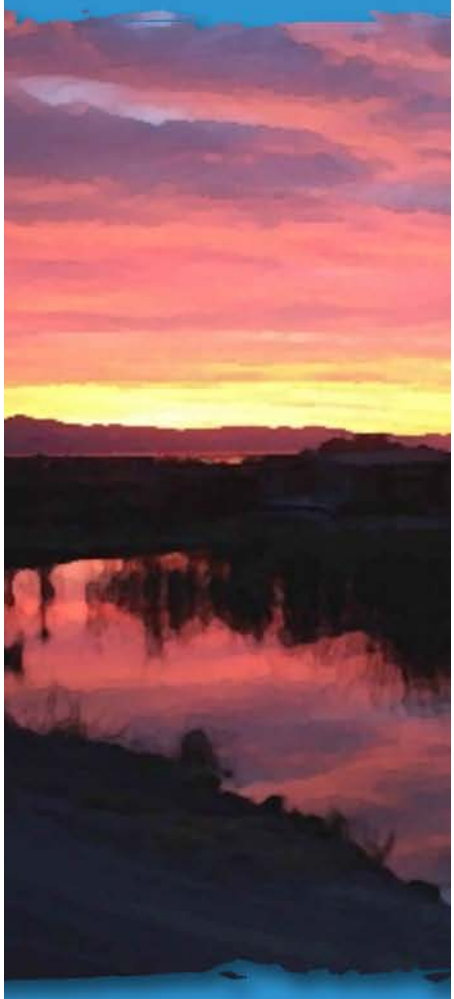
Section E

Findings Related to Significant Effects Reduced to Less than Significant Levels by Mitigation



E. Findings Related to Significant Effects Reduced to Less than Significant Levels by Mitigation

The WHCP Final PEIR identifies five (5) resource areas with significant, or potentially significant effects. Within these five resource areas, the Final PEIR identifies twenty (20) individual impacts. Of these twenty impacts, thirteen (13) impacts are less than significant, or will be reduced to less than significant, by implementing mitigation measures. This section describes the DBW's findings related to these thirteen impacts. Chapters 3 through 6 of the Final PEIR provide a detailed analysis of these impacts and mitigation measures. **Table E-1,** on the next page, provides a summary of the WHCP mitigation measures. In the remainder of this document, we refer to the mitigation measures by their numeral (the first column of Table E-1). The specific mitigation measure identifiers in the third column of Table E-1 identify the associated impact number.

Agricultural Resources

Impact A1 – Agricultural Crops: effects of WHCP herbicide treatments on agricultural crops

There are approximately 1,800 agricultural diversions in the Delta. During the peak summer irrigation season, diversions from these facilities collectively exceed 5,000 cubic feet per second. The WHCP could adversely impact agricultural crops, since treatments would occur during the irrigation season. Implementation of the following mitigation measures will reduce this impact to a less than significant level:

- **Mitigation Measure 3** – Conduct herbicide treatments in order to minimize potential for drift
- **Mitigation Measure 22** – Notify County Agricultural Commissioners about WHCP activities.

Impact A2 – Irrigation pumps: effects of WHCP treatments on agricultural irrigation

Herbicide treatments, handpicking, and herding may break fragments of water hyacinth lose into Delta waterways. These water hyacinth fragments would increase debris loading at the 1,800 agricultural irrigation intakes located throughout the Delta. Implementation of the following mitigation measures will reduce this impact to a less than significant level:

Table E-1
WHCP Mitigation Measures Summary

	Mitigation Measures Summary[1]	Specific Mitigation Measures
1.	Avoid herbicide application near special status species, and sensitive riparian and wetland habitat; and other biologically important resources	B1a; B2d; B4c; B6a; W2a; W3a
2.	Provide a 250 foot buffer between treatment sites and shoreline elderberry shrubs (*Sambucus* ssp.), host plant for the valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)*	B1b
3.	Conduct herbicide treatments in order to minimize potential for drift	B1c; B2f; H2d ; W1d; W2e; W3e; A1b
4.	Operate program vessels in a manner that causes the least amount of disturbance to the habitat	B1d; B6b; W2f; W3f; W6a
5.	Implement temporal and spatial limitations and restrictions on herbicide treatments to minimize treatments during times, and at locations, where larval and/or migratory fish are likely to be present	B2a
6.	Monitor herbicide and adjuvant levels to ensure that the WHCP does not result in potentially toxic concentrations of chemicals in Delta waters	B2b; B4a; W1a; W2b; W3b
7.	Implement an adaptive management approach to minimize the use of herbicides	B2c; B4b; H2c; W1c; W2c; W3c
8.	Provide treatment crews with electronic mapping that identifies previously surveyed areas for giant garter snake habitat	B2e
9.	Monitor dissolved oxygen levels pre- and post-treatment for all WHCP treatments	B5a; W4a
10.	Treat no more than three contiguous acres at any treatment site	B5b; W4b
11.	Treat no more than one-half of the area at one time of completely infested dead-end sloughs to allow for fish passage	B5c; W4c
12.	Treat no more than one-half of completely infested moving waterways at one time to allow for fish passage	B5d; W4d
13.	Collect plant fragments during and immediately following treatment	B7a; W5c; U1b; A2b
14.	Conduct handpicking and herding only as required	B7b
15.	Identify and utilize disposal areas that have no and/or low habitat value for the federal and State listed giant garter snake *(Thamnophis gigas)*	B8a
16.	Identify and utilize disposal areas that are at least 100 feet away from elderberry shrubs (*Sambucus* ssp.)	B8b
17.	Minimize public exposure to herbicide treated water	H1a
18.	Require treatment crews to participate in training on herbicide and heat hazards	H2a
19.	Follow best management practices to minimize the risk of spill and to minimize the impact of a spill, should one occur	H2b ; H3a
20.	Implement safety precautions on hot days to prevent heat illness	H2e
21.	Follow the Memorandum of Understanding (MOU) protocol for herbicide applications within one (1) mile of Contra Costa Water District (CCWD) drinking water intake facilities	W1b; W2d; W3d; W5a; U1a
22.	Notify County Agricultural Commissioners about WHCP activities	W5b; A1a; A2a

