

99E116

4.5 PSP Cover Sheet (Attach to the front of each proposal)

Purple Loosetrife Prevention, Detection and Control Actions for the Sacramento-San
Proposal Title: Joaquin River Delta System and Associated Hydrological Units
Applicant Name: Integrated Pest Control Branch, CA Dept. of Food and Agriculture
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Amount of funding requested: \$ 338,779.47 for 3 years

Indicate the Topic for which you are applying (check only one box).

- Fish Passage/Fish Screens
- Habitat Restoration
- Local Watershed Stewardship
- Water Quality
- Introduced Species
- Fish Management/Hatchery
- Environmental Education

Does the proposal address a specified Focused Action? yes no

What county or counties is the project located in? Butte, Contra Costa, Fresno, Nevada, Placer, San Joaquin, Sacramento, Stanislaus, Shasta, Solano, Sonoma, Sutter, Tehama, Yolo and Yuba.

Indicate the geographic area of your proposal (check only one box):

- Sacramento River Mainstem
- Sacramento Trib: _____
- San Joaquin River Mainstem
- San Joaquin Trib: _____
- Delta: _____
- East Side Trib: _____
- Suisun Marsh and Bay
- North Bay/South Bay: _____
- Landscape (entire Bay-Delta watershed)
- Other: _____

Indicate the primary species which the proposal addresses (check all that apply):

- San Joaquin and East-side Delta tributaries fall-run chinook salmon
 - Winter-run chinook salmon
 - Late-fall run chinook salmon
 - Delta smelt
 - Splittail
 - Green sturgeon
 - Migratory birds
 - Other: _____
 - Spring-run chinook salmon
 - Fall-run chinook salmon
 - Longfin smelt
 - Steelhead trout
 - Striped bass
 - All chinook species
 - All anadromous salmonids
- All of these species would suffer negative impact if purple loosetrife is not controlled.

Specify the ERP strategic objective and target (s) that the project addresses. Include page numbers from January 1999 version of ERP Volume I and II:

Strategic Objectives and Targets: Halt the introduction of invasive aquatic and terrestrial plants into Central California; Develop focus control efforts on those species where control is most feasible and of greatest benefit. (ERP Vol.1 p.420 and pp.456-459)

**Purple Loosestrife Prevention, Detection, and Control Actions
for the Sacramento-San Joaquin River Delta System
and Associated Hydrological Units**

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Participants: Steve Schoenig: Project Manager, Carri Benefield: Field Coordinator. California Department of Food and Agriculture.

Primary Collaborators: Agricultural Commissioners from the following counties will be collaborating or locally coordinating: Butte, Contra Costa, Fresno, Nevada, Placer, San Joaquin, Sacramento, Stanislaus, Shasta, Solano, Sonoma, Sutter, Tehama, Yolo, and Yuba.

Organization Type: State Government
Tax Status: Exempt
Tax Identification Number: 84-0437540

Executive Summary

Purple loosestrife is a perennial plant from the European Continent which has invaded North America. It has moved extensively throughout the wetlands of the United States causing immense ecological destruction. It is now showing up in California in a number of small, but growing, infestations that are currently not under eradication or containment. It poses an aggressive threat to almost all the wetland and riparian habitats in the CALFED focus area. This threat is of greatest concern in the Sacramento-San Joaquin Delta where there are a number of threatened and declining species due to a multitude of environmental stressors.

The following project presents a general hypothesis, based on historic evidence and anecdotal observations, that purple loosestrife is present in multiple locations in the Sacramento-San Joaquin Delta system, and furthermore, that it can be eradicated by implementing an adaptive management program which addresses each infestation with the most appropriate management technique, as determined by CDFA personnel and outside collaborators. Over a three year period, the Integrated Pest Control Branch of the California Department of Food and Agriculture will carry out a series of tasks which will result in:

- 1) Exhaustive yearly survey of the Sacramento-San Joaquin Delta;
- 2) Local eradication of loosestrife in the Delta and other hydrological units;
- 3) Focused perimeter delimitation and survey of all loosestrife infestations in the CALFED focus area;
- 4) Training of agency personnel, working in and near the Delta, to recognize purple loosestrife and other aquatic nonnative invasive species; and
- 5) Education of the boating, water fowl hunting, and similar public citizenry.

Benefits and Linkage to CALFED: If loosestrife is allowed to invade the CALFED system, all of the following attributes will suffer major negative impacts: fish, threatened and endangered native wetland plants and wildlife, interface between farm land and water, recreation opportunities, productivity and nutrient cycling, water flow and quality.

The actions contained within this proposal are fully compatible with and flow directly from the Draft Strategic Plan for the CALFED Nonnative Invasive Species Program (NISP) and the Strategic Plan for Ecosystem Restoration (ERP StratPlan). The mission of the NISP is to "Prevent establishment of additional non-native species and reduce the negative biological and economic impacts of established non-native species"(pp 6,7,12, NIS StratPlan). The goals of the NISP Strategic Management Plan are:

- (I) *Prevention* of new introductions and establishment;
- (II) *Limiting* the spread and/or establishment; and
- (III) *Reducing* harmful ecological impacts; ecosystem alteration and displacement of native species (p 2, NIS StratPlan).

This project is fully consistent with Goal 5, of the Strategic Plan for Ecosystem Restoration Program (Table 5-1, ERP StratPlan). The ERP objectives identified for this goal include: Halt the introduction of invasive aquatic and terrestrial plants into Central California (Objective 6) (p 6, ERP StratPlan) and develop focused control efforts on those introduced species where control is most feasible and of greatest benefit (Objective 9) (p 6-7, ERP StratPlan).

Project Phases and Costs: CDFA has been very recently solicited (4/5/99) to implement a "directed action" by the CALFED Non-native Invasive Species Program (NISP) for the prevention and eradication of purple loosestrife with a primary focus of detection and eradication in the Delta. This direct action will also cover detection and eradication of populations in the nearby hydrological units. The amount of the proposed direct action contract is \$201,306.00. Because the directed action is only tentative at this point, and does not address protection of the whole CALFED watershed, we have been advised to submit this proposal for the full amount of an area-wide project, but to break the proposal into two phases which separate the proposed contract for the directed action and the extra work plan to protect the whole watershed. These two phases will be referred to as **Phase I** and **Phase II**. Although this terminology connotes a temporal sequence, it actually refers to a geographic separation which reflects distance for the Sacramento-San Joaquin Delta system and the funding limitations of the directed action. The total for the entire project is \$328,779.47. The total personnel related costs are: \$240,779. Costs for other items such as travel, chemicals, transportation, educational materials, and miscellaneous equipment is \$98,000.

Monitoring and Adaptive Management: Consistent with the adaptive management approach, the CDFA and cooperators will be continuously monitoring three different aspects of the project. Evaluation of the overall treatment and detection hypotheses and the yearly tactical integrated control plan will be ongoing throughout the duration of the project. Specifically, we will be monitoring:

- 1) treatment efficacy, 2) eradication efficacy, and 3) water adjacent to certain treatments.

Collaboration: There will be local collaboration and coordination with the following groups: County Agricultural Commissioners of Butte, Contra Costa, Fresno, Nevada, Placer, San Joaquin, Sacramento, Stanislaus, Shasta, Solano, Sonoma, Sutter, Tehama, Yolo, and Yuba Counties; local CDFA Integrated Pest Control Branch District Weed Eradication Biologists; local Weed Management Areas; and the CA Department of Fish and Game, CA Department of Boating and Waterways, US Bureau of Reclamation, US Fish and Wildlife Service, US Department of Agriculture - ARS Resource Conservation Districts, Local Watershed Groups and the California Native Plant Society.

Applicant Qualifications: The Integrated Pest Control Branch has a long history of weed management actions and has taken the lead in noxious weed prevention, detection, education, and control in California. The Weed and Vertebrate Program is largely focused on the detection and eradication of A-rated, listed State Noxious Weeds. The Branch has totally eradicated 13 weed species from the state. This group surveys the entire Delta in the Fall for Hydrilla (another serious aquatic weed) and thus has the specific experience to conduct purple loosestrife detection and mapping. The Hydrilla Program is very similar, but focuses on a specific aquatic weed of special concern. This program, which has similar components/structure to our proposed Purple Loosestrife Project, has shown great success. Hydrilla has been eradicated from nine out of 17 infested counties, and is nearing eradication in the others. The specific personnel who would run the project have vast knowledge and demonstrated experience to do the job.

Project Description

The following project presents two general hypotheses, based on historic evidence and anecdotal observations: 1) That purple loosestrife is present in multiple, but small population in the Sacramento-San Joaquin Delta system and nearby hydrological units; and 2) That it can be eradicated by implementing an adaptive and integrated management program which addresses each infestation with the most appropriate management technique, as determined by CDFA personnel and outside collaborators.

Project Phases: CDFA has been very recently solicited (4/5/99) to implement a "directed action" by the CALFED Non-native Invasive Species Program (NISIP) for the prevention and eradication of purple loosestrife with a primary focus of detection and eradication in the Delta. This direct action will also cover detection and eradication of populations in the nearby hydrological units. The amount of the proposed direct action contract is \$201,306.00. Because the directed action is only tentative at this point, and doesn't address protection of the whole CALFED watershed, we have been advised to submit this proposal for the full amount of an area-wide project, but to break the proposal into **two phases** which separate the proposed contract for the directed action and the extra work plan to protect the whole watershed. These two phases will be referred to as **Phase I** and **Phase II**. Although this terminology connotes a temporal sequence, it actually refers to a geographic separation which reflects distance for the Sacramento-San Joaquin Delta system and the funding limitations of the directed action.

Proposed Work Plan

Over a three year period, the Integrated Pest Control Branch of the California Department of Food and Agriculture will carry out a series of tasks (see table 1) which will result in:

- 1) Exhaustive survey of the Sacramento-San Joaquin Delta.
- 2) Local eradication of loosestrife in the Phase I and II areas.
- 3) Focused delimitation and survey of all loosestrife infestations in the Calfed focus area.
- 4) Training of agency personnel, working in and near the Delta, to recognize purple loosestrife and other aquatic non-native invasive species.
- 5) Education of the boating, water fowl hunting, and similar public citizenry.

The first year's work will focus on:

- 1) Survey of existing populations and nearby downstream areas in Phase I and II areas.
- 2) A complete Delta survey.
- 3) Early eradication efforts for Delta resident and other small loosestrife populations.
- 4) Education and training.

The second year's work will focus on:

- 1) Continuing survey of existing populations and extended downstream areas.
- 2) A complete Delta survey.
- 3) An assessment meeting and formulation of site specific adaptive management plan.
- 4) Eradication, biological control, or containment in accordance with the adaptive management plan in Phase I and II areas.
- 5) Continued education and training.

