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# VEGETATION MANAGEMENT PLAN

## Berkeley Meadow

### Eastshore State Park

#### Introduction

Eastshore State Park is located on the eastern shoreline of the San Francisco Bay between the Oakland-Bay Bridge on the south and the Marina Bay area of Richmond on the north, a distance of approximately 8.5 miles (Figure 1, Appendix A). The park covers a total of approximately 2,262 acres, of which 260 acres are upland (i.e., above the mean high tide line) and the remaining 2,202 acres are tidelands.

Over the past century and a half, extensive shoreline modifications and the deposition of debris and fill have resulted in the loss of as much as 90% of the wetlands and tidal marshes that once edged the Bay. As a result of years of effort on the part of various citizens and local organizations, the Eastshore State Park property was acquired with the purpose of protecting the area's natural, cultural, and scenic resources while providing the public with waterfront open space and appropriate recreational opportunities.

#### Project Location

This Vegetation Management Plan has been prepared for the Berkeley Meadow (Meadow) area of Eastshore SP. The site is located west of I80 and immediately north of University Avenue in the City of Berkeley. The North Basin is at the northern boundary of the site, Marina Boulevard near the Berkeley Marina is on the west, and West Frontage Road forms the eastern boundary (Figure 2, Appendix A). The Berkeley Meadow site encompasses approximately 75 acres.

#### Background

##### SITE HISTORY

The area now occupied by the Berkeley Meadow property was once part of San Francisco Bay. In the mid-1800s, the shoreline was located east of the existing I80 freeway at a location between Eastshore Highway and 2<sup>nd</sup> Street (CHNMB Associates, 1981). In 1908, the City of Berkeley operated a garbage incinerator at Fleming Point, but by 1923, Berkeley residents had had their fill of the smell and the cost of operating the incinerator and approved a plan to bury their garbage in a "fill and cover" landfill (LSA, et al., 2001). According to historic aerial photos (ERM and Erler & Kalinowski, 1998) by 1953 the eastern half of Berkeley Meadow was mostly filled. By 1966, the remainder of Berkeley Meadow was filled and landfilling was now occurring in the area of the current Cesar Chavez Park. Filling along the East Bay shoreline finally ceased in the 1980s. (See Figure 7, Appendix A, for historic shorelines.)

## Existing Conditions

### VEGETATION

Currently, a large portion of the Berkeley Meadow site supports an upland ruderal scrub habitat type, consisting predominantly of nonnative, and in some cases, highly invasive plant species such as fennel (*Foeniculum vulgare*) with openings dominated by nonnative annual grasses. Some other common nonnative plant species occurring in the Berkeley Meadow uplands include teasel (*Dipsacus* sp.), wild radish (*Raphanus sativus*), common plantain (*Plantago major*), cheeseweed (*Malva* sp.), bindweed (*Convolvulus arvensis*), and many others. The native coyote brush (*Baccharis pilularis*) is also a common component of the ruderal scrub habitat on the site. The majority of the wetter areas within the Berkeley Meadow are dominated by nonnative plant species such as curly dock (*Rumex crispus*), Himalayan blackberry (*Rubus discolor*), bristly ox-tongue (*Picris echinoides*), swamp grass (*Crypsis schoenoides*), and bermuda grass (*Cynodon dactylon*). Several of the wetland areas within the Berkeley Meadow are dominated by native willow species (*Salix* spp.). Other native wetland plant species noted in the seasonal wetlands include cattails (*Typha* sp.) fathen (*Atriplex triangularis*), and cocklebur (*Xanthium strumarium*).

There are 17 sensitive plant species that have occurrence records in the California Natural Diversity Database (CNDDDB, 2001) for the general vicinity of the Berkeley Meadow project site. According to botanical information gathered by LSA for preparation of the Resource Inventory for Eastshore State Park, no sensitive plant species are known to occur on the Berkeley Meadow site and the likelihood of occurrences there is low (LSA, 2001).

### WILDLIFE

The ruderal scrub at the Berkeley Meadow of Eastshore SP is a valuable wildlife habitat, particularly for bird species. Two sensitive bird species are known to use the Berkeley Meadow. They are the northern harrier (California Dept. of Fish and Game Species of Special Concern), which currently nests in the northwest corner and central portion of the site, and the white-tailed kite (California Dept. of Fish and Game Fully Protected Species) that forages at the Meadow. Other species of birds using the site include the red-winged blackbird, mourning dove, house finch, song sparrow, golden-crowned sparrow, white-crowned sparrow, California towhee, American crow, Canada goose, American kestrel, western meadowlark, ruby-crowned kinglet, several species of gull, Anna's hummingbird, belted kingfisher, and Brewer's blackbirds (Shafer and Seidman, 2003). Additionally, species of water birds such as the cinnamon teal have been known to use the seasonal wetlands of the Berkeley Meadow when ponded water is present (C. Greenberg, 2003).

