# Integrated Ecosystem Restoration and Hurricane Protection: Louisiana's Comprehensive Master Plan for a Sustainable Coast

## Appendix G:
## Coastal Louisiana Ecosystem Assessment and Restoration (CLEAR) Report

**Coastal Protection and Restoration Authority of Louisiana**

**April 2007**

# Table of Contents


**1.0 INTRODUCTION ..... 1**

1.1 BACKGROUND ..... 1
1.2 INPUT ..... 1

**2.0 CLEAR MODELING FOR ALTERNATIVES 1 AND 2 ..... 3**

2.1 MEASURES CONSIDERED AS INPUT DATA TO THE CLEAR MODEL FOR CPRA ALTERNATIVES 1 AND 2 AS OF OCTOBER 2006 ..... 3
*2.1.1 Planning Unit 1, Alternative I ..... 3*
*2.1.2 Planning Unit 1, Alternative II ..... 4*
*2.1.3 Planning Unit 2, Alternative I ..... 5*
*2.1.4 Planning Unit 2, Alternative II ..... 5*
*2.1.5 Planning Unit 3a, Alternative I ..... 6*
*2.1.6 Planning Unit 3a, Alternative II ..... 6*
*2.1.7 Planning Unit 3b, Alternative I ..... 7*
*2.1.8 Planning Unit 3b, Alternative II ..... 7*
*2.1.9 Planning Unit 4, Alternative I ..... 8*
*2.1.10 Planning Unit 4, Alternative II ..... 8*
2.2 DIVERSION HYDROGRAPHS USED TO GENERATE SEDIMENT LOADS ..... 9
2.3 HYDRODYNAMICS / SALINITY ..... 12
2.4 BASE (NO INCREASED ACTION) COASTWIDE SALINITY VALUES USED AS INPUT INTO THE CLEAR MODEL ..... 13
2.5 MONITORING STATIONS USED TO GENERATE BASE-LINE (NO INCREASED ACTION) COASTWIDE SALINITY VALUES FOR INPUT INTO THE CLEAR MODEL ..... 15
2.6 ALTERNATIVE 1: DIVERSION HYDROGRAPHS BY ECOSYSTEM UNIT (AVERAGE OF 1997 AND 2000) AND RESULTING SALINITY ..... 15
2.7 ALTERNATIVE 2: DIVERSION HYDROGRAPHS BY ECOSYSTEM UNIT (AVERAGE OF 1997 AND 2000) AND RESULTING SALINITY ..... 18
2.8 ASSUMPTIONS FOR BOX CONNECTIVITY ..... 21
*2.8.1 Alternative 1 ..... 22*
*2.8.2 Alternative 2 ..... 22*

**3.0 DESKTOP MODULES ..... 23**

3.1 LANDSCAPE CHANGE ..... 23
3.2 HABITAT SWITCHING, INCLUDING PRODUCTIVITY ..... 24
3.3 HABITAT SUITABILITY ..... 24

**4.0 MODEL OUTPUT FOR ALTERNATIVES 1 AND 2 ..... 25**

4.1 CLEAR OUTPUT USED BY CPRA-IPT FOR SCORING ..... 25
4.2 LAND CHANGE ..... 25
*4.2.1 Background ..... 25*
*4.2.2 Coastwide ..... 27*
*4.2.3 Planning Unit ..... 28*
*4.2.4 Ecosystem Unit ..... 30*
4.3 HABITAT TYPE: COASTWIDE AND PLANNING UNIT SUMMARY ..... 43
4.4 PRODUCTIVITY ..... 50
*4.4.1 Background ..... 50*
*4.4.2 Coastwide ..... 51*
*4.4.3 Planning Unit ..... 52*
*4.4.4 Ecosystem Unit ..... 54*
4.5 HABITAT SUITABILITY: COASTWIDE AND PLANNING UNIT SUMMARY ..... 68

**5.0 LANDSCAPE CHANGE SIMULATION MODEL FOR THE PRELIMINARY DRAFT MASTER PLAN ..... 75**

5.1 MEASURES CONSIDERED AS INPUT DATA TO THE CLEAR MODEL FOR THE PRELIMINARY DRAFT MASTER PLAN AS OF JANUARY 2007 ..... 75

*5.1.1 Planning Unit 1* ..... *75*
*5.1.2 Planning Unit 2* ..... *76*
*5.1.3 Planning Unit 3a* ..... *77*
*5.1.4 Studies and Common Measures for Planning Units 1, 2, and 3a* ..... *77*
*5.1.5 Planning Unit 3b* ..... *78*
*5.1.6 Planning Unit 4* ..... *78*
*5.1.7 Studies and Common Measures for Planning Units 3b and 4* ..... *79*
5.2 DIVERSION HYDROGRAPHS USED TO GENERATE SEDIMENT LOADS ..... 79
5.3 MODIFICATION TO THE LANDSCAPE CHANGE SIMULATION MODEL BETWEEN OCTOBER 2006 AND JANUARY 2007 ..... 80
*5.3.1 Marsh Creation and Barrier Island Maintenance* ..... *80*
*5.3.2 Land Loss Rates* ..... *81*
5.4 RESULTS ..... 81
*5.4.1 Maps* ..... *81*
*5.4.2 Summary Statistics* ..... *87*

## List of Figures

Figure 1.1 Bathymetry used for CLEAR model runs. ..... 2
Figure 2.1 Ecological Unit boundaries used for generation of coastwide salinity data. ..... 12
Figure 2.2 Map showing the monitoring stations used to generate base-line (No Increased Action) coastwide salinity values. ..... 15
Figure 3.1 Effects of a constant loss rate applied annually on land area change. ..... 24
Figure 5.1 Change in wetland area over 50 years as a result of the suite of projects proposed by the Louisiana CPRA IPT PDMP. ..... 82
Figure 5.2 Change in wetland area over 50 years under a future of no increased restorative action. ..... 83
Figure 5.3 Total wetland area at Year 0. ..... 84
Figure 5.4 Total wetland area at Year 50 under a no increased action scenario. ..... 85
Figure 5.5 Total wetland area at Year 50 under a scenario containing the suite of projects proposed by the Louisiana CPRA IPT PDMP. ..... 86

# 1.0 Introduction

## 1.1 Background

The Coastal Louisiana Ecosystem Assessment and Restoration (CLEAR) model was created for and used during the development of the Louisiana Coastal Area (LCA) study, conducted by the U.S. Army Corps of Engineers and the State of Louisiana, through the Department of Natural Resources. Since that time, several improvements have been made, and are discussed in the following sections.

It is important to note that this appendix only details improvements that were incorporated into the CLEAR model since the time of the LCA modeling effort; all foundation information and core details of the models, including assumptions, may be found in the November 2004, LCA Report - Appendix C: Hydrodynamic and Ecological Modeling.

http://www.clear.lsu.edu/Reports/Appdx%20C_LCA.pdf

Outputs of these most recent model runs were used by the Coastal Protection and Restoration Authority, Integrated Planning Team (CPRA IPT) to analyze two alternative scenarios. Model output included land change, habitat type, productivity, and habitat use. Model outputs have been compiled into summary tables which are located in the last section of this report (*Section VI.C. CLEAR Output Used for Scoring*).

## 1.2 Input

The CLEAR model grid used in the CPRA IPT alternative runs consists of 501,000 cells (500 m x 500 m) that cover the Louisiana coastal and near-shore areas from Texas to Mississippi. In contrast, the LCA modeling effort used a grid with 1 $km^2$ cells. The CLEAR model assumed construction and operation at year 0 for all diversions, marsh creation (pipeline conveyance), and beneficial use land areas. This assumption allowed the evaluation of the long-term effects of various restoration options. The CLEAR model has no algorithms specific to marsh creation, so the marsh creation foot prints provided by CPRA IPT were used to define these areas. The CLEAR model then applied the historic loss rate for a particular region to areas of created marsh, assuming that the processes that caused the loss in the past are still operating. Loss rates are reduced if a created land area is in the nourishment sphere of a diversion as described in the LCA report.

In terms of dredged material or hard breakwaters proposed as shoreline protection, while LCA modeling only included hard structures (modeled as reducing the land loss by 50% in the cell that they were in), the current CLEAR model assumes these structures are permeable, not restricting the flow of water. Hard structures were incorporated in the land change model with the assumption that they reduced land loss in the landward cells adjacent to them by 50%. CLEAR did not differentiate between various engineering techniques for bankline stabilization, shoreline protection and breakwaters as the model inputs were not available to consider their effects differently. No decision has been made on how to incorporate soft shoreline protection structures. Utilization of sediment/sand for shoreline improvements were not incorporated in the landscape change module, because inputs were not available to simulate how they would perform in this capacity

During the LCA modeling work, bathymetry was built into the model very simply, by assuming depths of 0.5 m for marsh ponds and 1.5 m for open water. The CLEAR model currently incorporates coastwide bathymetry data (Figure I.A.), which allows for better estimations of the diversion fill volumes for land building.

