Section F

# Findings Related to Unavoidable Significant Effects of the WHCP

# F. Findings Related to Unavoidable Significant Effects of the WHCP

The Final PEIR analysis concluded that despite mitigation, seven (7) WHCP impacts cannot be avoided, with certainty. Chapters 3 and 5 of the Final PEIR describe these impacts and associated mitigation measures in detail. These seven impacts fall within two resource areas: biological resources, and hydrology and water quality. These seven impacts are defined as unavoidable, or potentially unavoidable, significant impacts. In addition, there is the potential for significant cumulative impacts resulting from the WHCP. These three categories of impacts, and their associated mitigation measures, are described below.

## Biological Resources

### Impact B1 – Herbicide overspray: effects of herbicide overspray on special status species, riparian or other sensitive habitats, and wetlands

The primary treatment of the WHCP is chemical. The program utilizes two herbicides, 2,4-D and glyphosate. The potential for impacts resulting from herbicide overspray depend on the amount of exposure, concentration of herbicide, and proximity of sensitive habitats, wetlands, and special status plants. While there is potential risk to sensitive habitats, wetlands, and special status plants due to herbicide overspray, the likelihood of such effects occurring is low. Herbicide application will be focused directly on target plants to decrease the possibility that concentrated herbicides would come in contact with sensitive plants, or result in impacts to sensitive habitats or wetlands. However, should any herbicide damage to special status plants, or sensitive riparian or wetland habitats occur, it would represent a significant impact. This impact would be reduced by implementing the following mitigation measures:

- **Mitigation Measure 1** – Avoid herbicide application near special status species, and sensitive riparian and wetland habitat; and other biologically important resources
- **Mitigation Measure 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)*
- **Mitigation Measure 3** – Conduct herbicide treatments in order to minimize potential for drift
- **Mitigation Measure 4** – Operate program vessels in a manner that causes the least amount of disturbances to the habitat.

## Impact B2 – Herbicide toxicity: toxic effects of herbicides on special status species, native resident fish, and migratory fish

There is potential for direct toxic effects on special status or common fish, amphibian, reptile, and bird species, and resident native and migratory fish, due to the use of WHCP herbicides and adjuvants. Toxic effects may be acute, chronic, or sublethal. It is extremely unlikely that there would be acute toxic impacts from WHCP herbicide or adjuvants to special status fish, amphibians, reptiles, birds, or that WHCP herbicides would result in toxic effects that would impact native resident or migratory fish species. In addition, given the low levels of herbicides utilized, and the limited treatment acreage, the potential for sublethal toxic impacts to special status fish, amphibians, reptiles, or birds, or native resident and migratory fish is likewise low. However, should such sublethal toxic impacts result, they would constitute an unavoidable or potentially unavoidable significant impact. This impact would be reduced by implementing the following mitigation measures:

- **Mitigation Measure 1** – Avoid herbicide application near special status species and sensitive riparian and wetland habitat; and other biologically important resources
- **Mitigation Measure 3** – Conduct herbicide treatments in order to minimize potential for drift
- **Mitigation Measure 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
- **Mitigation Measure 6** – Monitor herbicide and adjuvant levels to ensure that the WHCP does not result in potentially toxic concentrations of chemicals in Delta waters
- **Mitigation Measure 7** – Implement an adaptive management approach to minimize the use of herbicides
- **Mitigation Measure 8** – Provide treatment crews with electronic mapping that identifies previously surveyed areas for giant garter snake habitat.

## Impact B4 – Food web effects: effect of treatment on food webs, and resulting impact on special status species, sensitive habitats, and migration of species

Special status fish species, or native residents or migratory fish, could be indirectly impacted if the WHCP decreases the abundance of invertebrates, such as zooplankton, upon which these fish feed. Given the low levels of herbicides utilized, and the limited treatment acreage, the potential for food web effects to impact special status fish, resident native or migratory fish, is low. However, should such food web effects result, they would constitute an unavoidable or potentially unavoidable significant impact. This impact would be reduced by implementing the following mitigation measures:

- **Mitigation Measure 1** – Avoid herbicide application near special status species and sensitive riparian and wetland habitat; and other biologically important resources
- **Mitigation Measure 6** – Monitor herbicide and adjuvant levels to ensure that the WHCP does not result in potentially toxic concentrations of chemicals in Delta waters
- **Mitigation Measure 7** – Implement an adaptive management approach to minimize the use of herbicides.

