Coordinated Regional Prevenetion and Control of Perennial Pepperweed and other prioritized Non-native Invasive Plants by local Weed Management Area Groups

Project Information

1. **Proposal Title:**

   Coordinated Regional Prevenetion and Control of Perennial Pepperweed and other prioritized Non-native Invasive Plants by local Weed Management Area Groups

2. **Proposal applicants:**

   Steve Schoenig, California Department of Food and Agriculture
   Nathan Dechoretz, Calif. Dept. of Food & Agriculture

3. **Corresponding Contact Person:**

   Steve Schoenig
   Calif. Dept. of Food & Agriculture
   1120 N St. Room A357 Sacramento CA 95814
   916 654-0768
   sschoenig@cdfa.ca.gov

4. **Project Keywords:**

   Geographic information systems (GIS)
   Habitat Restoration, Wetland
   Nonnative Invasive Species

5. **Type of project:**

   Implementation_Full

6. **Does the project involve land acquisition, either in fee or through a conservation easement?**

   No

7. **Topic Area**:

   Non-Native Invasive Species

8. **Type of applicant:**

   State Agency

9. **Location - GIS coordinates:**

Latitude:

Longitude:

Datum:

Describe project location using information such as water bodies, river miles, road intersections, landmarks, and size in acres.

This project is a very regional project encompassing wetlands, riparian, and associated drainages throughout the delta, sacramento and san-joaquin regions. Areas of emphasis will be determined based on regional/spatial analysis.

10. **Location - Ecozone:**

    3.1 Keswick Dam to Red Bluff Diversion Dam, 3.2 Red Bluff Diversion Dam to Chico Landing, 3.3 Chico Landing to Colusa, 3.4 Colusa to Verona, 3.5 Verona to Sacramento, 4.1 Clear Creek, 4.2 Cow Creek, 4.3 Bear Creek, 4.4 Battle Creek, 5.1 Upper Cottonwood Creek, 5.2 Lower Cottonwood Creek, 6.1 Stony Creek, 6.2 Elder Creek, 6.3 Thomas Creek, 6.4 Colusa Basin, 7.1 Paynes Creek, 7.2 Antelope Creek, 7.3 Mill Creek, 7.4 Deer Creek, 7.5 Big Chico Creek, 7.6 Butte Creek, 7.7 Butte Sink, 8.1 Feather River, 8.2 Yuba River, 8.3 Bear River and Honcut Creek, 8.4 Sutter Bypass, 9.1 American Basin, 9.2 Lower American River, 10.1 Cache Creek, 10.2 Putah Creek, 10.3 Solano, 10.4 Willow Slough, 12.1 Vernalis to Merced River, 12.2 Merced River to Mendota Pool, 12.3 Mendota Pool to Gravelly Ford, 12.4 Gravelly Ford to Friant Dam, 13.1 Stanislaus River, 13.2 Tuolumne River, 13.3 Merced River, West San Joaquin Basin, 1.1 North Delta, 1.2 East Delta, 1.3 South Delta, 1.4 Central and West Delta, 11.1 Cosumnes River, 11.2 Mokelumne River, 11.3 Calaveras River, 2.1 Suisun Bay & Marsh, Code 15: Landscape

11. **Location - County:**

    Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, Tehama, Yolo, Yuba

12. **Location - City:**

    Does your project fall within a city jurisdiction?

    No

13. **Location - Tribal Lands:**

    Does your project fall on or adjacent to tribal lands?

    No

14. **Location - Congressional District:**

    2,3,4,5,6,11,18,20

15. **Location:**

California State Senate District Number: 1,3,4,5,6,12,14

California Assembly District Number: 2,3,4,5,7,8,10,11,15,17,26,32

16. **How many years of funding are you requesting?**

    3

17. **Requested Funds:**

    a) Are your overhead rates different depending on whether funds are state or federal?

    No

    If no, list single overhead rate and total requested funds:

    Single Overhead Rate: 21.19

    Total Requested Funds: 5,329,951.00

    b) Do you have cost share partners already identified?

    No

    c) Do you have potential cost share partners?

    Yes

    If yes, list partners and amount contributed by each:

    each Weed Management Area Various In-kind

    d) Are you specifically seeking non-federal cost share funds through this solicitation?

    No

    If the total non-federal cost share funds requested above does not match the total state funds requested in 17a, please explain the difference:

18. **Is this proposal for next-phase funding of an ongoing project funded by CALFED?**

    No

    Have you previously received funding from CALFED for other projects not listed above?

    Yes

If yes, identify project number(s), title(s) and CALFED program.

99-F08 Purple Loosestrife Prevention, Detection and Control Actions ... ERP

99-N11 Purple Loosestrife Prevention, Detection and Control Actions ... ERP

19. **Is this proposal for next-phase funding of an ongoing project funded by CVPIA?**

    No

    Have you previously received funding from CVPIA for other projects not listed above?

    No

20. **Is this proposal for next-phase funding of an ongoing project funded by an entity other than CALFED or CVPIA?**

    No

    Please list suggested reviewers for your proposal. (optional)

    Kim Webb US Fish & Wildlife Service 209-946-6400 kwebb@delta.dfg.gov

21. **Comments:**

Environmental Compliance Checklist

Coordinated Regional Prevenetion and Control of Perennial Pepperweed and other prioritized Non-native Invasive Plants by local Weed Management Area Groups

1. **CEQA or NEPA Compliance**
   a) Will this project require compliance with CEQA?

      No
   b) Will this project require compliance with NEPA?

      Yes
   c) If neither CEQA or NEPA compliance is required, please explain why compliance is not required for the actions in this proposal.

