

IMPLEMENTATION AND MONITORING PLAN FOR RESTORATION PROJECT

I. Introduction

1. This document (hereinafter identified as the Implementation Plan) describes the construction, monitoring, and reporting requirements for the Old River South Marsh Restoration Project (“ORS Marsh Project”) at the Lower Neches Wildlife Management Area to be performed in Southeast Texas pursuant to the settlement of natural resource damage claims arising from releases of hazardous substances at or from the Palmer Barge Line Facility. The terms of this settlement are contained within a Settlement Agreement (the “Settlement Agreement” or “Agreement”) and this Plan is incorporated by reference therein and is an attachment to the Agreement. Unless otherwise expressly provided herein or in the Agreement, terms used in this Plan which are defined in CERCLA, 42 U.S.C. § 9601 *et seq.*, or in regulations promulgated under CERCLA, 43 C.F.R. Part 11 and 40 C.F.R. Part 300, shall have the meaning assigned to them in CERCLA or in such regulations.

II. Description of Restoration Project

2. The ORS Marsh Project is located in a Texas Parks and Wildlife Department (“TPWD”) wildlife management area (“WMA”), owned and managed by the TPWD, a signatory to the Agreement. The ORS Marsh Project is located on the ORS Restoration Site, which is in the Lower Neches WMA adjacent to Sabine Lake near Bridge City, Orange County, Texas. The ORS Marsh Project is intended to be an addition to and located contiguous to a larger marsh restoration project identified as the ORS Estuarine Marsh Complex in the Implementation and Monitoring Plan attached to the Consent Decree entered March 30, 2005 in the United States

District Court for the Eastern District of Texas in the case of *United States of America and the State of Texas v. Chevron U.S.A., Inc. et al.* The general location of the ORS Marsh Project is depicted on Exhibit A, attached hereto.

III. Construction Requirements

A. Construction Criteria

3. The ORS Marsh Project shall consist of construction of a minimum of 1.7 acres of estuarine marsh constructed in accordance with the construction design drawing in Exhibit B and in accordance with the following Construction Criteria:

- a. The ORS Marsh Project shall consist of a minimum of 60% and a maximum of 70% vegetated Mounds and Terraces;
- b. The ORS Marsh Project shall consist of a minimum of 30% and a maximum of 40% open water;
- c. For the ORS Marsh Project, Mounds will be built by reusing stockpiled dredge material from the containment cells located between the Gulf States Utility canal and the ORS Estuarine Marsh Complex, and Terraces will be built by terracing existing sediments in open water areas; if necessary other sources of appropriate sediments will be used once approved by the TPWD Manager of the Lower Neches WMA;
- d. The top of the Mounds and the resulting planting area shall be between 1.1 feet and 1.75 feet NAVD88. These required maximum and minimum elevations may be altered by agreement of the Trustees and Settling Parties, based on vegetation elevation data taken after construction of the low water plug and using the vegetation data obtained from the ORS Pilot Project which was conducted in the Lower Neches WMA in 2002 pursuant to the Pilot Project Agreement Between TPWD and Chevron Environmental Management Company;
- e. The top of Terraces and the resulting planting area shall be between 1.75 feet and 2.75 feet NAVD88. These required maximum and minimum elevations may be altered by agreement of the Trustees and Settling Parties, based on vegetation elevation data taken after construction of the low water plug and using the vegetation data from the ORS Pilot Project;

- f. The Mounds and Terraces shall be randomly distributed to allow for continuous and unobstructed water movement generally in accordance with the construction design drawing in Exhibit B;
- g. The Mounds will have a range of linear widths so that the distance across the estuarine planting area is no less than 10 meters and no more than 40 meters. The Terraces will have a linear width so that the distance across the planting area of each Terrace is no more than 40 meters;
- h. The total acreage of the ORS Marsh Project, inclusive of Mounds and Terraces, shall be at least 1.7 acres, with between 60% and 70% of the ORS Marsh Project at the elevations described for Mounds in Subparagraphs 3d and for Terraces in Subparagraph 3e; and
- i. The Mounds and Terraces constructed for the ORS Marsh Project shall be planted using approximately 4-inch plugs of nursery-grown, purchased, and/or borrowed estuarine marsh plants and shall be planted on 3 to 5 foot centers, including at a minimum the plant species listed in Exhibit C.