## Hydrology and Water Quality

### Impact W1 – Chemical constituents: following WHCP herbicide treatment, waters may potentially contain chemical constituents that adversely affect beneficial uses, violating water quality standards or otherwise substantially degrading drinking water quality

WHCP herbicide treatments involve spraying chemical constituents onto water hyacinth plants growing in the Delta and its tributaries. Studies have found that 10 to 20 percent of herbicide reaches the water following water hyacinth treatment, either moving through the water hyacinth mat, or as a result of drift. This herbicide is considered a chemical constituent in water. Based on WHCP monitoring results, the potential for WHCP herbicide treatments to be present in water at concentrations that would adversely affect beneficial uses is low. However, should WHCP herbicide levels occur at such concentrations, it would constitute an avoidable or potentially unavoidable significant impact. This impact would be reduced by implementing the following mitigation measures:

- **Mitigation Measure 3** – Conduct herbicide treatments in order to minimize potential for drift
- **Mitigation Measure 6** – Monitor herbicide and adjuvant levels to ensure that the WHCP does not result in potentially toxic concentrations of chemicals in Delta waters
- **Mitigation Measure 7** – Implement an adaptive management approach to minimize the use of herbicides
- **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.

### Impact W2 – Pesticides: following WHCP herbicide treatment pesticides may potentially be present in concentrations that adversely affect beneficial uses, violating drinking water quality standards or otherwise substantially degrading water or drinking water quality

WHCP herbicide treatments entail spraying 2,4-D, glyphosate, and adjuvants on water hyacinth plants located in Delta and tributary waterways. These treatments have the potential to adversely affect beneficial uses, violating water quality standards or otherwise substantially degrading water or drinking water quality. Pesticides present in Delta waters following WHCP herbicide treatments are unlikely to bioaccumulate in species or accumulate in sediment, are unlikely to affect antidegradation policies, and are unlikely to be present in concentrations that exceed Maximum Contaminant Levels (MCLs). The DBW will not apply WHCP herbicides at levels that exceed the lowest levels technically and economically achievable. It is also unlikely that pesticide concentrations resulting from WHCP herbicide treatments will adversely affect beneficial uses, violate water quality standards, or otherwise substantially degrade water or drinking water quality. However, should such concentrations result, it would represent an unavoidable or potentially unavoidable significant impact. This impact would be reduced by implementing the following mitigation measures:

- **Mitigation Measure 1** – Avoid herbicide application near special status species, and sensitive riparian and wetland habitats; and other biologically important resources
- **Mitigation Measure 3** – Conduct herbicide treatments in order to minimize potential for drift
- **Mitigation Measure 4** – Operate program vessels in a manner that causes the least amount of disturbance to the habitat

- **Mitigation Measure 6** – Monitor herbicide and adjuvant levels to ensure that the WHCP does not result in potentially toxic concentrations of chemicals in Delta waters
- **Mitigation Measure 7** – Implement an adaptive management approach to minimize the use of herbicides
- **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.

### Impact W3 – Toxicity: following WHCP herbicide treatment toxic substances may potentially be found in waters in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life, violating water quality standards or otherwise substantially degrading water or drinking water quality

Application of WHCP herbicides to Delta waters and tributaries could result in concentrations of chemicals that produce toxic responses. DBW monitoring, and review of scientific literature, as discussed in the Final PEIR, found no evidence of acute toxicity at herbicide levels likely to be present following WHCP treatments. There is some evidence of potential sublethal effects on aquatic species, although data are not conclusive. While there is a potential toxic risk to plants due to herbicide overspray, the likelihood of such effects occurring is low. However, should any acute or sublethal toxic effects to non-target plants or aquatic species occur, it would represent an unavoidable or potentially unavoidable significant impact. This impact would be reduced by implementing the following mitigation measures:

- **Mitigation Measure 1** – Avoid herbicide application near special status species, and sensitive riparian and wetland habitats; and other biologically important resources
- **Mitigation Measure 3** – Conduct herbicide treatments in order to minimize potential for drift
- **Mitigation Measure 4** – Operate program vessels in a manner that causes the least amount of disturbance to the habitat
- **Mitigation Measure 6** – Monitor herbicide and adjuvant levels to ensure that the WHCP does not result in potentially toxic concentrations of chemicals in Delta waters
- **Mitigation Measure 7** – Implement an adaptive management approach to minimize the use of herbicides
- **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.

### Impact W4 – Dissolved oxygen: following WHCP herbicide treatment, dissolved oxygen may potentially be reduced below Basin Plan and Bay-Delta Plan objectives, violating water quality standards or otherwise substantially degrading drinking water quality

Dissolved oxygen (DO) levels may potentially be reduced below Basin Plan and Bay-Delta Plan objectives following WHCP herbicide treatments, and the resulting decay of water hyacinth, other aquatic macrophytes, and algae. Decomposition of vegetative material may create an organic carbon slug, which could in turn reduce dissolved oxygen levels. Reductions in DO levels below Basin Plan limits occur only infrequently as a result of WHCP treatments, and if they do occur, are likely to be short-lived. However, should WHCP treatments result in violations of the Bay-Delta Plan or Basin Plan water quality objectives for dissolved oxygen, it would constitute an unavoidable or potentially unavoidable significant impact. This impact would be reduced by implementing the following mitigation measures:

- **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.

