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MAR 11 1998

DOE-0536-98

Mr. James A. Saric, Remedial Project Manager
U.S. Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

RESPONSES TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE "HABITAT AREA PROJECT WORK PLAN, OPERABLE UNIT 4 SUPPLEMENTAL PROJECT"

Enclosed for your review are responses to the U.S. Environmental Protection Agency (U.S. EPA) and Ohio Environmental Protection Agency (OEPA) comments on the "Habitat Area Project Work Plan, Operable Unit 4 Supplemental Project." Upon receiving concurrence with these comment responses, the work plan will be revised and submitted by April 13, 1998.

If you have any questions or require additional information, please contact Kathleen Nickel at (513) 648-3166.

Sincerely,

Johnny Reising

Johnny W. Reising
Fernald Remedial Action
Project Manager

FEMP:Nickel

Enclosures: As Stated

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cc w/encs:

S. Bogart, DOE-OH
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R. Beaumier, TPSS/DERR, OEPA-Columbus
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F. Bell, ATSDR
M. Schupe, HSI GeoTrans
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DRAFT RESPONSES TO THE COMMENTS ON THE "HABITAT AREA PROJECT WORK PLAN OPERABLE UNIT 4 SUPPLEMENTAL PROJECT"

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 1 Pg #: Line #: Code: C
Original Comment #: 1

Comment:

a) Please provide a reference for the recommended seeding rates.

b) Ohio EPA recommends replacement of annual rye grass with Canada Wild Rye (*Elymus canadensis*). Canada Wild Rye is a native plant which shows promise as a nurse crop (Whitney, Bill, Restoration & Management Notes, Winter 1997 pg126-137). If successful, it may be appropriate to consider Canada Wild Rye as a standard seed for temporary cover during remediation.

c) Include Side Oats Grama (*Bouteloua curtipendula*) in the grass mix. It is another native typically included in prairie mix with a lower growing nature than the other proposed grasses.

Response:

a) The recommended seeding rates for the tallgrass prairie grasses are based on several sources (SER, 1997) and are conservatively high to help ensure rapid establishment of dominant indigenous grasses during the first growing season. Rapid establishment of the dominant prairie grasses is important to reduce competition from annual weeds and to generate immediate public interest in the project.

b) Agreed. DOE-FEMP has reviewed the recommended article (Whitney, 1997) and agrees that Canada Wild Rye (*Elymus canadensis*) should be included in the tallgrass prairie seed mix. Anything that has been demonstrated to help in the rapid establishment of dominant prairie grasses and to suppress dominance by annual weeds would help further the objectives of the project.

c) Agreed. DOE-FEMP will include Side Oats Grama in the grass mix used to establish tallgrass prairie and tallgrass prairie savannah in the Public Access Area of the Habitat Area Project.

Action:

a) The text in Section 2 of the work plan will include a statement explaining why these high rates of seeding will be used to establish the tallgrass prairie.

b) Canada Wild Rye will be included in the seed mix at an application rate of six lbs/acre as outlined in Table 1 of the work plan, and Annual Ryegrass, which is an introduced species, will be removed from the list.

c) Side Oats Grama will also be added to the seed mix as outlined in Table 1 of the work plan.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Table 2 Pg #: Line #: Code: C
Original Comment #: 2
Comment: a) The table should include a date for submittal of the certification design letter.

b) Efforts should be made to reduce the time required to complete certification and design. Additionally, to the extent possible, planting could occur prior to September 15 for some plants if effort was made to provide watering when necessary.

Response: a) Agreed. The CDL will be submitted by March 31, 1998.

b) Agreed. Wherever possible, certification and design are being expedited. Under normal conditions, the period between September 15 and December 15 should allow for installation of most trees and shrubs without further watering beyond the initial watering required at the time of planting. If the overall schedule outlined in Table 2 of the work plan does not slip, it may be possible to begin installing some trees and shrubs before September 15. But unless weather conditions are exceptionally cool and/or wet, periodic waterings may be necessary between the installation date and September 15. DOE-FEMP will have to closely monitor the plantings to determine when the supplemental waterings are necessary. Installation after December 15 is not recommended because of the possibility of frozen soil.

Action: a) Include the CDL submittal date in Table 2.

b) A paragraph will be added to Section 2.3 of the work plan that discusses the need for supplemental watering if plant material is installed before September 15. The paragraph will also acknowledge that supplemental watering may also be needed after September 15 if unusually dry weather is encountered. It will indicate that the decision will be made by a restoration ecologist assigned by DOE-FEMP to monitor the newly installed vegetation.

Commenting Organization: Ohio EPA Commentor: OFFO
Section #: Figure 1 Pg #: Line #: Code: C
Original Comment #: 3
Comment: a) The text references possible use of seedling trees; neither the text nor the figure define which trees would be planted as seedlings. Ohio EPA recommends the use of saplings exclusively to ensure a high survival rate and to provide the immediate habitat envisioned when defining the supplemental project. Additionally, size requirements for the shrub and wildflower specimens should be included.

b) Ohio EPA recommends significantly reducing the number of Honeylocust trees planned. Due to the thorny nature of these trees, they are not well suited for public access areas of such limited size. For those specimens retained, removal from areas adjacent to the path is necessary.

c) Ohio EPA recommends replacement of Honeylocust trees with specimens of the following:

Bitternut Hickory (*Carya cordiformis*)
Beech (*Fagus grandifolia*)
Sassafras (*Sassafras albidium*)
Sycamore (*Platanus occidentalis*)

These trees are likely to be included in future restoration efforts so it will be good to provide the public access to examples of them. Additionally, all four species provide wildlife forage.

d) Consistent with a request from a member of the Fernald Citizens Advisory Board, Ohio EPA recommends inclusion of specimens of the Butternut (*Juglans cinerea*) tree. Additionally, this tree will provide wildlife forage.

e) The figure should be revised to identify existing tree types within the habitat area.