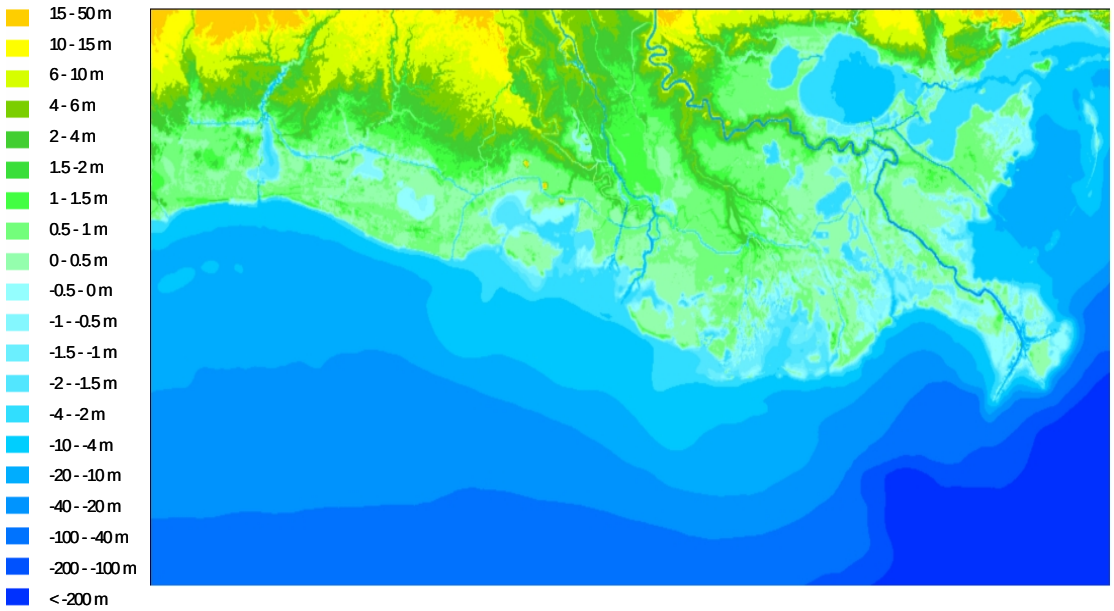


Figure 1.1 Bathymetry used for CLEAR model runs.

# 2.0 CLEAR Modeling for Alternatives 1 and 2

## 2.1 Measures Considered as Input Data to the CLEAR Model for CPRA Alternatives 1 and 2 as of October 2006

CLEAR considered the spatial data provided by the CPRA IPT, as referenced below by a particular measure number. Because measures are defined only to the detail required for planning, spatial data provided may not encompass all features which will make up that measure once engineering and design is completed.

The following list contains the full list of measures in both alternative plans. Not all measures could be incorporated into the CLEAR model, usually because they are studies or because they were too conceptual to be adequately described for modeling purposes. The color code, below, was developed to catalog which measures were included in the model.

Black = Considered as spatial input data.
Red = Not considered because CLEAR did not receive spatial input data or was told to exclude the feature from consideration.
Grey = Not considered because the feature was conceptual or too small to incorporate into a landscape scale, system response model.
Blue = Conceptual; not a specific measure.
Green = Not considered because CLEAR used a 'box salinity' approach in lieu of a hydrodynamic model approach to generate coastwide salinity values.

### 2.1.1 Planning Unit 1, Alternative I

1-1. Levee alignment No 1 from Pearl River to Caernarvon (30ft storm surge at coastline) and Hurricane Protection from Caernarvon to Pointe-a-la-Hache (20ft Storm Surge at Coastline)
1-2. West Shore Lake Pontchartrain Study Levee Alignment
1-3. Re-evaluate levee protection at south shore of Lake Pontchartrain (from LaBranche to Hwy 11 – including fronting and hardening pump stations and construction of 3 new pump stations and the Seabrook Floodgate) for 30 ft Storm Surge at Coastline
1-4. Resolve/close MRGO to deep draft navigation
1-5. Complete/accelerate the LCA Near Term Plan including:
   a. MRGO Environmental Restoration Features
   b. Small diversion at Hope Canal
   c. Small diversion at Convent/Blind River
   d. Increase Amite River Diversion Canal Influence by gapping banks
   e. Medium Diversion at Whites' Ditch
   f. Modification at Caernarvon Diversion
   g. Louisiana/Mississippi Hydrodynamic Study
   h. Mississippi River Hydrodynamic Study
   i. Mississippi River Delta Management Study
1-6. Restore Chandeleur Islands
1-7. Maintain and restore Biloxi Landbridge and Barrier reefs – south (reefs not considered)
1-8. Restore Bayou LaLoutre ridge
1-9. Construct Jefferson Parish Fringe Buffer
1-10. Maintain Lake Borgne Landbridge
1-11. Sediment Delivery by Pipeline at American/California Bay
1-12. Sediment Delivery by Pipeline at Central Wetlands
1-13. Sediment Delivery by Pipeline at Golden Triangle
1-14. Sediment Delivery by Pipeline at LaBranche

1-15. Benneys Bay Sediment Diversion.
1-16. Restore Main Pass Ridge with dredged material
1-17. Add new bankline stabilization (Lake Borgne Corner at GIWW to Verret)
1-18. Goose Point / Pointe Platte marsh creation
1-19. Adaptive management through maintenance of existing crevasses and construction of new crevasses
1-20. Maximize beneficial use of dredged material where feasible
1-21. Strategize and implement plan to elevate and/or relocate assets located outside the hurricane protection plans
1-22. Maintain and Restore Breton land bridge

### 2.1.2 Planning Unit 1, Alternative II

1-1. Levee Alignment No. 1 from Pearl River to Caernarvon (30 ft surge at coastline) and Hurricane Protection from Caernarvon to Point-a-la-Hache (20 ft Storm Surge at coastline)
1-2. West Shore Lake Pontchartrain Study Levee Alignment
1-3. Re-evaluate levee protection at south shore of Lake Pontchartrain (from LaBranche to Hwy 11 – including fronting and hardening pump stations and construction of 3 new pump stations and Seabrook Floodgate) for 30 ft storm surge at coastline
1-4. Resolve/close MRGO to deep draft navigation
1-5. Complete/accelerate the LCA Near Term Plan including:
   a. MRGO Environmental Restoration Features
   b. Small diversion at Hope Canal
   c. Small diversion at Convent/Blind River
   d. Increase Amite River Diversion Canal influence by gapping banks
   e. Medium Diversion at Whites' Ditch
   f. Modification at Caernarvon Diversion
   g. Louisiana/Mississippi Hydrodynamic Study
   h. Mississippi River Hydrodynamic Study
   i. Mississippi River Delta Management Study
1-6. Restore Chandeleur Islands
1-7. Maintain and restore Biloxi Landbridge and Barrier reefs – south (reefs not considered)
1-8. Maintain and restore Biloxi Landbridge and Barrier reefs – north (reefs not considered)
1-9. Restore Bayou LaLoutre ridge
1-10. Construct Jefferson Parish Fringe Buffer
1-11. Maintain Lake Borgne Landbridge
1-12. Maintain critical marsh shorelines and ridges of the East Orleans Landbridge
1-13. Construct Violet reintroduction to maintain target salinity in LA and MS
1-14. Diversion at American/California Bay with sediment enrichment
1-15. Benneys Bay Sediment Diversion
1-16. Add breakwater (in Lake Borgne from southwest corner to Biloxi Wildlife Management Area
1-17. St. Tammany Marsh Restoration and shoreline protection with dredge material and vegetative plantings
1-18. Adaptive management through maintenance of existing crevasses and construction of new crevasses
1-19. Maximize beneficial use of dredged material
1-20. Strategize and implement plan to elevate and/or relocate assets located outside the hurricane protection plans