The third year's work will focus on:

- 1) Continuing survey of existing populations and extended downstream areas.
- 2) A complete Delta survey.
- 3) Eradication and biological control in accordance with the adaptive management plan.
- 4) Continued education and training.

There will be a consistent pattern to the staffing on the project. A Senior Environmental Research Scientist will provide formal management and oversight averaging 25 billable hours per year. An Agricultural Biologist will be lead person for the field crews, multi-agency coordination, treatment coordination and perform the education activities. The Agricultural Biologist will average approximately 50% time for 3 years. The total field crew will consist of three Scientific Aids working 3 months full time during the summer. Pesticide applications and Biological Control releases will be made by trained CDFA applicators or collaborating agency personnel.

Boats and vehicles will be obtained on an as needed basis through agency in-kind loans or commercial rentals.

Adaptive Management Plan and Control Options

The first year of the plan will focus on education and survey. Upon collection of the survey data it will be possible to convene a meeting of aquatic weed control experts and interested parties to assess the size, geographical position, and environmental conditions of each population and produce a tactical Adaptive Management Plan to assign an appropriate treatment method to each population. The three main treatment options are:

- 1) *Manual and Mechanical Control*- Hand removal and/or the use of mowing/cutting implements has been found to be effective on small (<100 plants) infestations. Pulled plants should be bagged and destroyed as to not spread seed and fragments. Additional care should be taken in mechanically removing large, mature plants because soil disturbance often results in a new flush of seedlings. Regrowth from mature plants may require repeated follow-up treatments.
- 2) *Chemical Control*- Only two herbicides, that have been found to be effective in controlling purple loosestrife, are registered for use in semi-aquatic and aquatic habitats in California. They are Rodeo (active ingredient Glyphosate) and 2,4-D. Of those herbicides currently registered, Rodeo is the most environmentally benign and has been used extensively in other states and in California. There has been past use of Rodeo on CALFED funded restoration projects removing Arundo from creeks and watersheds. Registration for a third aquatically approved herbicide, Garlon 3A (active ingredient Triclopyr), selective for dicots, is currently pending.
- 3) *Biological Control*- There are currently four purple loosestrife feeding beetles permitted for release in California by the USDA and the CDFA. They are *Galerucella californiensis*, *G. pusilla*, *Hylobius transversovittatus*, and *Nanophyes marmoratus*. The Biological Control Program of CDFA has made releases of all four beetles, collected in Oregon, in 1997 and 1998.

At this point it has not been determined if any of the species have become established in California. The introduction of beetles has led to substantial reductions of loosestrife in other states. It is not known at this time whether the beetles will cause similar results in California. There is evidence that the beetles may feed on a native congener of purple loosestrife, *Lythrum californicum*, a wetlands species, which occurs throughout California.

A Special Publication of the Minnesota Department of Natural Resources has made the following recommendations for the types of treatment appropriate for different sizes of loosestrife population:

- 1) *1-20 plants* (scattered)- hand removal or selectively spot spray with herbicide.
- 2) *20-100 plants* (scattered/small clumps)- hand removal or spot-spray with Rodeo.
- 3) *100-1,000 plants* (small clumps/dense stands)- spot-spray Rodeo or broadcast-spray selective herbicide.
- 4) *>1,000 plants* (large stands cover >75% coverage)- broad-cast spray selective herbicide, biological control, when available.
- 5) *For sensitive sites* (e.g. rare plants)- hand removal or wick applications of Rodeo for small infestations and biological control, when available, for large populations.
- 6) *In areas where chemical use is prohibited*- hand removal for small infestations and biological control, when available, for large populations.

Recommendations such as the above and the judgement of the assessment panel will be used to assign a treatment method each year in accordance with the monitoring data. This is the essence of the proposed adaptive management approach.

Location and Geographic Bondaries of the Project: The only compiled distribution information on purple loosestrife is based on samples submitted to the CDFA Botany Lab over the past 50 years. Figure 1 shows the distribution of known infested townships. The summary data for the populations is in Table 2. The boundary of the Phase I and Phase II actions are also shown in Figure 1. The Phase I boundary excludes infestations not within the CALFED area and also the Butte, Shasta, and Fresno County infestations. It is clear from Figure 1 that purple loosestrife is in the Delta and gaining ground in the perimeter basins.

Table 1- Proposed Actions for Prevention, Detection, and Control Plan	
Task	Description of Task
PHASE I- Calfed Area-Wide Actions	
EDUCATION	
Task 1 - Educational brochure	Production of a educational brochure.
Task 2 - Educational outreach	Educational talks to societies, professional organizations, Weed Management Areas, Resource Conservation Districts, Etc.
GIS	
Task 3- Training of professionals	Focused education/training with professionals working in the Delta and Contiguous Basins.
DETECTION PROGRAM- Implementation of survey crews for:	
Task 4- Map vulnerable habitats (GIS analysis)	Identify and map vulnerable habitats and form priorities for detections.
Task 5 - GPS of existing sites	GPS of existing sites in Delta and Contiguous Basins.
Task 6- Delta-wide loosestrife survey	Complete detection of loosestrife Delta-wide.
Task 7- Contiguous basin survey	Focused detection in priority areas of Contiguous Basins.
Task 8 - Update GIS	Produce and update GIS maps of infestations.
ASSESSMENT	
Task 9 -Assessment	Assessment meeting of stakeholders, collaborators, and experts.
Task 10 - Produce Adaptive Management Plan	Assign appropriate form of control to each known infestation.
Task 11- Environmental consultation and planning	Environmental consultation and planning of treatments.
MANAGEMENT	
Task 12 - Implement controls	Implementation of control/management practices.
MONITORING	
Task 13- Monitor loosestrife density/control success	Survey of purple loosestrife density at all sites. Survey success and distribution of biological control agents.
Task 14- Monitor water	Water Sampling
PHASE II- Actions Beyond CalFed Watershed- Butte, Shasta, and Phase II Area Rivers	
EDUCATION	
Task 15- Educational outreach	Educational talks to societies, professional organizations, Weed Management Areas, Resource Conservation Districts, Etc.
Task 16 - Training of professionals	Focused education/training with professionals working in the Butte, Shasta, and Phase II Area Rivers.
GPS	
Task 17- GPS of existing sites	GPS of existing sites in Butte, Shasta, and Phase II Area Rivers.

Table 1 continued	
PHASE II- Actions Beyond CalFed Watershed Continued	
DETECTION PROGRAM- Implementation of survey crews for:	
Task 18- Butte, Shasta, upper river survey	Complete detection of loosestrife in Butte, Shasta, and Phase II Area Rivers.
Task 19- Update GIS	Produce and update GIS maps of infestations.
ASSESSMENT	
Task 20- Assessment	Assessment meeting of stakeholders, collaborators, and experts.
Task 21- Produce Adaptive Management Plan	Assign appropriate form of control to each known infestation.
Task 22- Environmental consultation and planning	Environmental consultation and planning of treatments.
MANAGEMENT	
Task 23- Implement controls	Implementation of control/management practices.
MONITORING	
Task 24- Monitor loosestrife density/control success	Survey of purple loosestrife density at all sites. Survey success and distribution of biological control agents.
Task 25- Monitor water	Water sampling

TABLE 2- Distribution and Abundance of Purple Loosestrife, *Lythrum salicaria*, in California by County, Number and Size of Infestations, and Date Last Surveyed. Based on historical records at Botany Lab, California Department of Food and Agriculture Plant Pest Diagnostic Center.

County	# of infestations	Size of largest infestation*	In Calif Watershed	Date last surveyed
Butte	7	1/4 acre	Yes	1997
El Dorado	1	X	Yes	1998
Fresno	1	X	Yes	1996
Lake	1	X	Yes	1995
Marin	2	X	Yes	1998
Nevada	2	1/2 acre	Yes	1992
Placer	4	X	Yes	1992
San Joaquin	1	X	Yes	1997
San Mateo	1	X	Yes	1978
Shasta	1	X	Yes	1986
Sonoma	4	1/2 acre	Yes	1998
Stanislaus	1	X	Yes	1991
Sutter	2	X	Yes	1998
Yolo	1	X	Yes	1986
Yuba	1	1/10 acre	Yes	1993
Humboldt	1	X	No	1997
Kern	1	7 acres	No	1996
Mendocino	2	X	No	1990
Santa Cruz	1	X	No	1990
Stakiyou	1	10 acres	No	1998

*X = data not available or unknown - probably small.

California Department of Food & Agriculture
Integrated Pest Control Branch - Noxious Weed Information Project