Amphibian and reptile species that typically use ruderal scrub habitat include Pacific treefrog, western fence lizard, western terrestrial garter snake, and gopher snake (LSA, 2001). Typical mammal species usually associated with this habitat type include native species such as the meadow vole, western harvest mouse, California ground squirrel, Botta's pocket gopher, and black-tailed hare, as well as the nonnative Virginia opossum and house mouse.

### SUBSTRATE

The existing substrate at the Berkeley Meadow consists of unconsolidated artificial fill material of variable composition, including sandy and clayey soils. The upper surface is highly compacted and dusty, indicating a prevalence of fines. Only occasional pieces of trash are observed at the surface (Martin, 2003). In six soil borings conducted by Erler & Kalinowski, Inc. (1998) the fill soils are described as silty clay, silt, sandy silt, or silty sand. Interspersed debris is described as wood fragments, glass fragments, broken bottles, concrete, paper,

metal, and wire. These borings were all drilled to a total depth below grade of 13 feet. The contact between the base of the fill and top of native material (bay mud) was interpreted at 10.5 to 11.5 feet below grade.

## **Project Description**

### **Project Components**

The proposed project for the Berkeley Meadow of Eastshore SP would provide seasonal wetland and upland native habitat enhancement and protection, trail development, installation of fencing, and interpretive, regulatory, and entrance signage. The project will provide a large protected central portion of the Meadow to accommodate foraging and an undisturbed nesting area for raptors. Visitor access will be through a fenced perimeter and interior trail system and off-trail access will be prevented in order to minimize disturbance to wildlife.

Hazardous material reports will be reviewed and additional studies conducted, if necessary, to determine the safety of the site with regard to soil-disturbing activities such as exotic plant removal, planting of native plant species, and grading activities. The project would also involve the removal of an existing asphalt roadway and removal of exposed construction or other debris from the site. If extensive amounts of debris are identified, the exposed debris would be capped and adjacent areas graded.

Seasonal wetland enhancements may include some or all of the following components: removal of nonnative plant species and revegetation with native seasonal wetland plant species, enlargement of existing depressions, and creation of new depressions followed by planting with native wetland plant species. Prior to the commencement of any of these activities, sensitive plant and wildlife surveys will be conducted at the appropriate season for making determinations of presence or identification.

Upland habitat enhancement may include some or all of the following components: removal of nonnative plant species, placement of fill on upland areas and grading according to approved grading plan for the site, and revegetation with upland plant species that are native to the area. Prior to these activities, sensitive plant and wildlife surveys will be conducted at the appropriate season for making determinations of presence or identification, and to develop measures to avoid impacts to those species. Also, a topographical survey will be conducted and a grading plan developed prior to the placement of fill on the site.

### **Phased Approach**

Due to funding constraints and to minimize disturbance to wildlife using the site, the Meadow enhancement work will be accomplished in a series of phases (Figure 2, Appendix A), with each phase being planned and completed over a period of approximately three to four years. Planning work on Phase I is in progress. Planning and implementation of future phases will commence as funding allows.

This phased approach will ensure that habitat changes occur gradually, allowing for continued wildlife use of remaining existing habitats until revegetated areas become more established and new habitats are utilized. Phasing will also allow the Department of Parks and Recreation (DPR) to monitor and evaluate the success of the revegetation effort of the early phases, and adapt management strategies accordingly, prior to work on future phases.

## Project Goals and Objectives for all Project Phases

The primary goals and objectives for all phases of the Meadow restoration project are to establish topography and native vegetation on the site to improve wildlife habitat, to protect and enhance views, and to provide a recreational experience that is conducive to habitat and wildlife protection goals.

### Types of Habitat to Be Created or Enhanced

#### SEASONAL WETLAND

Seasonal wetlands currently exist on the site in a compromised condition due to the presence of dense vegetation composed predominately of weedy, nonnative plant species. The proposed project will remove nonnative plant species from existing wetlands and replace these with plant species that are native to similar habitats occurring in the general vicinity of the project site. The creation of new seasonal wetlands, and the enlargement of existing wetlands, are also possible components of the proposed project.

