Yellow-throated Vireo	X	X		X	X	X	X	X		X	
Yellow-throated Warbler			X		X		X	X			





## Appendix M: Management Priorities

Parks identified priorities for Supplemental Document 15, DeBacker, et al. 2005, *Heartland Inventory and Monitoring Network and Prairie Cluster Prototype Monitoring Program Vital Signs Monitoring Plan, September 30, 2005*. They are presented here with minor editorial changes for clarity.

### **Cuyahoga Valley National Park Wetland Management**

A 2001 park-wide wetland inventory indicated that nearly 1500 wetlands exist. Most wetlands are small, but very small wetlands may remain undetected. Small emergent wetlands are most common and often found at the head of small, intermittent drainage ways, adjacent to ponds, or as groundwater seeps on hillsides. In addition to providing habitat for plants and animals, isolated wetlands, such as vernal pools, serve as breeding areas for amphibians. Long-abandoned farm ponds have gained natural wetland characteristics, and are treated as natural wetlands. The largest wetlands are located within the Cuyahoga River floodplain.

#### Management Objectives:

- Maintain high quality wetland habitats at CUVA.
- Restore degraded wetlands at CUVA.

### **Invasive Plant Management**

The invasive species threat at CUVA is a landscape scale issue that requires a multi-tiered approach. Davey Resource Group documented 47 invasive plant species at CUVA during surveys in 2007. Three of these plant species were not previously documented in the park based on NPSpecies (accessed April 11, 2011). Multiflora rose, the most abundant invasive plant, covered between 20.4 and 436.5 acres. In general, several invasive plants are a major problem, but successful control appears possible for many species (Djuren and Young 2007). The relatively low cover of many species suggests that eradication or successful control may be possible. Wetland inventories revealed invasive species in at least 86 wetlands with 43 wetlands dominated by invasive vegetation. Park staff consider the following invasive species to be of greatest concern:

- Garlic mustard (*Alliaria petiolata*) in upland and floodplain forests throughout the park.
- Autumn olive (*Elaeagnus umbellata*) in disturbed areas throughout the park.
- Japanese honeysuckle (*Lonicera japonica*) in disturbed habitats throughout the park.
- Purple loosestrife (*Lythrum salicaria*) in a variety of wetland habitats.
- Glossy buckthorn (*Rhamnus frangula*) in wetlands, forests, edges, and old fields.
- Multiflora rose (*Rosa multiflora*) in a wide range of habitats throughout the park.
- Reed canarygrass (*Phalaris arundinacea*) in wetlands and stream banks throughout park.
- Common reed (*Phragmites australis*) in marshes, riverbanks, and disturbed soils.
- Japanese knotweed (*Polygonum cuspidatum*) in open areas, roadsides, stream banks, and woodland edges.

#### Management Objective:

Control invasive plants to improve habitat for endangered, threatened, and other native species.

## Effigy Mounds National Monument

### ***Maintenance and Restoration of Native Plant Communities***

Remnant native plant communities and existing forest communities are believed to play an important role in the park. Although a restoration of the exact Woodland Period (500 B.C. to 1200 A.D.) forest structure is not possible, invasive plant control is critical to maintaining the desired communities.

#### Management Objectives:

- The park has not defined the cultural landscape nor determined a final plant composition within the forest areas. As an interim condition, the park may manage for Potential Vegetation Type (PVT)<sup>69</sup> that represents the appearance of forest during the mound-building period.
- The preservation of the rare goat prairies on the bluffs has high priority.

### ***Invasive Plant Management***

While targeting garlic mustard during surveys in 2006 (Young, et al. 2007), crews documented five additional invasive plant species (Appendix B). The distribution and abundance of the species varied widely. Garlic mustard was the most abundant species.

- Garlic mustard is widespread and is considered a major forest management problem or potential problem throughout the park.
- Japanese barberry, multiflora rose, common buckthorn, and shrub honeysuckle (*Lonicera* spp.) are invasive shrubs that were documented in the forest understory. Shrub honeysuckle was the most widespread invasive shrub with an observed cover of 390 m<sup>2</sup>.

Resource management staff views invasive plant management as an essential component of the park's commitment to a collaborative resource management program. The size of many of the invasive plant populations and the costs associated with control suggests that invasive species control is feasible.