      The use of herbicides following label direction is CEQA equivalent based on an MOU between CalEPA and the Resources Agency. Non-chemical control will have no significant impacts.

2. **If the project will require CEQA and/or NEPA compliance, identify the lead agency(ies).** *If not applicable, put "None".*

   CEQA Lead Agency: County Agricultural Departments
   NEPA Lead Agency (or co-lead:) Federal Land Owner member of Weed Management Area
   NEPA Co-Lead Agency (if applicable):

3. **Please check which type of CEQA/NEPA documentation is anticipated.**

   CEQA
   -Categorical Exemption
   -Negative Declaration or Mitigated Negative Declaration
   -EIR
   Xnone

   NEPA
   -Categorical Exclusion
   XEnvironmental Assessment/FONSI
   -EIS
   -none

   If you anticipate relying on either the Categorical Exemption or Categorical Exclusion for this project, please specifically identify the exemption and/or exclusion that you believe covers this project.

4. **CEQA/NEPA Process**
   a) Is the CEQA/NEPA process complete?

      No

If the CEQA/NEPA process is not complete, please describe the dates for completing draft and/or final CEQA/NEPA documents.

done only if proposal funded

b) If the CEQA/NEPA document has been completed, please list document name(s):

5. **Environmental Permitting and Approvals** (*If a permit is not required, leave both Required? and Obtained? check boxes blank.*)

LOCAL PERMITS AND APPROVALS

Conditional use permit

Variance

Subdivision Map Act

Grading Permit

General Plan Amendment

Specific Plan Approval

Rezone

Williamson Act Contract Cancellation

Other

STATE PERMITS AND APPROVALS

Scientific Collecting Permit

CESA Compliance: 2081

CESA Compliance: NCCP

1601/03

CWA 401 certification

Coastal Development Permit

Reclamation Board Approval

Notification of DPC or BCDC

Other

FEDERAL PERMITS AND APPROVALS

ESA Compliance Section 7 Consultation

ESA Compliance Section 10 Permit

Rivers and Harbors Act

CWA 404

Other

PERMISSION TO ACCESS PROPERTY

Permission to access city, county or other local agency land. Agency Name: various	Required
Permission to access state land. Agency Name: various	Required
Permission to access federal land. Agency Name: various	Required
Permission to access private land. Landowner Name: various	Required

6. **Comments.**

Obviously, the permitting needs for this project will depend on land owneship and the scope and nature of treatments. CDFA and Weed Management Areas will work closely with CALFED permitting staff.

Land Use Checklist

Coordinated Regional Prevenetion and Control of Perennial Pepperweed and other prioritized Non-native Invasive Plants by local Weed Management Area Groups

1. **Does the project involve land acquisition, either in fee or through a conservation easement?**

   No

2. **Will the applicant require access across public or private property that the applicant does not own to accomplish the activities in the proposal?**

   Yes

3. **Do the actions in the proposal involve physical changes in the land use?**

   No

   If you answered no to #3, explain what type of actions are involved in the proposal (i.e., research only, planning only).

   Inventory, removal of non-native invasive species, planting of native vegetation Land use will not be change.

4. **Comments.**

   All access issues will be handled by the sub-contractors ie local county Weed Management Area groups.

Conflict of Interest Checklist

Coordinated Regional Prevenetion and Control of Perennial Pepperweed and other prioritized Non-native Invasive Plants by local Weed Management Area Groups

Please list below the full names and organizations of all individuals in the following categories:

- Applicants listed in the proposal who wrote the proposal, will be performing the tasks listed in the proposal or who will benefit financially if the proposal is funded.
- Subcontractors listed in the proposal who will perform some tasks listed in the proposal and will benefit financially if the proposal is funded.
- Individuals not listed in the proposal who helped with proposal development, for example by reviewing drafts, or by providing critical suggestions or ideas contained within the proposal.

The information provided on this form will be used to select appropriate and unbiased reviewers for your proposal.

Applicant(s):

Steve Schoenig, California Department of Food and Agriculture
Nathan Dechoretz, Calif. Dept. of Food & Agriculture

Subcontractor(s):

Are specific subcontractors identified in this proposal? Yes

If yes, please list the name(s) and organization(s):

sub-contractor weed management areas

Helped with proposal development:

Are there persons who helped with proposal development?

No

Comments:

In the proposal the weed management area groups are listed with which sub-contracts will be established. It is generally the County Agricultural Commissioner who holds the contracts in a Weed Management Area.

Budget Summary

Coordinated Regional Prevenetion and Control of Perennial Pepperweed and other prioritized Non-native Invasive Plants by local Weed Management Area Groups

Please provide a detailed budget for each year of requested funds, indicating on the form whether the indirect costs are based on the Federal overhead rate, State overhead rate, or are independent of fund source.

Independent of Fund Source

Year 1												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary** ***(per year)***	**Benefits** ***(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
1	Training/support in weed survey & GIS	1320	31699.6	9,826.88	6600	660	0	0	0	48786.48	10,337.85	59124.33
2	Compile known weed localities into GIS	0	0	0	0	0	200000	0	0	200000.0	0	200000.00
3	Field survey and GIS data entry	0	0	0	0	0	1000000	0	0	1000000.0	0	1000000.00
4	Eradicate very small isolated patches	0	0	0	0	0	200000	0	0	200000.0	0	200000.00
5	Review plans, establish sub-contract, oversee sub-contracted work	1100	29403	9,114.93	5500	550	0	0	0	44567.93	9,443.94	54011.87
6	Training/support in plan writing	990	27414.7	8,498.56	4950	495	0	0	0	41358.26	8,763.81	50122.07
7	Regional Analysis of weed distributions	0	0	0	0	0	20000	0	0	20000.0	0	20000.00
8	Environmental Consultation	0	0	0	0	0	20000	0	0	20000.0	0	20000.00
9	Write Strategic and Implementation Plans	0	0	0	0	0	40000	0	0	40000.0	0	40000.00
10	Build Internet GIS Map Server	528	12679.84	3,930.75	2640	264	0	0	0	19514.59	4,135.14	23649.73
11	Training/support in Control, Eradication, Restoration, & Monitoring of invasive weeds	484	12556.52	3,892.52	2420	242	0	0	0	19111.04	4,049.63	23160.67
12	Control, Eradication, Restoration, & Monitoring of Invasive weeds	0	0	0	0	0	0	0	0	0.0	0	0.00
		4422	113753.66	35263.64	22110.00	2211.00	1480000.00	0.00	0.00	1653338.30	36730.37	1690068.67