Plant species considered suitable for planting in seasonal wetland habitats at the Berkeley Meadow site include, but are not limited to:

<b>Common Name</b>	<b>Scientific Name</b>
rush	<i>Juncus bufonius</i> var. <i>congestus</i>
rush	<i>Juncus balticus</i>
rush	<i>Juncus occidentalis</i>
rush	<i>Juncus patens</i>
rush	<i>Juncus phaeocephalus</i>
arroyo willow	<i>Salix lasiolepis</i>
spearscale	<i>Atriplex triangularis</i>
umbrella sedge	<i>Cyperus eragrostis</i>
saltgrass	<i>Distichlis spicata</i>
cattails	<i>Typha</i> sp.
button-celery	<i>Eryngium armatum</i>
sedge	<i>Carex densa</i>
sedge	<i>Carex subbracteata</i>
sedge	<i>Carex tumulicola</i>
tules	<i>Scirpus</i> sp.
phyla	<i>Phyla nodiflora</i> var. <i>nodiflora</i>

**TRANSITIONAL HABITAT ZONE**

The transitional habitat zone will include the habitat and species that occur in between the seasonal wetland areas and upland areas. The conditions in this zone are not as moist as those occurring in the wetland depressions and not as dry as those in more upland areas.

Plant species considered suitable for planting in the transitional habitat zone at the Meadow site include, but are not limited to:

<b>Common Name</b>	<b>Scientific Name</b>
hairgrass	<i>Deschampsia danthonioides</i>
willow dock	<i>Rumex salicifolius</i>
willow	<i>Salix</i> sp.
hedge nettle	<i>Stachys ajugoides</i> var. <i>ajugoides</i>
Douglas' mugwort	<i>Artemisia douglasiana</i>
California figwort	<i>Scrophularia californica</i>

**UPLAND HABITAT**

Upland habitat at the Meadow currently is composed of ruderal scrub habitat. Enhancement of the upland habitat will include the placement of fill on the existing substrate, contouring that fill, and planting it with plant species that are native to upland sites in the surrounding area. This is consistent with the General Plan for Eastshore SP, which states that DPR will enhance the coastal scrub habitat by removing noxious weeds and planting locally native species at the Meadow. Plant species considered suitable for planting in the upland habitat at the Meadow site include, but are not limited to:

**SHRUBS:**

<b>Common Name</b>	<b>Scientific Name</b>
coyote brush	<i>Baccharis pilularis</i>
California sagebrush	<i>Artemisia californica</i>
sticky monkey flower	<i>Mimulus aurantiacus</i>
toyon	<i>Heteromeles arbutifolia</i>
lizard tail	<i>Eriophyllum staechadifolium</i>
lupine	<i>Lupinus chamissonis</i>
California lilac	<i>Ceanothus</i> sp.
California buckwheat	<i>Eriogonum fasciculatum</i>

## HERBACEOUS:

<b>Common Name</b>	<b>Scientific Name</b>
wildrye	<i>Leymus triticoides</i>
meadow barley	<i>Hordeum brachyantherum</i>
California brome	<i>Bromus californicus</i>
blue wildrye	<i>Elymus glaucus</i>
needlegrass	<i>Nassella pulchra</i>
California poppy	<i>Eschscholzia californica</i>
yarrow	<i>Achillea millefolium</i>
beach aster	<i>Aster chilensis</i>
showy tarplant	<i>Hemizonia corymbosa</i>
mules ears	<i>Wyethia angustifolia</i>
gumplant	<i>Grindelia sp.</i>
western goldenrod	<i>Euthamia occidentalis</i>
milk maids	<i>Cardamine californica var. integrifolia</i>
coast tarweed	<i>Madia sativa</i>
lotus	<i>Lotus purshianus var. purshianus</i>
willow herb	<i>Epilobium brachycarpum</i>
blue-eyed grass	<i>Sisyrinchium bellum</i>
nightshade	<i>Solanum umbelliferum</i>

### **Wildlife Considerations**

Habitat enhancements at the Meadow will be made with the goal of improving habitat for wildlife species. This will be accomplished by providing habitat that is composed of plant species that are native to the area. The structure of a habitat is also important to wildlife usage as structure can provide areas for nesting and cover from predators. The goal for the Meadow habitat enhancements will be to create appropriate habitat structure for wildlife usage in the newly planted areas and to accomplish that using plant species native to the area. All habitat enhancement work at the Meadow will be accomplished using a phased approach so as to allow continued wildlife use of the site.