#### Management Objective:

Control invasive plants to improve habitat for endangered, threatened, and other native species, improve interpretation of the landscape, and protect archeology.

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<sup>69</sup> PVT is a stable vegetation community type based on the local biophysical environment and often best predicted by the type of historically native vegetation community on the same site.

## **Hopewell Culture National Historical Park**

### ***Invasive Plant Management***

During surveys in 2008, Davey Resource Group documented 34 high priority invasive plant species at HOCU. Three of these plant species were not previously documented as occurring on the park, based on NPSpecies (April 11, 2011), the service-wide database for plant information. Japanese honeysuckle, the most abundant invasive plant, covered between 0.75 and 10.4 acres in the forests and restored prairies of all mound groups. Of the 34 invasive plant species, 26 occurred in fewer than 25% of transects and occupied less than 1 acre. The relatively low cover of these species is encouraging and suggests that eradication or at least successful control may be a viable management option for some species.

Fallow farm fields at HOCU are commonly overgrown with multiflora rose and Johnsongrass. Other invasive plants such as periwinkle (*Vinca minor*) and summer grape (*Vitis aestivalis*) are also inhibiting native plant reproduction. The larger woody species, such as tree-of-heaven and autumn olive have the potential to damage buried archeological resources that are the primary resource of the park. Several species of thistle (*Cirsium* spp.) have become established during the disturbance created as old fields are restored. The invasive species make it difficult to establish and maintain the preferred vegetation cover.

#### Management Objective:

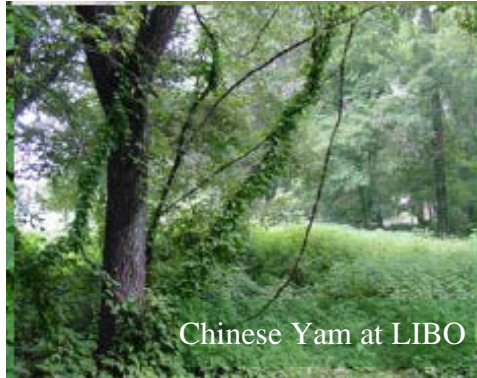
Control invasive plants to improve habitat for endangered, threatened, and other native species, protect archeology, and facilitate visitor understanding of resources.

### ***Forest Management***

Adjacent land uses cause pollutants in the forest. Examples include chemicals from paper mills and pesticide overspray from maintenance of power line rights-of-way that may negatively affect forest vegetation (Dafna Reiner, personal communication). The Gypsy moth (*Lymantria dispar*) and the emerald ash borer (*Agrilus planipennis*) are potential invasive insects that fall outside of the objectives of this plan, but must be considered as potential stressors to forests in the environmental analysis.

#### Management Objective:

Park staff intends to encourage the development of upland and lowland forest cover outside of earthworks sites through passive succession and restoration.



### **Lincoln Boyhood National Monument Forest Management (High Priority)**

LIBO's primary natural resource issue is the protection of oak-hickory and mixed deciduous forest, which are representative of the early settlement period in Southern Indiana. Managers hope to restore the forest's function to the extent possible given the history and small size of LIBO. Based on current models, gypsy moths are expected to be present at LIBO by 2015 and could influence forest structure, affecting opportunities for invasive plant infestation. Prescribed fire and cutting will

be used to eliminate mesic species such as tulip poplar and sugar maple from well-drained soils that historically supported oak-hickory forests. A prescribed fire-return interval of 5 to 10 years is planned after a series of more frequent fires that are planned to reduce fuel loads by 75%.

#### Management Objective:

Restore the forest to approximate the composition and structure encountered by the Lincoln family and other Southern Indiana pioneers.

### **Invasive Plant Management (High Priority)**

Invasive species are found throughout LIBO in varying densities. Adjacent land use, farming, and rural residential areas provide the means for invasion into LIBO. During surveys in 2006, crews documented 31 invasive plant taxa. Japanese honeysuckle was widespread and abundant on at least 3.2 acres and occurred in 94.8% of search units. Common periwinkle was the second most abundant species with a cover of 1.3 acres and occurred in 24.7% of search units. A total of 27 invasive plant species each covered one acre or less of the park. In general, several invasive plants are a moderate problem at LIBO, but successful control appears possible for a large group of species. Other species of primary concern include Chinese yam (*Dioscorea oppositifolia*), multiflora rose, privet (*Ligustrum* sp.), and various less aggressive ornamental shrubs and grasses. Chinese yam has invaded 1 to 2 acres, but the vine spreads rapidly via asexual bulbils and covers all vegetation and structures.