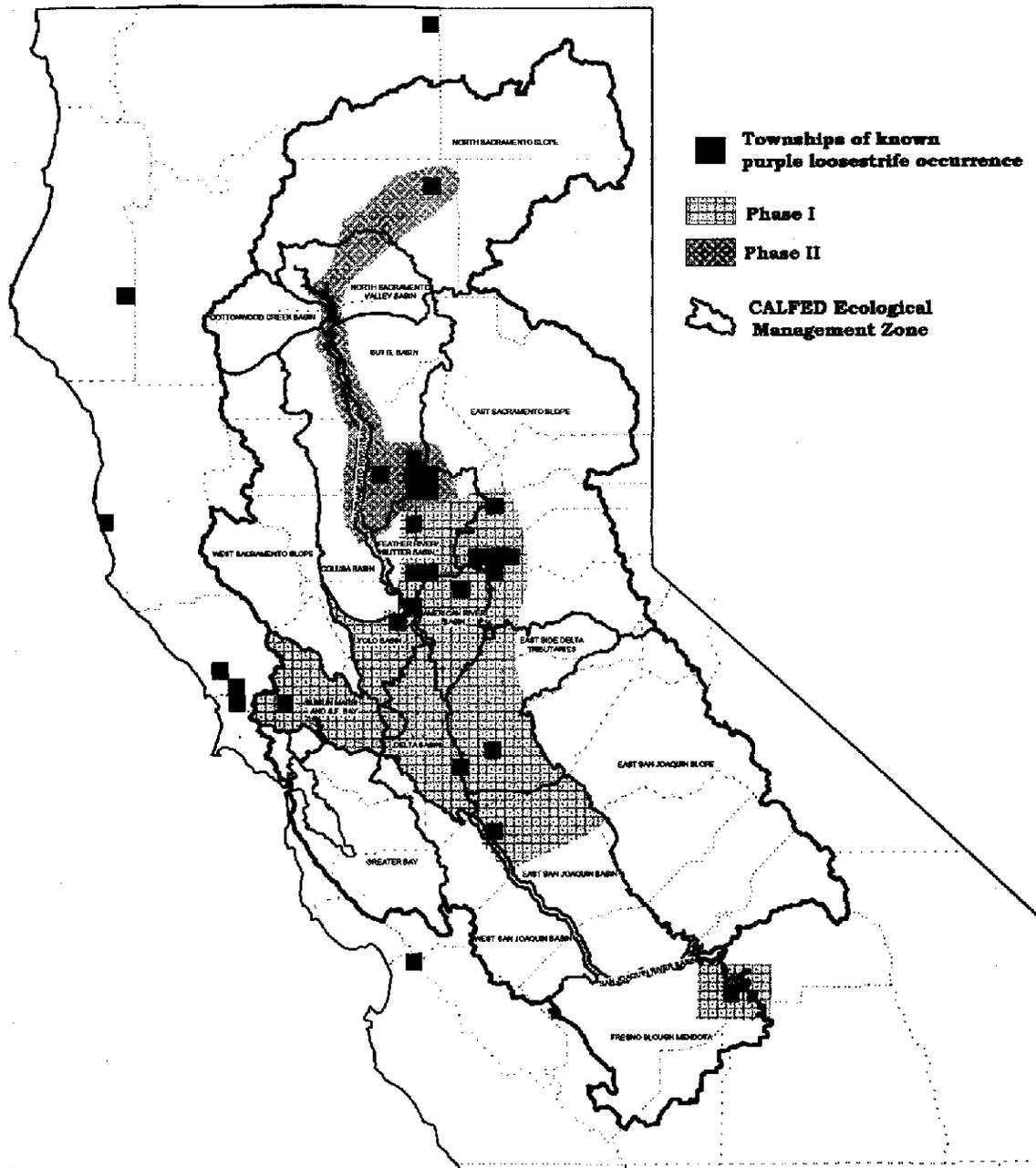


Figure 1: Map showing the Phase I and Phase II boundaries of the proposed eradication and survey of purple loosestrife, *Lythrum salicaria*, and townships of past sightings.

Ecological and Biological Benefits/Harm Prevented

Hypothesis

The distribution of purple loosestrife is currently in multiple, but small populations, in the Sacramento-San Joaquin Delta system and nearby hydrological units, based on preliminary surveys (see map, Figure 1), such that eradication, containment, and control are attainable goals. *Primary objectives* will address: a broad education and training campaign, extensive surveying and mapping, a collaborative assessment meeting and the development of site specific adaptive management plans, and comprehensive local eradication and control efforts.

The California Department of Food and Agriculture has *statutory responsibility* for the prevention of exotic agricultural and environmental pests from entering the State. Within the CDFA, the Integrated Pest Control Branch has a long history of weed management and has taken the lead in noxious weed prevention, detection, education, and control in California. To date, purple loosestrife, a State Listed "B" rated pest, has not been the focus of state eradication and control efforts.

Similar projects include the CDFA's Hydrilla Eradication and Minnesota Purple Loosestrife Programs. The Hydrilla Program is largely focused on the detection and eradication of hydrilla in the State. This program, which has similar components/structure to our proposed Purple Loosestrife Project, has shown great success, hydrilla has been eradicated from 9 out of 17 infested Counties and is nearing eradication in the others. The Minnesota Purple Loosestrife Program (Skinner et al. 1994) was established in 1987 by the Minnesota legislature to protect state's vast acres of wetlands, lake shores, and streams from the negative impacts of purple loosestrife. The first of its kind in the United States, the program included public awareness, inventories, researching control methods, and control, similar components as outlined in our proposed Project Plan. The Minnesota Program has been widely used as a model program for neighboring states.

As part of adaptive management plan, our proposed project will be *self sustaining*, beyond the CALFED timeframe, through continual reassessment and follow-up carried out through surveys and monitoring conducted annually by CDFA seasonals, State Biologists and County Ag Commissioners Offices, as well as outside RCD and Weed Management Area collaborators/experts.

Need for project; Why critical to the Bay-Delta

The ecological integrity of the Bay-Delta system is threatened by the looming invasion of purple loosestrife. Loosestrife is listed by the California Department of Food and Agriculture as a "B" rated noxious weed and as a "species with potential to spread explosively" by the California Exotic Pest Plant Council. Loosestrife, which spreads primarily by copious production of seed the size of ground-pepper, will quickly become established and form dense stands that crowd out native wetland vegetation and associated wildlife, thus threatening the overall biodiversity of aquatic, wetland, and riparian areas. Minnesota and U.S. distribution maps (Figures 2 and 3) are examples of how widespread purple loosestrife will become if left unchecked.

Ecological/Biological Objectives

The displacement of valued *flora and fauna* and the diminishment of critical fish and wildlife habitats has been well documented throughout the United States. In many States, loosestrife makes up more than 50% of the biomass of emergent vegetation causing canopy closure that results in a virtual biological "desert" underneath. Research has shown that common emergent aquatics such as cattails (*Typha* spp.), sedges (*Carex* spp.), and smartweed (*Polygonum* spp.), and floating plants such as *Potamogeton* spp., and *Lemna minor* cannot successfully compete with loosestrife (Thompson et al. 1987; Weihe and Neely 1997; Fernberg 1998). A literature review also reveals that dramatic changes in the physical as well as the trophic structure of wetland habitat has threatened the following wildlife species: Muskrat, mink, Canada goose, fox, wood duck, mallard, black tern, canvasback, and sandhill (Coddington and Field 1978; Malecki et al. 1993; Skinner et al. 1994).

Complex food webs that are maintained by a diversity of native wetland plants and aquatic habitats become simplified or excluded. Animals that rely on the native vegetation for food, shelter, breeding and nesting areas cannot use these heavily infested areas (Skinner et al. 1994; Thompson et al. 1987).

Fish species will also be affected. The rapid decay rate of purple loosestrife leaves has been shown to supply detritus to the ecosystem in Autumn, whereas a much slower decay rate of resident vegetation supplies detritus throughout the winter and early spring (Grout et al. 1997). Consumer organisms important in juvenile Salmon food webs appear to be adapted to take advantage of the detritus provided in these later seasons. In addition, submersed terrestrial vegetation that provides habitat for spawning and zooplankton critical to early survival, will be crowded-out by the establishment of loosestrife (Skinner et al. 1994).

Loosestrife has also jeopardized various *threatened and endangered* native wetland plants and wildlife such as a local bulrush (*Scirpus longii*) in Massachusetts, rare inland populations of dwarf spike rush (*Eleocharis parvula*) in New York, native flatsedge (*Cyperus erythrorhizos*), and the bog turtle (*Clemmys muhlenbergi*) in the northeastern United States (Rawinski 1982; Thompson et al. 1987; Malecki et al. 1993; Skinner et al. 1994). Diverse wildlife and wetland vegetation, including Delta special status plant species and listed wetland-dependent species would similarly be threatened.

The *complex interface between farm land and water* in the Bay-Delta estuary provides rich and varied habitat for wildlife, especially birds. In the Delta, the principle attraction for waterfowl is winter-flooded agricultural fields. During fall and winter, fields provide a food source and a resting area for migratory birds. Waterways, irrigation canals, and channels feeding these unique systems are at risk. Small mammals also find suitable habitat in the Bay-Delta. Vegetated levees, remnants of riparian forest, and undeveloped islands provide some of the best mammalian habitat in the region. The area also supports a variety of non-game wildlife, including songbirds, hawks, owls, reptiles, and amphibians.

Infestations have also been documented to diminish wildlife-related *recreation* opportunities such as bird watching, fishing, and hunting (Skinner et al. 1994; Piper 1996).

Compatibility with Non-Ecosystem Objectives

Loosestrife may interfere with wetland functions, including *productivity* and *nutrient cycling* by replacing mosaics of submergent and emergent vegetation. Leaves of Lythrum have a rapid decay rate resulting in a release of significant amounts of NH_4^+ and PO_4^{3-} (Emery and Perry 1995). It is further said that dead loosestrife is not as usable for food by zooplankton and other detritivores as is native wetland vegetation (Skinner et al. 1994). Suppression of the resident plant community eventually leads to the alteration of wetland structure, chemistry, and function (Thompson et al. 1987). The fact that purple loosestrife impedes the rate of natural *water flow*, causing increased silt deposition and reduction in *water quality* has generated substantial concern in western states (Malecki et al. 1993). Loosestrife infestations would also decrease storage capacities of impounded waterbodies.

System-Wide Ecosystem Benefits

Both established and future Floodplain/Restoration and Watershed Stewardship projects will be seriously jeopardized if purple loosestrife is allowed to spread further throughout the Bay-Delta. In addition, experienced crews conducting extensive purple loosestrife surveys in the Delta will be equipped to identify the occurrence of any other aggressive invasive weed populations not previously recorded.

Linkage to Calfed Goals and Objectives

The actions contained within this proposal are fully consistent and flow directly from the Draft Strategic Plan for the CALFED Nonnative Invasive Species Program (NISP) and the Strategic Plan for Ecosystem Restoration

(ERP StratPlan).

The mission of the NISP is to "Prevent establishment of additional non-native species and reduce the negative biological and economic impacts of established non-native species"(pp 6,7,12,NIS StratPlan) The goals of the NISP Strategic Management Plan are:

- (I) *Prevention* of new introductions and establishment
- (II) *Limiting* the spread and/or establishment, and
- (III) *Reducing* harmful ecological impacts; ecosystem alteration and displacement of native species (p 2, NIS StratPlan).

The goals reflect a desire for: (a) "*Ecosystems that are not continually being disrupted* by unpredictable events, such as the invasion of non-native species capable of altering ecosystem processes, (b) A *landscape that is aesthetically pleasing* and that contains large-scale reminders of the original ecosystem, such as, expanses of clean, open water, (c) Ecosystems that will result will be made up of *mixtures of native and non-native species that will interact in an environment in which many of the basic processes...*" (p 28, NIS StratPlan).

This project is fully consistent with Goal 5, of the Strategic Plan for Ecosystem Restoration Program (Table 5-1, ERP StratPlan). The ERP objectives identified for this goal include: Halt the introduction of invasive aquatic and terrestrial plants into Central California (Objective 6) (p6, ERP StratPlan) and develop focused control efforts on those introduced species where control is most feasible and of greatest benefit (Objective 9) (p 6-7, ERP StratPlan).

"To effectively control aquatic weeds, existing programs will need to be expanded and funded or *new programs created*" (p 451, ERP Plan Vol 1). "The Strategic approach to this plan recognizes *prevention* as the most practical, economic, and environmentally safe method for dealing with new or incipient infestations" (p 8, NIS StratPlan). "Long term restoration and management of the Bay-Delta ecosystem requires *public support and education...* public education will be necessary to help reduce or eliminate ecological stressors; education may include production of brochures, workshops, etc." (p 24, NIS StratPlan). "An effective program includes: a *detection component* to identify incipient infestation and an integrated pest management component to *eradicate or control* species with minimal or transitory impact to the habitat and non-target species" (p 8, NIS StratPlan). "Comprehensive *mapping* throughout the study area is needed for all weeds that threaten aquatic habitats as a *first step* to monitoring and controlling infestations (p 452, ERP Plan Vol 1). Further *monitoring, mapping and control* are necessary..."(p 452 ERP Plan Vol 1). "Adaptive management involves continual inventory, analysis, and interpretation of scientific data. *GIS* is absolutely essential for a number of critical functions, including *simple project tracking, database management, monitoring, analysis of connections between actions, and geographic visualization of complex scientific and planning information*" (p 26, ERP StratPlan). There is an *immediate need* to develop ways by which to *control* these plants that are not, in themselves, environmentally harmful (goal 5, objective 9).