### **General Methodology**

#### **Health and Safety Concerns**

The Meadow site was filled from the 1930s to the 1940s using construction debris and municipal waste (RWQCB, 1998). Since there were no restrictions on the type of waste allowed, potentially hazardous substances were disposed of along with the municipal garbage and inert construction debris. Chemicals identified during site assessment activities that exceeded Action Levels for Eastshore SP in soil and groundwater included metals (lead, mercury, arsenic, chromium, and zinc), petroleum hydrocarbons (diesel, gasoline, and components such as benzene), oil and grease, and volatile and semivolatile organic compounds (such as benzo(a)pyrene).

Slag material was detected at the Meadow, with the highest concentration (based on a magnetometer survey) in the north-central area (Tetra Tech, 1995). Two samples (one composite sample of foundry slag and a single sample of kiln brick) were sampled and

analyzed. The foundry slag contained total chromium (and possibly some chromium VI<sup>1</sup>) and levels of copper and nickel above the action levels for ecological receptors. Selenium was just under the action level. No results for the single kiln brick sample exceeded action levels for human or ecological receptors.

Four landfill gas samples collected at the Meadow by Tetra Tech (1995) contained methane, methylene chloride, chloroform, benzene, toluene, xylene, PCE, and 1,1,1 TCA. Three of the four samples required dilution due to hydrocarbon interference.

In general, surface soil samples did not indicate significant environmental impacts (Catellus, 1996). Based on analytical results and the findings of the Remediation and Risk Management Plan (ERM, Erler & Kalinowski, 1998) the RWQCB required soil remediation at the Meadow for lead and benzo(a)pyrene<sup>2</sup> concentrations in surficial soil at three locations where concentrations of those analytes were above Regional Park Preliminary Remediation Goals (PRGs). From these three areas, approximately 210 cubic yards of soil were disposed of offsite as Class I and II waste; the resulting excavation was backfilled and capped with two feet of clean gravel fill (ERM, 1998). The three remediation areas may not be the only areas where contaminants are above the PRGs. The nature of the site and the variable types and placement of wastes makes it difficult to conclusively identify every "hot spot" since every square foot of soil has not been sampled. Therefore, any future work at the site may uncover additional areas where chemicals are above the PRGs.

The RWQCB issued a Certificate of Completion (COC) in 1998 stating that the site investigation and remedial action at the site have been accomplished. The COC is subject to the conditions in the RWQCB Site Cleanup Requirements set forth in Order 98-072. This order requires implementation of the May 1998 Remediation and Risk Management Plan (RRMP) by ERM & Erler & Kalinowski (1998). Appendix B and D of the RRMP describe procedures for future work at Eastshore SP by park personnel. Appendix B states that *"Following acquisition of the Properties, two types of park maintenance and construction warrant implementation of enhanced health and safety measures for park workers or others engaged in maintenance or construction activities in remediation or risk management activities in localized areas of concern."* Two different cases are discussed below:

- 1) If workers are engaged in landscaping or other surface-disturbance activities, they should have training on worker safety procedures applicable to the constituents present in these soils (lead, nickel, zinc, and cadmium, for example). Since the primary exposure pathway is inhalation or ingestion, worker safety can be maintained through the use of dust masks and proper hygiene (such as washing hands before eating or

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<sup>1</sup> Chromium occurs in several oxidation states ranging from -2 to +6, but is most frequently found in the trivalent (+3) and hexavalent (+6) forms. Hexavalent or chromium VI rarely occurs naturally, but instead results from human-made sources (rust inhibitors, metal plating). This form of chromium is highly toxic and is a suspected human carcinogen (US EPA, 1998).

<sup>2</sup> Benzo(a)pyrene (BAP) is a polycyclic aromatic hydrocarbon with a chemical formula of C<sub>20</sub>H<sub>12</sub>. BAP is not produced or used commercially, but results from the incomplete combustion of organic materials. BAP is found in gasoline and diesel engine exhaust, emissions from coal-, oil-, and wood-burning stoves and furnaces, cigarette smoke, industrial smoke and soot, incinerators, asphalt processing, and cooked foods, especially charcoal-broiled foods. Short-term exposure to BAP can result in red blood cell damage, anemia, and immune-system suppression. Long-term exposure can result in developmental and reproductive effects, and cancer (US EPA, 2003).

drinking). Care should be taken to prevent erosion or wind dispersion of soils into adjacent surface water and the Bay.