Year 2												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary** ***(per year)***	**Benefits** ***(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
1	Training/support in weed survey & GIS	440	10,753.20	3,333.49	2200	220	0	0	0	16506.69	3,497.77	20004.46
2	Compile known weed localities into GIS	0	0	0	0	0	200000	0	0	200000.0	0	200000.00
3	Field survey and GIS data entry	0	0	0	0	0	400000	0	0	400000.0	0	400000.00
4	Eradicate very small isolated patches	0	0	0	0	0	200000	0	0	200000.0	0	200000.00
5	Review plans, establish sub-contract, oversee sub-contracted work	1320	35,059.60	10,868.48	6600	660	0	0	0	53188.08	11,270.55	64458.63
6	Training/support in plan writing	770	21,198.10	6,571.41	3850	385	0	0	0	32004.51	6,781.76	38786.27
7	Regional Analysis of weed distributions	660	16,409.80	5,087.04	3300	330	0	0	0	25126.84	0	25126.84
8	Environmental Consultation	0	0	0	0	0	40000	0	0	40000.0	0	40000.00
9	Write Strategic and Implementation Plans	0	0	0	0	0	200000	0	0	200000.0	0	200000.00
10	Build Internet GIS Map Server	748	17,776.44	5,510.70	3740	374	0	0	0	27401.14	5,806.30	33207.44
11	Training/support in Control, Eradication, Restoration, & Monitoring of invasive weeds	484	12,556.52	3,892.52	2420	242	0	0	0	19111.04	4,049.63	23160.67
12	Control, Eradication, Restoration, & Monitoring of Invasive weeds	0	0	0	0	0	500000	0	0	500000.0	0.00	500000.00
		4422	113753.66	35263.64	22110.00	2211.00	1540000.00	0.00	0.00	1713338.30	31406.01	1744744.31

Year 3												
Task No.	**Task Description**	**Direct Labor Hours**	**Salary** ***(per year)***	**Benefits** ***(per year)***	**Travel**	**Supplies & Expendables**	**Services or Consultants**	**Equipment**	**Other Direct Costs**	**Total Direct Costs**	**Indirect Costs**	**Total Cost**
1	Training/support in weed survey & GIS	220	5,656.60	1,753.55	1100	110	0	0	0	8620.15	1,826.61	10446.76
2	Compile known weed localities into GIS	0	0	0	0	0	10000	0	0	10000.0	0	10000.00
3	Field survey and GIS data entry	0	0	0	0	0	250000	0	0	250000.0	0	250000.00
4	Eradicate very small isolated patches	0	0	0	0	0	200000	0	0	200000.0	0	200000.00
5	Review plans, establish sub-contract, oversee sub-contracted work	1100	29,963.00	9,288.53	5500	550	0	0	0	45301.53	9,599.39	54900.92
6	Training/support in plan writing	330	8,764.90	2,717.12	1650	165	0	0	0	13297.02	2,817.64	16114.66
7	Regional Analysis of weed distributions	880	21,506.40	6,666.98	4400	440	0	0	0	33013.38	0	33013.38
8	Environmental Consultation	0	0	0	0	0	40000	0	0	40000.0	0	40000.00
9	Write Strategic and Implementation Plans	0	0	0	0	0	200000	0	0	200000.0	0	200000.00
10	Build Internet GIS Map Server	748	17,776.44	5,510.70	3740	374	0	0	0	27401.14	5,806.30	33207.44
11	Training/support in Control, Eradication, Restoration, & Monitoring of invasive weeds	990	25,734.70	7,977.76	4950	495	0	0	0	39157.46	8,297.47	47454.93
12	Control, Eradication, Restoration, & Monitoring of Invasive weeds	0	0	0	0	0	1000000	0	0	1000000.0	0	1000000.00

		4268	109402.04	33914.64	21340.00	2134.00	1700000.00	0.00	0.00	1866790.68	28347.41	1895138.09

Grand Total=5329951.07

Comments.

Budget Justification

Coordinated Regional Prevenetion and Control of Perennial Pepperweed and other prioritized Non-native Invasive Plants by local Weed Management Area Groups

Direct Labor Hours. Provide estimated hours proposed for each individual.

Senior Env. Research Sci. 20% time Research Associate I (GIS) 100% time Associate Env. Research Sci. 100% time

Salary. Provide estimated rate of compensation proposed for each individual.

Senior Env. Research Sci. $38.83/hour Research Associate I (GIS)$22.00/hour Associate Env. Research Sci.$27.60/hour

Benefits. Provide the overall benefit rate applicable to each category of employee proposed in the project.

All staff - 31% benefits

Travel. Provide purpose and estimate costs for all non-local travel.

The purpose of travel is to conduct field training, audits, project site visits and to attend professional and scientific meeting. Total cost: $65,560.00

Supplies & Expendables. Indicate separately the amounts proposed for office, laboratory, computing, and field supplies.