Response:

a) With the exceptions noted below, all trees shown on the plan will be installed using balled-and-burlapped or container-grown saplings that are at least one inch in caliper and four feet in height. The exceptions include:

1) Trees of certain subcanopy species will be balled-and-burlapped or container-grown and a minimum of three feet in height. No caliper minimum will be specified. Examples of subcanopy trees that will be planted in the project include Eastern Redcedar (*Juniperus virginiana*), Eastern Redbud (*Cercis canadensis*), and Flowering Dogwood (*Cornus florida*)

2) Trees of certain taprooted, slow growing species may be planted as seedlings because larger stock is either unavailable or prohibitively expensive. Examples include various hickories (*Carya sp.*) and Bur Oak (*Quercus macrocarpa*).

All shrubs shown on the plan will be planted as balled-and-burlapped or container-grown stock, with a minimum height of three feet. All wildflowers shown on the plans will be planted using peat-potted stock.

b) Honeylocust (*Gleditsia triacanthos*) is an excellent choice for planting along hedgerows and in old fields and successional hardwood forests in the project for several reasons, including the following:

1) Honeylocust is indigenous to southwestern Ohio
2) Several Honeylocusts already are thriving at the site
3) Honeylocust thorns provide specialized habitat favoring the loggerhead shrike, a rare bird that impales its prey on thorns
4) The abundant seed pods of Honeylocust are a valuable food source to many common species of bird and small mammals
5) Honeylocust is a fast growing tree that is hardy in most upland soils and has few serious insect pests or diseases
6) The filtered shade, ridged bark, and distinctively shaped twigs and overall silhouette of Honeylocust offers considerable aesthetic appeal.

It is doubtful that the thorns present a serious safety concern to users of an interpretive and educational project. Nevertheless, to be conservative, the plans will be changed so that no Honeylocust will be planted within 25 feet of the trail, overlooks, or parking area

Although not indicated in the work plan, some of the existing trees on the site are Honeylocust and bear the characteristic thorns. In keeping with the project's objective of enhancing rather than replacing the site's existing vegetation, these trees will not be removed.

c) Bitternut Hickory (*Carya cordiformis*) and American Beech (*Fagus grandifolia*) would be appropriate additions to areas targeted for conversion to Oak-Hickory or Beech-Maple forest cover types. The plan calls for planting species typical of Beech-Maple forest in the shade of existing successional hardwood trees on the steep slopes north and east of the trail, and for planting species typical of Oak-Hickory forest in the shade of existing successional hardwood trees on the steep slope south of the trail. The plan did not utilize these species because they are slow-growing, difficult to transplant species (Hightshoe, 1988), and because large specimens may not be readily available from commercial sources. The plan will be changed to specify use of both species on the slopes, but it will have to allow for the use of seedlings or smaller nursery stock. The specifications will call for use of either one balled-and-burlapped or container-grown specimen, or ten seedlings, at each planting location shown on the plan for these species. If seedlings are used, they will be randomly scattered over an area of roughly 1,000 square feet, centered on the designated planting spot.

Sassafras (*Sassafras albidum*) is likewise difficult to transplant and not readily available as saplings (Hightshoe, 1988). Although a desirable species of hedgerows and old fields in southwestern Ohio, Sassafras does not possess unique attributes not also possessed by those species designated on the draft plan for the hedgerow and old field areas of the project. Thus the plan will not be changed to include planting of Sassafras.

American Sycamore (*Platanus occidentalis*) typically favors rich bottomlands, alluvial floodplains, creek banks, and lake margins throughout most of the eastern United States, including southwestern Ohio (Hightshoe, 1988). It is a fast growing, easily transplantable, and readily available tree that would be an excellent choice for inclusion in riparian forest restorations in the floodplain of Paddys Run. Unfortunately, the site is limited to an area of uplands and slopes west of the Paddys Run floodplain, and does not include any areas of alluvial soil favored by American Sycamore. However, it will be possible to plant a few American Sycamore saplings immediately southeast of the site where a swale enters the Paddys Run floodplain. When mature, these sycamores will be visible from the trail.

d) Although Butternut (*Juglans cinerea*) is a desirable tree indigenous to southwestern Ohio, it is not widely available as large nursery stock from commercial suppliers. It would most likely have to be obtained as seedlings, and even these might have to be "contract grown", i.e. grown to order by the nursery from seed. The species

proposed in the plan for the forests on the slopes include several oaks and Ohio Buckeye (*Aesculus glabra*), all of which are also nut producers.

e) The project designers visited the site and made notes on the existing vegetative cover before initiating the design effort. These notes included the species and condition of isolated trees and the dominant species and condition of stands of trees. A computer-aided design drafting (CADD) layer was created showing the approximate locations of existing trunk locations and existing canopy cover, based primarily on an aerial photograph taken in 1996. This CADD layer was included on the draft plan-view drawing. To simplify the drawing, the layer did not include detail on tree species and condition. But the notes on species and conditions were considered as the project design proceeded. To assist reviewers of the plan, the final version of the planting plan will label the species of existing isolated trees and the dominant species of existing stands of trees.