Linkage of invasive aquatic plants adversely influencing other ecosystem elements includes: *ecological processes, habitats, and species* (p 456, Vol 1). For example, like other recognized invasives, Egeria (p 452, ERP Plan Vol 1), Hydrilla (p 453, ERP Plan Vol 1), and Water hyacinth (p 453, ERP Plan Vol 1), Purple loosestrife has been found to form dense stands that "*displace native plant species, harm fish and wildlife, create environments that are unfavorable for native fishes, reduce foodweb productivity, impede water conveyance, and obstruct commercial and recreational navigation*" (p 451-454, ERP Plan Vol 1). "The vision for invasive aquatic plants is to reduce their adverse effects on native species and ecological processes, water quality, and conveyance systems, and major rivers and their tributaries" (Visions for reducing or eliminating stressors-invasive aquatic plants, p 451 ERP Plan Vol 1).

Table 3- Literature Cited

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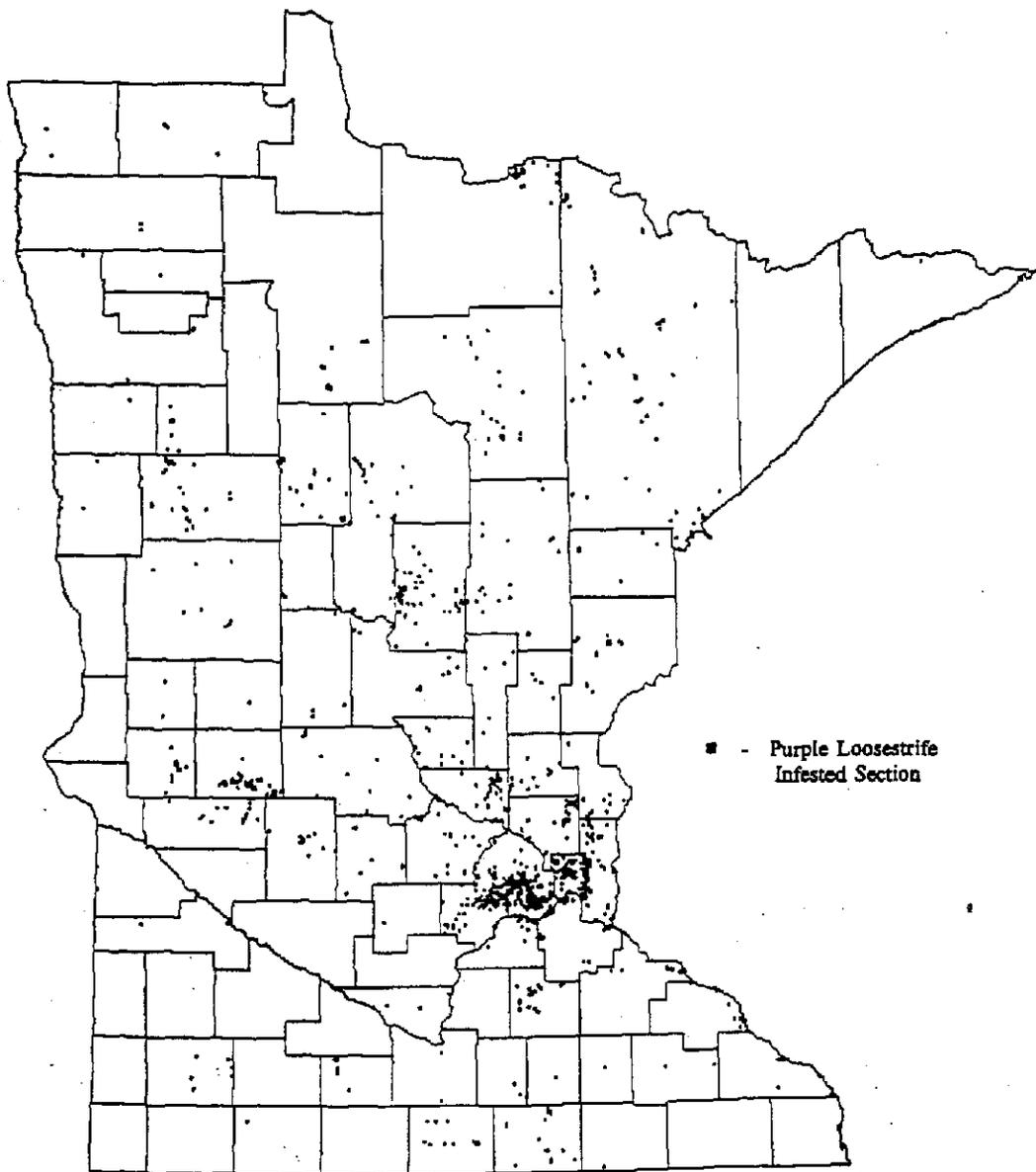


Figure 2- Distribution of purple loosestrife, *Lythrum salicaria*, in Minnesota by township section, Skinner et al. 1989.

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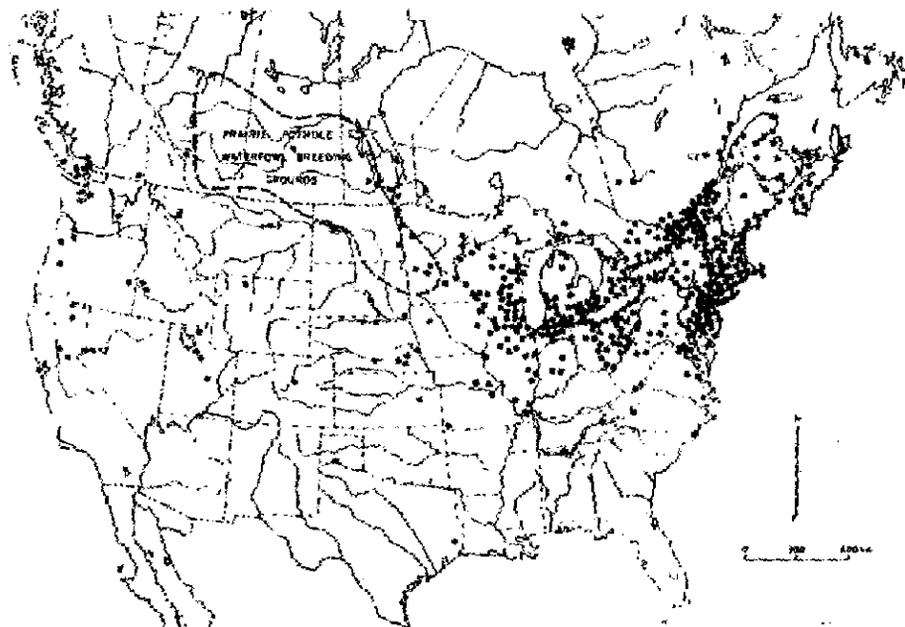


Figure 3- Distribution of purple loosestrife, *Lythrum salicaria*, in North America as of 1986 (Thopson et al. 1987).

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Technical Feasibility and Timing

The alternative to the current plan is to not take action. Inaction would inevitably result in the continuation of the invasion process, only postponing prevention, detection, and treatment. This alternative is unacceptable due to grave threats to the Bay-Delta wildlands, riparian systems, and endangered species posed by large populations of this explosive weed (see Ecological and Biological Benefits/Harm Prevented Section). Purple loosestrife can spread quickly and with increases in population size there is a greater reliance on herbicide treatments for eradication and the probability of eradication decreases. Alternative control methods for each loosestrife population, addressed in the adaptive management plan, will enable the implementation of best Integrated Weed Management practices/tools, appropriate to each situation.

All currently proposed methods of purple loosestrife management are either inherently benign or have passed through CEQA equivalent environmental reviews (refer to Project Description, Section 4, a summary of the proposed control options). The herbicide Rodeo has been registered in California for over a decade and has passed review by both the US EPA and the California EPA for label compliant usage on aquatic vegetation. CDFA will follow all use restriction requirements recommended by CalEPA in their approval of the material use. The CDFA will consult with the California Department of Fish and Game and the United States Fish and Wildlife Service to determine if additional measures are needed for site specific actions in sensitive habitats (e.g., habitats of threatened and endangered species identified in the Natural Diversity Database). When used in sensitive habitats, water sampling will be conducted by the Pesticide Investigation Unit of the California Department of Fish and Game. Recent water sampling after the use of Rodeo for Giant Cane removal showed concentrations in nearby water far lower than known toxicity to fish and amphibians.

The use of biological control agents for purple loosestrife (*Galerucella californiensis*, *G. pusilla*, *Hylobius transversovittatus*, and *Nanophyes marmoratus*) have been approved nationally for release by the Technical Advisory Group (TAG) of US Department of Agriculture based on host specificity, after extensive feeding trials on appropriate native and horticultural plants. They have been approved for release in California after testing and review by California Department of Food and Agriculture scientists and regulators.

Project leaders do not foresee any implementation issues/constraints. Such issues are not expected because the proposed purple loosestrife project has been modeled closely after the very successful Hydrilla Eradication Program. Furthermore, Hydrilla was initially more widespread and, due to its submersed state, is more difficult to eradicate. Additionally, the Integrated Pest Control Branch has had success in totally eradicating 13 weeds from California and over hundreds of weed population from local areas. ONLY if massive, previously unknown populations were discovered, would the project shift from an eradication effort to containment and biological control campaign.

Project Monitoring

Consistent with the adaptive management approach, the CDFA and cooperators will be continuously monitoring three different aspects of the project. Evaluation of the overall treatment and detection hypotheses and the yearly tactical integrated control plan will be ongoing throughout the duration of the project. Specifically we will be addressing:

Treatment efficacy - Depending on which management tools are employed, follow-up will ensure that treatment results in purple loosestrife mortality and/or non-reproduction within the same season as treatment. After a foliar application, herbicides often take one or two months to be translocated to the roots and stems. Due to this delay in activity, there is a lag time in determining treatment efficacy. Follow-up will involve a visual assessment after sufficient time has passed for treatment effects to be adequately measured. Follow-up in terms of biological control, is necessary in both the same season, as well as subsequent seasons, to determine if agents were successfully established. The CDFA has vast expertise in treatment follow-up, inherently a straight forward activity. Determining the long term impacts of bio-control agents on populations numbers is a much more complicated activity which would extend beyond the time-line of this project.