All will be donated in-kind by CDFA.

Services or Consultants. Identify the specific tasks for which these services would be used. Estimate amount of time required and the hourly or daily rate.

Weed Management Areas(WMA) will conduct the bulk of mapping, GIS , planning and control at the local level. Daily rate $300 total days - 15,700 (ave ~1000/WMA)

Equipment. Identify non-expendable personal property having a useful life of more than one (1) year and an acquisition cost of more than $5,000 per unit. If fabrication of equipment is proposed, list parts and materials required for each, and show costs separately from the other items.

All required will be donated in-kind by CDFA.

Project Management. Describe the specific costs associated with insuring accomplishment of a specific project, such as inspection of work in progress, validation of costs, report preparation, giving presentatons, reponse to project specific questions and necessary costs directly associated with specific project oversight.

The Senior Scientist will be mainly involve in total project management. The Associate Scientist will spend 50%-75% in providing oversight and management.

Other Direct Costs. Provide any other direct costs not already covered.

none

Indirect Costs. Explain what is encompassed in the overhead rate (indirect costs). Overhead should include costs associated with general office requirements such as rent, phones, furniture, general office staff, etc., generally distributed by a predetermined percentage (or surcharge) of specific costs.

Indirect costs comprise all the operating expenses of the CA Dept.Fodd & Agriculture. They are not assessed on pass-through funding. Contracting costs will be absorbed by the Department.

Executive Summary

Coordinated Regional Prevenetion and Control of Perennial Pepperweed and other prioritized Non-native Invasive Plants by local Weed Management Area Groups

Non-native invasive species (NIS), such as perennial pepperweed, (Lepidium latifolium), and scarlet wisteria, Sesbania punicea, are destroying ecosystem function, endangered species habitat and native bio-diversity at an exponential rate in the CALFED ERP regions. With a limited amount of resources, all of these populations cannot be permanently eradicated from the whole region. The optimal solution is to conduct detection inventories and create a GIS database of infestations. Based on this data a regional and local strategy can be quickly developed to contain, control and most importantly eradicate key pioneer populations to STOP the spread of NIS to pristine areas. The CALFED ERP Strategic goals and the Draft Stage 1 Implementation Plan specifically highlight control of NIS as Strategic Goals and Priority Actions. There are large populations of non-native invasive plant species in the Sacramento, San Joaquin, Delta and Bay ERP Regions (there are also large areas that are still uninfested). The California Department of Food and Agriculture proposes to coordinate and provide technical leadership in the implementation of a $1.5 million sub-contracted, cost-share program to local county-based Weed Management Areas (existing multi-agency coordination groups) in the Delta, Sacramento, San Joaquin and Bay regions. The local cost-share activities will proceed in three phases: 1) collation of known sites & data, survey/map new sites, and GIS creation; 2) regional and local strategic prioritization and creation of local action plans; 3) implementation of eradication, containment, control/restoration, and monitoring for key prioritized sites. The emphasis in the strategic prioritization is on eradication of small pioneer infestations (esp. perennial pepperweed) in areas that are otherwise free of the weed. The proposed program is absolutely feasible and is based on protocols and systems that are proven and in place. The CDFA, in teamwork with the USDA and the County Ag Departments has been successfully eradicating small to medium sized infestations of noxious weeds for decades in California. This work relies on an Integrated Weed Management approach that employs a variety of proven techniques and has moved toward more effective, selective and environmentally friendly herbicides when they are deemed necessary. The CALFED priority area is already covered with County Weed Management Areas. The CDFA, in implementing Senate Bill 1740 (Chaptered. 2000), has demonstrated an ability to select and administer weed control grants to WMAs (4.25 million dollars as of January 2002) based on WMAs submitting an Integrated Weed Management Plan. A WMA is voluntarily governed by a chairperson or a steering committee. To date, groups in California have been initiated by either the leadership of the County Agricultural Commissioner’s Office or a Federal Agency employee. WMA’s are unique because they attempt to address agricultural (regulatory) weeds and "wildland" weeds under one local umbrella of organization. With a primary focus on perennial pepperweed, in this program, the techniques of Mark Renz and Dr. Joseph DiTomaso, from UC Davis, have established effective and environmentally safe techniques to eradicate this weed - especially in small populations. Both herbicidal and mechanical techniques can be used to eradicate small pioneer infestations, depending on sensitivity of the environment. TOTAL Yearly Budget $1,690,069.00 $1,747,444.00 $1,895,138.00 This program directly addresses Strategic Goals in the ERP EIS Record of Decision (ROD), ERP Draft Stage 1 Implementation Plan (DS1IP), and the Strategic Plan and Action Plan for the Non-native Invasive Species Program. Relationships to ERP DS1IP: Multi Region Priorities and Actions MR-1 pp.18-20 Delta Region Priorities and Actions DR-pp. 40-41 San Joaquin Region Priorities and Actions SJ-1 p 32. Sacramento Region Priorities and Actions SR-5

Proposal

California Department of Food and Agriculture

Coordinated Regional Prevenetion and Control of Perennial Pepperweed and other prioritized Non-native Invasive Plants by local Weed Management Area Groups

Steve Schoenig, California Department of Food and Agriculture
Nathan Dechoretz, Calif. Dept. of Food & Agriculture

Regional Prevention and Control of Perennial Pepperweed and other Non-native Invasive, Plants in the San Joaquin, Sacramento , and Delta Regions through a Strategic Coordinated Pass-Through Funding and Technical Support Program.

A. Project Description: Project Goals and Scope of work

1.Problem

This proposal is written to address four fundamental problems:

1. Invasive exotic plants, such as perennial pepperweed, (*Lepidium latifolium*), and scarlet wisteria, *Sesbania punicea,* are destroying ecosystem function, endangered species habitat and native bio-diversity at an exponential rate in the CALFED ERP regions.