- 2) For deeper excavations (greater than one foot), enhanced worker safety methods should be taken as appropriate to protect against exposure. Prior to any excavation a site-specific health and safety plan should be prepared addressing site-specific contaminant concerns. Care should be taken to eliminate migration of contaminants via wind, surface water, or collection on personnel and equipment. Soils should be kept damp at all times and stockpiled soils should be placed on and covered by plastic sheeting to avoid airborne dust problems.

These two scenarios do not specifically address removal of exotic vegetation, which could be accomplished in various ways. However, if soil is disturbed to remove vegetation, the measures above should be followed. Placement of clean fill over the exposed soil should be implemented as soon as possible, or the soil should be covered with plastic sheeting to prevent erosion of surface soils. In addition, the RWQCB should be notified of any proposed work that involves soil disturbance. RWQCB concurrence to disturb those areas should be obtained in advance (DPR, 2002).

#### **GOALS AND GUIDELINES FOR OPERATIONS FROM THE EASTSHORE STATE PARK GENERAL PLAN**

The Eastshore SP GP sets the following goals:

- OPER-7 If design, improvement, and/or development plans involve intrusive activities, available chemical data should be reviewed for those specific locations. Depending on the scope and extent of intrusive activities, additional testing in those areas may be warranted to evaluate soil, groundwater, and soil-gas conditions that may be encountered. Furthermore, available data should be provided to the contractors to assist with worker health and safety considerations during actual soil and groundwater handling activities.
- OPER-9 If design, improvement, and/or development plans involve wetlands creation or restoration, available chemical data should be reviewed for those specific locations. Additional testing in those areas may be warranted to evaluate the suitability of that soil for on-site reuse and/or off-site disposal. Chemical data should be compared with sediment screening and beneficial reuse criteria established by the Regional Water Quality Control Board (RWQCB) and such plans should be approved by the appropriate regulatory agencies.
- OPER-10 If design, improvement, and/or development plans involve work in the risk and remediation areas described in the Resource Inventory, the RWQCB should be notified of those plans and RWQCB concurrence to disturb those areas should be obtained in advance.

## **Site Preparation**

### **EXOTIC PLANT SPECIES CONTROL**

The first step in preparation of the site will be to remove the exotic plant species that currently exist there, with the exception of existing large trees around the perimeter of the site. Various methods may be used to accomplish this task including mowing, grading, using a brush hog, using a weed whacker, pulling or digging out plants by hand or with tools (if safety measures are followed and it is determined that it is safe to disturb the soil), using a weed torch, and/or using herbicides. The use of herbicides would not be the first approach taken to control nonnative plant species at the Meadow, but it is one method that may be used to remove the most problematic species, such as fennel. Herbicide could be applied using the following techniques: cutting plants and painting herbicide on the cut stems, cutting plants and spraying subsequent plant growth with herbicide, or spraying individual plants with a hand sprayer. Herbicides will be applied strictly by a Certified Pesticide Applicator, following the guidance and direction of a licensed Pest Control Advisor, and incorporating all safety measures and recommended concentrations. Only herbicides that are appropriate for use near water will be used in or near seasonal wetland areas. Large-scale spraying of herbicide is not a method that will be used at the Meadow.

### **PREPARATION OF SUBSTRATE**

After exotic plant species are removed or cut back on the site, a layer of fill will be placed on top of all existing upland areas and graded. No fill will be placed in existing wetlands; it will be sloped away from wetlands to avoid erosion and deposition of fill into them. The layer of fill will be a minimum of one foot deep in upland areas, but may be deeper in some areas than in others in order to create micro-topography and diversity on the site.

In some cases, the fill layer may be compressed and formed into a shallow depression. A material with low permeability may then be placed in the depression in order to create seasonal wetland conditions. These depressions would then be planted with native plant species that are appropriate for seasonal wetlands on the east shore of San Francisco Bay (see the tables above in the section Types of Habitat to Be Created or Enhanced).

## **Erosion Control**

Erosion control measures will be implemented if seeding and planting of native plant species does not occur prior to the first rainy season after site preparation. Erosion control measures may include, but are not limited to, seeding the site with a mixture of appropriate native grasses, seeding with a sterile grass seed such as "Regreen," and spreading a certified weed-free straw mulch on areas of concern.