Action:

a) The minimum planting stock sizes noted above will be noted in the text of Section 2.2 in the work plan. A plant schedule, a table listing the species, forms sizes, and quantities of all proposed planting stock, will be included as an attachment to the work plan.

b) The plan will be changed so that it shows no planting of Honeylocusts within 25 feet of the edge of the trail, overlooks, and parking area.

c) The plan will be modified to designate planting of occasional Bitternut Hickories and American Beeches on the slopes north, east, and south of the trail and to designate planting two or three American Sycamores where a swale enters the Paddys Run floodplain immediately southeast of the project.

d) None required.

e) The existing vegetation layer on the plan will be expanded to show the species of isolated existing trees and the dominant species of stands of existing trees. A new section will be inserted into the work plan that describes existing conditions of the site, including existing vegetation, soils, and topography.

TECHNICAL REVIEW COMMENTS ON "HABITAT AREA PROJECT WORK PLAN, OPERABLE UNIT 4 SUPPLEMENTAL PROJECT"

GENERAL COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA (Not Applicable) Page #: NA Line #: NA
Original General Comment #: 1

Comment: The text states that the "wild bird/wildflower sanctuary," also referred to as the Habitat Area Project, is one of five environmental projects to be conducted as part of the Dispute Resolution Agreement (DRA). The Habitat Area Project consists of constructing a parking area, trail, interpretive signs, two overlook platforms, and representative restored ecosystems. According to the DRA, "the goal for this proposal would be to create a protected habitat for regional species of wild birds and wildflowers both in the same area of the FEMP." Although construction of trails, signs, representative restored areas, and overlook platforms may provide attractive and desirable amenities to the general public, the connection between these activities and the creation of protected habitat for regional wildflowers and birds needs to be emphasized and clarified. The primary emphasis of the work plan seems to be to provide an attractive, landscaped, park-like public area. The work plan indicates that several different native habitats will be restored, but the only habitat identified is the tallgrass prairie. The work plan introduction should be revised to clearly explain and emphasize how proposed activities will fulfill DRA intended goals.

Response: The plan has been designed to establish several native plant communities known to occur at the FEMP and surrounding areas in southwestern Ohio. These plant communities include Succession Hardwood Forest; Beech-Maple Forest; Oak-Hickory Forest; Old Field Scrub-Shrub Vegetation; Palustrine Scrub-Shrub Vegetation; Scrub-Shrub Vegetation; Palustrine Forested Vegetation; Tallgrass Prairie, Tallgrass Prairie Savannah; Old Field Vegetation; and Hedgerow. Section 2 of the work plan will be expanded to include a map and description of each plant community to be established in the project.

The project will combine both landscaped and public viewing areas (e.g., the trail and overlooks) as well as scientifically designed habitats using native grasses, shrubs, and trees. The project will meet the intended goal of creating a protected habitat for regional species of wild birds and wildflowers. Not only will a tallgrass prairie exist within the project, but so will eleven other habitat types. The intent of the project is to emphasize native habitats that include indigenous wildflowers, shrubs, and trees while at the same time providing easy public access so that it can function as an enjoyable demonstration and education area.

Action: Section 2 of the work plan will be expanded to include a map and descriptions of each of the plant communities to be established in the project. This expanded text will describe the value of each of these plant communities to terrestrial wildlife, including birds.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 2

Comment: The work plan states that the revegetation component of the Habitat Area Project will consist of planting native trees, shrubs, grasses, and wildflowers to represent several different native habitats. Figure 1 indicates the proposed vegetation layout in relation to the proposed structures and topography. However, throughout the work plan, text fails to explain if the planting layout is based on site characteristics such as existing vegetation, soils, drainage, topography, and other features. The work plan should clearly explain the criteria used to determine the vegetation layout. For example, soil information is totally absent from the work plan, but is a major factor in determining the vegetative success. In addition, although not all species were reviewed, several species normally found under rather moist conditions are located in areas that appear to be topographically rather dry. Examples include the Spotted Joe Pye weed and tall coreopsis, which according to Figure 1, are to be located at or near the top of a south-facing slope. The work plan should be revised to provide justification for the vegetation layout in Figure 1.

Response: The designers of the project visited the site in September 1997 and made visual observations on the existing vegetation, topography, drainage, surface soils, viewsheds, and other site conditions relevant to successful establishment of indigenous plant communities. All of these factors were carefully considered when proposing planting locations for each tree, shrub, and wildflower shown on the plan. For example, Red Oak (*Quercus rubra*) and Sugar Maple (*Acer saccharum*) were proposed for planting under the shade of existing successional hardwood forest cover on the steep slopes north, east, and south of the trail. These species thrive in the shade of mature trees. Establishing these species typical of climax hardwood forests as saplings in successional hardwood forests mimics the natural successional process.