[1] Please refer to the text in Volume I, Chapters 3 through 6 for the complete mitigation measure description.

- **Mitigation Measure 13** – Collect plant fragments during and immediately after treatments
- **Mitigation Measure 22** - Notify County Agricultural Commissioners about WHCP activities.

Biological Resources

Impact B3 – Herbicide bioaccumulation: effects of herbicide bioaccumulation on special status species

Based on existing evidence, neither 2,4-D, glyphosate, or the adjuvant Agridex®, are likely to result in adverse effects on biological resources due to bioaccumulation of herbicide. The impact of bioaccumulation on special status species is expected to be less than significant. No mitigation measures are required.

Impact B5 – Dissolved oxygen levels: effects of treatment on local dissolved oxygen (DO) levels, and resulting impact on special status species, resident native or migratory fish, sensitive habitat, and wetlands

The WHCP could result in adverse indirect effects to special status fish, resident and migratory fish, and sensitive riparian and wetland habitats due to the rapid decay of water hyacinth, other aquatic macrophytes, and algae following herbicide applications. Decomposition of vegetative material may create an organic carbon slug, which could in turn reduce dissolved oxygen concentrations. Implementation of the following mitigation measures will reduce this impact to a less than significant level:

- **Mitigation Measure 9** – Monitor dissolved oxygen levels pre- and post-treatment for all WHCP treatments
- **Mitigation Measure 10** – Treat no more than three contiguous acres at any treatment site
- **Mitigation Measure 11** – Treat no more than one-half of the area at one time of completely infested dead-end sloughs to allow for fish passage
- **Mitigation Measure 12** – Treat no more than one-half of completely infested moving waterways at one time to allow for fish passage.

Impact B6 – Treatment disturbances: effects of treatment disturbances on special status species, resident native or migratory fish, sensitive habitat, and wetlands

Operational activities associated with WHCP herbicide treatments, handpicking, or herding, primarily using motorized watercraft, may result in operational-related disturbances on special status species, or resident native or migratory fish species located nearby. These disturbances may also temporarily result in impacts to sensitive riparian or wildlife habitats. Implementation of the following mitigation measures will reduce this impact to a less than significant level:

- **Mitigation Measure 1** – Avoid herbicide application near special status species, and sensitive riparian and wetland habitat; and other biologically important resources
- **Mitigation Measure 4** – Operate program vessels in a manner that causes the least amount of disturbances to the habitat.

Impact B7 – Plant fragmentation: effects of plant fragmentation on sensitive habitat and wetlands

There is the potential for plant fragmentation resulting from WHCP activities to impact sensitive habitat and wetlands through the further spread of water hyacinth. However, the likelihood of plant fragment escape during handpicking or herding is low. Implementation of the following mitigation measures will reduce this impact to a less than significant level:

- **Mitigation Measure 13** – Collect plant fragments during and immediately following treatments
- **Mitigation Measure 14** – Conduct handpicking and herding only as required.

Impact B8 – Disposal following handpicking: effects of disposal following handpicking on sensitive habitat and wetlands

Disposal of handpicked water hyacinth, if not properly managed, could impair sensitive habitats and wetlands. This impact is already less than significant, however implementation of the following mitigation measures will further minimize potential impacts:

- **Mitigation Measure15** – Identify and utilize disposal areas that have no and/or low habitat value for the federal and State listed giant garter snake *(Thamnophis gigas)*
- **Mitigation Measure 16** – Identify and utilize disposal areas that are at least 100 feet away from elderberry shrubs *(Sambucus ssp.)*.