#### Management Objectives:

- Eliminate or reduce the cover of invasive plants at LIBO.
- Prevent future invasions of invasive species.

### **Indiana state-listed animal species**

Indiana has an endangered species act that covers animals (excluding insects) (Ind. Code 14-22-34-1 et seq.) The act does not require agency consultation. There are three bird species, one reptile, and one mammal that are listed as state species of concern that occur in the park.

**Arkansas Post National Memorial*****Invasive Plant Management (High Priority)***

During surveys in 2006, crews documented 20 invasive plant taxa. Bluegrass, smooth brome (*Bromus inermis*), and reed canarygrass were widespread and abundant throughout the park. In general, several invasive plants are a major problem at ARPO, but successful control is possible for a large group of species. Four invasive species: trifoliate orange, common privet (*Ligustrum vulgare*), Chinese privet, and Japanese honeysuckle threaten the forest structure and contribute to hazard fuel accumulations. Trifoliate orange has overtaken approximately 10 acres of the Memorial Unit. Roughly eight to nine percent of the Memorial Unit is covered with invasive plants. The status of invasive plants at the Osotouy Unit is not documented.

**Management Objectives:**

Consistent with the approved CLR (NPS 2005) for the park that supports the management and control of invasive species of concern management objectives include eliminate trifoliate orange, common privet, Chinese privet, and Japanese honeysuckle, as well as other invasive plants from the Memorial Unit and prevent these species from spreading to surrounding private, state, and federally owned land. Vegetation plays a critical role in visitor understanding and is critical in stabilizing archeological resources within the Osotouy. Objectives for the Osotouy Unit are pending.

## Buffalo National River

### ***Management of Species of Concern***

Hibernating, bachelor, and maternity bat colonies exist in several park caves and abandoned mines. Over 300 caves are currently documented in the park. The caves provide critical habitat for three federally endangered bat species: gray bat, Indiana bat, and the Ozark big-eared bat. There are also reports of Eastern small footed bat, a G3N3S1<sup>70</sup> ranked species, in at least one cave inside the park. Arkansas' largest hibernaculum for the gray bat is located approximately 200 feet outside of the Lower Buffalo Wilderness boundary. There are two known gray bat caves in the Lower Buffalo Wilderness, including a maternity cave with a population of ten to fifteen thousand bats.

### Management Objectives:

- Comply with all Endangered Species Act requirements and protect populations of rare species.
- Support site dependent objectives for cultural landscapes and natural resources.

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<sup>70</sup> NatureServe Conservation Status numeric rank represents the conservation status of a species or ecosystem, designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment (G = Global), N = National, and S = Subnational). The numbers mean, 1 = critically imperiled, 2 = imperiled, 3 = vulnerable, 4 = apparently secure, and 5 = secure. (<http://www.natureserve.org/explorer/ranking.htm>, September 21, 2011).

## **George Washington Carver National Monument**

### ***Plant Community Restoration***

The NPS began a prairie restoration program on six acres in 1985. Today there are 120 acres being managed as restored prairie. Invasive plant species have also become established throughout the park. These invasive plants may impede successful prairie restoration. Another of GWCA's management objectives is to maintain forest cover as a buffer for riparian zones and to meet visitor experience objectives.

#### Management Objectives:

- Maintain and restore prairies.
- Maintain and restore riparian forests.

### ***Invasive Plant Management***

During surveys in 2006, crews documented 26 invasive plant taxa. Invasive plants occurred in the restored prairies and the forests at the park. The invasive Japanese honeysuckle, Tartarian honeysuckle (*Lonicera tartarica*), Johnsongrass, crownvetch (*Securigera varia*), and Chinese bushclover have colonized prairies at GWCA. Japanese honeysuckle, bald brome, fescue, and Osage orange were widespread and abundant. In general, several invasive plants are a moderate problem at GWCA, but successful control is possible for many. Extensive grazing on surrounding farms invites invasive species establishment and growth. Sumac (*Rhus* spp.), blackberries (*Rubus* spp.), woody briars (*Smilax* spp.), and grape vine (*Vitus* spp.) are also invading the restored prairies.