As another example, wetland species such as Black Willow (*Salix nigra*) and common alder (*Alnus serrulata*) were proposed only for two narrow gullies east and south of the trail where soils are saturated or shallowly inundated.

Soils throughout the site are mapped by the Natural Resource Conservation Service as deep with no serious limitations to the establishment of trees. All of the soils are described as ranging from slightly acid to slightly alkaline, a range conducive to establishment of almost all plants indigenous to southwestern Ohio. Soils on the upland terraces that will accommodate the trail and parking lot are mapped as Fincastle silt loam. Fincastle soils are described as deep, early level, and somewhat poorly drained. Such soils are not generally hydric or indicative of wetlands, but they do favor plants tolerant of occasional surface soil saturation. However, the description notes that areas mapped in the Fincastle soil series often contain inclusions of soils in the well-drained (but otherwise similar) Xenia series. Based on the apparent good drainage observed on the site, these soils are most likely Xenia soils, which are suited to establishment of a broad spectrum of plants other than those associated with the wettest and driest of sites.

Soils on the slopes immediately north, east, and south of the proposed trail alignment are mapped as Hennepin silt loam, with 35-60 percent slopes. Based on the actual topography shown on the plan drawing, the slopes range up to about 45 percent. Hennepin soils are described as deep, well drained, and typically found on slopes along

streams. The soil survey recommends species typically of upland forests, such as red and white oaks and green ash, for tree planting on Hennepin soils (SCS, 1982). Consistent with this recommendation, the plan calls for interplanting saplings of various oak and other upland forest species among the successional hardwood forest already present on these slopes.

Both Spotted Joe-Pye Weed (*Eupatorium maculata*) and Tall Coreopsis (*Coreopsis tripteris*) should thrive in the locations for which they have been designated. The former is described as inhabiting damp thickets, meadows, and shores, usually in rich or calcareous soils; and the latter is described as inhabiting thickets and borders of woods (Fernald, 1970).

Action: A new section will be inserted into the work plan that describes and discusses existing conditions at the site. Topics covered will include existing topography, vegetation, soils, and drainage. This new section will include new figures mapping existing vegetation and existing soils. The text in Section 2 of the work plan will describe how the project will be suited to the environmental setting presented in the new insert.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 3

Comment: The work plan states that details of vegetation procurement and planting will be included in the final work plan. Because of the relatively high cost often associated with purchasing and planting native nursery seed and stock and because of the direct relationship seed and stock planting has on project success, these components should be discussed in greater detail in draft documents. If these issues remain unaddressed until the final work plan, any work plan revisions may interfere with the purchase of proposed nursery seed and stock, thus impacting the overall project implementation schedule. The work plan should be revised to discuss these issues as early as possible.

Response: The plan was designed to utilize plant material readily available from nurseries that specialize in indigenous plant material for the midwestern United States. Much of the material should be available upon demand; other of the specified material may require several months notice. For this reason, DOE-FEMP plans to begin identifying specific sources of some of the plant material very shortly. It is anticipated that all of the trees and shrubs will be planted in Fall 1998, along with seeding tallgrass prairie grasses.

Action: Although DOE-FEMP acknowledges the need for identifying sources for some of the plant material several months before the planned installation date, the work plan will not be revised in response to this comment.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 4

Comment: The work plan indicates that the proposed project primarily consists of three components: (1) installation of structures, (2) revegetation, and (3) maintenance. Site and soil preparation, such as seedbed cultivating, discing, fertilizing, mulching, and other activities, play a significant role in vegetative success and should be included as an additional component. This component should be discussed in significant detail throughout the work plan, particularly with respect to the restored tallgrass prairie

area. Proper site and soil preparation is one of the most important factors in the success of prairie planting.

Response: Site and soil preparation will encompass those minimal activities necessary to successfully establish the indigenous vegetation shown on the plan drawing. Topsoiling and fertilization will be limited to those small areas of surface soil disturbed by grading to construct the parking lot. These areas will be topsoiled, fertilized, limed, and seeded with stabilization grasses in accordance with standard soils stabilization practices, and as specified in the Sitewide Excavation Plan.

Soil preparation for installing the trees, shrubs, and wildflowers will be limited to excavation and backfill of standard-sized planting pits. Adequate natural topsoil is already present throughout the site. This limited surface disturbance will minimize impacts to existing grass and leaf duff needed to prevent soil erosion, especially on the slopes. Fertilization is not generally recommended for most ecological restoration efforts, as it results in unnaturally high soil concentrations of plant nutrients that tend to encourage exotic weed growth.

The planned approach for preparing soil for tallgrass prairie establishment was based on information developed by the Society for Ecological Restoration (SER, 1997), as adapted to a very small site. Because Eurasian grasses presently occupy the site proposed for tallgrass prairie, these grasses will be initially treated with a broad-spectrum postemergence herbicide such as Roundup® prior to seeding. The prairie seed mix will then be broadcast over the dead grass cover and hand raked into the upper inch of soil. This seeding will be performed in the fall so that winter snows will help to further incorporate the seeds into the surface soil. Other options considered for preparing the prairie site included plowing and burning. Plowing was rejected because it would render the site more prone to soil erosion before the prairie grasses established. Burning is favored by many prairie restorationists but was rejected because of the small size of the site and proximity of existing desirable forest cover.