Eradication efficacy - Follow-up in subsequent years, at all treatment sites, will determine population status- i.e. if populations are approaching eradication, containment, or control. A visual sampling for both flowering and vegetative plant material will be carried out by trained personnel in a thorough and systematic manner-even if total kill of existing plants is achieved in a given year. Follow-up must be done for at a minimum of five years to ensure that seeds in the soil do not germinate and re-infest the area. The CDFA and cooperators will carry-out follow-up monitoring for the duration of seed viability.

Water sampling - In sensitive habitats, herbicide applications will be accompanied by both before and after testing for herbicide residues in adjacent non-flowing water sources. Such precautionary testing will serve as an overall programmatic check. The California Department of Fish and Game's Pesticide Investigations Unit will be contracted for water sampling analysis. The CDFA will sample water in non-flowing situations immediately before and after herbicide treatments and one week later. The project budgeted accounts for a total of 81 individual samples (\$148/sample). With three replicates and three sampling dates this allows for investigated residues from nine treatments. Because there will probably be over a hundred treatments, the sampling will be used as a programmatic check and for high sensitivity situations, rather than providing a direct check for every treatment. It should be re-emphasized that all treatments are consistent with state and federal EPA requirements and have been extensively tested for toxicity to fish and amphibians. Furthermore, the California Department of Fish and Game's Pesticide Investigations Unit has been testing Rodeo used for Arundo application in semi-aquatic habitats and detailed toxicity tests on larval amphibians and has found a lack of detectable residues post treatment in the water.

All monitoring will be carried out in accordance with the scientific literature and following the guidelines and conceptual models of the Comprehensive Monitoring, Assessment and Research Program (CMARP). Specifically, issues from the CMARP document chapter on Monitoring for Non-indigenous Organisms will be addressed.

Table 4 Biological/Ecological Objectives

Hypothesis to be Evaluated	Monitoring Parameters and Data Collection Approach	Data Evaluation Approach	Comments/ Data priority
Treatment efficacy - Depending on which management tools are employed, follow-up will ensure that treatment results in purple loosestrife mortality and/or non-reproduction within the same season as treatment. After a foliar application, herbicides often take one or two months to be translocated to the roots and stems. Due to this delay in activity, there is a lag time in determining treatment efficacy.	Follow-up will involve a visual assessment after sufficient time has passed for treatment effects to be adequately measured. Follow-up in terms of biological control, is necessary in both the same season, as well as subsequent seasons, to determine if agents were successfully established. The CDFA has vast expertise in treatment follow-up, inherently a straight forward activity. Determining the long term impacts of bio-control agents on populations numbers is a much more complicated activity which would extend beyond the time-line of this project.	Follow-up will involve a visual assessment after sufficient time has passed for treatment effects to be adequately measured. Follow-up in terms of biological control, is necessary in both the same season, as well as subsequent seasons, to determine if agents were successfully established. The CDFA has vast expertise in treatment follow-up, inherently a straight forward activity. Determining the long term impacts of bio-control agents on populations numbers is a much more complicated activity which would extend beyond the time-line of this project.	High
Eradication efficacy - Follow-up in subsequent years, at all treatment sites, will determine population status- i.e. if populations are approaching eradication, containment, or control.	A visual sampling for both flowering and vegetative plant material will be carried out by trained personnel in a thorough and systematic manner-even if total kill of existing plants is achieved in a given year. Follow-up must be done for at a minimum of five years to ensure that seeds in the soil do not germinate and re-infest the area. The CDFA and cooperators will carry-out follow-up monitoring for the duration of seed viability.	A visual sampling for both flowering and vegetative plant material will be carried out by trained personnel in a thorough and systematic manner-even if total kill of existing plants is achieved in a given year. Follow-up must be done for at a minimum of five years to ensure that seeds in the soil do not germinate and re-infest the area. The CDFA and cooperators will carry-out follow-up monitoring for the duration of seed viability.	High

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Table 4 (Continued) Biological/Ecological Objectives

Hypothesis to be Evaluated	Monitoring Parameters and Data Collection Approach	Data Evaluation Approach	Comments/Data Priority
<p>Water sampling - In sensitive habitats, herbicide applications will be accompanied by both before and after testing for herbicide residues in adjacent non-flowing water sources. Such precautionary testing will serve as an overall programmatic check.</p>	<p>The California Department of Fish and Game's Pesticide Investigations Unit will be contracted for water sampling analysis. The CDFA will sample water in non-flowing situations immediately before and after herbicide treatments and one week later. The project budgeted accounts for a total of 81 individual samples (\$148/sample). With three replicates and three sampling dates this allows for investigated residues from nine treatments. Because there will probably be over a hundred treatments, the sampling will be used as a programmatic check and for high sensitivity situations, rather than providing a direct check for every treatment. It should be re-emphasized that all treatments are consistent with state and federal EPA requirements and have been extensively tested for toxicity to fish and amphibians. Furthermore, the California Department of Fish and Game's Pesticide Investigations Unit has been testing Rodeo used for Arundo application in semi-aquatic habitats and detailed toxicity tests on larval amphibians and has found a lack of detectable residues post treatment in the water.</p>	<p>The California Department of Fish and Game's Pesticide Investigations Unit will be contracted for water sampling analysis. The CDFA will sample water in non-flowing situations immediately before and after herbicide treatments and one week later. The project budgeted accounts for a total of 81 individual samples (\$148/sample). With three replicates and three sampling dates this allows for investigated residues from nine treatments. Because there will probably be over a hundred treatments, the sampling will be used as a programmatic check and for high sensitivity situations, rather than providing a direct check for every treatment. It should be re-emphasized that all treatments are consistent with state and federal EPA requirements and have been extensively tested for toxicity to fish and amphibians. Furthermore, the California Department of Fish and Game's Pesticide Investigations Unit has been testing Rodeo used for Arundo application in semi-aquatic habitats and detailed toxicity tests on larval amphibians and has found a lack of detectable residues post treatment in the water.</p>	<p>High</p>

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Local Involvement

County Agricultural Commissioners often share or take the lead role with the CDFA on all County weed projects. In line with this historic partnership, the CDFA has already contacted the Ag Commissioner in each county where intensive survey or eradication treatments are planned. The Counties fully support the proposed project, both Phases I and II. Furthermore, we have sent out a letter notifying each County Board of Supervisors, Planning Department, and Agricultural Commissioner's office in compliance with the instructions in the Proposal Solicitation Package. The Counties which have been contacted include: Butte, Contra Costa, Fresno, Nevada, Placer, San Joaquin, Sacramento, Stanislaus, Shasta, Solano, Sonoma, Sutter, Tehama, Yolo, and Yuba. A copy of the letter is attached along with the mailing list.

We will also be working closely with our own local CDFA Integrated Pest Control Branch District Weed Eradication Biologists. They will be assisting with the detection and eradication work in-kind as well as providing usage of boats and trucks off budget.

Further Anticipated Local Collaborators and Partners

Local Weed Management Areas

The Integrated Pest Management Branch has been taking a lead role in the promotion and coordination of county-wide Weed Management Areas (WMA's). They are local weed management groups made-up of concerned citizens, members from private groups and State, Federal, County Agencies. Groups sign memoranda of understanding, hold regular meetings, formulate weed management plans, and conduct a wide range of weed prevention, education, detection, and control projects. We will give presentations on purple loosestrife at their meetings and enlist their support and in-kind work contributions.

State and Federal Agencies

Collaboration will include, but not be limited to locally employees of the following agencies: California Department of Fish and Game, California Department of Boating and Waterways, US Bureau of Reclamation, US Fish and Wildlife Service, US Department of Agriculture - Aquatic Plant Lab. We will be giving focused training in purple loosestrife identification and soliciting participation from local agency personnel in detection and monitoring work. We will be seeking in-kind contributions of boat time whenever possible.

Resource Conservation Districts, Local Watershed Groups, California Native Plant Society

When possible education and detection activities will be coordinated with other existing local groups. Each California Native Plant Society (CNPS) has an exotic plant chairperson. They will all be contacted and incorporated into the education and detection work if willing. Jake Sigg, the CNPS president is a leader in the invasive plant field has committed to stepping up their involvement in this area. The Resource Conservation Districts will be included into the project when appropriate.

Property access will be facilitated through the County Agricultural Commissioners office if on private land. The MOU signed by the members of the California Interagency Noxious Weed Coordinating Committee ensures cooperation in attaining access to public lands.

DEPARTMENT OF FOOD AND AGRICULTURE



1220 N Street, Room A-357
Sacramento, CA 95814
(916) 654-0768

April 14, 1999

TO: COUNTY AGRICULTURAL COMMISSIONER
COUNTY BOARD OF SUPERVISORS
COUNTY PLANNING DEPARTMENT

SUBJECT: Notification of grant proposal submitted to the CALFED Program.
Proposal Title: Purple Loosestrife Prevention, Detection, and Control Actions for the Sacramento-San Joaquin River Delta System and Associated Hydrological Units.

The Integrated Pest Control Branch of the California Department of Food and Agriculture has submitted a grant proposal to the CALFED Ecosystem Restoration Projects and Programs' "Solicitation for Proposals". As part of the application process we are required to notify the Board of Supervisors and the Planning Departments in each County where work is proposed. The proposal is titled: Purple Loosestrife Prevention, Detection, and Control Actions for the Sacramento-San Joaquin River Delta System and Associated Hydrological Units. Purple loosestrife is a Noxious aquatic weed that poses a great threat to the wetlands and waterways of the State. We are notifying the County Agricultural Commissioner as well, since they are considered to be collaborators on the project. An executive summary of the project is enclosed and a project map showing where purple loosestrife is located and where control and detection will be done.

If you would like a full copy of the proposal or have any question contact myself or Steve Schoenig at (916)-654-0768.

Sincerely,

A handwritten signature in cursive script that reads "Steve Schoenig".

for Nathan Dechoretz, Program Supervisor
Integrated Pest Control Branch
Plant Health and Pest Prevention Services

Enclosures

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Oroville, CA 95965

Butte County Planning Commission
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Contra Costa County Board of Supervisors
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Fresno, CA 93721

Fresno County Planning Commission
2281 Tulare Street, Room 300
Fresno, CA 93721

Osmo Insalaco
Fresno County Ag Commissioner Office
730 S. Maple Avenue
Fresno, CA 93702-4596

Costs

For Task specific line budgets see Table 5

General Budget Category Notes and Explanations

Personnel There will be a consistent pattern to the staffing on the project. A Senior Environmental Research Scientist will provide formal management and oversight averaging 25 billable hours per year. The Senior Environmental Research Scientist makes \$37.25/hr including benefits. An Agricultural Biologist will be lead person for the field crews, multi-agency coordination, treatment coordination and perform the education activities. The Agricultural Biologist will average approximately ½ time for 3 years. The Agricultural Biologist makes \$21.94/hr including benefits. The total field crew will consist of three Scientific Aids working 3 months full time during the summer. The Scientific Aids makes \$10.72/hr including benefits. Pesticide applications and Biological Control releases will be made by trained CDFA Biologists or collaborating agency personnel.