### 2.1.3 Planning Unit 2, Alternative I

2-1. USACE Levee Alignment No. 1 Hurricane Protection (30 ft surge at coastline) along the GIWW south from Golden Meadow to City Price, modified to include Lafitte and Barataria
2-2. New Orleans to Venice Hurricane Protection Project: City Price to Venice segment – Improve existing levees to provide 100 yr storm frequency level of protection
2-3. Grand Isle and Vicinity Project: provide max technically feasible hurricane protection
2-4. Complete/accelerate the LCA Near Term Plan including:
   a. Barataria Basin Barrier Shoreline Restoration (Caminada Headland and Shell Island)
   b. Small Bayou Lafourche Reintroduction
   c. Medium Diversion with Dedicated Dredging at Myrtle Grove
   d. Re-authorization of Davis Pond - Optimize for Marsh Creation
   e. Mississippi River Hydrodynamic Study
   f. Mississippi River Delta Management Study
   g. Third Delta Study
2-5. Barrier shoreline restoration projects - restoring the Barataria barrier islands
2-6. Adaptive management through maintenance of W. Bay crevasse
2-7. Pipeline conveyance of sediment to create strategic marsh platforms in Fringing Marsh and Middle Basin Marsh areas, including the LA-1 Marsh Creation Project area
2-8. Back fill and/or plug non-essential oil and gas canals
2-9. Develop a watershed management plan that redirects freshwater and sediment, storm water, and treated sewage water to sustain upper basin swamps and middle basin freshwater marsh
2-10. Small diversions at strategic locations in upper basin
2-11. Maximize beneficial use of dredged material where feasible
2-12. Strategize and implement plan to elevate and/or relocate assets located outside the hurricane protection plans

### 2.1.4 Planning Unit 2, Alternative II

2-1. West Bank Hurricane Protection Levee from Davis Pond to Oakville: improve Existing Levee to Provide Hurricane Protection (30 ft surge at coastline)
2-2. USACE Levee Alignment No. 3 - Provide 100 yr storm protection via the Highway 90 alignment from Golden Meadow to Davis Pond segment and from Oakville to Venice in the Plaquemines Parish segment
2-3. Ring Levees around Lafitte, Barataria, and Crown Point, Provide Maximum Technically Feasible Hurricane Protection
2-4. Complete/accelerate the LCA Near Term Plan including:
   a. Barataria Basin Barrier Shoreline Restoration (Caminada Headland and Shell Island)
   b. Small Bayou Lafourche Reintroduction
   c. Medium Diversion with Dedicated Dredging at Myrtle Grove
   d. Re-authorization of Davis Pond - Optimize for Marsh Creation
   e. Mississippi River Hydrodynamic Study
   f. Mississippi River Delta Management Study
   g. Third Delta Study
2-5. Barrier shoreline restoration projects - restoring the Barataria barrier islands
2-6. Adaptive management through maintenance of W. Bay crevasse
2-7. Pipeline conveyance of sediment to create strategic marsh platforms in Fringing Marsh and Middle Basin Marsh areas, including the LA-1 Marsh Creation Project area
2-8. Back fill and/or plug non-essential oil and gas canals
2-9. Develop a watershed management plan that redirects freshwater and sediment, storm water, and treated sewage water to sustain upper basin swamps and middle basin freshwater marsh
2-10. Small diversions at strategic locations in upper basin

2-11. Maximize beneficial use of dredged material where feasible
2-12. Strategize and implement plan to elevate and/or relocate assets located outside the hurricane protection plans
2-11. Small diversions at Port Sulphur
2-12. Restore ridges including: Bayou Lafourche, Bayou L'ours, Bayou Grand Cheniere, Caminada Cheniere, Bayou Dupont, Bayou Barataria, Bayou Long-Bayou Fontanelle (Empire Westway), and Bayou Grand Liard
2-13. North Barataria Bay Shoreline Wave Breaks

### 2.1.5 Planning Unit 3a, Alternative I

3a-1 Morganza to the Gulf Hurricane protection levee alignment (30 ft surge at coastline)
3a-2. Complete/accelerate the LCA Near Term Plan including:
  a. Small Bayou Lafourche Reintroduction
  b. Multi-Purpose Operation of Houma Navigation Canal (HNC) Lock
  c. Terrebonne Basin Barrier shoreline restoration
  d. Maintain Landbridge between Caillou Land and the Gulf of Mexico
  e. Convey Atchafalaya River Water to Northern Terrebonne marshes
  f. Third Delta Study
  g. Upper Atchafalaya Basin Study
3a-3 Pipeline conveyance of sediments to create strategic marsh platforms
3a-4. Plugging and/or backfilling oil and gas canals to restore hydrology and regulate salt water movement (assume polygon for twin pipeline project)
3a-5 Bankline Protection for Houma Navigation Canal (HNC)
3a-6 Bankline Protection for GIWW
3a-7. Protection to distributed assets south of the Morganza to Gulf Hurricane Protection alignment by elevated structures and protected evacuation routes
3a-8. Strategize and implement plan to evaluate and/or relocate assets outside the hurricane protection plans
3a-9. Implement the Chacahoula Basin Plan and other projects to alleviate inundation issues in the Verret Sub-basin
3a-10. Maximize beneficial use of dredge material where possible

### 2.1.6 Planning Unit 3a, Alternative II

3a-1. Morganza to the Gulf Hurricane protection levee alignment (20 ft surge at coastline)
3a-2. Internal hurricane levee alignment (30 ft surge at coastline)
3a-3. Complete/accelerate the LCA Near Term Plan including:
  a. Small Bayou Lafourche Reintroduction
  b. Multi-Purpose Operation of Houma Navigation Canal (HNC) Lock
  c. Terrebonne Basin Barrier shoreline restoration
  d. Maintain Landbridge between Caillou Land and the Gulf of Mexico
  e. Convey Atchafalaya River Water to Northern Terrebonne marshes
  f. Third Delta Study
  g. Upper Atchafalaya Basin Study
3a-4. Pipeline conveyance of sediments to create strategic marsh platforms
3a-5. Implement the Chacahoula Basin Plan and other projects to alleviate inundation issues in the Verret Sub-basin
3a-6. Freshwater Introduction via Blue Hammock Bayou
3a-7. Freshwater Introduction to South of Lake Decade and Shoreline Protection
3a-8. Penchant Basin Plan

3a-9. Protection to distributed assets south of the Morganza to Gulf Hurricane Protection alignment by elevated structures and protected evacuation routes
3a-10. Strategize and implement plan to evaluate and/or relocate assets outside the hurricane protection plans
3a-11. Stabilize/Maintain Northern Shoreline of Terrebonne/Timbalier Bay
3a-12. Short-term Freshwater Redirections to Nourish and Sustain Intermediate Marshes that are being affected by salt water
3a-13. Protect and Maintain Ridges
3a-14. Maximize beneficial use of dredge material where feasible
3a-15. Bankline stabilization for the Houma Navigation Canal
3a-16. Bankline stabilization for the GIWW

### 2.1.7 Planning Unit 3b, Alternative I

3b-1. Construct Hurricane Protection (30 ft surge at coastline) for Berwick and Patterson and levee Alignment south of the GIWW from the Wax lake outlet to Freshwater Bayou
3b-2. Complete/accelerate the LCA Near Term Plan including:
   a. Stabilize Gulf shoreline at Pointe Au Fer Island
   b. Convey Atchafalaya River Water to northern Terrebonne Marshes
   c. Acadiana Bays Estuarine Restoration Feasibility Study
   d. Upper Atchafalaya Basin Study
3b-3. Create marsh at Weeks Bay
3b-4. Restore marsh at Marsh Island south shoreline and Rainey Marsh via dedicated dredging
3b-5. Maintain north shore of East Cote Blanche Bay at Point Marone
3b-6. Restore Vermilion Bay and West Cote Blanche Bay shorelines via beneficial uses of dredged material and/or detached breakwaters
3b-7. Maintain Vermilion Bay, East and West Cote Blanche Bay as brackish environments
3b-8. Strategize and implement plan to elevate and/or relocate assets located outside the hurricane protection plans
3b-9. Freshwater Bayou Bank Stabilization – Belle Isle to Lock

### 2.1.8 Planning Unit 3b, Alternative II

3b-1. Construct Hurricane Protection (30 ft surge at coastline) for Berwick and Patterson and levee alignment from the Wax lake outlet to the Vermilion River following the USACE levee alignment 3A
3b-2. Complete/accelerate the LCA Near Term Plan including:
   a. Stabilize Gulf shoreline at Pointe Au Fer Island
   b. Convey Atchafalaya River Water to northern Terrebonne Marshes
   c. Acadiana Bays Estuarine Restoration Feasibility Study
   d. Upper Atchafalaya Basin Study
3b-3. Increase sediment transport from Atchafalaya River down Wax Lake Outlet
3b-4. Stabilize Banks of Southwest Pass off Marsh Island
3b-5. Stabilize Banks of the GIWW
3b-6. Stabilize shorelines from Planning Unit 4 boundary past Tigre Point to Southwest Pass
3b-7. Stabilize shorelines across south shoreline of Marsh Island from Lighthouse Point to South Point (east of Mound Point) using dredged sediments and/or breakwaters
3b-8. Beneficial use of dredged material and dedicated dredging material wherever possible to rebuild marsh shorelines, historic reefs, and barrier islands (reefs not considered)
3b-9. Stabilize and implement plan to evaluate and/or relocate assets outside of the hurricane protection plan
3b-10. Freshwater Bayou Bank Stabilization - Belle Isle to Lock