B. Construction Planning.

4. Permit Applications. Within six months of the Effective Date of the Agreement, the Settling Parties shall submit to the appropriate regulatory authorities applications for all permits required for the construction of the ORS Marsh Project, and Settling Parties shall submit to the Trustees a list of the permits that have been sought and shall certify that all required applications have been filed with the appropriate regulatory authorities.

5. At least thirty (30) days before beginning construction of the ORS Marsh Project, Settling Parties shall submit to the Trustees a notice describing its construction schedule, including the first day construction will begin and the estimated completion date for construction of the ORS Marsh Project, along with Settling Parties' Planting Schedule for the ORS Marsh Project.

C. Notice of Construction Completion.

6. At least fourteen (14) days prior to the date that Settling Parties will complete the ORS Marsh Project (“Project Construction Completion Date”), Settling Parties shall provide notice of the Project Construction Completion Date and preliminary “as-built” surveys (with spatial configurations of the planting area and elevations of constructed Mounds and Terraces) and aerial photography to show that the ORS Marsh Project will meet the Construction Criteria.

D. Construction Review.**7. Trustee Review Schedule.**

Within three (3) work days after the Project Construction Completion Date specified in the notice for the ORS Marsh Project or within three (3) work days after receipt of that notice, whichever is later, the Trustees shall inspect the completed ORS Marsh Project (the “Inspection Date”). On the Inspection Date, Settling Parties shall provide the final as-built survey and all other documentation needed to establish that it has achieved the Construction Criteria.

8. Trustee Review Procedure for the ORS Marsh Project.

a. To the extent that the Trustees have determined that the Settling Parties have not achieved the Construction Criteria described in Section III.A, or that Settling Parties have not provided the documentation needed for the Trustees to determine whether the Settling Parties have achieved the Construction Criteria, the Trustees will provide preliminary oral notice of these circumstances to the Settling Parties upon completion of the inspection on the Inspection Date. Within seven (7) days after the Inspection Date, the Trustees shall provide to Settling Parties a written description of the deficiencies. The Trustees and Settling Parties shall meet within

twenty-one (21) days after the Inspection Date, or the date of receipt of any missing information, whichever is later. Within seven (7) days after the meeting, the Trustees shall provide in writing to Settling Parties a schedule for achieving the failed Construction Criteria, or if the Trustees have obtained satisfactory information to establish that the applicable standards have been achieved, the Trustees will issue the Certification of Construction Completion. If the deficiency has not been corrected, Settling Parties shall modify the construction of the deficient ORS Marsh Project pursuant to the schedule, and Settling Parties and the Trustees shall again inspect the ORS Marsh Project and follow the process described in this Paragraph until the applicable Construction Criteria have been achieved.

b. If the Trustees have determined that the Settling Parties have achieved the applicable Construction Criteria for the ORS Marsh Project on the Inspection Date, then the Trustees will provide preliminary oral notice to the Settling Parties upon completion of the inspection of the ORS Marsh Project on the Inspection Date, and within seven (7) days after the Inspection Date the Trustees shall issue to Settling Parties a written Certification of Construction Completion for the ORS Marsh Project.

9. No later than two (2) years after issuance of the last required permit authorizing construction of the ORS Marsh Project, Settling Parties shall submit to the Trustees all information or documentation necessary for the Trustees to establish that construction has been completed at the ORS Marsh Project in accordance with the Construction Criteria described in Section III.A.