#### Management Objectives:

- Control invasive plants in prairies to improve habitat for native species.
- Control invasive plants in riparian forests to improve habitat for native species.

## Hot Springs National Park

### ***Watershed Management***

Watershed management is designed to protect the integrity of the thermal springs, cold-water springs, and streams at HOSP, as called for in the enabling legislation. Shallow ground-water systems, containing cold water that mixes with thermal water, are dominated by fractures and are subject to rapid input of surface contaminants. Rapid transport of these contaminants to wells and springs may occur with little opportunity for natural degradation of contaminants before entrainment in the thermal water supply.

#### Management Objectives:

- Promote and maintain high water quality in surface waters is particularly important in Gulpha Creek and Bull Bayou where visitors fish and swim.
- Maintain high water quality in shallow ground-water systems and in recharge areas to park the water quality of the thermal and cold springs.

### ***Invasive Plant Management***

Because of the urban setting and disturbed land from the removal of former housing developments within the park, Japanese honeysuckle, kudzu (*Pueraria montana* var. *lobata*), common privet (*Ligustrum vulgare*), nandina (*Nandina domestica*), cherry laurel (*Prunus laurocerasus*), Chinese bushclover, southern magnolia (*Magnolia grandiflora*), and Russian olive (*Elaeagnus angustifolia*) continue to flourish. Some of these species are former or escaped domesticated plants from housing communities once located in the park. Kudzu (*Pueraria montana* var. *lobata*), an invasive spreading throughout the South, colonizes disturbed areas quickly and covers forest and native vegetation. As the park reclaims residential lots and buildings are removed (over 300 to date), kudzu becomes established quickly. This has made the reclaimed areas impenetrable in some places. The Cultural Landscape Report (NPS 2010) provides guidance on invasive plant management in the historic landscape.

#### Management Objectives:

Eradicate or control invasive plants at HOSP.

### ***Forest Management***

Based on tree-ring analysis, HOSP protects the oldest stand of oak-hickory-pine in the state of Arkansas (Stephen Rudd, 2011, personal communication). The 40 to 50 acres stand is located on the edge of Hot Springs Mountain. Another 90 acres stand is located to the side of Sugarloaf Mountain near Cedar Glades Road. Gypsy moth (*Lymantria dispar*), red-oak borer (*Enaphalodes rufulus*) and southern pine beetles (*Dendroctonus frontalis*) threaten the forest composition. These threats fall outside of the scope of this plan, but must be considered as an ecosystem stressor contributing to forest community conditions.

#### Management Objectives:

Maintain high priority forest types.



## **Ozark National Scenic Riverways**

### ***Threatened and Endangered Species Management***

These rare species utilize a variety of habitats including caves, riparian forest, giant cane, seeps, bluff tops, upland forests, spring branches, deep river pools, and forest canopy openings in the park. Many of these rare species are protected through federal or state mandates, including the federally listed gray bat, Indiana bat, and Ozark hellbender.

#### Management Objectives:

Prevent future Endangered Species Act listings through sound management practices.

### ***Plant Community Management***

The matrix forest provides the scenic setting for park visitors as they float on the river. The landform divides the matrix cover into approximately 75% upland forest and 25% riparian and floodplain forest. High quality examples of rare Missouri natural communities include glades, fens, woodlands, cliffs, caves, rivers, streams, sloughs, springs, spring branches, and washes. Compared to upland and riparian forests within the park, rare plant communities are relatively small, discrete areas harboring a set of distinctive environmental conditions. These communities are subject to enormous edge influence given their size. Therefore, protection and management of these unique sites within the larger forest and river matrix is required to preserve "natural features" and meet the park legislative mandate. Decisions on the nature of the actions must emerge from a series of cultural landscape studies and reports to document, evaluate and provide treatment recommendations for historic agricultural and recreational landscapes.

#### Management Objectives:

- Protect and restore rare plant communities.
- Maintain matrix forests.
- Manage open fields to meet cultural landscape and wildlife objectives.