## **Planting Strategy**

Planting for each phase will begin after the site is prepared by removing exotic plant species, placing fill on upland areas, and grading the fill. Local seed will be collected, if possible, or purchased from a local native plant nursery that collects local plant seeds. Annual plant species will be seeded into the upland areas using hand or mechanical means, including hydroseeding. Perennial plant species will be grown from seed or from plant material into young plants, or they may be purchased as container stock from a local native plant nursery that uses local plant material. These plants will be placed into holes dug into the fill material; weed control fabric may be placed around the stem and fertilizer may be added to enhance plant growth. Protective collars may be placed around plants to prevent damage from browsing. Some perennial plant species may also be seeded into the upland areas.

Planting in the existing seasonal wetland areas is dependent upon safety considerations (see above, Health and Safety Concerns) since no fill will be placed in wetland areas. Wetland plant species will be planted into seasonal wetland and transitional habitat areas following removal or cutting of existing exotic plant species. This would be accomplished by seeding with locally collected native plant seed, and/or if safe to do so, by digging holes in the wetlands and inserting young plants into them. As with upland plant species, all plant material will be collected locally and/or purchased from local native plant nurseries that use locally collected material. Protective collars may be placed around plants to prevent damage from browsing, and fertilizer may be used to enhance plant growth.

It is anticipated that volunteer work crews, and/or Civilian Conservation Corps (CCC) crews, may accomplish much of the planting work in both upland and wetland sites. Contracted labor may also be used.

### ***Irrigation Plan***

An irrigation system will be installed for Phase I restoration work at the Berkeley Meadow and possibly also in subsequent phases of the project. Irrigation of planted vegetation may be conducted for approximately three years after planting to increase chances for long-term survival. Irrigation will likely occur on a daily basis during the dry season for the first year. The frequency of watering will decrease during the rainy months, dependent upon the amount of rain that is received in that first year. During the second year, watering frequency will likely decrease during the dry months and may be discontinued during the wet months if adequate rainfall occurs and if plants do not show signs of distress. During the third year, watering frequency will likely decrease further in the dry months, and will again be discontinued during the rainy season unless plants show signs of distress from lack of moisture. Watering is expected to be discontinued completely in the fourth year after planting. The extent, frequency, and duration of irrigation may be altered in future phases to accommodate knowledge gained in earlier phases. Future phases may also be designed to eliminate need for irrigation.

## **Site Maintenance**

### **Weed Control Methodologies**

Various weed control methods may be used at the Meadow to control emergent weeds on the site (see above Site Preparation, Exotic Plant Species Control for explanation).

### **Maintenance Schedule**

Maintenance of the revegetated areas at the Meadow will be timed on a seasonal and daily basis, if necessary, to avoid impacts to nesting raptors and to minimize impacts to other wildlife species that utilize the site. Maintenance includes weed control activities (e.g., mowing, use of a weed whacker, pulling or digging plants out by hand or with tools, use of a weed torch, and/or use of herbicides), repair or upkeep of structures (e.g., trails, fencing, signage, etc.) and other activities of this nature. Weed maintenance efforts will occur on a regular basis to minimize competition to native plants from encroaching weed species. Maintenance of fencing and other structures will occur as needed to protect resources at the Meadow.

## **PHASE I ACTIVITIES**

### **Timing, Schedule, and Duration of Activities**

Construction activities for Phase I (Figure 2, Appendix A) of the project will begin around August or September of 2004 and will continue for approximately six months. The activities that will be conducted in that time will consist of the infrastructure work, clearing and grubbing of the site, fill placement, and grading/contouring. Planting and seeding of native plant species is expected to begin in the spring of 2005 and will be completed before the end of 2005. These activities will be timed or located so that they do not interfere with nesting activities of the northern harrier or peak periods of wildlife usage.

### **Funding**

State funding for implementation of Phase I will be available for three years from the date of approval. All project implementation activities will be funded from July 1, 2004 through June 30, 2007. Additional funding from Cherokee Simeon Venture II, LLC (CSV) will be used to complete the site preparation, planting, and monitoring components of the projects (see following section for details). This funding will be available for a minimum of five years beyond completion of the revegetation. Cherokee Simeon Venture II, LLC (CSV), on behalf of Simeon Commercial Properties, has agreed to fund the site preparation, wetland enhancement, planting, and monitoring tasks for the Phase I activities at the Meadow in order to meet seasonal wetland mitigation requirements for an offsite proposed project known as the Metroport Project. DPR has strict guidelines regarding the acceptance of offsite mitigations on State Park property. Since the CSV proposal falls within these guidelines, CSV will fund in part Phase I of the Berkeley Meadow enhancement project, and ensure that monitoring is successfully completed.

