



WaterKeepers

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June 4, 2003

Ms. Peggy R. Olofson
Director, Invasive Spartina Project
Ms. Maxene Spellman
Project Manager
California Coastal Conservancy
1330 Broadway, Floor 11
Oakland, CA 94612

Re: Comments on the Proposed EIR for the San Francisco Estuary Invasive Spartina Project: Spartina Control Program

Dear Ms. Olofson, Ms. Spellman and Members of the Spartina Control Program:

On behalf of San Francisco BayKeeper, a project of WaterKeepers Northern California ("BayKeeper"), we offer, for your consideration, the following comments on the proposed EIR. We commend you for preemptively drafting a fairly thorough proposal. We reiterate, however, that the comments provided herein are brief due to limited resources for BayKeeper involvement and thus do not preclude any future objections that BayKeeper may have regarding the final monitoring plan, the final EIR, implementation of either proposal, and unforeseen consequences. BayKeeper has incorporated some comments made by Dr. G. Fred Lee into our assessment, but Dr. Lee will also be providing his complete scientific evaluation of the proposed EIR and draft monitoring plan under separate cover.

General Comments

Overall, the draft EIR for the proposed San Francisco Estuary Spartina Control Program covers most of the environmentally significant issues that may arise when evaluating the potential use of herbicides and mechanical techniques to control invasive *Spartina* species in the San Francisco Bay. However, because of the many chemical unknowns involved the application of glyphosate and its associated components (surfactants and colorants) to marsh and mudflat environments, it is essential that a comprehensive monitoring plan, similar to the one presented in draft form to BayKeeper, be included in the text of the EIR. The California Environmental Quality Act ("CEQA") requires an agency to identify a project's potential significant impacts on the environment, to identify alternatives to the project, and to indicate the manner in which those significant impacts can be mitigated or avoided. The agency must mitigate harmful environmental impacts whenever feasible. (CEQA § 21002.1(a) and (b)). The monitoring plan

is essential to the mitigation requirements. The plan should also consider the herbicide mixture's impact on the water column, sediment, and aquatic life, including the impact on benthic organisms. Little information is available regarding the toxicity of glyphosate in combination with other chemicals, and this gap in knowledge must be addressed as a central issue in the monitoring plan. The monitoring plan also must adequately address the impacts of mechanical removal technology at the time of removal and at a later time after removal. It must further address post application effects of the proposed non-chemical alternatives.

BayKeeper understands the agencies' urgent need to contain and reduce Spartina in these Bay watersheds, however, we greatly urge caution when turning to chemicals of unknown toxicity and other less-studied alternatives. The Bay ecosystem does not need to be faced with an even greater environmental hazard as a result of present haste. According to BayKeeper's current understanding of the Spartina problem and program, we believe the following comments will help improve the Spartina Control Program and reduce future unforeseen, unwanted consequences.

Specific Comments

Need To Clarify Timeline

The EIR does not include a clear timeline for monitoring the impacts of removal operations or reassessing the project's goal. There should be a definite short term and long term timeline that is consistent for all monitoring. There should also be a clear indication of when the project will cease to aim for eradication and move into a more management, control-based approach, and the EIR should indicate what factors could trigger this switch. The timeline should include a specific timeframe during which the program will be re-evaluated and control measures will be re-assessed. Especially since the EIR states that "the acreage proposed for chemical treatment may decline as newer and more effective mechanical [and we would hope other non-chemical technology] becomes available." (Page 2-22).

Disposal Methods After Removal May Be Inappropriate

CEQA requires a full analysis of all potentially adverse environmental impacts and any feasible mitigation measures. (§ 21002.1(a) and (b)). The EIR must contain specific, identified environmental risks, and specific mitigation measures. The language of the EIR does not provide enough specific context to assure that the disposal of dredged materials will not adversely effect the marsh environment.

In order to provide a full analysis of the impacts and mitigation the EIR should contain a specific reference to the feasible operations mentioned in the EIR: "Disposal of dredged material from navigational and flood control projects to diked bayland restoration projects has proven both feasible and cost effective. Based on the similarity of the operations, Control Program planners are optimistic that disposal of materials from eradication projects to assist wetland restoration may also be feasible." (Page 2-10). It should also provide a more detailed description

of methods that aim to “beneficially re-use excavated or dredged materials from cordgrass eradication sites to facilitate restoration of dikes baylands.” (Page 2-10). The EIR should contain references to the specific projects where the disposal technique has been, and will be, used, so that the effectiveness of the disposal method can be better understood.