### ***Invasive Plant Species Management***

Once ranked low priority with less than 11% invasive vegetation species, increased recreational use has changed the level of priority for invasive plant management within the park. During surveys in 2009, crews documented seven invasive plant taxa in the Big Spring Pines Natural Area, Chubb Hollow, Long Bay Field and Long Bay. The most widespread and abundant of the invasive plant species observed included Johnsongrass, ground ivy (*Glechoma hederacea*), and Nepalese browntop (*Microstegium vimineum*). In general, several invasive plants are a major problem, but successful control is possible. Management objectives include identifying the major vectors of invasive species, determining the susceptibility of plant communities to invasive species, and determining how these invasive species should be managed.

#### Management Objectives:

- Eliminate or reduce invasive species at OZAR.
- Prevent future invasions of invasive species at OZAR.

**Pea Ridge National Military Park*****Plant Community Management (High Priority):***

Fire suppression and logging have changed the character of the park's forests significantly since 1862, the year of the battle and basis for determining desired conditions for the landscape appearance. Ecological succession, grazing, and the lack of prescribed fire have promoted Eastern red cedar as the dominant overstory species, which has altered the native ecosystems and changed the landscape appearance.

**Management Objective:**

Restore forests to mimic their appearance in 1862, as recommended in the Cultural Landscape Report for the park.

***Invasive Plant Management:***

Pea Ridge National Military Park has a long history of cattle grazing, fire suppression and other human introduced disturbances. These disturbances have led to the introduction of invasive plants. During surveys in 2006, crews documented 13 invasive plant species and the invasive Eastern red cedar. The survey focused on the relatively mature forests at the park, excluding old fields and successional forests. Eastern red cedar, covering between 671 and 1152 acres, was by far the most abundant invasive plant documented in the survey (Young, et al. 2007). In general, only a few invasive plants pose a problem in the park's forest. Other common invasive plant species include Carolina buckthorn (*Rhamnus caroliniana*), Japanese honeysuckle, bull thistle, Chinese bushclover, multiflora rose, Johnsongrass, English ivy, Kentucky bluegrass, and winter creeper (*Euonymus fortunei*).

**Management Objectives:**

- Eliminate or reduce invasive species.
- Prevent future invasions of invasive species.

**Wilson's Creek National Battlefield*****Invasive Plant Management***

During surveys in 2006, crews documented 35 invasive plant species. Chinese bushclover, the most abundant invasive plant at Wilson's Creek National Battlefield, is estimated to cover between 480 and 851 acres. In general, several invasive plants are a major problem to native plant community integrity at Wilson's Creek National Battlefield, but successful control is possible for a large group of species (Young, et al. 2007e).

**Management Objectives:**

- Eliminate or reduce invasive species.
- Prevent future invasions of invasive species.

***Species of Concern Management***

The Missouri bladderpod inhabits glades at WICR. The Cultural Landscape Report 2004 made numerous recommendations that support efforts to protect bladderpod populations.

**Management Objectives:**

Maintain Missouri bladderpod habitat to encourage natural propagation.

***Plant Community Management***

A restoration plan was developed by the Missouri Department of Conservation in 1986, and was implemented by WICR in 1987 and is consistent with restoring landscape appearance to match the 1861 battlefield landscape. The Cultural Landscape Report 2004 (NPS 2004b) made further recommendations for landscape treatment. Prescribed fire is one of several treatments being used to restore prairie and woodlands at WICR.

**Management Objectives:**

Restore forests to mimic their appearance in 1862.

## **Herbert Hoover National Historic Site**

### ***Invasive Plant Management***

Invasive species pose a threat to prairie communities, stream rehabilitation efforts, and park aesthetics. Some of the most extensive invasions of plants occur along drainages from surrounding agricultural land and within floodplains of Hoover Creek. During surveys in 2009, crews documented 23 invasive plant taxa in the restored prairie. The most widespread and abundant of the invasive plant species observed included sweetclover (*Melilotus alba*), reed canarygrass, and smooth brome. Similar surveys were conducted and documented in 2006, providing an opportunity to compare two separate years of data collection, as well as an analysis of changes in invasive plant composition, abundance and distribution. Seven of 27 species increased in frequency over the three year period, while 20 decreased, but overall reduction in invasive cover occurred. Fencerows and mowed areas of the park are planted in Kentucky bluegrass, fescue, and smooth brome. Smooth brome and Kentucky bluegrass encroach on the prairie edges and take advantage of open areas between the warm season bunch grasses. Reed canarygrass forms monotypic stands that exclude other species in riparian areas. Invasive woody plants such as Siberian elm (*Ulmus pumila*), white mulberry (*Morus alba*), and Russian olive have colonized at HEHO. Escaped ornamentals from the cultural landscape of the site, such as Tartarian honeysuckle, have invaded the prairie and woodlands as well. Canada thistle and ragweed (*Ambrosia* spp.) are also found in small, dense groups (less than one acre) in disturbed areas.