### 2.1.9 Planning Unit 4, Alternative I

4-1. Proposed hurricane protection levee (30 ft surge at coastline)
4-2. Complete/Accelerate the Chenier Plain Freshwater and Sediment Management and Allocation Reassessment Study which was included in the LCA Near-Term Plan
4-3. Maximize freshwater inflow from Sabine River
4-4. Salinity Control Structures along the east shoreline of Sabine Lake near Blue Buck Point and Black Bayou
4-5. Beneficial uses of dredged material program: utilize sediment form Sabine Ship Channel and dedicated dredging for marsh enhancement and construction of terraces
4-6. Salinity Control Structure at Sabine Pass Near Hwy 82 Causeway
4-7. Stabilize Gulf Shoreline and beach west of the Calcasieu River to Sabine River using dredged sediment or breakwaters
4-8. Stabilize Gulf Shoreline and beach east of the Calcasieu River to Freshwater Bayou using dredged sediment or breakwaters
4-9. Salinity Control Structure in Calcasieu Ship Channel near ferry
4-10. Beneficial use of dredged material program: utilize sediment and dedicated dredging for marsh enhancement and construction of terraces in Calcasieu Lake.
4-11. Salinity Control Structures at points on east side of Calcasieu Lake
4-12. Maximize freshwater inflow to tributaries of the Mermentau River from outside sources
4-13. Maximize freshwater inflow to Mermentau River from outside sources
4-14. Stabilize Grand Lake Shoreline and Landbridge
4-15. Freshwater Introduction/Retention Structure or Sill on Little Pecan Bayou
4-16. Freshwater Introduction/Retention Structure or Sill on Rollover Bayou
4-17. Stabilize White Lake Shoreline and Landbridge
4-18. Stabilize banks from Schooner Bayou to GIWW along Freshwater Bayou and GIWW near White Lake
4-19. Salinity Control Structure on Black Lake Bayou near Hackberry
4-20. Build new chamber for navigation at Calcasieu Lock on GIWW and use old lock to evacuate excess water
4-21. Stabilize West Banks of Freshwater Bayou
4-22. Stabilize Eastern Shore of Lake Calcasieu
4-23. Develop a plan to elevate and/or relocate assets located outside the hurricane protection levee
4-24. Maintain Hwy 82 for hurricane evacuation and marsh protection
4-25. Provide water control structures at strategic locations along Hwys 82 and 27
4-26. Manage watershed to reduce rapid inflows into Mermentau Sub-Basin
4-27. Restore marsh by filling abandoned canals
4-28. Utilize freshwater inflow from Atchafalaya River
4-29. Improve hydrology of the old Mermentau River Channel between Mud Lake and Gulf of Mexico
4-30. Stabilize banks of GIWW

### 2.1.10 Planning Unit 4, Alternative II

4-1. Storm surge protection for Lake Charles Metropolitan Area using ring levee
4-2. Storm surge protection for Lafayette
4-3. Storm surge protection around Gueydan, Kaplan, and Vinton
4-4. Complete/Accelerate the Chenier Plain Freshwater and Sediment Management and Allocation Reassessment Study which was included in the LCA Near-Term Plan
4-5. Maximize freshwater inflow from Sabine River
4-6. Beneficial uses of dredged material program: utilize sediment from Sabine Ship Channel and dedicated dredging for marsh enhancement and construction of terraces

4-7. Allow Calcasieu Lake and surrounding area to become and remain brackish to saline – no action needed
4-8. Stabilize Gulf Shoreline and beach east of the Calcasieu River to Louisiana Point using dredged sediment or breakwaters
4-9. Stabilize Gulf Shoreline and beach east of the Calcasieu River to Freshwater Bayou using dredged sediment or breakwaters
4-10. Stabilize Grand Lake Shoreline and Landbridge
4-11. Stabilize White Lake Shoreline and Landbridge
4-12. Beneficial use of dredged material program: utilize sediment and dedicated dredging for marsh enhancement and construction of terraces in Calcasieu Lake
4-13. Dedicated dredging from the Gulf of Mexico for Marsh creation and enhancement
4-14. Stabilize West Banks of Freshwater Bayou
4-15. Manage watershed to reduce rapid inflows into Mermentau sub-basin
4-16. Stabilize banks from Schooner Bayou to GIWW along Freshwater Bayou and GIWW near White Lake
4-17. Maintain Hwy 82 for hurricane evacuation and marsh protection
4-18. Provide water control structures at strategic locations along Hwys 82 and 27
4-19. Develop a plan to elevate and/or relocate assets located outside the hurricane protection levee
4-20. Stabilize Banks of the GIWW
4-21. Utilize freshwater inflow from Atchafalaya River
4-22. Build new chamber for navigation at Calcasieu Lock on GIWW and use old lock to evacuate excess water

## 2.2 Diversion Hydrographs used to Generate Sediment Loads

In order to generate sediment loads for each diversion, daily hydrographs were created for each diversion based on actual Mississippi River flow (based on data from 1980 to 2005 which are repeated to create 50 years of flow), and are presented below for each alternative plan. At times of low river flow, diversion flows were decreased accordingly. All hydrographs take into consideration the average head differential between the river and the wetlands. These hydrographs are provided on the next two pages.

# Alternative 1:

**Measure name / location and monthly flow, cubic feet per second (cfs)**

| Measure name / location | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benneys Bay Sediment Diversion | 12794 | 16337 | 21255 | 22060 | 22096 | 18380 | 14373 | 9142 | 4307 | 2121 | 4164 | 13175 |
| Medium Diversion at White's Ditch | 8905 | 9056 | 10639 | 10642 | 10733 | 9354 | 8121 | 6455 | 4876 | 4616 | 5874 | 10188 |
| Small Diversion at Hope Canal | 210 | 598 | 855 | 854 | 792 | 603 | 435 | 261 | 120 | 44 | 32 | 91 |
| Small Div. at Convent/Blind River | 210 | 598 | 855 | 854 | 792 | 603 | 435 | 261 | 120 | 44 | 32 | 91 |
| Modification of Caenarvon Diversion | 146685 | 168269 | 199263 | 192094 | 183578 | 151002 | 124335 | 95516 | 73324 | 75485 | 102304 | 174283 |
| Re-authorization of Davis Pond – Optimize for Marsh Creation | 6800 | 8194 | 9785 | 9384 | 8879 | 7230 | 5907 | 4517 | 3443 | 3446 | 4452 | 7276 |
| Small diversions at strategic locations in upper basin. | 850 | 950 | 1150 | 1142 | 1114 | 914 | 717 | 478 | 276 | 228 | 401 | 941 |
| Small diversions at strategic locations in upper basin. | 850 | 950 | 1150 | 1142 | 1114 | 914 | 717 | 478 | 276 | 228 | 401 | 941 |
| Small B.u Lafourche Reintroduction | 289 | 323 | 391 | 388 | 379 | 311 | 244 | 163 | 94 | 78 | 136 | 320 |
| Medium Diversion with Dedicated Dredging at Myrtle Grove | 7871 | 9996 | 12791 | 13040 | 12853 | 10551 | 8190 | 5269 | 2725 | 1874 | 3530 | 9295 |
| Convey Atchafalaya River Water to Northern Terrebonne marshes | 155 | 182 | 215 | 210 | 201 | 167 | 136 | 100 | 73 | 75 | 107 | 200 |
| As above | 155 | 182 | 215 | 210 | 201 | 167 | 136 | 100 | 73 | 75 | 107 | 200 |
| As above | 155 | 182 | 215 | 210 | 201 | 167 | 136 | 100 | 73 | 75 | 107 | 200 |
| As above | 155 | 182 | 215 | 210 | 201 | 167 | 136 | 100 | 73 | 75 | 107 | 200 |
| As above | 155 | 182 | 215 | 210 | 201 | 167 | 136 | 100 | 73 | 75 | 107 | 200 |
| Small B. Lafourche Reintroduction | 433 | 485 | 577 | 574 | 559 | 463 | 365 | 240 | 138 | 114 | 201 | 489 |
| Convey Atchafalaya River Water to northern Terrebonne Marshes | 5812 | 6818 | 8058 | 7867 | 7548 | 6259 | 5111 | 3763 | 2754 | 2800 | 4009 | 7500 |
| Maximize freshwater inflow to Mermentau River from outside sources | 2798 | 2681 | 2336 | 1872 | 1342 | 1640 | 1375 | 832 | 1204 | 1962 | 3195 | 2045 |
| Maximize freshwater inflow from Sabine River | 12275 | 13044 | 15327 | 11192 | 8887 | 7281 | 6389 | 4417 | 4053 | 3089 | 4437 | 8782 |
| Maximize freshwater inflow to tributaries of the Mermentau River from outside sources. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| West Bay Sediment Diversion | 14106 | 19207 | 25468 | 26496 | 26340 | 21518 | 16186 | 9293 | 2916 | 57 | 1519 | 11551 |