CEQA also requires that an EIR contain a description of all mitigation measures, which should include all proposed monitoring and evaluation techniques. (§ 21002.1(a)). While the stated objective seems to fit this requirement, “the Control Program would carefully monitor and evaluate the efficacy of any such pilot effort [referring to the pilot disposal program described above], more monitoring detail should be provided for dealing with the future impacts on the environment from disposal of dredged materials, preferably as part of a comprehensive monitoring plan for the potential impacts of mechanical removal and other alternatives, including the long-term potential adverse impacts of frequent mowing, burning, pruning, flaming and flooding. As the EIR mentions, Spartina may sprout from tiny fragments. Thus any disposal method must be clearly described to better understand the environmental impacts and to ensure no further spreading.

Suggested Alternatives Are Inadequately Described And Should Not Be Entirely Rejected

CEQA requires an agency to consider all the alternatives to a proposed action that may impact the environment. (§ 21002.1(a)). CEQA also requires that all feasible mitigation measures be considered. Only if economic, social or other conditions make it infeasible to mitigate one or more of the significant effects on the environment of a project may the alternative or mitigation measure be rejected. (§ 21002.1(a) and (c)). The proposed EIR insufficiently rejects one of the action alternatives and the four alternatives presented in favor of an action that will include herbicidal applications and could lead to the most harmful impacts to the aquatic environment.

There are very few reasons, most of which are unconvincing, for not pursuing the non-chemical action alternative. For instance, Alternative 2 states that without chemical treatment, it would be “difficult to assure the death of individual plants, resulting in the possible need for repeated mechanical treatment of areas as plants regenerate.” (Page 2-23). However, a repeated application of herbicides will probably have to occur to guarantee eradication and to prevent re-growth from parts. Additionally, the fact that mechanical equipment may be infeasible in certain areas does not rule this method out for optimal conditions. And no rationale is provided for why a combination of non-chemical alternatives, such as mechanical, hand excavation, and covering, cannot be used instead of toxic herbicides.

One of the rejected alternatives is the eradication of species with limited distribution. The draft EIR states the goal of the limited distribution approach “would be to eradicate only three of the non-native cordgrass species: Chilean cordgrass, salt-meadow cordgrass, and English cordgrass. These species currently have small population sizes and limited distributions, therefore the likelihood of full eradication is high. However, this approach would not address the existing and expanding problem of Atlantic smooth cordgrass invading low intertidal

habitats.” (Page 2-24). The EIR presents inadequate reasons to reject this alternative. From the descriptions, the non-chemical alternatives could be used in combination with an alternative that focuses on Atlantic smooth cordgrass, such as the biological control method used in Washington, which utilizes the plant-hopper to eliminate this species. As the only alternative or mitigation measure it may be inadequate to prevent the spread of invasive Spartina, however, this alternative is likely to succeed as a part of a larger, non-chemical removal effort. This rejected alternative should be re-evaluated and more sufficiently included as part of the overall EIR.

The EIR must more fully address the potential to use biological controls to manage invasive Spartina populations. The EIR uses only one paragraph to describe the potential use of the plant-hopper to control the hybrid Spartina species. (Page 2-24). More analysis of the feasibility of this biological control should be addressed. It should not be rejected simply because it has a “high potential” to attack native species of cordgrass – if this rationale is used in this instance, then BayKeeper would like to suggest that glyphosate should not be used because it has a “high potential” to pollute the entire marsh ecosystem. Further, if the plant-hopper is already native to San Francisco Bay, then the difficulties in obtaining a permit should be less of an issue than they are said to be in the EIR. More information about permitting problems should be provided. Additionally, the success of biological control mechanisms in Washington and other sites should be described. In addition to the plant hopper, the EIR should also address any other potential organism that could act as a biological control. And the possibility of biological control should be addressed in combination with other methods.

Furthermore, since the EIR states that “the Control Program shall continue to investigate improved herbicide formulations with lower ecological risks,” (Page 3.2-13) consideration of other potentially less toxic new herbicides, such as imazapyr (Arsenal), which is being tested in Washington state, should be considered and implemented into the Control Plan. In addition to the potential alternative imazapyr, other non-chemical alternatives being used by Washington authorities should be further analyzed and assessed for use in the San Francisco Bay.