Action: The text in Section 2 of the work plan will be expanded to discuss the proposed approach for site and soil preparation prior to planting indigenous vegetation. The specifications that will be presented as an attachment to the work plan will also provide pertinent details.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 5

Comment: The work plan and Figure 1 indicate that wildflowers will be planted individually both within the tallgrass prairie seeding area and around the public-accessible area. The work plan should explain why transplanting is preferred over seeding within the tallgrass prairie seeding area. Also, mowing of the tallgrass prairie that has been planted with wildflowers will be difficult and will potentially damage the wildflowers. The work plan should explain how the area will be mowed without damaging the wildflowers.

Response: DOE-FEMP recognizes that most large-scale tallgrass prairie restorations involve the seeding of grass and forb mixes. Any tallgrass prairie restoration attempts elsewhere at the FEMP will indeed likely involve seeding of such as mix. However, as the project

will include less than 0.25 acre of tallgrass prairie (and tallgrass prairie savannah), the designers felt that the use of nursery-raised seedlings would be the most dependable way to ensure that a diversity of forbs will be visible from the trail. Furthermore, many of the desired forbs are not very aggressive (less so than the dominant prairie grasses) and may be difficult to establish from seed when faced with the inevitable competition from annual weeds during the first year of establishment.

All of the forbs that will be planted in the tallgrass prairie (and tallgrass prairie savanna) are perennial plants whose tops die back after the growing season and whose roots grow new tops the following growing season. Thus mowing outside of the growing season should not adversely affect them. If mowing becomes necessary during the growing season, after the forbs have been initially planted, the locations of the forbs will be marked by pin flags so that those locations can be avoided. Because of the small size of the project, all mowing will be done by walk-behind power mowers rather than tractors or riding mowers. The initial planting of the forbs will be scheduled immediately following the first mow in Spring 1999.

Action: The information presented above concerning protection and planting of prairie forbs during mowing will be added to Section 2.3 of the work plan.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
Original General Comment #: 6

Comment: The DRA indicates that project costs include the costs for the installation of feeders and a bird blind, yet neither is mentioned in the work plan. These installation activities and their associated costs should be included in the work plan.

Response: The design of the project will meet the objective of attracting avian wildlife. The installation of bird blinds was rejected during design and would require additional permitting since bird blinds are considered to be structures. The overlook platform was designed as a substitute for the bird blinds. DOE-FEMP will encourage employee volunteers to erect and maintain simple bird feeders and bird boxes. An existing volunteer organization has expressed an interest in assuring this responsibility.

Action: Community volunteers shall strategically install bird boxes and feeders in the project to attract avian wildlife. This statement will be added to Section 2 of the work plan.

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.1.1 Page #: 3 Line #: 16 to 19
Original Specific Comment #: 1

Comment: The text provides a brief description of the small gravel parking area designed to provide access and accommodate automobiles. The parking area description should include a description of the proposed gravel material (for example, coarse aggregate, crushed limestone, crushed gravel, or other) and a description of the parking area draining.

Response: Agreed.

Action: Details regarding gravel material and drainage requirements will be added to Section 2.1.1, and will be included on corresponding design drawings and specifications.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.1.1 Page #: 3 Line #: 19 and 20
Original Specific Comment #: 2
Comment: The text states that a series of poles will be installed around the parking area. The text should indicate whether the parking area will be screened with vegetation from the remainder of the Habitat Area Project.

Response: In response to this comment, the plan will be modified to designate a five-foot wide planting bed between the eastern edge of the gravel parking lot and the trail. Indigenous shrubs and wildflowers will be established in the planting bed to provide a screen that will separate cars from the project.

Action: The plan will be modified to show the planting strip.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.1.1 Page #: 3 Line #: 26 and 27
Original Specific Comment #: 3
Comment: The text states that parking area access will meet local transportation authority specifications, including those associated with elevations and dimensions, line painting, traffic signs, and others. The text should specify the agency responsible for the access road specifications (for example, the town, county, village, or other) and include "line-of-sight distances" as one of the listed requirements.

Response: Agreed.

Action: Replace "The Local Transportation Authority" with "Hamilton County." Add "line-of-sight distances" after "traffic signs."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.1.2 Page #: 4 Line #: 2
Original Specific Comment #: 4
Comment: The text states that a short trail will be installed from the parking area to the scenic overlooks. The text should specify that the trail will be designed as a walking trail. The trail description should also indicate if the trail will be edged with some type of physical border to keep the mulch in place.

Response: Regarding edging for the trail, the trail will be five feet wide and surfaced using mulch. Where required steps will be installed to aid in foot access and to control erosion. DOE-FEMP is considering the use of railroad ties to edge the trail. If used, railroad ties will reflect the aesthetic appearance that DOE-FEMP is trying to achieve and complement the material used to make grade changes (steps) on the trail. A supply of clean railroad ties may be available at the FEMP. Railroad ties must meet free-release criteria and must not compromise the certification of Area 8, Phase I.

Action: If agreed to, the last sentence in Section 2.1.2 of the work plan will say: "The walking trail will be edged with railroad ties to keep the mulch surface form eroding and/or washing away."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.1.3 Page #: 4 Line #: 20
Original Specific Comment #: 5
Comment: The text states that the northern overlook is designed to be wheelchair-accessible. To clarify which overlook is referred to, the text should redesignate this overlook as the "western overlook."