# Alternative 2:

**Measure name / location and monthly flow, cubic feet per second (cfs)**

| Measure name / location | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benneys Bay Sediment Diversion | 12075 | 15282 | 20344 | 20906 | 20163 | 17252 | 13601 | 8642 | 4268 | 2120 | 4056 | 11501 |
| Medium Diversion at White's Ditch | 8414 | 8470 | 10181 | 10085 | 9791 | 8780 | 7683 | 6109 | 4836 | 4615 | 5737 | 8937 |
| Small Diversion at Hope Canal | 194 | 556 | 815 | 806 | 717 | 562 | 407 | 243 | 118 | 44 | 29 | 75 |
| Small Div. at Convent/Blind River | 194 | 556 | 815 | 806 | 717 | 562 | 407 | 243 | 118 | 44 | 29 | 75 |
| Modification of Caenarvon Diversion | 138532 | 157430 | 190736 | 182099 | 167588 | 141766 | 117707 | 90445 | 72739 | 75464 | 99928 | 153037 |
| Construct Violet Reintroduction | 689 | 783 | 950 | 906 | 832 | 705 | 583 | 448 | 363 | 377 | 497 | 758 |
| Diversion at American/California Bay | 120787 | 152853 | 203473 | 209103 | 201680 | 172552 | 136064 | 86458 | 42684 | 21204 | 40580 | 115070 |
| Re-authorization of Davis Pond – Optimize for Marsh Creation | 6546 | 7816 | 9551 | 9070 | 8264 | 6919 | 5700 | 4360 | 3483 | 3514 | 4434 | 6515 |
| Small diversions at strategic locations in upper basin. | 4016 | 4443 | 5502 | 5413 | 5083 | 4290 | 3392 | 2259 | 1366 | 1140 | 1954 | 4123 |
| As above | 4016 | 4443 | 5502 | 5413 | 5083 | 4290 | 3392 | 2259 | 1366 | 1140 | 1954 | 4123 |
| Small B. Lafourche Reintroduction | 802 | 887 | 1099 | 1081 | 1015 | 857 | 677 | 450 | 273 | 228 | 390 | 822 |
| Medium Div. at Myrtle Grove | 10805 | 14146 | 18711 | 18906 | 17883 | 15002 | 11619 | 7313 | 3769 | 2427 | 4745 | 11773 |
| Small diversion at Port Sulphur | 1575 | 2155 | 2934 | 3012 | 2856 | 2359 | 1729 | 914 | 213 | 0 | 240 | 1489 |
| Convey Atchafalaya River Water to Northern Terrebonne marshes | 382 | 449 | 537 | 525 | 503 | 414 | 337 | 251 | 184 | 187 | 267 | 488 |
| As above | 382 | 449 | 537 | 525 | 503 | 414 | 337 | 251 | 184 | 187 | 267 | 488 |
| As above | 382 | 449 | 537 | 525 | 503 | 414 | 337 | 251 | 184 | 187 | 267 | 488 |
| As above | 382 | 449 | 537 | 525 | 503 | 414 | 337 | 251 | 184 | 187 | 267 | 488 |
| As above | 764 | 899 | 1074 | 1049 | 1006 | 829 | 674 | 501 | 367 | 373 | 534 | 977 |
| Small B. Lafourche Reintroduction | 433 | 485 | 577 | 574 | 559 | 463 | 365 | 240 | 138 | 114 | 201 | 489 |
| Freshwater Intro. Blue Hammock B. | 764 | 899 | 1074 | 1049 | 1006 | 829 | 674 | 501 | 367 | 373 | 534 | 977 |
| Small B.Lafourche Reintroduction | 433 | 485 | 577 | 574 | 559 | 463 | 365 | 240 | 138 | 114 | 201 | 489 |
| Convey Atchafalaya River Water to northern Terrebonne Marshes | 7645 | 9000 | 10745 | 10490 | 10063 | 8294 | 6748 | 5014 | 3672 | 3733 | 5340 | 9785 |
| Increase sediment transport down Wax Lake Outlet | 57346 | 67505 | 80585 | 78675 | 75475 | 62211 | 50612 | 37606 | 27542 | 28000 | 40053 | 73401 |
| Maximize freshwater inflow to Mermentau River | 2185 | 1978 | 2621 | 1970 | 1361 | 1680 | 1869 | 1525 | 1521 | 1224 | 1112 | 2118 |
| West Bay Sediment Diversion | 13309 | 17967 | 24377 | 25111 | 24038 | 20196 | 15317 | 8777 | 2885 | 57 | 1469 | 10045 |

## 2.3 Hydrodynamics / Salinity

Base-line (No Increased Action) salinity values (Section II.A.) were generated at the Ecosystem Unit level (Figure II.A) for coastal Louisiana using historical data from monitoring stations across the coast (Section II.B). In locations where monitoring stations were unavailable, salinity values were interpolated from existing stations to yield reasonable coast-inland gradients (using best professional judgment). The resulting salinity values were altered accordingly for CPRA Alternative 1 and Alternative 2, given a dilution of the volume of water (beginning at X ppt) in each Ecosystem Unit with a volume of fresh water (0 ppt) calculated to flow into that Ecosystem Unit from nearby diversions. Diversion volumes used were the average of 1997 (high flow year) and 2000 (low flow year), See Section II.C.

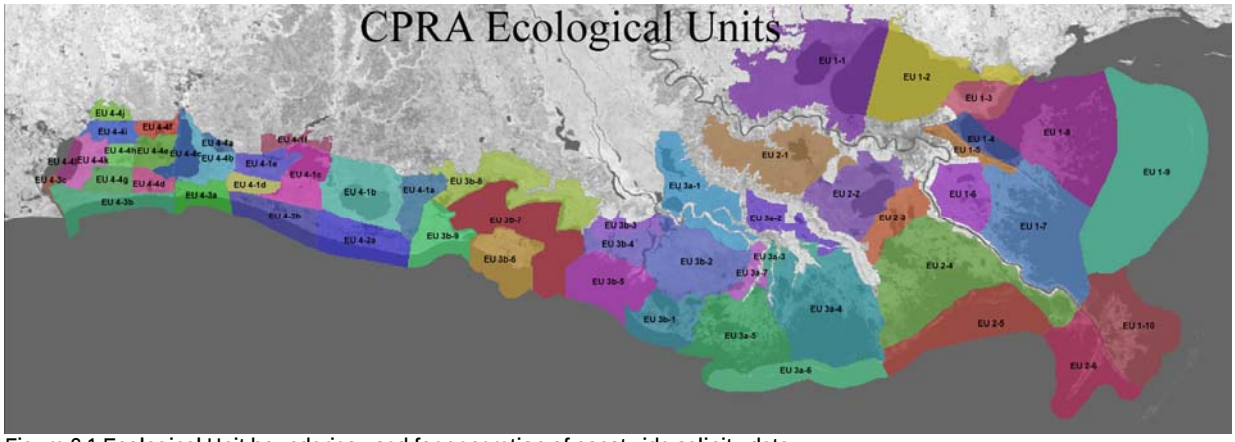


Figure 2.1 Ecological Unit boundaries used for generation of coastwide salinity data.

The following is an example of the calculations involved:

1997 and 2000 monthly average hydro value for diversion = DIVERSION_FT3_SEC_JAN

DIVERSION_FT3_SEC_JAN * 0.02832 = DIVERSION_M3_SEC_JAN

DIVERSION_M3_SEC_JAN * 60secs*60mins*24hours = DIVERSION_M3_DAY_JAN

WATER_VOLUME_M3 / DIVERSION_M3_DAY_JAN = REPLACEMENT_TIME_DAYS_JAN

100 * (DIVERSION_M3_DAY_JAN / WATER_VOLUME_M3) = REPLACEMENT_TIME_PERCENT_DAY_JAN

((REPLACEMENT_TIME_PERCENT_DAY_JAN * DAYS_OPERATION_JAN) / 100) * BASE_SALINITY_JAN = SALINITY_DECREASE_JAN

BASE_SALINITY_JAN - SALINITY_DECREASE_JAN = NEW_SALINITY_JAN

If the volume from a diversion replaced the volume of an Ecosystem Unit, the balance flowed to the adjacent cell, and that volume would then dilute that cell. A '90% connectivity rule' was incorporated to allow flow between Ecosystem Units (Section II.D).

To reduce the abrupt edge effect between Ecosystem Units, a smoothing procedure was applied within 5 km on either side of each Ecosystem Unit boundary. This smoothing procedure replaced the salinity of each cell in this 10 km wide strip with the average of 120 surrounding neighbors (cells near the upland boundary of an Ecosystem Unit may have had fewer surrounding neighbors).