2. Much public money is currently being spent on habitat restoration and *tactical* invasive species removal without a regional and local *strategic assessment* based on a geo-spatial analysis of weed distributions, relative ecosystem values, likelihood of re-invasion and a simple cost/benefit analysis of restoring damaged sites. Frequently, this work dose not address preventing massive invasion of pristine sites.

   The single most important weed control activity should be to quickly find small pioneer infestations of noxious and invasive weeds and eradicate them cheaply before the ecosystem has sustained serious damage (Moody & Mack 1988, ERP Strategic Goal 5). Also of great importance, is the establishment of "containment lines or zones" which represent a management objective to keep weeds from spreading from an area of high abundance into an area mostly free of the target weeds.

3. There is inadequate accurate spatial data on invasive weed occurrences for most of the important non-native invasive plants in the delta and nearby river basins. This is primarily due to a lack of funding and a coordinated program of training and oversight. This prevent a strategic and preventative approach detailed above

4. While local, county-based Weed Management Areas are best able to conduct local projects and are theoretically able to make their own applications to this ERP Proposal Solicitation Package, the complexity, unfamiliarity and uncertainty with the process has made them hesitant to invest staff and resources into the process alone. They are much more enthusiastic to participate in a coordinated grant process with training and facilitation of integrated and adaptive non-native invasive species control plans, by the California Department of Food and Agriculture.

2. Justification

a. Conceptual Model –

- The detriment of Non-native Invasive Species is well documented generally (wilcove, strat plans, books, etc) and specifically in the CALFED Program (strat plans, ERP EIR/ROD, Draft stage 1 Imp. Plan).
- The detriment of perennial pepperweed, *Lepidium latifolium*, on wetland ecosystems has been reviewed by (Young, Palmquist and Wotring 1997) and is best described as a shift to a monoculture of pepperweed devoid of native fauna or flora. (see also Trumbo 1994, Kloot 1973). The ERP Draft. Stage.1 Imp. Plan
- Coordinated approaches to the regional and landscape level approach to NIS control has been established in general (making collaborations work), and specifically for Invasive Plant Control (rmac, pulling together)
- CDFA is the lead agency in noxious weed control and has vast experience in eradicating noxious weeds and funding successful collaborative efforts at the county level.
- A coordinated funding program to detect, map, set strategic priorities and eradicate key NIS infestations is the best way to prevent further infestation and loss of key ecosystem function, native biodiversity and heath of threatened and endangered species.
- All funded activities from this plan will follow an adaptive and strategic management paradigm – inventory, spatial analysis, prioritized control, monitoring, re-analysis, re-prioritized control and prevention.

b. Hypothesis – There are large populations of non-native invasive plant species in the Sacramento, San Joaquin, Delta and Bay ERP Regions (There are also large areas that are still uninfested). With a limited amount of resources, all of these populations cannot be permanently eradicated from the whole region. The optimal solution is to conduct detection inventories and create a GIS database of infestations. Based on this data a regional and local strategy can be quickly developed to contain, control and most importantly eradicate key populations to STOP the spread of NIS to pristine areas.

c. Project Type – This is a project to <u>implement</u> a strategy of funding local Weed Management Area groups under a coordinated California Department of Food and Agriculture umbrella. The CDFA will pass money and expertise to county-based WMAs for <u>pilot and implementation</u> projects depending on the state of knowledge about the distribution, and a comprehensive strategy to prioritize control efforts in a given county. This project establishes a funding and technical support framework to allow Weed Management Areas in the Delta, San Joaquin and Sacramento ERP Regions to carry out pilot <u>and</u> full-scale projects for both non-native invasive plant *survey* <u>and</u> *eradication.*

3. Approach

This is not a research study. However, data plays a central role in the crafting of regional and local implementation strategy. Additionally, each tactical implementation, derived from regional strategy, will be framed within an adaptive management paradigm. Weed control treatments will be monitored for efficacy and for long-term success in eradication.

Objective 1 – Weed Management Areas will initially focus on the compilation of existing weed localities into the county weed GIS based on existing priorities and data county-wide surveys will be designed to refine the boundaries between light and heavily infested areas and to intensely survey presumed un-infested areas for pioneer or incipient infestation. Survey intensity will be inversely proportional to presumed and observed regional density of the weed. Point, polygon and line features will be collected with GPS receivers and collated into ArcView coverages. Bio-climatic modeling will be conducted by CDFA GIS Staff and combined with know wetland and hydrological coverages to identify primary and secondary search priorities.

Objective 2 – Assuming most important occurrence data is existing within an ArcView coverage, a process of strategic assessment of the regional patterns of weed distribution will be used to create management zones to "triage" specific populations and regions into eradication, containment or site-specific stewardship. This project will place a higher priority on funding local/regional eradication and maintenance of "no spread" or containment lines. Site-specific stewardship of heavily infested areas within heavily infested regions is very costly and often is not sustainable on a long-term basis. Other considerations such as proximity to threatened, endangered, or sensitive species will effect strategic prioritization. CDFA will work in consultation with CALFED GIS working group and ERP managers in ensuring that prioritizations are most in accordance with broad CALFED objectives.

Objective 3 – Once management zones and strategic assessments have been delineated, the process of implementing integrated and adaptive control strategies commences. Control projects will involve some combination of chemical, mechanical, manual or other treatment and a monitoring program to measure the effectiveness of control and response of the native vegetation.