### **Monitoring of Phase I Revegetation**

CSV will be required to meet the mitigation and monitoring requirements and success criteria of the permitting agencies for the Metroport Project as well as DPR requirements. CSV will provide funding and/or contractors for ongoing nonnative plant removal efforts for five years in the Phase I restoration project area.

### **Methodology**

The detailed methodology for monitoring of Phase I is not yet developed. However, the methodology proposed by CSV must meet the approval of the permitting agencies for the Metroport Project, as well as DPR, prior to implementation. Components of Phase I restoration area monitoring may include, but will not be limited to, the installation of permanent or semipermanent photo-monitoring points and transect end-points. Vegetation transects, if used, would be installed and sampled according to accepted scientific methods. Vegetation baseline conditions would be sampled and/or photo-monitored just after the planting is completed with follow-up monitoring on a regular basis, at least once every six months.

### ***Planting Success Criteria***

Planting success criteria will be determined by the permitting agencies for the Metroport Project impacts and DPR. The information and data gathered during the course of the five-year monitoring effort of the Phase I restoration will enable DPR to draw conclusions regarding the successes and failures of the revegetation project at the Meadow. The data gathered and resulting management recommendations will be used by DPR to increase success and reduce costs of subsequent phases of the restoration.

### ***Adaptive Management***

If the success criteria are not met according to the requirements of the permitting agencies, adaptive management strategies will be triggered. Adaptive management strategies may include, but are not limited to: reseeding and/or replanting native plant species in areas where mortality has occurred; modifying weed-management strategies; extending the watering regime for a longer time period; improving browse-protection methods (measures to reduce damage to tender young plants by browsing animals such as rabbits); increasing fertilizing; improving erosion control, and improving protection of the overall site.

### **Duration of Data Collection**

Monitoring of the revegetation of Phase I will take place for five years after planting is completed to meet permitting agency mitigation and monitoring requirements for the Metroport Project.

### ***Responsible Parties***

DPR will be responsible for project implementation of Phase I. CSV will be responsible for the following components of Phase I: site preparation, seasonal wetland enhancements, revegetation of the site, and monitoring for five years following planting.

### ***Annual Reports***

Annual reports documenting the results of the revegetation monitoring will be prepared by CSV for Phase I of the Berkeley Meadow enhancement project for five years following the initial restoration effort. Copies of the reports will be given to the appropriate permitting agencies and to DPR.

## **SUBSEQUENT PHASES**

After completion of each phase of the Meadow revegetation, DPR will qualitatively and/or quantitatively monitor success of the planting and seeding effort, general condition of the newly revegetated site, and the extent and diversity of weed species onsite for those phases. Weed control efforts will be ongoing in all restored areas of the Berkeley Meadow. Monitoring will generally be accomplished within the context of annual resource management inspections and photopoint monitoring. More intensive monitoring is feasible and desirable should adequate funding and personnel be available.

### **Methodology**

Components of future monitoring of subsequent phases of the restoration area may include, but will not be limited to, the installation of permanent or semipermanent photo-monitoring points and transect end-points. Vegetation transects, if used, would be installed and sampled according to accepted scientific methods. Vegetation baseline conditions would be sampled and/or photo-monitored just after the planting is completed with follow-up monitoring at least once every 12 months. Monitoring photographs, data, and/or reports will be kept in the unit file. If sufficient funding and staff are available, vegetation transects or other vegetation sampling method(s) will be conducted according to commonly accepted scientific protocols.

### ***Adaptive Management***

Adaptive management will incorporate information gathered from Phase I when planning for and carrying out subsequent phases. Additional planting and seeding may be used to fill in the

vegetation gaps of previously restored areas if sufficient funding and personnel are available. Innovative and cost-effective weed control strategies will be sought for long-term maintenance of restored areas.

#### **Duration of Data Collection**

Monitoring of the site will take place for a minimum of three years after planting is completed. If additional funding is obtained for a particular phase of the project, the duration of the monitoring may be extended and/or the extent of the monitoring will be increased.

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