#### Management Objectives:

- Control invasive plants in prairies to improve habitat for native species.
- Control invasive plants in riparian forests to improve habitat for native species.

### ***Prairie Restoration***

After 40 years of development, the prairie continues to require active management. Prescribed fire had been the primary management over the years. The park's General Management Plan has established a low tolerance for invasive plant species in its Natural Zone as a desired condition. The draft Resource Stewardship Strategy calls for an increase in species diversity to attain desired conditions within the prairie.

#### Management Objectives:

Continue to restore the prairie per recommendations of the GMP 2006 and the Cultural Landscape Report 1995.

**Homestead National Monument of America*****Prairie Management***

The prairie at HOME is the Nation's second oldest restored tallgrass prairie. The restoration of the 100 acre prairie started in 1939. The prairie provides an important island of habitat for wildlife and native plant diversity. Restoration of the prairie increases retention and infiltration of overland flow to reduce pollutants and dissipate energy in Cub Creek. It also contributes to the representative landscape for the time of the Homestead Act.

**Management Objectives**

- Continue prairie restoration to represent the landscape at the time of the Homestead Act.
- The goals of prairie management, as listed in the Vegetation Management Action Plan, are to protect and promote native biodiversity, manage and monitor invasive species infestations and manage thickets so they remain a small part of the prairie.

***Mesic-Bur Oak Forest Management***

The 40-acre woodland at Homestead is classified as a mesic bur oak forest, a rare community type in Nebraska, as regarded by the state. Upon acquisition of the Freeman homestead by the NPS, much of the wooded area along Cub Creek had been heavily grazed, and most of the older trees had been harvested. However, approximately 20 acres of woodland remained undisturbed.

**Management Objectives**

Restore the bur oak forest to represent the landscape at the time of the Homestead Act.

**Pipestone National Monument (PIPE)*****Endangered Species Management (High priority)***

The federally threatened western prairie fringed orchid and the federally endangered Topeka shiner occur at PIPE. Western prairie fringed orchid populations are affected by climate factors, and by overall prairie health. The Topeka shiner may be negatively affected by alteration in water quality and flow, and by species predation and competition.

**Management Objectives:**

- Maintain habitat conditions for the Topeka shiner.
- Maintain habitat conditions for the western prairie fringed orchid.

***Invasive Plant Management (High priority)***

During surveys in 2006 and 2009, 20 invasive plant taxa were documented. Three grass species are widespread and abundant: bluegrass and smooth brome were each estimated to cover at least 21 acres, while reed canarygrass occurred on at least four acres. Survey findings suggest that the park's control efforts have reduced the distribution and abundance of several invasive plant species. This observation combined with the low abundance of many of the other species suggests that ongoing park control efforts are likely to be very effective.

**Management Objectives:**

- Manage invasive species.
- Prevent future invasions of invasive species.

## **Tallgrass Prairie National Preserve**

### ***Plant Community Management***

The park is dominated by unplowed upland tallgrass prairie and perpetuated by fire, climate, and grazing. According to park personnel, cattle and bison are managed on the park lands and a varied fire and grazing regime (initiated in 2006) is used for vegetation and range management. Prior to 2006, nearly all of the 10,000 acres of prairie on the park burned every spring. In 2001, the bottomland smooth brome fields were converted from cattle pastures to brome hay fields and the park has worked to restore these fields back to bottomland tallgrass prairie. At this time, the native upland prairies are relatively free of significant invasive plant encroachment however; the bottomland fields have a number of problematic agricultural weeds.

#### Management Objectives:

- Maintain and restore native prairie communities.
- Maintain and restore native riparian communities.
- Maintain and restore rare and small-patch plant communities.