Response: The overlook in question is located more to the north than the west of the parking lot. Thus it will remain designated as the "Northern Overlook."

Action: To clarify, the text in Section 2.1.3 will describe the "Northern Overlook" as that overlook closest to the parking lot. It is for that reason that the overlook was selected for wheelchair access.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.2 Page #: 4 Line #: 23 to 25
Original Specific Comment #: 6
Comment: The text states that the revegetation effort will consist of planting native trees, plants, shrubs, grasses, and wildflowers to represent several different native habitats. According to the text, Figure 1 shows the restored habitat locations. The text should indicate and specify exactly which native habitat types are being restored and why these particular native habitats were selected for the site. In addition, Figure 1 should be revised and labeled to reflect the restored habitat locations within the Habitat Area Project. Currently, the only habitat Figure 1 appears to show is the tallgrass prairie and the remainder of Figure 1 appears to show a landscape plan or individual planting plan.

Response: Agreed. As described in the response to General Comment No. 1, a variety of FEMP habitats will be represented. As noted in the response to General Comment No. 1, the project was designed to incorporate elements of each plant community presently or formerly occurring in southwestern Ohio, including:

- Old Field Vegetation
- Old Field Scrub-Shrub
- Hedgerow
- Successional Hardwood Forest
- Beech-Maple Forest
- Oak-Hickory Forest
- Palustrine Scrub-Shrub Vegetation
- Palustrine Forested Vegetation
- Tallgrass Prairie
- Tallgrass Prairie Savanna

As noted in the comment, the plan was indeed prepared as a planting plan, using a format typically used in working landscape drawings prepared for use by installation contractors. The tallgrass prairie seeding area was shaded to show the contractor

where the seed mix will have to be broadcast. A conceptual plan, outlining where each of the plant communities would be established, was prepared internally but not included with the work plan.

Action: As noted in the response to General Comment No. 1, Section 2 of the work plan will be expanded to include a separate figure identifying where each plant community will be established within the project. This information will not, however, be superimposed over the planting plan, as it will make it too busy for practical use.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.2.1 Page #: 5 Line #: 1 and 2
Original Specific Comment #: 7

Comment: The text states that tree saplings and seedlings will be obtained from "local stock." The text should clarify that the saplings and seedlings will be of local genotypes, grown and collected from the local geographic area.

Response: The specifications prepared to accompany the revised work plan states that tree saplings and other plant material would have to be conditioned to grow in the U.S. Department of Agriculture Hardiness Zone 6, which includes southwestern Ohio. It is not the intent of DOE-FEMP to necessarily limit the project to plant material raised locally from the wild vegetation of southwestern Ohio. Few nurseries are so specialized to a small geographic area. Such a restriction would severely limit what species would be available and would require that much of the material be contract grown from seed, requiring prohibitively high expense and delay. The genotypes of any plant material meeting the above specification would survive and function normally in the project, provided that the plant material is properly installed and maintained.

Action: The specifications for installing plant material in the project will not be changed in response to this comment. The planting specification will be appended to the revised work plan.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.2.3 Page #: 5 Line #: 16
Original Specific Comment #: 8

Comment: The text states the center of the public access area will consist of a restored tallgrass prairie. Figure 1 shows trees in the restored tallgrass prairie habitat area. Typically, tallgrass prairie is not characterized by the presence of trees. The habitat represented within the center of the public access area in Figure 1 appears to resemble a savannah more than a tallgrass prairie. The text and figure throughout the work plan should be revised to address this issue.

Response: The plan was designed to include both tallgrass prairie and tallgrass savanna. The resettlement vegetation of southwestern Ohio is thought to have been a mosaic of deciduous forest, oak woodland, tallgrass savanna, and tallgrass prairie. Transitions from forest to tallgrass prairie were thought to have been gradual, comprising ecotones from dense deciduous forest, to grove-like woodland dominated by oaks with a groundcover of grasses, to tallgrass savanna dominated by grasses with scattered oaks, to tallgrass prairie with few or no trees (SER, 1997). The plan calls for establishment of tallgrass prairie without trees in the northern part of the area enclosed within the trail, and for tallgrass prairie with scattered oaks in the southern part. This southern

part would give users of the trail a glimpse of the tallgrass savannah that once occurred in the region.

Action: See Action for Specific Comment No. 1

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.2.3 Page #: 5 Line #: 18
Original Specific Comment #: 9
Comment: The text states that the replica of the larger tallgrass prairie is viewable from the northern overlook. If possible, Figure 1 should show the location of the proposed larger restored tallgrass prairie in relation to the referenced overlook. As previously mentioned in Specific Comment #5, this overlook should be referred to as the "western overlook."

Response: Detail of Figure 1 would be lost if the scale were decreased to show the locations of various research plots. A separate figure is required.

Action: Develop a new figures that illustrates the location of the Habitat Area Project in relation to all of Area 8, Phase I.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.2.3 Page #: 5 Line #: 18 and 19
Original Specific Comment #: 10
Comment: The text states that a combination of big bluestem, little bluestem, and Indiangrass will be planted at the densities shown in Table 1. The text should state that annual rye grass will also be planted with these grasses as a nurse crop. In addition, the Table 1 recommendation of a 32-pound per acre native grass planting rate of 10 to 12 pounds per acre and an annual rye nurse crop planting rate of 10 pounds per acre would provide a favorable mix when planting grasses and forbs by seeding. The text should be revised accordingly.