Service Contracts The following services will be contracted out- Printing of a loosestrife educational brochure will cost approximately \$10,000.00 for 40,000 copies. Water sampling and analysis will cost \$12,000.00 for Phase I and an additional \$24,000.00 for Phase II.

Equipment Phase I equipment costs: \$5,000.00 for a Trimble GPS unit and software. Phase II equipment costs: \$5,000.00 for a Trimble GPS unit and software.

Materials Phase I materials costs: \$5,000.00 for herbicides and \$1000 for an informational poster for meetings. Phase II equipment costs: \$5,000.00 for herbicides.

Travel/Per Diem Phase I per/diem costs: \$6000 for 60 days. Phase II per/diem costs: \$4000 for 40 days.

Transportation Phase I transportation costs: \$12,5000.00 for nine months vehicle rental(\$1000.0/month) and five months boat rental(\$500.0/month). Phase II transportation costs: \$9,5000.00 for eight months vehicle rental and five months boat rental.

Indirect Costs These costs are calculated as 15% of personnel costs. They cover CDFA Departmental and State overhead costs. Phase I indirect costs: \$19,539.98. Phase II indirect costs: \$11,866.04.

**Table 5 Phase I & II Combined BUDGET -
Purple Loosestrife Prevention and Eradication Action**

Task	sci aid	ag bio	sen ior	Direct Labor Hours	Direct Salary and Benefits	Service Contracts	Material and Acquisition Costs	Miscellaneous and other direct costs	Overhead and indirect costs	Total Costs
Task 1 - Educational brochure	0	120	4	124	\$2,781.80	\$10,000.00			\$417.27	\$13,199.07
Task 2 - Educational outreach	0	400	10	410	\$9,148.50		\$1,000.00	\$4,000.00	\$1,372.28	\$15,520.78
Task 3 - Training of professionals	0	240	0	240	\$5,265.60			\$500.00	\$789.84	\$6,555.44
Task 4 - Map vulnerable habitats(GIS analysis)	0	120	15	135	\$3,191.55			\$2,000.00	\$478.73	\$5,670.28
Task 5 - GPS of existing sites	378	126	20	524	\$7,561.60		\$5,000.00		\$1,134.24	\$13,695.84
Task 6- Delta wide loosestrife survey	1134	378	20	1532	\$21,194.80			\$3,000.00	\$3,179.22	\$27,374.02
Task 7- Contiguous basin survey	1134	378	20	1532	\$21,194.80			\$3,000.00	\$3,179.22	\$27,374.02
Task 8 - Update GIS	180	80	10	270	\$4,057.30				\$608.60	\$4,665.90
Task 9 -Assessment	0	240	40	280	\$6,755.60				\$1,013.34	\$7,768.94
Task 10 - Produce adaptive management plan	0	240	40	280	\$6,755.60				\$1,013.34	\$7,768.94
Task 11- Environmental consultation and planning	0	240	10	250	\$5,638.10				\$845.72	\$6,483.82
Task 12 - Implement controls	1134	378	15	1527	\$21,008.55		\$5,000.00	\$3,000.00	\$3,151.28	\$32,159.83
Task 13- Monitor loosestrife density/control success	756	252	15	1023	\$14,191.95			\$3,000.00	\$2,128.79	\$19,320.74
Task 14- Monitor water	60	40	0	100	\$1,520.80	\$12,000.00			\$228.12	\$13,748.92
Phase I SUBTOTAL	4776	3232	219		\$130,266.55	\$22,000.00	\$11,000.00	\$18,500.00	\$19,539.98	\$201,306.53
Task 15- Educational outreach	0	100	0	100	\$2,194.00			\$4,000.00	\$329.10	\$6,523.10
Task 16 - Training of professionals	0	60	0	60	\$1,316.40			\$500.00	\$197.46	\$2,013.86

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Table 5 - Budget, Continued

Task 17- GPS of existing sites	378	128	20	524	\$7,561.60		\$5,000.00		\$1,134.24	\$13,695.84
Task 18- Butte, shafts, Upper River survey	1134	378	20	1532	\$21,194.80			\$3,000.00	\$3,179.22	\$27,374.02
Task 19 - Update GIS	90	40	10	140	\$2,214.90				\$332.24	\$2,547.14
Task 20 -Assessment	0	60	10	70	\$1,688.90				\$253.34	\$1,942.24
Task 21- Produce adaptive management plan	0	60	10	70	\$1,688.90				\$253.34	\$1,942.24
Task 22- Environmental consultation and planning	0	120	10	130	\$3,005.30				\$450.80	\$3,456.10
Task 23- Implement controls	1134	378	15	1527	\$21,008.55		\$5,000.00	\$3,000.00	\$3,151.28	\$32,159.83
Task 24- Monitor loosestrife density/control success	756	252	15	1023	\$14,191.95			\$3,000.00	\$2,128.79	\$19,320.74
Task 25- Monitor water	120	80	0	200	\$3,041.60	\$24,000.00			\$456.24	\$27,497.84
Phase II SUBTOTAL	3612	1654	110		\$79,106.90	\$24,000.00	\$10,000.00	\$13,500.00	\$11,866.04	\$138,472.94
TOTAL	8388	4886	329	13603	\$209,373.45	\$46,000.00	\$21,000.00	\$32,000.00	\$31,406.02	\$339,779.47

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Cost-Sharing

It is appropriate to disclose in this section that Phase I of this proposal has been very recently selected as a Directed Action by the CALFED Non-native Invasive Species Program (NISIP) for a three year project with \$200,000.00 funding. Because this award is tentative (must have full CALFED approval) and only represents partial funding for a CALFED region-wide eradication, we have been advised to still follow the proposal solicitation process and to break the project into two phases. The Phase II work in this proposal is not included in the NISIP directed action because of limited NISIP funding. It was felt that with limited funding, the infestations closest to the Delta should be worked on first.

While there is no formal cost-share with any other sources of outside funding, the Integrated Pest Control Branch will be making contributions to this project in terms of already existing equipment, technical support personnel (computers, GIS, pesticide applications, etc.). We will also be working closely with our own local CDFA Integrated Pest Control Branch District Weed Eradication Biologists. They will be assisting with the detection and eradication work in-kind as well as providing usage of boats and trucks not budgeted explicitly.

County Agricultural Commissioners often share or take the lead role on all County weed projects with CDFA. In line with this historic partnership CDFA has already contacted the Ag Commissioner in each county where intensive survey or eradication treatments are planned. The counties we have contacted are: Butte, Contra Costa, Nevada, Placer, San Joaquin, Sacramento, Stanislaus, Shasta, Solano, Sonoma, Sutter, Yolo, and Yuba. These Counties will be providing in-kind logistical support for site visits, follow-up work, primary detection, and eradication. The exact nature of these contributions will be determined by meeting with each county separately.

Collaboration will include, but not be limited to locally employees of the following state and federal agencies. California Department of Fish and Game, California Department of Boating and Waterways, US Bureau of Reclamation, US Fish and Wildlife Service, US Department of Agriculture - Aquatic Plant Lab. We will be giving focused training in purple loosestrife identification and soliciting participation from local agency personnel in detection and monitoring work. We will be seeking in-kind contributions of boat time, logistics help, and in detection whenever possible.

Applicant Qualifications

California Department of Food and Agriculture

The California Department of Food and Agriculture (CDFA) has statutory responsibility for the prevention of exotic agricultural and environmental pests from entering the State. The CDFA is concerned with invasive weeds, insects, animals, and diseases. The Department's pest prevention strategy consists of four major components:

- 1) *Exclusion*- preventing exotic pests from entering California
- 2) *Detection*- locating existing pest populations
- 3) *Eradication*- eliminating existing pest populations
- 4) *Education*, informing the public about the importance of keeping California pest-free.

Integrated Pest Control Branch

Pest prevention is a major part of the CDFA's many different functions, particularly in the Plant Health and Pest Prevention Service (PHPPS). PHPPS is divided into four branches, including the Integrated Pest Control Branch (IPC). The IPC has four major programs that are directly involved in weed control:

- 1) *Weed and Vertebrate Program*
- 2) *Hydrilla Eradication Program*
- 3) *Biological Control Program*
- 4) *Noxious Weed Information, Mapping, and GIS Project*

IPC works closely with the County Agricultural Commissioner Offices, local Weed Management Areas (local weed management action and coordination groups) and other State and Federal agencies in prevention, education, detection, and control efforts. The Integrated Pest Control Branch has a long history of weed management actions and has taken the lead in noxious weed prevention, detection, education, and control in California. The Weed and Vertebrate Program is largely focused on the detection and eradication of A-rated, listed State Noxious Weeds. This group surveys the entire Delta annually (for hydrilla -at a time too late for loosestrife) and thus will serve as an invaluable resource in purple loosestrife detection and mapping. The Hydrilla Program is very similar, but focuses on a specific aquatic weed of special concern. This program, which has similar components/structure to our proposed Purple Loosestrife Project, has shown great success, hydrilla has been eradicated from 9 out of 17 infested Counties and is nearing eradication in the others. The Biological Control Program, in cooperation with the USDA and the University of California, brings natural enemies of pests into the State to permanently reduce pest populations. This group is in its second year of carrying out purple loosestrife biocontrol agent test releases in California. The Noxious Weed Information, Mapping, and GIS Project has developed a GIS and database system for mapping and tracking A-rated weed populations. This group has also facilitated formation of local Weed Management Areas throughout the State and produces a quarterly interagency weed control newsletter sent to 1500 subscribers, the "Noxious Times."

Nathan Dechoretz, Principle Investigator

Experience includes over 30 years working in the field of aquatic weed control. Received B.S. in Biological Science from the University of Arizona in 1967. From 1967 to 1987 managed and conducted research at the USDA Aquatic Weed Control Research Laboratory in Davis, CA. Since 1987 has served as Program Supervisor for the Weed and Vertebrate Control, Hydrilla Eradication and Biological Control Programs, and the Weed Information, Mapping, and GIS Project at the CDFA. Has successfully organized and conducted research on hydrilla, water hyacinth, as well as, many other noxious weeds. Has conducted numerous workshops, given

countless presentations, and has authored/co-authored over 50 publications, abstracts, and reports in the field of weed management. Currently Chairs the California Interagency Noxious Weed Coordinating Committee and is a lead member of the Western Weed Coordinating Committee. Is also a member of the Weed Science Society of America, Western Society of Weed Science, Western Aquatic Plant Management Society, and Aquatic Plant Management Society.