Vehicle Impacts On Geomorphology and Hydrology Should Be Further Described

The EIR states that “unless the treatment method specifically requires it, vehicle travel in the tidal marsh and mudflat shall be minimized. Mats shall be used to distribute the weight of vehicles on marsh surfaces *wherever feasible*.” Sensitive sites, or sites surrounded by sensitive habitat that could be significantly impacted by erosion or sedimentation from overland vehicles shall be accessed by boat providing those access methods have less overall adverse environmental impact.” (Page 3.1-7, emphasis added).

The EIR should contain details about mitigation measures for using vehicles in the marsh where mats are not feasible, so that all the potential impacts of the vehicles are clear. Further, the EIR should contain an analysis of the environmental impacts of boat access on the wetland as part of their impact assessment. The above statement mentions that boat access will be used “providing those access methods have less overall adverse environmental impact.” A comparison of the environmental impacts of vehicle and boat access for removal operations

should be included, as well as compared to alternatives requiring manual access.

Need to Address Cumulative Impacts from Herbicide Mixtures

The EIR does not adequately address the impacts of the herbicide and other chemicals for Spartina control, as required by CEQA. Additionally, as the EIR states, “a monitoring program shall...include appropriate toxicological studies to determine toxicity levels of the herbicide solutions being used. The Control Program shall use adaptive management strategies to refine herbicide application methods to increase control effectiveness and reduce impacts.” (Page 3.2-13).

One of the major problems with attempting to review this EIR is the fact that there is no monitoring program within the EIR available for review. The monitoring program must be included in the EIR and must specifically address the overall toxicity that results from the combination of glyphosate, the surfactants and colorants, and the results from mixing these with other chemicals that already exist in the sediment and water column. If “studies of toxicity of glyphosate mixtures” in estuarine environments are “few and the data unreliable,” and if the “tidal marsh conditions...can be a problem for efficacy of glyphosate,” then why does the EIR propose to use glyphosate? More research and data collection on the toxic and cumulative impacts of glyphosate must be done before the known toxin can be applied to the environment for an unpredictable number of years. Precaution should prevail when there is a gap in the knowledge of a synthetic chemical’s impacts and efficacy.

Additionally, in the Summary of Mitigation Measures for Water Quality, the mitigation measures for WQ-2, and WQ-3 state that a plan will be developed and implemented. A monitoring plan for the measurement and recording of any future impacts from the described herbicide activities should be included in the final EIR as part of the mitigation plan. Another row could be added to the table with a monitoring schedule for each procedure and its potential impacts. If the long-term effects of the alternatives and mitigation measures are unknown, then there is little justification to chose one alternative over another.

Chronic Toxicity Must Be Assessed

The EIR states that “because Project applications of herbicides would occur only one or twice a year and compounds in the herbicide mixture are not expected to persist in significant concentrations for more than several hours, chronic exposure is not likely. Therefore, this evaluation focuses on acute toxicity, which would occur the compounds are present at relatively high concentrations during and immediately following application.” (Page 3.3-25).

This approach may be effective in a limited capacity for water column effects, but the herbicide mixture may interact with other chemicals in the sediment and lead to chronic toxicity. The EIR needs to more fully evaluate the potential for toxic spots in low tidal areas after application as a result of the mixing of the herbicide and other chemicals. The monitoring plan must also consider the potential for chronic toxicity and monitor the overall toxicity carefully.

CEQA requires adequate review of the cumulative impacts of any proposed action (see § 21083(b)), and thus includes monitoring for the total toxicity in the water and soil as part of any mitigation plan, particularly in areas that may become chronically over-toxic.

Potential Absorption By Benthic Organisms Must Be Analyzed

The EIR states that “one ecologically significant feature of glyphosate is that it is strongly adsorbed by organic matter and fine sediment, such as clay or silt. Sediment films on plant surfaces strongly interfere with uptake and activity of glyphosate. In its chemically bound, adsorbed state, glyphosate is chemically intact, but physiologically inactive.” (Page 3.3-27).