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## Cumulative Impacts

Cumulative impacts are the direct and indirect impacts of a proposed project considered in combination with the impacts of past projects, other current projects and reasonable foreseeable future projects. Section 15355 of the CEQA guidelines defines cumulative impacts as follows: "Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time."

Chapter 7 of the Final PEIR provides an assessment of the potential cumulative impacts of the WHCP. Chapter 7 describes 33 past, present, and possible future projects with which the WHCP may potentially contribute to cumulative impacts. These 33 Delta projects are listed in **Table F-1,** on the next page. Most Delta-wide projects are of far greater scope than the WHCP. For example, several of the 33 described projects involve significant Delta-wide operations that will influence Delta hydraulics and fisheries. None of the prior Delta EIRs or Environmental Impact Statements (EISs) reviewed for the WHCP PEIR (with the exception of the *Egeria densa* Control Program (EDCP) EIR) even considered the WHCP or EDCP in their cumulative impacts. This suggests to the DBW that as compared to other Delta projects, the environmental impacts of the WHCP are largely immaterial.

Like the WHCP, all of the 33 identified programs are intended to improve conditions in the Delta, for sensitive species and habitats, agriculture, or water quality, or some combination of these areas. However, in creating these improved conditions, each program also has the potential to result in significant environmental impacts, at least temporarily. Most of the 33 other Delta programs have significantly greater scope, and scale, than the WHCP. The WHCP affects only a relatively small percentage of the total Delta, while many of these other programs have, or will have, Delta-wide affects. Currently, several of these 33 programs are still in the planning and permitting phases. Only the EDCP is of a similar small scale to the WHCP.

The two environmental resource areas that are most likely to be affected by cumulative impacts of the WHCP, combined with these other Delta projects and programs, are biological resources, and hydrology and water quality. To the extent that any of these projects create stress (of any kind) on special status species and habitats, this stress could be compounded by the combined impacts of each program. For example, while the potential impacts of the WHCP on special status fish may be limited, if special status fish are already impacted by other Delta projects, the cumulative impact on special status fish may be significant.

**Table F-1**
**Related Projects Described in Chapter 7 of the Final PEIR**

| Project |
|---|
| 1. *Egeria densa* Control Program |
| 2. Central Valley Project and State Water Project |
| 3. Environmental Water Account |
| 4. South Delta Temporary Barriers Project |
| 5. USFWS BO – Reasonable and Prudent Alternative |
| 6. NOAA-Fisheries BO – Reasonable and Prudent Alternative |
| 7. Old River and Rock Slough Water Quality Improvement Project |
| 8. CalFed Levees Program |
| 9. CalFed Ecosystem Restoration Program (DRERIP) |
| 10. Stockton East Water District Efficiency Enhancement Project |
| 11. CCWD Alternative Intake Project |
| 12. City of Sacramento Water Facilities Expansion Project |
| 13. Sacramento River and Stockton Deep Water Ship Channels |
| 14. Delta Wetlands Project |
| 15. San Joaquin River Agreement and Vernalis Adaptive Management Plan |
| 16. San Joaquin River Restoration Program |
| 17. Bay Delta Conservation Plan |
| 18. Franks Tract Project |
| 19. Two-Gate Project |
| 20. Suisun Management Plan |
| 21. Delta Water Supply Project |
| 22. South Delta Improvement Program Stage 1 |
| 23. Upper San Joaquin River Basin Storage Investigation |
| 24. Tracy Fish Test Facility |
| 25. Delta Cross Channel Re-operation and Through-Delta Facility |
| 26. Bay Area Water Quality and Reliability Program |
| 27. North Bay Aqueduct Intake Project |
| 28. Sacramento Valley Water Management Agreement (Phase 8) |
| 29. South Delta Improvement Program Stage 2 |
| 30. Delta Mendota Canal Recirculation Project |
| 31. In-Delta Storage Project |
| 32. Lower San Joaquin Flood Improvements |
| 33. North Delta Flood Control Ecosystem Restoration Project |

The potential for cumulative impacts to hydrology and water quality are similar to those for biological resources. The WHCP will potentially result in unavoidable, potentially unavoidable, or avoidable impacts to water quality. Several of these 33 other Delta programs may also result in at least temporary impacts to water quality, that when combined with the WHCP impacts, would be cumulatively considerable.

WHCP mitigation measures, as identified in Table E-1, and described in detail in the Final PEIR, will minimize the WHCP's contribution to biological resource and water quality impacts in the Delta. The other 33 Delta projects will also implement mitigation measures to minimize impacts to hydrology and water quality.