This approach provides a static picture of the salinity in each box, not allowing for changes over time. For example, assume a box had a base salinity of 10 ppt in October and 12 ppt in November. A diversion is added, and the salinity in October drops to 8 ppt. The current model calculates the November salinity using the base of 12 ppt, but in reality the November base should be less than 12 ppt since the October flow has gone into the box. A more realistic model would incorporate this. To achieve this, in addition to the data used (areas, depths, and volumes), simulated forcing functions (coastal salinity and water level, precipitation, and evapotranspiration) would also need to be incorporated.

## 2.4 Base (No Increased Action) Coastwide Salinity Values Used as Input into the CLEAR Model

### Base (No Increased Action):

**Salinity, ppt**

| ECO_UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 1-1 | 1.5 | 1.5 | 1.0 | 1.3 | 1.3 | 1.5 | 1.0 | 1.7 | 3.3 | 2.6 | 2.3 | 2.1 |
| EU 1-2 | 5.6 | 5.0 | 4.4 | 3.7 | 3.3 | 3.4 | 4.2 | 5.2 | 6.9 | 6.9 | 6.4 | 6.4 |
| EU 1-3 | 5.3 | 5.9 | 4.8 | 4.0 | 4.3 | 5.1 | 5.9 | 7.0 | 9.8 | 9.3 | 8.8 | 7.2 |
| EU 1-4 | 6.1 | 4.9 | 5.5 | 5.0 | 6.0 | 7.8 | 9.2 | 9.3 | 8.8 | 8.3 | 8.0 | 7.9 |
| EU 1-5 | 5.3 | 5.9 | 4.8 | 4.0 | 4.3 | 5.1 | 5.9 | 7.0 | 9.8 | 9.3 | 8.8 | 7.2 |
| EU 1-6 | 0.8 | 0.7 | 0.4 | 0.5 | 0.7 | 0.7 | 0.6 | 0.9 | 1.8 | 1.7 | 1.4 | 1.5 |
| EU 1-7 | 10.2 | 8.1 | 9.2 | 8.3 | 9.9 | 12.9 | 15.4 | 15.5 | 14.7 | 13.8 | 13.3 | 13.2 |
| EU 1-8 | 6.1 | 4.9 | 5.5 | 5.0 | 6.0 | 7.8 | 9.2 | 9.3 | 8.8 | 8.3 | 8.0 | 7.9 |
| EU 1-9 | 10.2 | 8.1 | 9.2 | 8.3 | 9.9 | 12.9 | 15.4 | 15.5 | 14.7 | 13.8 | 13.3 | 13.2 |
| EU 1-10 | 2.1 | 0.8 | 0.8 | 0.9 | 0.9 | 1.4 | 2.0 | 3.1 | 5.8 | 7.4 | 5.4 | 2.6 |
| EU 2-1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.3 | 0.2 | 0.3 | 0.6 |
| EU 2-2 | 3.7 | 3.2 | 2.7 | 2.7 | 3.1 | 3.2 | 4.0 | 4.4 | 5.4 | 5.5 | 6.1 | 4.7 |
| EU 2-3 | 6.9 | 6.3 | 5.9 | 5.8 | 6.0 | 5.6 | 6.1 | 6.9 | 8.0 | 9.6 | 10.2 | 8.5 |
| EU 2-4 | 10.0 | 9.5 | 9.1 | 8.9 | 8.9 | 8.1 | 8.3 | 9.4 | 10.6 | 13.6 | 14.2 | 12.2 |
| EU 2-5 | 21.3 | 20.3 | 19.1 | 17.5 | 15.9 | 15.1 | 18.2 | 19.0 | 20.2 | 23.7 | 24.6 | 22.7 |
| EU 2-6 | 2.1 | 0.8 | 0.8 | 0.9 | 0.9 | 1.4 | 2.0 | 3.1 | 5.8 | 7.4 | 5.4 | 2.6 |
| EU 3a-1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 |
| EU 3a-2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.1 | 0.3 | 1.6 | 1.5 | 1.1 | 0.4 |
| EU 3a-3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.1 | 0.3 | 1.6 | 1.5 | 1.1 | 0.4 |

# Base (No Increased Action):

**Salinity, ppt (continued)**

| ECO_UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 3a-4 | 5.8 | 5.7 | 6.0 | 7.1 | 6.8 | 6.4 | 5.7 | 6.0 | 7.8 | 9.9 | 9.6 | 7.7 |
| EU 3a-5 | 9.0 | 8.8 | 9.9 | 10.0 | 10.6 | 9.3 | 7.3 | 9.2 | 13.1 | 15.2 | 15.7 | 12.6 |
| EU 3a-6 | 24.5 | 25.0 | 23.3 | 23.4 | 22.7 | 22.0 | 22.3 | 24.2 | 25.3 | 27.5 | 27.8 | 27.7 |
| EU 3a-7 | 3.1 | 1.2 | 0.9 | 0.8 | 0.9 | 0.8 | 1.0 | 1.2 | 5.7 | 4.5 | 5.5 | 2.4 |
| EU 3b-1 | 6.1 | 5.9 | 7.1 | 5.4 | 5.7 | 6.3 | 4.9 | 5.2 | 10.9 | 12.6 | 12.9 | 8.7 |
| EU 3b-2 | 0.7 | 0.7 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 |
| EU 3b-3 | 0.7 | 0.7 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 |
| EU 3b-4 | 0.7 | 0.7 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 |
| EU 3b-5 | 3.1 | 2.5 | 2.5 | 1.9 | 1.6 | 1.6 | 2.9 | 4.2 | 4.4 | 4.8 | 4.9 | 3.6 |
| EU 3b-6 | 8.2 | 8.0 | 7.7 | 7.5 | 8.1 | 8.1 | 10.2 | 10.6 | 8.4 | 8.6 | 8.6 | 9.0 |
| EU 3b-7 | 3.8 | 2.6 | 2.4 | 1.9 | 1.3 | 1.8 | 2.5 | 4.3 | 4.0 | 4.4 | 4.7 | 4.3 |
| EU 3b-8 | 4.6 | 3.1 | 2.8 | 3.1 | 4.6 | 3.9 | 2.9 | 3.0 | 3.3 | 5.3 | 2.7 | 2.2 |
| EU 3b-9 | 8.2 | 8.0 | 7.7 | 7.5 | 8.1 | 8.1 | 10.2 | 10.6 | 8.4 | 8.6 | 8.6 | 9.0 |
| EU 4-1a | 0.7 | 0.6 | 1.2 | 1.9 | 1.6 | 1.2 | 1.0 | 1.1 | 1.7 | 2.1 | 2.1 | 1.3 |
| EU 4-1b | 0.8 | 0.8 | 0.9 | 0.8 | 0.8 | 1.4 | 1.4 | 1.4 | 2.0 | 2.0 | 2.1 | 0.8 |
| EU 4-1c | 1.7 | 0.5 | 1.3 | 1.9 | 3.0 | 2.7 | 1.9 | 2.0 | 2.7 | 4.3 | 4.5 | 2.6 |
| EU 4-1d | 0.3 | 0.3 | 0.8 | 0.8 | 0.8 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 1.6 | 0.3 |
| EU 4-1e | 0.1 | 0.1 | 0.5 | 0.5 | 0.5 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 0.1 |
| EU 4-1f | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 |
| EU 4-2a | 6.3 | 6.3 | 8.5 | 6.3 | 6.4 | 8.6 | 8.0 | 7.9 | 9.2 | 8.6 | 15.0 | 6.3 |
| EU 4-2b | 8.0 | 8.0 | 9.7 | 8.1 | 8.2 | 11.3 | 10.8 | 10.9 | 11.8 | 11.4 | 16.2 | 8.0 |
| EU 4-3a | 6.7 | 4.8 | 6.7 | 6.5 | 9.9 | 12.5 | 12.2 | 13.1 | 16.1 | 18.1 | 19.6 | 20.4 |
| EU 4-3b | 6.1 | 4.0 | 5.1 | 5.3 | 8.6 | 9.6 | 9.8 | 12.3 | 12.4 | 14.2 | 16.0 | 16.8 |
| EU 4-3c | 6.1 | 4.0 | 5.1 | 5.3 | 8.6 | 9.6 | 9.8 | 12.3 | 12.4 | 14.2 | 16.0 | 16.8 |
| EU 4-4a | 0.0 | 0.0 | 0.5 | 0.5 | 0.5 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 |
| EU 4-4b | 5.4 | 5.1 | 5.7 | 5.1 | 4.3 | 5.2 | 6.1 | 6.0 | 6.1 | 6.8 | 8.3 | 6.7 |
| EU 4-4c | 6.7 | 4.7 | 6.6 | 6.5 | 10.1 | 12.7 | 12.4 | 13.3 | 16.5 | 18.6 | 20.3 | 21.6 |
| EU 4-4d | 5.0 | 4.1 | 5.0 | 5.6 | 7.9 | 9.6 | 9.5 | 10.3 | 12.1 | 14.2 | 16.1 | 17.6 |
| EU 4-4e | 5.9 | 4.4 | 5.9 | 6.1 | 9.1 | 11.3 | 11.0 | 11.8 | 14.5 | 16.6 | 18.4 | 19.8 |
| EU 4-4f | 5.9 | 4.4 | 5.9 | 6.1 | 9.1 | 11.3 | 11.1 | 11.8 | 14.5 | 16.6 | 18.4 | 19.8 |
| EU 4-4g | 3.6 | 2.4 | 2.4 | 3.3 | 4.6 | 5.7 | 6.1 | 6.7 | 7.3 | 9.8 | 11.5 | 12.7 |
| EU 4-4h | 3.5 | 2.4 | 2.3 | 3.2 | 4.5 | 5.6 | 6.0 | 6.4 | 7.2 | 9.6 | 11.4 | 12.6 |
| EU 4-4i | 3.3 | 2.2 | 2.2 | 3.2 | 4.4 | 5.6 | 6.0 | 6.6 | 7.0 | 9.0 | 10.4 | 11.3 |
| EU 4-4j | 3.0 | 1.9 | 2.0 | 3.0 | 4.2 | 5.4 | 5.9 | 6.6 | 6.5 | 8.2 | 9.2 | 9.7 |
| EU 4-4k | 3.2 | 2.1 | 2.1 | 3.1 | 4.4 | 5.6 | 6.0 | 6.7 | 6.8 | 8.6 | 9.8 | 10.4 |
| EU 4-4l | 3.1 | 2.0 | 2.1 | 3.1 | 4.4 | 5.6 | 6.1 | 6.9 | 6.7 | 8.2 | 9.1 | 9.4 |
| GULF | 30.0 | 27.1 | 26.6 | 25.8 | 22.8 | 24.6 | 23.1 | 24.1 | 25.5 | 27.3 | 29.2 | 30.5 |
| INS | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