Response: In response to General Comment No. 1b of Ohio EPA, DOE-FEMP has agreed to include Canada Wild Rye as a nurse crop. Canada Wild Rye is indigenous to southwestern Ohio, whereas annual ryegrass is the Eurasian origin. As noted by Ohio EPA, Canada Wild Rye has shown promise as a nurse crop in recent field research (Whitney, 1997).

DOE-FEMP acknowledges that the 32 pound per acre seeding rate is substantially greater than typical prairie grass seeding rates. However, the area of tallgrass prairie (and tallgrass savanna) proposed for the project is very small, less than 10,000 square feet. Furthermore, successful establishment of grass cover during the first growing season following seeding is important to the public demonstration objectives of the project. The higher seeding rate will reduce the potential for visible bare spots that will attract annual weeds during the first growing season. The slight additional expense of using higher than normal seeding rates seems justified.

Action: The tallgrass seeding rates in Table 1 of the work plan will not be changed in response to this comment. They will, however, be changed in response to the addition of Canada Wild Rye to the mix in response to the comment made by Ohio EPA.

Commenting Organization: U.S. EPA — Commentor: Saric
Section #: 2.2.3 — Page #: 5 — Line #: 19 and 20
Original Specific Comment #: 11

Comment: The text states that prior to seeding, all existing vegetation will be cleared using an application of herbicide. As mentioned in General Comment #4, the text should provide more detail regarding site and soil preparation, including herbicide application. Because herbicides kill only actively growing weeds, areas such as old fields, which probably contain a variety of perennial weeds, may require more than one herbicide application. The text should also discuss any soil preparation activities that will be undertaken after herbicide application.

Response: Only one herbicide application is planned over the area proposed for establishment of tallgrass prairie and tall savanna. Any subsequent application would kill or injure the desired indigenous plants that have been established. It is expected that annual weeds will germinate during the first growing season. It is hoped that the densely seeded grasses will effectively compete against the annual weeds. The indigenous prairie grass species selected for the seed mix in Table 1 are relatively aggressive (SER, 1997) and should thus grow vigorously despite some competition from annual weeds. DOE-FEMP will assign a restoration ecologist to evaluate the grass stand after each of the first three growing seasons to evaluate whether additional measures have to be taken to ensure dominance by desired plant species. Such additional measures could include off-season mowing (using a hand mower), spot application of herbicide, or spot hand weeding.

Action: As noted in the response to General Comment No. 4, the text in Section 2 of the work plan will be expanded to discuss the proposed approach for site and soil preparation prior to planting indigenous vegetation. The Specifications that will be presented as an attachment to the work plan will also provide pertinent details.

Commenting Organization: U.S. EPA — Commentor: Saric
Section #: 2.2.3 — Page #: 5 — Line #: 20 to 22
Original Specific Comment #: 12

Comment: The text states that once grasses are established, perennial wildflowers will be planted at the quantities and locations indicated in Figure 1. The text provides no discussion of what is meant by "once the grasses are established." A specific height for the grasses should be listed instead (such as 4 to 6 inches). In addition, it is strongly suggested that additional erosion control measures, such as lightly mulching the cleared areas with clean straw or marsh hay, be implemented after native grass seeding.

Response: DOE-FEMP anticipates seeding the prairies grasses in the fall of 1998 and then planting the nursery-raised forbs in the following growing season (1999). The schedule will provide an opportunity to evaluate how well the seeded grasses germinated in the spring. The forbs can be planted any time after the grass germination is found to be satisfactory. The grass does not have to attain any minimum height or other stage of development.

The Eurasian pasture grass turf presently occupying the tallgrass prairie site will be treated with a broad-spectrum postemergence herbicide in preparation for seeding the prairie grasses. The site will not be plowed. Thus the roots of the dead pasture grasses should adequately stabilize the surface soils unit the prairie grasses germinate. The

process resembles that of no-till cropping, which involves killing weeds with a herbicide at planting time rather than plowing. DOE-FEMP acknowledges that a straw mulch would have been necessary if the soils were to be plowed first.

Action: The text in Section 2.2.3 of the work plan will be modified to state that the forbs will be planted out in the growing season following fall seeding of the prairie grasses, as soon as the prairie grass germination has been determined to be successful.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.3 Page #: 5 Line #: 25
Original Specific Comment #: 13
Comment: The text should incorporate watering into the maintenance of transplanted trees and shrubs, particularly during the first growing season.

Response: The project has been designed using native plant material that is hardy in the climatic conditions of Southwestern Ohio. There are no plans to introduce an irrigation system or to have scheduled watering, because the intent of this project is to be a natural landscape with minimal maintenance.

However, DOE-FEMP recognize that, should any plant material be established prior to September 15 or otherwise during exceptionally dry conditions, that supplemental watering will be necessary to sustain most of the plant material. The installed vegetation will be routinely monitored by a restoration ecologist, who will determine whether supplemental watering is necessary.

Action: Revise Section 2.3 to include the following text: "Scheduled watering of the project will not be necessary once the vegetation is established. The plant material selected for this project are hardy and self-maintaining."