Hazards and Hazardous Materials

Impact H1 – General public exposure: there is potential for the WHCP to create a significant hazard to the public through the routine transport, use, or disposal of WHCP herbicides

The general public could be exposed to WHCP herbicides through: consumption of drinking water contaminated with herbicides, consumption of fish or other aquatic organisms that have bioaccumulated WHCP herbicide residues, or swimming or water skiing in areas recently treated with WHCP herbicides. However, based on existing research and evidence, program operations, and monitoring results, WHCP herbicide treatments are not likely to result in adverse effects to the general public. Implementation of the following mitigation measure will further reduce this already less than significant impact:

- **Mitigation Measure 17** – Minimize public exposure to herbicide treated water.

Impact H2 – Treatment crew exposure: there is potential for the WHCP to create a significant hazard to treatment crews through the routine transport, use, or disposal of WHCP herbicides; and/or through heat exposure

The potential for the WHCP to create a significant hazard to treatment crews through the routine transport, use, or disposal of WHCP herbicides depends on exposure and toxicity. These factors are described in detail in Chapter 4 of the Final PEIR. It is extremely unlikely that there would be acute health impacts to WHCP treatment crews as a result of exposure to herbicides. It is also unlikely that there would be chronic health impacts to WHCP treatment crews as a result of exposure to WHCP herbicides. However, given the uncertainties related to the long-term human health impacts of low level exposure to 2,4-D and glyphosate, it is important that the DBW minimize the potential for herbicide exposure. There is also potential for acute health impacts to WHCP treatment crews as a result of heat exposure during WHCP treatments. Implementation of the following mitigation measures will reduce this impact to a less than significant level:

- **Mitigation Measure 3** – Conduct herbicide treatments in order to minimize potential for drift
- **Mitigation Measure 7** – Implement an adaptive management approach to minimize the use of herbicides
- **Mitigation Measure 18** – Require treatment crews to participate in training on herbicide and heat hazards

- **Mitigation Measure 19** – Follow best management practices to minimize the risk of spill, and to minimize the impact of a spill, should one occur
- **Mitigation Measure 20** – Implement safety precautions on hot days to prevent heat illness.

Impact H3 – Accidental spill: there is potential for the WHCP to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment

A catastrophic spill of either 2,4-D or glyphosate could result in adverse impacts to human health due to exposure of concentrated herbicides. However, in 25 years of operation, there have not been any accidental spills of herbicides during WHCP operations. Implementation of the following mitigation measure will reduce this impact to a less than significant level:

- **Mitigation Measure 19** - Follow best management practices to minimize the risk of spill, and to minimize the impact of a spill, should one occur.

Hydrology and Water Quality

Impact W5 – Floating material: following WHCP treatment, waters may potentially contain floating water hyacinth fragments in amounts that cause nuisance or adversely affect beneficial uses, violating water quality standards or otherwise substantially degrading water quality

Herbicide treatments, handpicking, and herding may break fragments of water hyacinth loose in Delta waterways. Potential negative impacts from floating debris include increasing debris loading at water utility intake facilities and agricultural irrigation intakes. Implementation of the following mitigation measures will reduce this impact to a less than significant level:

- **Mitigation Measure 13** – Collect plant fragments during and immediately following treatments
- **Mitigation Measure 21** – Follow the Memorandum of Understanding (MOU) protocol for herbicide applications within one (1) mile of Contra Costa Water District (CCWD) drinking water intake facilities
- **Mitigation Measure 22** – Notify County Agricultural Commissioners about WHCP activities.

Impact W6 – Turbidity: WHCP treatment may potentially result in changes to turbidity that cause nuisance or adversely affect beneficial uses, violating water quality standards or otherwise substantially degrading water quality

Operation of WHCP vessels for treatment and monitoring may potentially result in changes in turbidity that violate water quality standards or otherwise substantially degrade water quality. However, it is extremely unlikely that WHCP operations will result in exceedences of turbidity standards, and any such exceedences are likely to be short-term. While no mitigation measures are required for this less than significant impact, the DBW will implement the following mitigation measure to further reduce potential impacts:

- **Mitigation Measure 4** – Operate program vessels in a manner that causes the least amount of disturbances to the habitat.

Utility and Service Systems

Impact U1 – Water utility intake pumps: effects of WHCP treatments on water utility intake pumps

Herbicide treatments, handpicking, and herding may break fragments of water hyacinth loose into Delta waterways. These water hyacinth fragments would increase debris loading at intake facilities. Implementation of the following mitigation measures will reduce this impact to a less than significant level:

- **Mitigation Measure 13** – Collect plant fragments during and immediately following handpicking, herding, or herbicide treatments
- **Mitigation Measure 21** – Follow the Memorandum of Understanding (MOU) protocol for herbicide applications within one (1) mile of Contra Costa Water District (CCWD) drinking water intake facilities.