10. Pursuant to Section IV. (Monitoring Requirements), Settling Parties shall monitor the ORS Marsh Project after the Trustees issue the Certification of Construction Completion for this

project, and they shall continue to monitor the Project until Settling Parties have met the requirements of Paragraph 11.

IV. Monitoring Requirements

A. Monitoring Criteria.

11. The following Monitoring Criteria shall apply to the ORS Marsh Project:

a. Vegetation Criteria

- i. Attain an average vegetative cover of 70% over the planted vegetative area;
- ii. Attain no less than 50% vegetative cover on each Mound and Terrace;
- iii. Maintain a minimum of 1 acres at the elevations described for Mounds in Subparagraphs 3.d and for Terraces in Subparagraph 3.e.; and
- iv. Eliminate all Chinese tallow and salt cedar.

b. Water Criteria. Maintain wet flow at mean low tide between the ORS Restoration Site and the historic Old River Bayou, and maintain existing natural channels in the ORS Estuarine Marsh Complex in an open and unobstructed condition, as generally depicted in the construction design drawing in Exhibit B.

B. Grow Out Period.

12. Upon issuance of the Certification of Construction Completion for the ORS Marsh Project, Settling Parties shall commence monitoring of the ORS Marsh Project, in accordance with the monitoring methods specified in Section VI, to determine whether the Monitoring Criteria will be achieved and whether Corrective Action should be undertaken. This monitoring shall continue until Settling Parties achieve the Monitoring Criteria specified in Section IV.A.

13. Settling Parties may monitor the ORS Marsh Project at any time; however, during the Grow Out Period Settling Parties must monitor the ORS Marsh Project in accordance with the following schedule, at a minimum:

- a. In September/October of each year after the first growing season, Settling Parties shall monitor the ORS Marsh Project to determine the status of the Monitoring Criteria listed in Section IV.A; and
- b. If Settling Parties have not achieved the Monitoring Criteria by October 31 of the second growing season after the issuance of the Certification of Construction Completion, or by October in any subsequent growing season, Settling Parties shall arrange an inspection with the Trustees to be conducted in November to determine whether Corrective Action should be undertaken by Settling Parties in accordance with the procedures specified in Section V.

14. No earlier than one (1) year after issuance of the Certification of Construction Completion for the ORS Marsh Project or at any time thereafter, if the Settling Parties conclude that they have achieved the Monitoring Criteria specified in Section IV.A, Settling Parties shall arrange an inspection with the Trustees. Within 30 days after the date of the inspection, Settling Parties shall provide a Grow Out Report to the Trustees, documenting, in accordance with the monitoring methods specified in Section VI, that Settling Defendants have met the Monitoring Criteria. If the Trustees determine that Settling Parties have achieved the Monitoring Criteria, the Trustees shall issue to Settling Parties a written certification of completion (the "Grow Out Certification") for the ORS Marsh Project, and the Maintenance Period, as described in Section IV.C, shall commence. If the Trustees' determine that Settling Parties have not achieved the Monitoring Criteria, the Trustees shall provide written notice within seven (7) days of receipt of the Grow Out Report, and the Parties shall follow the procedures outlined in Section V.C.

15. The Grow Out Period shall continue until Settling Parties achieve the Monitoring Criteria specified in Section IV.A. and the Trustees issue the Grow Out Certification.

C. Maintenance Period.

16. Settling Parties shall continue to monitor the ORS Marsh Project, in accordance with the monitoring methods specified in Section VI, at least annually for at least two (2) consecutive years from the date of the issuance of the Grow Out Certification in accordance with the following procedures:

a. If during the Maintenance Period, monitoring conducted by Settling Parties and the Trustees indicates that the Monitoring Criteria set forth in Section IV.A are not being achieved, Corrective Action, as described in Section V, shall be implemented by Settling Parties. If Corrective Action is required for the ORS Marsh Project, the Maintenance Period shall be extended by one (1) additional year for the affected portion of the ORS Marsh Project. Regardless of the number of Corrective Actions undertaken, the Maintenance Period shall not exceed a total of three (3) years, inclusive of the initial two-year Maintenance Period. At the end of the Maintenance Period, Settling Parties shall submit a Maintenance Report to the Trustees, documenting the status of Settling Parties' compliance with the Monitoring Criteria in accordance with the monitoring methods specified in Section VI.