The above statement may be unreliable with respect to the uptake in the intestinal tract by benthic organisms. Pesticides that have been characterized as strongly adsorbed to particles are being found to be absorbed into the tissues of benthic organisms through the intestinal tract. The toxicological effects of this absorption have been insufficiently studied. This unknown toxicological impact should be considered more carefully and monitored.

More Studies Need To Be Assessed Regarding The Impact Of Herbicides On Biological Resources

R-11, an adjuvant to be used in the proposed project, has been shown have an adverse impact on amphibian populations as an endocrine-blocking agent. Even at very low concentrations, serious effects of R-11 are seen in frogs in the field and in lab rats. Findings have indicated that exposures at 25 ppm produced significant disruption to the species’ endocrine systems. Because R-11, and other adjuvants, have the potential to disrupt endocrine systems in amphibians at low concentrations, the application of herbicides on the habitats of these populations must be considered and mitigated.

On page 3.3-46, the proposed EIR analyzes the impacts of removal on the California red-legged frog (IMPACT BIO-7). While no impacts are foreseen because the proposed EIR assumes that the habitat for this species will not overlap with areas where eradication operations would occur, the possibility of these populations being impacted in the future must be addressed as part of any mitigation plan for biological resources. Additionally, the EIR must assess the impacts of herbicidal drift on these populations and their habitats.

Finally, there is documentation that glyphosate causes mutations in genetic structures of lab species. The EIR must address this potential impact of glyphosate, especially in light of the lack of sufficient research, in order to prevent long-term harm to both aquatic species and human applicators and communities.

Human Health Impacts Need To Be More Fully Mitigated

The EIR states under MITIGATION WQ-1 that “Herbicides shall be applied directly to

plants and at low or receding tide to minimize the potential application of herbicide directly on the water surface. Herbicides shall be applied by a certified applicator and in accordance with application guidelines and the manufacturer label.” (Page 3.2-13). BayKeeper expects that certified applicators will be trained to take adequate precautions, however, the EIR should further mitigate potential impacts on human health by going beyond labeling requirements to keep applicators from accidental exposure to the toxin. It should also recommend measures such as change of clothes and showers before coming into contact with other people, especially children.

On page 3.6-1 the EIR describes the Potentially Exposed Populations that may be exposed to health risks associated with the herbicide. This paragraph and the follow-up impact and mitigation assessment should include mitigation for future unknown potentially exposed populations that may occur later in the project. The potential for accidental exposure during spray is great due to the open and public nature of the Bay. Measures should be taken to ensure that no boats and bystanders are close to the spray area during the appropriate window of dissipation. Additionally, since sediment toxicity could be a potential hazard for an unknown period of time, measures must be taken to ensure that people do not come into contact with contaminated patches of land.

Furthermore, the mitigation proposal for health effects to the public from herbicide application says that no spraying will be conducted within 0.25 miles of a school, hospital or other sensitive receptor location. The EIR should delineate why the 0.25 mile zone is a sufficient buffer for the spray zone.

Private Land Removal Requires Further Description

A monitoring plan for the application of herbicides is required by the NPDES permit. The EIR should more fully address this process in terms of getting permission of the private land owners. The EIR should also address the possibility of any unforeseen contact with the herbicide that may arise on private lands as a result of various land uses in the area.

Potential Drift Must Be More Adequately Addressed

The potential for herbicide drift should also be addressed in the context of private landowners and also as it impacts neighboring communities. The buffer zone, currently set at 0.25, must account for the possibility of drift both during the application period and for the time period that herbicide particles could again become airborne due to strong coastal winds. The monitoring plan must make sure it addresses the overall water and sediment quality in spray areas and surrounding communities for the full term of the project, not just during the time of application.

Worst Case Scenario Should be Addressed

The final EIR should contain a worst-case scenario evaluation of the concentration of

glyphosate that could occur when applied in accordance with label instructions. This scenario should assume the chemical is dispersed evenly in the water column during the initial low tide runoff from the area to which the chemical is applied. Dr. G. Fred Lee's preliminary calculations indicated that there is at least a hundred-fold margin of safety between worst-case concentrations under normal application rates and acute toxicity in the water column.