Steve Schoenig, Project Manager, Co-Principle Investigator

Has 15 years experience in the fields of biological pest control weed education/research. In 1981 received B.S. in Biology of Natural Resources from UC Berkeley. At UC Davis earned two Master's degrees in Statistics and Entomology in 1981 and 1987, respectively. From 1991 to 1995 provided Departmental statistical consultation and implemented biological pest control projects/studies while serving as Associate Environmental Research Scientist with the Biological Control Program at CDFA. 1996 to present, serves as lead Senior Environmental Research Scientist for the Weed Information, Mapping, and GIS Project within the Integrated Pest Control Branch at the CDFA. Duties include: supervising 6 people, oversees mapping, database, education, research, and interagency weed management coordination projects. Has given countless presentations on weed education/control, authored/co-authored over 20 publications. Currently a board member of the California Exotic Pest Plant Council, and a member of the American Statistical Association, and the California Native Plant Society.

Carri Benefield, Project Coordinator

Graduated in 1996 from Saint Mary's College of California with a B.S. in Biology. Spring of 1998 earned a Master's Degree in Plant Biology, emphasis in Weed Science, from UC Davis. Fall 1998 to present, serves as a Scientific Aid for the CDFA and as Field Crops Outreach Coordinator with the UC Sustainable Research and Education Program, Davis CA. Scientific Aid duties include: Editor of "Noxious Times" quarterly newsletter and various weed education projects under the direction of the Noxious Weed Information, Mapping and GIS Project leadperson. Field Crop Outreach Coordinator duties include: organizing and facilitating farmer/scientist focus sessions and related meetings, coordinating field tours, guiding on-farm research, locating funding sources, and authoring a field manual. Has conducted, organized, and/or led research on yellow starthistle, cape ivy (formerly known as German ivy), Scotch thistle, and French broom. Currently a member of the California Exotic Pest Plant Council, California Weed Science Society, and Western Society of Weed Science. Has presented at National Conference of Undergraduate Research, Fish and Game Applicators Conference, as well as at the above mentioned Societies. Has 10 abstracts and currently has 3 manuscripts under review (Weed Science and Weed Technology), one in press (California Agriculture), and was a contributor of a chapter on purple loosestrife to "Wildland Weeds of California," book (due out October, 1999).

**APPLICATION FOR
FEDERAL ASSISTANCE**

OMB Approval No. 0348-0043

1. DATE SUBMITTED April 16, 1999		Applicant Identifier CA Dept. of Food and Agriculture	
2. DATE RECEIVED BY STATE		State Application Identifier N/A	
3. DATE RECEIVED BY FEDERAL AGENCY		Federal Identifier	
TYPE OF SUBMISSION: Application <input checked="" type="checkbox"/> Construction <input type="checkbox"/> Non-Construction Preapplication <input type="checkbox"/> Construction <input type="checkbox"/> Non-Construction			
APPLICANT INFORMATION			
Name: State of California		Organizational Unit: Dept. of Food and Agriculture	
Address (give city, county, State, and zip code): 20 N St., Room A-357 Sacramento, CA 95814		Name and telephone number of person to be contacted on matters involving this application (give area code): Nathan Dechoretz (916) 654-0768	
EMPLOYER IDENTIFICATION NUMBER (EIN): 618-0325104		7. TYPE OF APPLICANT: (enter appropriate letter in box) A <input checked="" type="checkbox"/> A. State B. <input type="checkbox"/> B. County C. <input type="checkbox"/> C. Municipal D. <input type="checkbox"/> D. Township E. <input type="checkbox"/> E. Interstate F. <input type="checkbox"/> F. Intermunicipal G. <input type="checkbox"/> G. Special District H. <input type="checkbox"/> H. Independent School Dist. I. <input type="checkbox"/> I. State Controlled Institution of Higher Learning J. <input type="checkbox"/> J. Private University K. <input type="checkbox"/> K. Indian Tribe L. <input type="checkbox"/> L. Individual M. <input type="checkbox"/> M. Profit Organization N. <input type="checkbox"/> N. Other (Specify) _____	
TYPE OF APPLICATION: <input checked="" type="checkbox"/> New <input type="checkbox"/> Continuation <input type="checkbox"/> Revision Revision, enter appropriate letter(s) in box(es): <input type="checkbox"/> <input type="checkbox"/> Increase Award B. Decrease Award C. Increase Duration Decrease Duration Other (specify): _____		9. NAME OF FEDERAL AGENCY: _____	
CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: 10-025 TITLE: Plant Pest and Animal Disease		11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Purple loosestrife prevention, detection and control actions for the Sacramento-San Joaquin Delta and associated hydrological basins.	
AREAS AFFECTED BY PROJECT (Cities, Counties, States, etc.): Affected project area of California			
PROPOSED PROJECT		14. CONGRESSIONAL DISTRICTS OF:	
Date 1/99	Ending Date 7/1/02	a. Applicant California	b. Project California
ESTIMATED FUNDING:		16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?	
Federal	\$ _____	a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:	
Applicant	\$ 339,779.47	DATE _____	
State	\$ _____	b. No. <input type="checkbox"/> PROGRAM IS NOT COVERED BY E. O. 12372	
Local	\$ _____	<input type="checkbox"/> OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW	
Other	\$ _____		
Program Income	\$ _____	17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?	
TOTAL	\$ 339,779.47	<input type="checkbox"/> Yes If "Yes," attach an explanation. <input checked="" type="checkbox"/> No	
TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT, THE ASSISTANCE HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.			
Name of Authorized Representative Robert L. Wynn, Jr.		b. Title Director	c. Telephone Number (916) 654-0317
Signature of Authorized Representative 		e. Date Signed 4/16/99	

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Standard Form 424 (Rev. 7-87)
Prescribed by OMB Circular A-102

**PART E: Certification Regarding Lobbying
Certification for Contracts, Grants, Loans, and Cooperative Agreements**

**CHECK IF CERTIFICATION IS FOR THE AWARD OF ANY OF THE FOLLOWING AND
THE AMOUNT EXCEEDS \$100,000: A FEDERAL GRANT OR COOPERATIVE AGREEMENT;
SUBCONTRACT, OR SUBGRANT UNDER THE GRANT OR COOPERATIVE AGREEMENT.**

**CHECK IF CERTIFICATION IS FOR THE AWARD OF A FEDERAL
LOAN EXCEEDING THE AMOUNT OF \$150,000, OR A SUBGRANT OR
SUBCONTRACT EXCEEDING \$100,000, UNDER THE LOAN.**

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

As the authorized certifying official, I hereby certify that the above specified certifications are true.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL

Alice L. Wright

TYPED NAME AND TITLE

**ALICE L. WRIGHT
CONTRACTS OFFICER
CA DEPT OF FOOD & AGRICULTURE**

DATE

4/9/99

U.S. Department of the Interior

**Certifications Regarding Debarment, Suspension and
Other Responsibility Matters, Drug-Free Workplace
Requirements and Lobbying**

Persons signing this form should refer to the regulations referenced below for complete instructions:

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions - The prospective primary participant further agrees by submitting this proposal that it will include the clause titled, "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions. See below for language to be used; use this form for certification and sign; or use Department of the Interior Form 1954 (DI-1954). (See Appendix A of Subpart D of 43 CFR Part 12.)

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions - (See Appendix B of Subpart D of 43 CFR Part 12.)

Certification Regarding Drug-Free Workplace Requirements - Alternate I. (Grantees Other Than Individuals) and Alternate II. (Grantees Who are Individuals) - (See Appendix C of Subpart D of 43 CFR Part 12)

Signature on this form provides for compliance with certification requirements under 43 CFR Parts 12 and 18. The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of the Interior determines to award the covered transaction, grant, cooperative agreement or loan.

**PART A: Certification Regarding Debarment, Suspension, and Other Responsibility Matters -
Primary Covered Transactions**

CHECK IF THIS CERTIFICATION IS FOR A PRIMARY COVERED TRANSACTION AND IS APPLICABLE.

- (1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- (2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

**PART B: Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion -
Lower Tier Covered Transactions**

CHECK IF THIS CERTIFICATION IS FOR A LOWER TIER COVERED TRANSACTION AND IS APPLICABLE.

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
- (2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

DI-1918
March 1995
(This form supersedes DI-1953, DI-1954,
DI-1955, DI-1956 and DI-1962)

PART C: Certification Regarding Drug-Free Workplace Requirements

CHECK IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS NOT AN INDIVIDUAL.

Alternate I. (Grantees Other Than Individuals)

A. The grantee certifies that it will or continues to provide a drug-free workplace by:

- (a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
- (b) Establishing an ongoing drug-free awareness program to inform employees about—
 - (1) The dangers of drug abuse in the workplace;
 - (2) The grantee's policy of maintaining a drug-free workplace;
 - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
 - (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
- (c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);
- (d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will —
 - (1) Abide by the terms of the statement; and
 - (2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;
- (e) Notifying the agency in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;
- (f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted —
 - (1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
 - (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;
- (g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a) (b), (c), (d), (e) and (f).

B. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

Many work sites throughout California
Headquarters: 1220 N St, Room A357, Sacramento CA 95814

Check if there are workplaces on file that are not identified here.

PART D: Certification Regarding Drug-Free Workplace Requirements

CHECK IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS AN INDIVIDUAL.

Alternate II. (Grantees Who Are Individuals)

- (a) The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant;
- (b) If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, he or she will report the conviction, in writing, within 10 calendar days of the conviction, to the grant officer or other designee, unless the Federal agency designates a central point for the receipt of such notices. When notice is made to such a central point, it shall include the identification number(s) of each affected grant.

INSTRUCTIONS FOR THE SF-424

Public reporting burden for this collection of information is estimated to average 45 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0043), Washington, DC 20503.

**PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET.
END IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.**

This is a standard form used by applicants as a required facesheet for preapplications and applications submitted for Federal assistance. It will be used by Federal agencies to obtain applicant certification that States which have established a review and comment procedure in response to Executive Order 12372 and have selected the program to be included in their process, have been given an opportunity to review the applicant's submission.