b. If Settling Parties conclude that they have achieved the Monitoring Criteria specified in Section IV.A without undertaking a Corrective Action for two consecutive years after the issuance of the Grow Out Certification, Settling Parties shall arrange an inspection(s) for Tier 1 and/or Tier 2 monitoring with the Trustees. Within 21 days after the final inspection date, Settling Parties shall provide a Maintenance Report to the Trustees, documenting that Settling

Parties have met the Monitoring Criteria in accordance with the monitoring methods specified in Section VI. If the Trustees determine that Settling Parties have achieved the Monitoring Criteria, the Trustees shall issue to Settling Parties the ORS Marsh Project Completion Certification, and Settling Parties shall have no further obligations under this Implementation Plan. If the Trustees' determine that Settling Parties have not achieved the Monitoring Criteria, the Trustees shall provide written notice within seven (7) days of receipt of the Maintenance Report, and the Parties shall follow the procedures outlined in Section V.C.

V. Corrective Action

A. Types of Corrective Actions.

17. If the ORS Marsh Project fails to meet the Monitoring Criteria during either the Grow Out Period or the Maintenance Period, Settling Parties shall undertake one or more of the following Corrective Actions in order that the Monitoring Criteria may be achieved, subject only to the limits provided in Section V.B:

- a. Alter the elevation of the planting areas at the ORS Marsh Project, or if agreed upon by both the Trustees and Settling Parties, either construct planting shelves at a mutually acceptable location within the TPWD Lower Neches WMA, or replant vegetative species more suited to existing elevations;
- b. Re-plant estuarine marsh vegetation in the Estuarine Marsh Complex;
- c. Take actions to ensure the unobstructed flow of water in culverts, including removing the obstructions, e.g. sand, silt, logs, plywood, trash, or debris, and eliminating the cause of the obstruction;
- d. Remove Chinese tallow, deep rooted sedge, and/or salt cedar.

After consultation between the Trustees and the Settling Parties, the Trustees may require or authorize an alternative Corrective Action before the Settling Parties undertake a Corrective Action listed in a-d.

B. Limits on Corrective Actions.

18. Settling Parties shall not be required to undertake Corrective Actions in excess of the following limits:

- a. Limit on Corrective Action for Elevation. If Settling Parties fail to achieve the Vegetation Criteria specified in Section IV.A for the ORS Marsh Project after the issuance of the Certification of Construction Completion because of subsequent changes in the elevation, as indicated in a survey during the monitoring period, the Settling Parties shall be required to alter the planting area elevation only once, and only after the first two years of the Grow Out Period, or after the issuance of the Grow Out Certification. In order to qualify for this Corrective Action limit, any elevation change must involve the one-time alteration of at least 10% of the constructed area of Mounds and Terraces in the ORS Marsh Project.
- b. Limit on Corrective Action for Vegetation. If during the Maintenance Period, the Settling Parties fail to achieve at least 50% vegetative cover on each Mound and Terrace in the planting areas of the ORS Marsh Project that have been identified in the survey used for the Certification of Construction, Settling Parties shall not be required to re-plant more than the cumulative equivalent of 100% of the original area that was planted and certified. The 100% re-planting limit shall apply only after the Trustees have issued the Grow Out Certification.
- c. Corrective Action Trigger for Natural Channels. Settling Parties shall undertake Corrective Action when obstructed flow occurs within existing natural channels, between the ORS Restoration Site and the historic Old River Bayou. "Obstructed flow" means the reduction of greater than 30% of the wet cross section of one or more natural channels without an equivalent replacement channel(s) (either natural or man made) being created. The existing natural channels and culverts subject to this corrective action trigger are identified in Exhibit D.