### ***Invasive Plant Management***

An invasive plant inventory was completed in 2006 (Young, et al. 2007). During surveys, 16 invasive plant species were documented. Smooth brome was the most abundant invasive plant. Smooth brome was planted in previously tilled bottomland along Fox Creek in 1995, prior to the park's establishment. Two small fields along Fox Creek are currently planted to soy beans annually. In general, invasive plants are not a major threat, but species such as Chinese bushclover, Johnsongrass, and the Old World bluestems are a concern in the native and restored prairies.

#### Management Objectives:

- Manage invasive species.
- Prevent future invasions of invasive species.





## Appendix N: Nationwide Rivers Inventory

Designated National Rivers Inventory rivers in parks affected by this proposal.

River	County	Reach	Length (miles)	Year Listed/ Updated	Potential Classification	ORVs	Description
Buffalo River	Marion, Searcy, Newton	From confluence with White River upstream to headwaters	150	1982		S, R, G, F, W, H	It flows through clear pools and rushing rapids, mountains, past unique caves and waterfalls, old pioneer cabins, long abandoned homes of cliff dwellers, and spectacular rock formations. The watershed contains 700 species of trees and other plants, furnishing habitat for 250 species of birds and other animals. It is nationally known as an exceptional recreation resource, including a smallmouth bass fishery.
Current River	Dent, Shannon, Carter	Entire segment within Ozark National Scenic Riverways	100	1993	S	S, R, G, F, W, H, C	It has large karst springs, the most of any river on Ozark plateau. Water quality is good. Landscape includes many caves, and geologic features.
Jacks Fork	Texas, Shannon	Entire segment within Ozark National Scenic Waterways	38	1993	W, S	S, R, G, F, W, H, C	It includes many federally threatened and endangered plant species. There are vertical bluffs and karst features on river.
Yellow River	Allamakee	Entire segment within Effigy Mounds National Monument	1	1982/ 1993	S	S, R, G, W, H, C	One of fastest falling rivers in Iowa, providing excellent fishing and canoeing opportunities. Numerous prehistoric Indian burial mounds. The site of Jefferson Davis Sawmill is upstream from boundary.

### **Potential Classification**

**Wild rivers (W):** Free of impoundments and generally inaccessible except by trail with essentially primitive watersheds or shorelines, and waters unpolluted. These represent vestiges of primitive America.

**Scenic rivers (S):** Free of impoundments, with largely primitive shorelines or watersheds and largely undeveloped shorelines, but accessible in places by roads.

**Recreational rivers (R):** Readily accessible by road or railroad that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

### **Outstandingly Remarkable Values (ORVs)**

**Scenery (S):** The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions. Scenery and visual attractions may be highly diverse over the majority of the river or river segment.

**Recreation (R):** Recreational opportunities attract visitors from throughout or beyond the region for river-related opportunities, such as sightseeing, wildlife observation, camping, photography, hiking, fishing and boating. Interpretive opportunities may be exceptional.

**Geology (G):** The river or the area within the river corridor contains one or more example of a geologic feature, process or phenomenon that is unique or rare within the region.

**Fish (F):** Fish values may be judged on the relative merits of fish populations, habitat, or a combination of these river-related conditions.

**Wildlife (W):** Wildlife values may be judged on the relative merits of either terrestrial or aquatic wildlife populations or habitat or a combination of these conditions.

**Prehistory (P):** The river or area within the river corridor contains a site(s) where there is evidence of occupation or use by Native Americans. Sites must have unique or rare characteristics or exceptional human-interest value(s). Many such sites are listed on the National Register of Historic Places.

**History (H):** The river or area within the river corridor contains a site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare or one-of-a-kind in the region. Many such sites are listed on the National Register of Historic Places.

**Cultural (C):** The river or area within the river corridor contains archeological sites or areas significant to traditional cultures. Examples might be American Indian burial grounds, petroglyphs, the oldest known human use site in a region, or streams that support traditional agriculture, subsistence fishing, or religious ceremonies.

**Other Values (O):** While no specific national evaluation guidelines have been developed for the "other similar values" category, assessments of additional river-related values consistent with the foregoing guidance may be developed -- including, but not limited to, hydrology, paleontology and botany resources.