- | Item: | Entry: | Item: | Entry: |
|-------|---|-------|--|
| | Self-explanatory. | 12. | List only the largest political entities affected (e.g., State, counties, cities). |
| | Date application submitted to Federal agency (or State if applicable) and applicant's control number (if applicable). | 13. | Self-explanatory. |
| | State use only (if applicable). | 14. | List the applicant's Congressional District and any District(s) affected by the program or project. |
| | If this application is to continue or revise an existing award, enter present Federal Identifier number. If for a new project, leave blank. | 15. | Amount requested or to be contributed during the first funding/budget period by each contributor. Value of in-kind contributions should be included on appropriate lines as applicable. If the action will result in a dollar change to an existing award, indicate <i>only</i> the amount of the change. For decreases, enclose the amounts in parentheses. If both basic and supplemental amounts are included, show breakdown on an attached sheet. For multiple program funding, use totals and show breakdown using same categories as Item 15. |
| | Legal name of applicant, name of primary organizational unit which will undertake the assistance activity, complete address of the applicant, and name and telephone number of the person to contact on matters related to this application. | 16. | Applicants should contact the State Single Point of Contact (SPOC) for Federal Executive Order 12372 to determine whether the application is subject to the State intergovernmental review process. |
| | Enter Employer Identification Number (EIN) as assigned by the Internal Revenue Service. | 17. | This question applies to the applicant organization, not the person who signs as the authorized representative. Categories of debt include delinquent audit disallowances, loans and taxes. |
| | Enter the appropriate letter in the space provided. | 18. | To be signed by the authorized representative of the applicant. A copy of the governing body's authorization for you to sign this application as official representative must be on file in the applicant's office. (Certain Federal agencies may require that this authorization be submitted as part of the application.) |
| | Check appropriate box and enter appropriate letter(s) in the space(s) provided: | | |
| | - "New" means a new assistance award. | | |
| | - "Continuation" means an extension for an additional funding/budget period for a project with a projected completion date. | | |
| | - "Revision" means any change in the Federal Government's financial obligation or contingent liability from an existing obligation. | | |
| | Name of Federal agency from which assistance is being requested with this application. | | |
| | Use the Catalog of Federal Domestic Assistance number and title of the program under which assistance is requested. | | |
| | Enter a brief descriptive title of the project. If more than one program is involved, you should append an explanation on a separate sheet. If appropriate (e.g., construction or real property projects), attach a map showing project location. For preapplications, use a separate sheet to provide a summary description of this project. | | |

BUDGET INFORMATION - Non-Construction Programs

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Purple loosestrife Program		\$	\$	\$	\$ 339,779.47	\$ 339,779.47
2.						
3.						
4.						
5. Totals		\$	\$	\$	\$ 339,779.47	\$ 339,779.47
SECTION B - BUDGET ALLOCATION						
6. Object Class Categories		GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
		(1) Phase I	(2) Phase II	(3)	(4)	
a. Personnel		\$ 106,946.38	\$ 65,949.81	\$	\$	\$ 209,373.45
b. Fringe Benefits		23,320.17	13,157.09			
c. Travel		6,000.00	4,000.00			10,000.00
d. Equipment		5,000.00	5,000.00			10,000.00
e. Supplies		6,000.00	5,000.00			11,000.00
f. Contractual		22,000.00	24,000.00			46,000.00
g. Construction						
h. Other Vehicle rental		12,500.00	9,500.00			22,000.00
i. Total Direct Charges (sum of 6a-6h)		181,766.55	126,606.90			308,373.45
j. Indirect Charges		19,539.98	11,866.04			31,406.02
k. TOTALS (sum of 6i and 6j)		\$ 201,306.53	\$ 138,472.94	\$	\$	\$ 339,779.47
7. Program Income		\$	\$	\$	\$	\$

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Standard Form 424A (Rev. 4-92)
Prescribed by OMB Circular A-102

1-020242

1-020242

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS	
8. Purple loosestrife Program	\$ 339,779.47	\$	\$	\$ 339,779.47	
9.					
10.					
11.					
12. TOTAL (sum of lines 8 - 11)	\$ 339,779.47	\$	\$	\$ 339,779.47	
SECTION D - BUDGETED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$	\$	\$	\$	\$
14. NonFederal	143,382.73	86,283.92	24,329.23	17,197.25	15,572.33
15. TOTAL (sum of lines 13 and 14)	143,382.73	86,283.92	24,329.23	17,197.25	15,572.33
SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program	FUTURE FUNDING PERIODS (Years)				
	(b) First	(c) Second	(d) Third	(e) Fourth	
16.	\$	\$	\$	\$	
17.					
18.					
19.					
20. TOTAL (sum of lines 16-19)	\$	\$	\$	\$	
SECTION F - DIRECT AND INDIRECT CHARGES					
21. Direct Charges:		22. Indirect Charges:			
23. Remarks:					

INSTRUCTIONS FOR THE SF-424A

Public reporting burden for this collection of information is estimated to average 180 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0044), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET, SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

General Instructions

This form is designed so that application can be made for funds on one or more grant programs. In preparing the budget, refer to any existing Federal grantor agency guidelines which describe how and whether budgeted amounts should be separately shown for different functions or activities within the program. For some programs, grantor agencies may require budgets to be separately shown by function or activity. For other programs, grantor agencies may require a breakdown by function or activity. Sections A, B, C, and D should include budget estimates for the whole project except when applying for assistance which requires Federal authorization in annual or other funding period increments. In the latter case, Sections A, B, C, and D should provide the budget for the first budget period (usually a year) and Section E should present the need for Federal assistance in the subsequent budget periods. All applications should contain a breakdown by the object class categories shown in Lines a-k of Section B.

Section A. Budget Summary Lines 1-4 Columns (a) and (b)

For applications pertaining to a *single* Federal grant program (Federal Domestic Assistance Catalog number) and *not* requiring a functional or activity breakdown, enter on Line 1 under Column (a) the catalog program title and the catalog number in Column (b).

For applications pertaining to a *single* program *requiring* budget amounts by multiple functions or activities, enter the name of each activity or function on each line in Column (a), and enter the catalog number in Column (b). For applications pertaining to multiple programs where none of the programs require a breakdown by function or activity, enter the catalog program title on each line in Column (a) and the respective catalog number on each line in Column (b).

For applications pertaining to a *multiple* programs where one or more programs *require* a breakdown by function or activity, prepare a separate sheet for each program requiring the breakdown. Additional sheets should be used when one form does not provide adequate space for all breakdown of data required. However, when more than one sheet is used, the first sheet should provide the summary totals by programs.

Lines 1-4, Columns (c) through (g)

For *new* applications, leave Columns (c) and (d) blank. For each line entry in Columns (a) and (b), enter in Columns (e), (f), and (g) the appropriate amounts of funds needed to support the project for the first funding period (usually a year).

For *continuing* grant program applications, submit these forms before the end of each funding period as required by the grantor agency. Enter in Columns (c) and (d) the estimated amounts of funds which will remain unobligated at the end of the grant funding period only if the Federal grantor agency instructions provide for this. Otherwise, leave these columns blank. Enter in Columns (e) and (f) the amounts of funds needed for the upcoming period. The amount(s) in Column (g) should be the sum of amounts in Columns (e) and (f).

For *supplemental* grants and changes to existing grants, do not use Columns (c) and (d). Enter in Column (e) the amount of the increase or decrease of Federal funds and enter in Column (f) the amount of the increase or decrease of non-Federal funds. In Column (g) enter the new total budgeted amount (Federal and non-Federal) which includes the total previous authorized budgeted amounts plus or minus, as appropriate, the amounts shown in Columns (e) and (f). The amount(s) in Column (g) should not equal the sum of amounts in Columns (e) and (f).

Line 5--Show the totals for all columns used.

Section B. Budget Categories

In the column headings (1) through (4), enter the titles of the same programs, functions, and activities shown on Lines 1-4, Column (a), Section A. When additional sheets are prepared for Section A, provide similar column headings on each sheet. For each program, function or activity, fill in the total requirements for funds (both Federal and non-Federal) by object class categories.

Lines 6a-i--Show the totals of Lines 6a and 6h in each column.

Line 6j--Show the amount of indirect cost.

Line 6k--Enter the total of amounts on Lines 6i and 6j. For all applications for new grants and continuation grants the total amount in column (5), Line 6k, should be the same as the total amount shown in Section A, Column (g), Line 5. For supplemental grants and changes to grants, the total amount of the increase or decrease as shown in Columns (1)-(4), Line 6k should be the same as the sum of the amounts in Section A, Columns (e) and (f) on Line 5.

Line 7--Enter the estimated amount of income, if any, expected to be generated from this project. Do not add or subtract this amount from the total project amount. Show under the program.

INSTRUCTIONS FOR THE SF-424A (continued)

narrative statement the nature and source of income. The estimated amount of program income may be considered by the Federal grantor agency in determining the total amount of the grant.

Section C. Non-Federal Resources

Lines 8-11--Enter amounts of non-Federal resources that will be used on the grant. If in-kind contributions are included, provide a brief explanation on a separate sheet.

Column (a) - Enter the program titles identical to Column (a), Section A. A breakdown by function or activity is not necessary.

Column (b) - Enter the contribution to be made by the applicant.

Column (c) - Enter the amount of the State's cash and in-kind contribution if the applicant is not a State or State agency. Applicants which are a State or State agencies should leave this column blank.

Column (d) - Enter the amount of cash and in-kind contributions to be made from all other sources.

Column (e) - Enter totals of Columns (b), (c), and (d).

Line 12--Enter the total for each of Columns (b)-(e). The amount in Column (e) should be equal to the amount on Line 5, Column (f) Section A.

Section D. Forecasted Cash Needs

Line 13--Enter the amount of cash needed by quarter from the grantor agency during the first year.

Line 14--Enter the amount of cash from all other sources needed by quarter during the first year.

Line 15--Enter the totals of amounts on Lines 13 and 14.

Section E. Budget Estimates of Federal Funds Needed for Balance of the Project.

Lines 16-19--Enter in Column (a) the same grant program titles shown in Column (a), Section A. A breakdown by function or activity is not necessary. For new applications and continuation grant applications, enter in the proper columns amounts of Federal funds which will be needed to complete the program or project over the succeeding funding period (usually in years). This section need not be completed for revisions (amendments, changes, or supplements) to funds for the current year of existing grants.

If more than four lines are needed to list the program titles, submit additional schedules as necessary.

Line 20--Enter the total for each of the Columns (b)-(e). When additional schedules are prepared for this Section, annotate accordingly and show the overall totals on this line.

Section F. Other Budget Information

Line 21--Use this space to explain amounts for individual direct object-class cost categories that may appear to be out of the ordinary or to explain the details as required by the Federal grantor agency.

Line 22--Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

Line 23--Provide any other explanations or comments deemed necessary.

ASSURANCES - NON-CONSTRUCTION PROGRAMS

The reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

I, the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.

Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.

Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

NAME OF AUTHORIZED CERTIFYING OFFICIAL <i>Alice L. Wright</i>	TITLE ALICE L. WRIGHT CONTRACTS OFFICER CA DEPT OF FOOD & AGRICULTURE
AGENCY ORGANIZATION	DATE SUBMITTED <i>4/9/99</i>

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ALICE L. WRIGHT
CONTRACTS OFFICER
CA DEPT OF FOOD & AGRICULTURE

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