19. Settling Parties shall have no further obligation to undertake a Corrective Action required in Paragraph 17.a through 17.d after the limit for that Corrective Action, as specified in Paragraph 18.a, 18.b, or 18.c has been met; however they shall undertake all other requirements specified by the Agreement and this Implementation Plan after the Corrective Actions limits specified in Paragraph 18.a, 18.b, and/or 18.c have been met.

C. Corrective Action Review Process.

20. Settling Parties may undertake Corrective Actions described in Subparagraph 30.d without providing prior notice to the Trustees.

21. Either Settling Parties or the Trustees may provide written notice that a Corrective Action should be undertaken, except that the Trustees will not require a Corrective Action for an elevation change until after the first two years of the Grow Out Period or after the issuance of the Grow Out Certification.

22. Except as provided under Paragraph 20, Settling Parties shall provide a Corrective Action Plan to the Trustees within ninety (90) days after Settling Parties and/or the Trustees provide written notice that Corrective Action and a Corrective Action Plan are required at the ORS Marsh Project. The Corrective Action Plan shall include the following information, at a minimum:

- a. Elevation Corrective Actions. An Elevation Corrective Action Plan shall include:
 - i. A description of the condition(s) or circumstance(s) to be addressed by the Corrective Action, including a map showing the affected area;
 - ii. An analysis of the cause(s) for such condition(s) or circumstances(s);
 - iii. The action(s) and or monitoring activities proposed to be undertaken to rectify, resolve, or otherwise address the condition(s) or circumstance(s);
 - iv. Copies of any permits, leases, special use, or other agreements necessary to implement the proposed activities; and
 - v. Any additional information requested by the Trustees after notification of the Elevation Corrective Action to be undertaken.
- b. Vegetation Corrective Actions.

- i. Pre-Grow Out Certification. Prior to issuance of the Grow Out Certification and until Settling Parties have planted 25% of the Corrective Action Vegetation Limit after issuance of the Grow Out Certification, Settling Parties shall complete the Vegetation Corrective Action Plan form, attached hereto as Exhibit E, and no further review will be undertaken by the Trustees.

- ii. Post-Grow Out Certification. After the Trustees have issued the Grow Out Certification and Settling Parties have planted more than 25% of the Corrective Action Vegetation Limit, Settling Parties shall provide the following information in a Vegetation Corrective Action Plan:
 - (a) A description of the condition(s) or circumstance(s) to be addressed by the Corrective Action, including a map showing the affected area;
 - (b) An analysis of the cause(s) for such condition(s) or circumstances(s) necessitating the Corrective Action;
 - (c) The action(s) and or monitoring activities proposed to be undertaken to rectify, resolve, or otherwise address the condition(s) or circumstance(s), including, but not limited to, the information sought in Exhibit E; and
 - (d) Any additional information requested by the Trustees after notification of the Vegetation Corrective Action to be undertaken.

- c. Natural Channel Corrective Actions. A Natural Channel Corrective Action Plan shall include:
 - i. A description of the condition(s) or the circumstance(s) to be addressed by the Corrective Action;
 - ii. An evaluation of the cause(s) for such condition(s) or circumstances necessitating the Corrective Action; and
 - iii. The action(s) and or monitoring activities proposed to be undertaken to rectify, resolve, or otherwise address the condition(s) or circumstance(s) causing the blockage of the culvert(s) and or natural channel(s).

23. For all Corrective Action Plans, except any Vegetation Corrective Actions Plans prepared before Settling Parties has planted 25% of the Corrective Action Vegetation Limit, within thirty (30) days of receipt of an adequate Corrective Action Plan, the Trustees will provide written notification either approving the Corrective Action Plan, or disapproving the Plan because the proposed Corrective Action is determined by the Trustees to be insufficient to fix the problems. If the Trustees approve the Corrective Action Plan, Settling Parties shall undertake the action and/or monitoring activities in accordance with the approved Corrective Action Plan. If the Trustees do not approve the Corrective Action Plan, the Trustees shall provide to the Settling Parties their written rationale for disapproving the Plan, and Settling Parties shall provide a revised Plan to the Trustees within sixty (60) days of receipt of the Trustees' notice of disapproval.