## 2.5 Monitoring Stations Used to Generate Base-line (No Increased Action) Coastwide Salinity Values for Input into the CLEAR Model

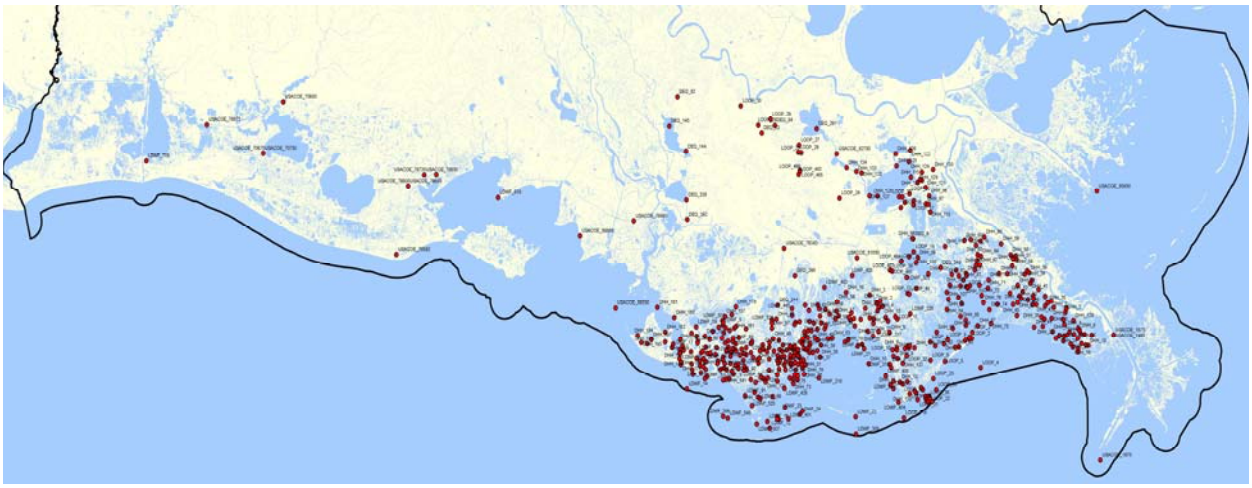

Figure 2.2 Map showing the monitoring stations used to generate base-line (No Increased Action) coastwide salinity values.

## 2.6 Alternative 1: Diversion Hydrographs by Ecosystem Unit (Average of 1997 and 2000) and Resulting Salinity

**Alternative 1:**
**Diversion hydrographs (cfs) by ecosystem unit**

| ECO UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 1-1 | 451 | 1262 | 1953 | 2020 | 1793 | 1436 | 1009 | 598 | 282 | 100 | 77 | 205 |
| EU 1-2 | 406 | 1136 | 1758 | 1818 | 1613 | 1293 | 908 | 538 | 254 | 90 | 69 | 184 |
| EU 1-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 1-4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 1-5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 1-6 | 170704 | 188126 | 239680 | 239561 | 220357 | 190819 | 153295 | 116568 | 92054 | 91251 | 127614 | 211216 |
| EU 1-7 | 153633 | 169314 | 215712 | 215605 | 198321 | 171737 | 137966 | 104911 | 82849 | 82126 | 114853 | 190094 |
| EU 1-8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 1-9 | 85352 | 94063 | 119840 | 119781 | 110178 | 95410 | 76648 | 58284 | 46027 | 45625 | 63807 | 105608 |
| EU 1-10 | 65238 | 73791 | 96176 | 97935 | 91162 | 79117 | 62625 | 45422 | 32686 | 29791 | 43199 | 78477 |
| EU 2-1 | 1857 | 2003 | 2627 | 2701 | 2525 | 2176 | 1661 | 1094 | 649 | 520 | 946 | 2156 |
| EU 2-2 | 9127 | 10494 | 13538 | 13519 | 12342 | 10562 | 8332 | 6149 | 4638 | 4394 | 6104 | 10269 |
| EU 2-3 | 8214 | 9445 | 12184 | 12168 | 11107 | 9506 | 7499 | 5534 | 4174 | 3955 | 5494 | 9242 |
| EU 2-4 | 16336 | 19453 | 26019 | 26819 | 25001 | 21480 | 16512 | 11191 | 7075 | 5782 | 9271 | 19340 |
| EU 2-5 | 8168 | 9727 | 13009 | 13409 | 12500 | 10740 | 8256 | 5595 | 3537 | 2891 | 4635 | 9670 |
| EU 2-6 | 15460 | 20411 | 29083 | 31307 | 29869 | 25605 | 18736 | 10624 | 3432 | 65 | 1795 | 13268 |
| EU 3a-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 3a-2 | 493 | 601 | 657 | 675 | 636 | 545 | 415 | 274 | 162 | 130 | 237 | 557 |