4. Feasibility

The proposed program is absolutely feasible and is based on protocols and systems that are proven and in place. The CDFA in teamwork with the USDA and the County Ag Departments has been successfully eradicating small to medium infestations of noxious weeds for decades in California. This work relies on an Integrated Weed Management approach that employs a variety of proven techniques and has moved toward more effective, selective and environmentally friendly herbicides when they are deemed necessary.

The CALFED priority area is already covered with County Weed Management Areas. The CDFA, in implementing California Senate Bill 1740 (Chaptered 2000), has demonstrated an ability to guide, evaluate and administer weed control grants to WMAs (4.25 million dollars as of January 2002) based on WMA submission of an Integrated Weed Management Plan.

With a primary focus on perennial pepperweed in this program, the techniques of Mark Renz and Dr. Joseph DiTomaso have established effective and environmentally safe techniques to eradicate this weed – especially in small populations. Both herbicidal and mechanical techniques can be used to eradicate pioneer infestations depending on sensitivity of the environment. (Renz and DiTomaso 2000, 1999a, 1999b, 1998a, 1998b, 1997)

From Renz (2000): "Perennial pepperweed is a highly invasive herbaceous perennial. It can invade a wide range of habitats including riparian areas, wetlands, marshes, and floodplains. Once established this plant creates large monospecific stands that displace native plants and animals and can be very difficult to remove. With the exception continual flooding, no non-chemical treatments have been found to effectively control this weed. Excellent control can be obtained with several herbicides, which fit in various control strategies, but limited recovery of desirable plants is seen in these controlled areas unless the soil surface is disturbed. Perennial roots can also remain dormant in the soil for several years, **thus intense monitoring with early detection and removal is the best control measure for perennial pepperweed. Sources of infestations should also be located and eliminated to prevent future infestations.** " (emphasis added)

5. Performance Measures

The success of all aspects of this plan can be framed in terms of performance measures.

The Objectives are delineated above in section 3. Approach.

Performance Measures – Objective 1. The amount of data collected and percent of wetland and other target acreage covered will be used to measure performance. **Expected performance can be formulated based on measured rates of travel and handling of equipment. A set of minimal skills for using ArcView will be required for continued funding of the Weed Management Areas,**

Objective 2 – A process of strategic assessment of the regional patterns of weed distribution will be used to create management zones to "triage" specific populations and regions into eradication, containment or site-specific stewardship with broad CALFED objectives. **Performance will be measured on this set of tasks by an assessment and review of the WMA strategic plan for regional prioritization and also on the submitted Integrated Weed Management Plans, which will detail proposed control and monitoring work. CDFA's role in coordination and analysis will be subject to**

performance measurement in the form of coordination activity logs and summaries. Ultimately, the success of each WMA in meeting their individual goals, in aggregate, will reflect on the performance of the coordination team.

Objective 3 – The process of implementing integrated and adaptive control strategies is very simple to assess for progress when the management goals are predominantly eradication and containment of spread. **Follow up survey and monitoring can be carried out on many levels of intensity either from presence/absence surveys to details transects and quadrats . Ultimately the success of a regional approach will be measured on intervals of 3 – 5 years, and will extend far beyond the scope of the current proposal. Incremental performance can be measured in terms of number of sites eradicated, acres surveyed and treated. Using predictive GIS modeling the impact of preventing weed spread can be measured and the amount of infestation prevented can be measured.**

6. Data Handling & Storage

Local - The formal collection and analysis of inventory and monitoring data is a central component of this proposal. Data storage and analysis at the local level (Weed Management Areas and agencies) is a major part of the capacity building inherent to this plan. WMAs will be further trained in ArcView GIS and will follow principles outlined in the California Weed Mapping Handbook. Inventory work will be done with GPS equipment and fed directly into local ArcView databases. Any control projects conducted with funding from this program will follow monitoring protocols outline in the California Weed Mapping Handbook and will be consistent with the CMARP documents.

Statewide/CALFED wide - The CDFA Integrated Pest Control Branch houses the Noxious Weed Information Project (NWIP). The NWIP project consists of three permanent and four seasonal staff, who have been working with the Senior Scientist to implement an Internet Map Server (IMS) for invasive weeds in California (www.cdfa.ca.gov/weedhome). This Internet database will be able to aggregate and synthesize data from the local County WMAs The NWIP also started and hosts the California Weed Mapping Coordination Committee.

7. Expected Products and Outcomes

Objective 1 – Weed Management Areas will initially focus on the compilation of existing weed localities into the county weed GIS based on existing priorities and data county-wide surveys will be designed to refine the boundaries between light and heavily infested areas and to intensely survey presumed un-infested areas for pioneer or incipient infestation. Survey intensity will be inversely proportional to presumed and observed regional density of the weed. Point, polygon and line features will be collected with GPS receivers and collated into ArcView coverages. Bio-climatic modeling will be conducted by CDFA GIS Staff and combined with know wetland and hydrological coverages to identify primary and secondary search priorities.

Objective 2 – Once most important occurrence data is existing within an ArcView coverage, a process of strategic assessment of the regional patterns of weed distribution will be used to create management zones to "triage" specific populations and regions into eradication, containment or site-specific stewardship. This project will place a higher priority on funding local/regional eradication and maintenance of "no spread" or containment lines. Site-specific stewardship of heavily infested areas within heavily infested regions is very costly and often is not sustainable on a long-term basis. Other considerations such as proximity to threatened, endangered, or sensitive species will effect strategic prioritization. CDFA will work in consultation with CALFED GIS working group and ERP managers in ensuring that prioritizations are most in accordance with broad CALFED objectives.

Objective 3 – Once management zones and strategic assessments have been delineated, the process of implementing integrated and adaptive control strategies commences. Control projects will involve some combination of chemical, mechanical, manual or other treatment and will be monitored for success and non-target effects when appropriate.