24. For all Corrective Actions undertaken pursuant to Paragraph 17.a through 17.d, Settling Parties shall submit a Corrective Action Report, describing their compliance with the requirements of the Corrective Action Plan and providing written documentation establishing the results of the Corrective Action, within thirty (30) days of completion of the actions.

VI. Monitoring Methods

25. Settling Parties shall determine if the Monitoring Criteria specified in Section IV.A have been or will be met by evaluating the following ORS Marsh Project characteristics in accordance with the schedule specified in this Implementation Plan:

- a. Percent foliar cover;
- b. Growth of prohibited vegetation;
- c. Water flow and obstructions in the open water of the

Marsh Complex and existence of natural channels; and

d. Estimated ratio of marsh/open water.

26. Settling Parties will use a two-tiered approach, as identified in the following paragraphs, to determine if the Monitoring Criteria are being met. No later than the date of Certification of Construction Completion, Settling Parties and the Trustees shall agree to permanent monitoring transects and locations. Thereafter, field inspections conducted by the Trustees and Settling Parties shall include, but not be limited to, walking along the established monitoring transects and locations.

27. Tier 1 monitoring will rely solely upon visual observations based on aerial photography and field inspections. If Settling Parties and the Trustees do not reach a consensus after visual observations during inspections, the Parties will undertake Tier 2 monitoring.

28. Tier 2 monitoring requires a quantitative assessment of plant vegetative cover. Settling Parties shall conduct this assessment with the Trustees by undertaking a pilot monitoring effort with the goal of determining the variability of plant survival and percent cover within the project. Quadrants will be randomly distributed over the vegetative area with a minimum of 20 and a maximum of 30 sampling stations. After the pilot study has been completed, Settling Parties will undertake quantitative sampling with an Alpha level of 0.2, and a study to determine the potential of measurement error.

VII. Reporting Requirements

29. Settling Parties shall be required to provide notices and certifications regarding the following activities, at a minimum:

a. Certification of filing of permit application;

- b. Commencement of construction;
- c. Projected date for completion of construction;
- d. Arrangements for inspections involving Trustees; and
- e. Corrective Action should be undertaken.

As appropriate, these notices can be prepared and submitted separately or combined in a single notice.

30. The Trustees will provide notices and/or Certifications pertaining to the following matters:

- a. Certification of Construction Completion for the ORS Marsh Project;
- b. Status of Monitoring Criteria;
- c. Grow Out Certification;
- d. Whether a Corrective Action will be required;
- e. The Corrective Action Plan(s);
- f. The Corrective Action Report(s);
- g. The Maintenance Report(s); and
- h. Certification of the ORS Marsh Project.

31. Settling Parties shall prepare the following reports in accordance with the requirements of this Implementation Plan:

- a. Construction Report(s);
- b. Annual Monitoring Report(s);
- c. Grow Out Report(s);
- d. Maintenance Report(s);

- e. Corrective Action Plan(s); and
- f. Corrective Action Report(s).

As appropriate these reports may be prepared and submitted separately or combined in a single report.

32. Settling Parties shall include the following information in the Annual Monitoring Report:

- a. A description of all scheduled and unscheduled site visits;
- b. Any Corrective Actions not previously reported to the Trustees; and
- c. Observations and activities, including all documentation of the characteristics required to be monitored pursuant to Section VI.

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2-09-2007

- Exhibit A - general location of the ORS Marsh Project is depicted on
- Exhibit B - construction design drawing in
- Exhibit C - plant species listed in
- Exhibit D - existing natural channels subject to corrective action trigger
- Exhibit E - Vegetation Corrective Action Plan form