It is generally concluded that glyphosate-based herbicides have low toxicity to aquatic life as compared to many other pesticides. The properties of glyphosate herbicides are such that their aqueous environmental chemistry would tend to lead to rapid detoxification and eventual degradation. If this is proven to be true, then the issue becomes whether the combination of chemicals used in the herbicide mixture, as well as other chemicals in Bay water and/or sediments, could lead to aquatic life toxicity, which would be adverse to the beneficial uses of the waterbody. The EIR should address whether the Spartina beds are a habitat for larval fish or other forms of aquatic life and whether repetitive application of glyphosate and the destruction of habitat will result in any adverse impacts to these species.

Sediment toxicity is also highly probable, and this potential impact must be monitored for and evaluated.

The EIR must take all potential impacts on the community into account, this may include, as mentioned above, monitoring for specific impacts to the water and sediment caused by mixing of herbicide and other chemicals. It should also include an analysis of the probable drift of application and its impact on surrounding communities. If in fact the final EIR determines that glyphosate is the appropriate approach to controlling the invasive spread of Spartina and eliminating it to the extent practicable, it is essential that a highly comprehensive monitoring program be conducted.

Proposed Monitoring and Reporting Plan (to meet requirements of Statewide General NPDES Permit for Discharges of Aquatic Pesticides to Waters of the United States).

The final comprehensive monitoring and reporting plan should be included in the final EIR because that is the only way to assess whether the assumptions made by the EIR are in fact realistic. The application of glyphosate is the EIR's chosen method because its harm on the environment is unknown. But just because the harm is unknown does not mean that it is mitigated, as required by CEQA. Short-term and long term impacts of glyphosate, its cumulative effects on both aquatic life and sediment quality, and the impacts of potential alternatives must be outlined in the EIR's monitoring plan and studied before the agency can justify its decision to use glyphosate for the duration of the Control Program.

Water Quality Parameters

Page 2 of the proposed monitoring and recording plan states, "Monitoring for surfactants or colorants used with herbicides is not required under the Statewide General Permit. Therefore, the Project will not monitor for the non-ionic surfactants or colorant used in conjunction with

glyphosate, except for R-11...” Colorants are not regulated as pesticides by state or federal agencies but contain a complex mix of chemicals. Because of their complexity and potential for toxicity, colorants should be analyzed as thoroughly as the active ingredients of both glyphosate and the surfactants R-11.

Aquatic Toxicity

The chart on page 3 does not specify a water quality objective in the 96-hour LC50 Bio-Toxicity larvae and juvenile test. More specific goals for future and long-term monitoring of water toxicity should be included in the final EIR.

Bioaccumulation

The chart on page 3 does not lay out specific parameters for measuring the bioaccumulation of toxicity over time. The monitoring plan should include more specific monitoring techniques for the long-term potential of chronic toxicity and bioaccumulation.

Sediment Quality

The proposed monitoring plan for sediment does not include any specific sediment quality goals in the table on page 4. The final EIR should outline specific sediment quality objectives as well as a comprehensive monitoring plan to evaluate contamination of the sediment.

Sampling Frequency and Locations

The EIR should more fully explain the reasoning behind collecting at high tide. Would concentrations be turn out to be higher when collected at low tides? If so, the monitoring would lead to skewed results that may not accurately reflect low tide concentration toxicity to aquatic species.

Page 7 of the proposed monitoring plan, under the Section labeled “Sampling Frequency and Locations” states in the first paragraph that “water quality samples will be evaluated for glyphosate, R-11, and nonylphenol residue.” The samples should also evaluate any other chemicals, surfactants, and colorants applied in the herbicide process and other chemicals that are already present in the water to ensure that there are no negative impacts from the combination of all the chemicals.

Proposed Monitoring of Mechanical Techniques

All of the impacts of mechanical technology should be analyzed and mitigated. The EIR does include mitigation strategies for all mechanical and manual technology for removal of Spartina, however, the proposed monitoring plan only includes monitoring either prior to or at the time of removal. The Table on page 1, of the May 20, 2003 draft Monitoring and Reporting

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Plan indicates no future monitoring or mitigation for any impacts on the area from mechanical or manual removal that may occur after actual removal. The EIR should include another column to address the future impacts of non-herbicide removal techniques. This monitoring should include any incidental takes of species that occur as a result of mechanical or hand removal operations.

BayKeeper hopes these comments on the draft EIR and monitoring plan help to improve the final Spartina Control Program. If you have any questions, please contact Sejal Choksi at 415-856-0444 x107.

Sincerely,

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