The ultimate product is eradicated and contained weed population and the prevention of thousands of acres of pristine wetlands from becoming biologically impared.

8. Work Schedule

	Task Description	Who	Start	End (ongoing)
Objective 1	**Inventory Weeds/ Build GIS**			
Task 1	Training/support in weed survey & GIS	CDFA	Year 1	Year 1
Task 2	Compile known weed localities into GIS	WMA	Year 1	Year 1
Task 3	Field survey and GIS data entry	WMA	Year 1	Year 3
Task 4	Eradicate very small isolated patches	WMA	Year 1	Year 3
Objective 2	**Build Strategic Plans/ Write Integrated Weed Management Plans**			
Task 5	Review plans, establish sub-contract, oversee sub-contracted work	CDFA	Year 1	Year 3
Task 6	Training/support in GIS and plan writing	CDFA	Year 1	Year 2
Task 7	Regional Analysis of weed distributions	CDFA	Year 1	Year 3
Task 8	Environmental Consultation	WMA	Year 1	Year 3
Task 9	Write Strategic and Implementation Plans	WMA	Year 2	Year 2
Task 10	Build Internet GIS Map Server	CDFA	Year 2	Year 3
Objective 3	**Eradicate Weeds / Monitor Sites/Restoration**			
Task 11	Training/support in Control, Eradication, Restoration, & Monitoring of invasive weeds	CDFA	Year 1	Year 2

Task 12	Control, Eradication, Restoration, & Monitoring of Invasive weeds	WMA	Year 2	Year 3

B. Applicability to CALFED ERP and Science Program Goals and Implementation Plan and CVPIA Priorities.

1. ERP, Science Program, and CVPIA Priorities

This program directly addresses Strategic Goals in the ERP EIS Record of Decision (ROD), ERP Draft Stage 1 Implementation Plan (DS1IP), and the Strategic Plan and Action Plan for the Non-native Invasive Species Program. The CALFED Bay-Delta Program Record of Decision (ROD) and the Interagency Implementation Memorandum of Understanding. The specific ROD commitment is listed on page 36 and states, "Implement an invasive species program, including prevention, control and eradication."

Relationships to ERP DS1IP:

Multi Region Priorities and Actions MR-1 (example) "..prevent the establishment of additional NIS…" pp.18-20

Delta Region Priorities and Actions DR-1 (example) " … develop successful approaches to control of Lepidium latifolium .." pp. 40-41

San Joaquin Region Priorities and Actions SJ-1 (example) "…habitat restoration studies in collaboration with local groups" p 32.

Sacramento Region Priorities and Actions SR-5 "Implement action to prevent, Control and reduce impacts of non-native invasive species in the region. P. 28

2. Relationship to Other Ecosystem Restoration Projects

The proposed program detailed herein is designed to be fully complementary to the other existing CALFED funded projects. So far major projects have been funded for the following species: Arundo donax, Spartina sp., Lythrum salicaria. Non-native invasive plant species are also being addressed in large scale restoration programs (e.g. Yolo County). This program aims to be more encompassing of species and regions not covered by existing ERP projects. Perennial Pepperweed (*Lepidium latifolium*) is a high priority ERP target (see section above) that has not received targeted funding for regional assessment and early detection and eradication funding. Further more there has been no mechanism to address important local needs as determined by county based Weed Management Areas. There are many other newly emerging Non-native invasive plants which are begin an encroachment into the regions (e.g. *Sesbania punicea*)

3. Request for Next-Phase Funding

Not Applicable

4. Previous recipients of CALFED Funding

The same management and coordination personnel at CDFA are currently implementing a CALFED funded project ($335,000.00/ 3 years) on the detection and control of purple loosestrife (*Lythrum salicaria*). The work proposed herein is an extension of the concept being implemented for the purple loosestrife work, with the exception that the proposed program implementation will be achieved by making grants to local Weed Management Areas and CDFA will supply program oversight, training and fund management.

5. System-Wide ecosystem benefits

Eliminate pioneer infestations of non-native invasive species prevents wide spread degradation of most habitat and ecosystem values.

From Renz 2000: "Perennial pepperweed poses a serious threat to many native ecosystems and previously disturbed areas returning to their native conditions by creating large monospecific stands. These dense stands can displace threatened and endangered species, such as the salt marsh harvest mouse (Trumbo 1994) or interfere with the regeneration of important plant species such as willows and cottonwoods (Young et al., 1995). Besides decreasing plant diversity, perennial pepperweed is also believed to reduce nesting frequency of waterfowl in and near wetlands that it invades (Trumbo 1994).

Perennial pepperweed also alters the ecosystem that it grows in. Blank and Young (1997) have shown these plants can act as "salt pumps" which take salt ions from deep in the soil profile, transport them up through their roots and deposit them near the surface. This can favor halophytes and put other species at a disadvantage, thereby shifting plant composition and diversity."

C. Qualifications

California Department of Food and Agriculture

The California Department of Food and Agriculture (CDFA) is responsible 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, and 4) *Education*, informing the public as to 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 **five major ongoing programs** that are directly involved in weed control: 1) *Weed and Vertebrate Program*, 2) *Hydrilla Eradication Program*, 3) *Biological Control Program, 4)Weed Management Area Funding Program, 5)Purple Loosestrife Eradication Program*. In addition, *IPC has a Noxious Weed Information, Mapping and GIS team/* which assists the five programs. IPC works closely with County Agricultural Commissioner Offices, State Biologist, and Weed Management Areas (local action weed management groups) in prevention, education, detection, and control efforts.