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 2.3 Page #: 6 Line #: 8 to 10
Original Specific Comment #: 14
Comment: The text states that mowing may be required a number of times during the first growing season and on a less frequent basis for the next couple of years. The text should establish a more quantifiable mowing schedule and indicate that the purpose of mowing is to control weeds. In addition, the text should discuss the option of prescribed burning as a weed control method.

Response: As noted in Section 2.3 of the work plan, mowing of the tallgrass prairie will be performed on an as-needed basis, as determined by DOE-FEMP. Mowing may be needed after the first one or two growing seasons to help suppress the establishment of old field vegetation. Once the tallgrass prairie vegetation is well established, occasional infrequent mowing will be necessary to prevent the establishment of woody shrubs and saplings through the natural successional process. The presettlement vegetation is thought to have required periodic fire and grazing (by bison and other wild animals) to avoid succession to forest, especially in the more humid eastern range of these communities (SER, 1997). DOE-FEMP doe not wish to conduct prescribed burns within the project due to the proximity of nearby private residences and fire sensitive vegetation.

Action: Revise Section 2.3 to include the above discussion regarding mowing and prescribed burns.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: 4.1 Page #: 9 Line #: 17 and 18
Original Specific Comment #: 15
Comment: The text states that erosion and sedimentation controls will consist of silt fences at the locations shown in the attached project drawings. The silt fence locations do not appear to be shown in Figure 1. In addition, as discussed in Specific Comment #12, additional erosion control measures in the form of clean straw or marsh hay mulching should be implemented in seeded areas.

Response: Standard sediment and soil erosion control measures will be taken as necessary to prevent soil erosion in the project. Other than in the immediate vicinity of the parking lot, surface soils and leaf duff will be left undisturbed so as not enough soil erosion.

Action: A drawing will be added to the work plan showing the locations of specific sediment and soil erosion control activities.

Commenting Organization: U.S. EPA Commentor: Saric
Section #: Figure 1 Page #: NA Line #: NA
Original Specific Comment #: 16
Comment: Figure 1 indicates a rather "boxy" trail layout. Southeast of the gravel parking lot, the trail cuts across what appears to be about a 20 percent slope. To minimize potential erosion impacts, some consideration should be given to reconfiguring the trail in a southerly loop between the existing tree canopies along existing contours instead of against them. An "S-shaped" trail extending south along the contours to the area near the cluster of six Allegheny blackberries and then bending beneath the existing tree canopies back to the original trail would provide additional aesthetic qualities and reduce potential erosion impacts. In addition, Figure 1 lacks detail in a number of areas. The figure should (1) label Paddys' Run Road, (2) label the elevations of additional contour lines, (3) show different line symbols for any existing and any proposed contour lines and include the symbols in the legend, (4) indicate what the symbol on the nonmulched portion of the trail represents and include it in the legend, (5) include the symbol that appears to indicate an intermittent stream in the legend, and (6) indicate Habitat Area Project boundaries and any ecological research plot boundaries.

Response: The layout of the trail was initially designed in anticipation of using a combination of elevated boardwalks and grasscrete, a polymeric matrix into which grass is seeded in areas that will experience heavy foot or light vehicular traffic. Engineering constraints associated with use of these material prevent having frequent and gradual curves in the route. Since the plan was initially prepared, DOE-FEMP has decided to mulch the trail instead of using boardwalks or grasscrete. Thus the layout will be modified to show more natural curves where the trail changes direction. Where steps will be necessary because of the grade, railroad ties will be placed parallel to the grade to form steps.

The trail route was selected to maximally display the various indigenous plant communities that will be created in the project, while minimizing impacts to existing tree cover and encroachment onto the steepest slopes. Optimal display of the site does,

however, require that some trail segments cross grades as high as 20 percent. As indicated above, these trail segments will be stepped. Design drawings will be added to the work plan that shows how the trail steps will be constructed.

The route selected for the trail did not cross the area to be planted with the six blackberry buses because of the need to protect several existing trees in that area. The large tree just north of the proposed blackberry cluster is a large red maple over 30 inches in diameter at breast height. Several limbs on the tree have experienced severe dieback due to unknown cause. There are also several dead American elms very close to that location. If the trail were constructed there, the red maple and dead elms would have to be removed to avoid the danger of injury from falling limbs to trail users. That would be unfortunate because the dead trees and limbs provide excellent roosting sites for indigenous birds and provide additional aesthetic interest. The designated route for the trail will allow users to easily see into this area of valuable old field habitat without exposing them to possible injury from existing trees in the area.

In response to the comments addressing labeling on the plan, the plan will be revised to label Paddys Run Road, to label additional contour elevations, to show both existing and proposed contours, to distinguish between stepped and unstepped segments of the trail, and to include an intermittent stream symbol.

The plan only shows planting location for the public access areas of the project. Ecological research plot boundaries will be included.

Action: Where practical, the route for the trail will be slightly modified to include gentle curves where it presently shows sharp turns. A detail will be provided in the work plan that shows the proposed steps. The revised plan will label Paddys Run Road, show elevations of additional contours, show both existing and proposed contours, indicate symbol in the legend of nonmulched sections of the trail, and include an intermittent stream symbol in the legend and show ecological research plot boundaries.