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. The **Weed and Vertebrate Program** is largely focused on the detection and eradication of rated, State noxious weed listed, weed populations. This group surveys the entire Delta annually 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 purposed Purple loosestrife Project, has shown great success, hydrilla has been eradicated from 9/17 Counties…. And contained ….. 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 team/section** have developed a GIS and database system for mapping and tracking rated weed populations. This group has also implemented/sponsored local Weed Management Areas throughout the State and produces a quarterly newsletter, "Noxious Times."

Nathan Dechoretz, Lead PI
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. Currently serves as Branch Chief for the Integrated Pest Control Branch at the CDFA, Sacramento CA. 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. Past Chair of the California Interagency Noxious Weed Coordinating Committee and is a lead member of 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. Vast experience in the field qualifies Dechoretz as one of the lead weed control experts on the west coast.

Steve Schoenig, Project Supervisor and Main Coordinator, Co- PI

Has 20 years experience in the fields of biological control, weed research and GIS. 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 1983 and 1987, respectively. From 1991 to 1995 provided statistical consultation and planned and implemented biological control projects/studies while serving as Associate Environmental Research Scientist with the Biological Control Program at CDFA. Summer 1996 to present, serves as lead Senior Environmental Research Scientist for the Weed Information, Mapping, and GIS Section within the Integrated Pest Control Branch at the CDFA, Sacramento CA. Duties include: supervising 12 people, 4 major projects. Implements a funding pass-through program of $5 million to county Weed Management Areas and weed researchers. Vast research, field, and teaching experience has been carried in entomology, statistics, weed science and GIS. Given numerous presentations on weed science, mapping and control as well as, authored/co-authored over 20 scientific publications. Currently Vice President of the California Exotic Pest Plant Council, Chair of the California Interagency Noxious Weed Coordinating Committee and member of California Weed Science Society, Weed Science Society of America, California Native Plant Society.

Carri Benefield, Associate 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 Supervisor for Weed Information, Mapping, and GIS Section. 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 to "Wildland Weeds of California,".

D. Cost

1. Yearly Budget Summary

	year1	year 2	year3
Cost-share grants to Weed Management areas	$1,480,000.00	$1,540,000.00	$1,700,000.00
Project Coordinator (salary + benefits)	$73,035.00	$73,035.00	$73,035.00
Mapping and Monitoring Coordinator (salary + benefits)	$57,640.00	$57,640.00	$53,645.15

Senior Manager (salary + benefits)	$18,342.00	$18,342.00	$17,703.22
Travel and supplies	$24,322.00	$27,021.00	$22,407.63
Indirect Costs (21.9% * (salary + benefits))	$36,730.00	$31,406.00	$28,347.00
TOTAL Yearly Budget	$1,690,069.00	$1,747,444.00	$1,895,138.00

(see budget spread sheets for details)

2. Cost-sharing

There are two levels of cost-sharing inherent in this proposal. The work by CDFA in implementing the GIS, coordination and training elements of the new program will be matched in-kind by current staff and resources who are already carrying out many coordination activities for Weed Management Areas statewide.

Senate Bill 1740 (Chaptered 2000) has allocated $ 5 million towards local Weed Management Area cost-share grants statewide and will supply matching dollar support for some of the CALFED associated programs both at the CDFA level and at the local Weed Management Area level.

The proposed program will be implemented such that any Weed Management Areas receiving these CALFED pass-through grants, in addition to addressing CALFED ERP Implementation objective will have to show at least a 1:1 matching cost-share contribution from non-CALFED sources.

E. Local involvement

County Agricultural Commissioners & Local Weed Management Areas

County-level Weed Management Areas, and other weed-specific coordination groups have brought invasive plant prevention and control to a more local level and have increased the sophistication and effectiveness of invasive species management in California. Between 1997 and 2001 the number WMAs has risen from 7 to 43 comprising 52 individual counties.

A Weed Management Area (WMA) is a local organization that brings together landowners and managers (private, city, county, state, and federal) in a county, multi-county, or other geographical area for the purpose of coordinating and combining action and expertise in combating common invasive weed species. It is intended to be at the grassroots level where participants in the group are actually the people who are out directly controlling weeds or doing education work with those who do.

A WMA is voluntarily governed by a chairperson or a steering committee. To date, groups in California have been initiated by either the leadership of the County Agricultural Commissioner's Office or a Federal Agency employee. WMA's are unique because they attempt to address agricultural (regulatory) weeds and "wildland" weeds under one local umbrella of organization. WMA's have printed weed I.D./control

brochures, organized weed education events, written and obtained grants, coordinated demonstration plots, instituted joint eradication and mapping projects, as well as, many other creative and effective outreach and weed management projects.

Often WMA groups form to address management concerns (Suppression) for the crisis weeds in their area. As the group gains momentum and members it can address an adaptive management model of regional weed control activities:

- Planning (strategic plan, MOU, management plan)
- Prevention - Education(at all levels), Regulations
- Detection - Finding, Reporting, Mapping (GPS,GIS)
- Suppression - Fire Model, Integrated Pest Management
- Re-vegetation - Forage crops, natives - depends on objectives
- Monitoring - Then back to planning for the next season

County Agricultural Commissioners and agency employees take the lead role on county Weed Management Areas. (more info on WMAs see www.cdfa.ca.gov/wma)

Core WMA: Alameda, Contra Costa, Fresno, San Joaquin, Sacramento, Solano, Stanislaus, Sutter, Yolo, Yuba

Periphera WMAl: Butte, Colusa, Glenn, Merced, Tehama,

F. Compliance With Standard Terms and Conditions

CDFA and local county Weed Management Areas will have no problems complying with all Standard Terms and Conditions as outlined in the Proposal Solicitation Package. CDFA currently has both Federal and State CALFED contracts as well as hundreds of county, state, and federal interagency agreements.

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