# Alternative 1:

## Diversion hydrographs (cfs) by ecosystem unit

| ECO UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 3a-3 | 177 | 225 | 245 | 247 | 229 | 197 | 155 | 114 | 86 | 85 | 126 | 228 |
| EU 3a-4 | 585 | 721 | 787 | 805 | 756 | 647 | 498 | 338 | 215 | 185 | 314 | 683 |
| EU 3a-5 | 177 | 225 | 245 | 247 | 229 | 197 | 155 | 114 | 86 | 85 | 126 | 228 |
| EU 3a-6 | 381 | 473 | 516 | 526 | 493 | 422 | 327 | 226 | 151 | 135 | 220 | 456 |
| EU 3a-7 | 194 | 248 | 269 | 272 | 252 | 216 | 171 | 126 | 95 | 94 | 138 | 251 |
| EU 3b-1 | 2790 | 3561 | 3868 | 3902 | 3623 | 3104 | 2453 | 1806 | 1366 | 1344 | 1988 | 3600 |
| EU 3b-2 | 6974 | 8901 | 9669 | 9755 | 9057 | 7761 | 6133 | 4515 | 3415 | 3360 | 4971 | 9000 |
| EU 3b-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 3b-4 | 2092 | 2670 | 2901 | 2926 | 2717 | 2328 | 1840 | 1355 | 1025 | 1008 | 1491 | 2700 |
| EU 3b-5 | 2092 | 2670 | 2901 | 2926 | 2717 | 2328 | 1840 | 1355 | 1025 | 1008 | 1491 | 2700 |
| EU 3b-6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 3b-7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 3b-8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 3b-9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-1a | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-1b | 1618 | 1518 | 1636 | 976 | 434 | 1171 | 477 | 218 | 774 | 546 | 315 | 1101 |
| EU 4-1c | 4624 | 4338 | 4675 | 2789 | 1240 | 3345 | 1364 | 623 | 2210 | 1561 | 900 | 3147 |
| EU 4-1d | 462 | 434 | 467 | 279 | 124 | 335 | 136 | 62 | 221 | 156 | 90 | 315 |
| EU 4-1e | 925 | 868 | 935 | 558 | 248 | 669 | 273 | 125 | 442 | 312 | 180 | 629 |
| EU 4-1f | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-2a | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-2b | 1156 | 1084 | 1169 | 697 | 310 | 836 | 341 | 156 | 553 | 390 | 225 | 787 |
| EU 4-3a | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-3b | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-3c | 5574 | 5977 | 7092 | 6167 | 7116 | 4008 | 1901 | 2293 | 2963 | 3436 | 4359 | 5158 |
| EU 4-4a | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4b | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4c | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4d | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4e | 2064 | 2214 | 2627 | 2284 | 2636 | 1485 | 704 | 849 | 1097 | 1273 | 1615 | 1910 |
| EU 4-4f | 3441 | 3690 | 4378 | 3807 | 4393 | 2474 | 1174 | 1415 | 1829 | 2121 | 2691 | 3184 |
| EU 4-4g | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4i | 13762 | 14759 | 17510 | 15228 | 17570 | 9897 | 4695 | 5661 | 7316 | 8484 | 10763 | 12735 |
| EU 4-4j | 15291 | 16399 | 19456 | 16920 | 19523 | 10997 | 5216 | 6290 | 8129 | 9426 | 11959 | 14150 |
| EU 4-4k | 6881 | 7380 | 8755 | 7614 | 8785 | 4949 | 2347 | 2831 | 3658 | 4242 | 5382 | 6368 |
| EU 4-4l | 6193 | 6642 | 7880 | 6853 | 7907 | 4454 | 2113 | 2548 | 3292 | 3818 | 4844 | 5731 |
| GULF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Alternative 1:
## Salinity, ppt

| ECO UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 1-1 | 5.56 | 4.87 | 4.21 | 3.55 | 3.22 | 3.31 | 4.15 | 5.15 | 6.85 | 6.93 | 6.38 | 6.38 |
| EU 1-2 | 5.56 | 4.87 | 4.21 | 3.55 | 3.22 | 3.31 | 4.15 | 5.15 | 6.85 | 6.93 | 6.38 | 6.38 |
| EU 1-3 | 5.01 | 5.03 | 3.60 | 3.03 | 3.33 | 4.19 | 5.17 | 6.42 | 9.48 | 9.22 | 8.72 | 7.01 |
| EU 1-4 | 6.11 | 4.86 | 5.52 | 4.95 | 5.96 | 7.77 | 9.24 | 9.28 | 8.79 | 8.28 | 7.98 | 7.90 |
| EU 1-5 | 5.31 | 5.89 | 4.80 | 4.04 | 4.33 | 5.10 | 5.94 | 6.95 | 9.82 | 9.34 | 8.80 | 7.20 |
| EU 1-6 | 0.77 | 0.68 | 0.40 | 0.47 | 0.72 | 0.75 | 0.60 | 0.87 | 1.75 | 1.66 | 1.42 | 1.48 |
| EU 1-7 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 1-8 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 1-9 | 10.19 | 8.10 | 9.21 | 8.26 | 9.94 | 12.95 | 15.40 | 15.46 | 14.65 | 13.80 | 13.30 | 13.16 |
| EU 1-10 | 0.33 | 0.11 | 0.01 | 0.01 | 0.01 | 0.08 | 0.44 | 1.26 | 3.17 | 3.95 | 2.02 | 0.01 |
| EU 2-1 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 2-2 | 2.56 | 2.20 | 1.48 | 1.49 | 1.79 | 2.03 | 2.83 | 3.61 | 4.82 | 5.06 | 5.18 | 2.99 |
| EU 2-3 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 2-4 | 3.43 | 2.78 | 0.01 | 0.23 | 0.73 | 1.94 | 3.14 | 5.11 | 7.09 | 9.15 | 7.93 | 2.88 |
| EU 2-5 | 16.40 | 15.09 | 11.87 | 10.85 | 10.12 | 10.51 | 13.79 | 15.88 | 18.16 | 21.73 | 21.42 | 16.32 |
| EU 2-6 | 1.89 | 0.74 | 0.68 | 0.80 | 0.75 | 1.20 | 1.78 | 2.89 | 5.57 | 7.12 | 5.14 | 2.35 |
| EU 3a-1 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.04 | 0.01 | 0.01 |
| EU 3a-2 | 0.18 | 0.15 | 0.22 | 0.28 | 0.25 | 0.18 | 0.14 | 0.31 | 1.62 | 1.45 | 1.08 | 0.41 |
| EU 3a-3 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 3a-4 | 5.70 | 5.59 | 5.91 | 7.02 | 6.71 | 6.29 | 5.61 | 5.94 | 7.72 | 9.85 | 9.52 | 7.63 |
| EU 3a-5 | 8.41 | 8.17 | 9.03 | 9.12 | 9.66 | 8.63 | 6.86 | 8.81 | 12.82 | 14.88 | 15.13 | 11.56 |
| EU 3a-6 | 24.33 | 24.86 | 23.16 | 23.22 | 22.50 | 21.88 | 22.15 | 24.07 | 25.22 | 27.41 | 27.64 | 27.46 |
| EU 3a-7 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.10 | 2.36 | 2.06 | 0.79 | 0.01 |
| EU 3b-1 | 5.87 | 5.67 | 6.81 | 5.12 | 5.49 | 6.11 | 4.75 | 5.12 | 10.72 | 12.40 | 12.56 | 8.29 |
| EU 3b-2 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 3b-3 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 3b-4 | 0.68 | 0.70 | 0.62 | 0.51 | 0.60 | 0.53 | 0.60 | 0.52 | 0.59 | 0.52 | 0.57 | 0.60 |
| EU 3b-5 | 2.74 | 2.14 | 2.09 | 1.62 | 1.33 | 1.41 | 2.62 | 3.88 | 4.12 | 4.50 | 4.53 | 3.06 |
| EU 3b-6 | 5.93 | 5.41 | 4.67 | 4.62 | 5.16 | 5.65 | 7.64 | 8.63 | 7.25 | 7.43 | 6.93 | 5.75 |
| EU 3b-7 | 3.75 | 2.58 | 2.38 | 1.91 | 1.30 | 1.77 | 2.46 | 4.30 | 4.01 | 4.45 | 4.71 | 4.26 |
| EU 3b-8 | 4.59 | 3.11 | 2.81 | 3.08 | 4.56 | 3.90 | 2.93 | 2.97 | 3.29 | 5.32 | 2.69 | 2.24 |
| EU 3b-9 | 8.15 | 8.02 | 7.66 | 7.47 | 8.14 | 8.11 | 10.16 | 10.55 | 8.37 | 8.60 | 8.61 | 9.03 |
| EU 4-1a | 0.66 | 0.58 | 1.21 | 1.87 | 1.56 | 1.20 | 1.03 | 1.07 | 1.68 | 2.11 | 2.10 | 1.26 |
| EU 4-1b | 0.77 | 0.77 | 0.89 | 0.82 | 0.83 | 1.44 | 1.43 | 1.44 | 1.98 | 1.97 | 2.15 | 0.77 |
| EU 4-1c | 0.01 | 0.01 | 0.01 | 0.51 | 2.01 | 0.32 | 1.21 | 1.69 | 1.14 | 2.47 | 3.44 | 0.37 |
| EU 4-1d | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 4-1e | 0.01 | 0.01 | 0.01 | 0.01 | 0.24 | 0.01 | 0.41 | 0.80 | 0.02 | 0.32 | 0.67 | 0.01 |

## Alternative 1:
**Salinity, ppt**

| ECO UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 4-1f | 0.01 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | 0.00 | 0.15 | 0.01 | 0.01 | 0.08 | 0.01 |
| EU 4-2a | 6.27 | 6.27 | 8.49 | 6.33 | 6.44 | 8.59 | 7.98 | 7.92 | 9.19 | 8.64 | 15.03 | 6.27 |
| EU 4-2b | 7.98 | 7.98 | 9.69 | 8.08 | 8.16 | 11.28 | 10.82 | 10.88 | 11.81 | 11.40 | 16.17 | 7.98 |
| EU 4-3a | 5.82 | 4.23 | 5.78 | 6.03 | 9.56 | 11.35 | 11.71 | 12.85 | 15.08 | 17.26 | 19.14 | 18.62 |
| EU 4-3b | 6.08 | 3.97 | 5.09 | 5.31 | 8.63 | 9.61 | 9.77 | 12.28 | 12.37 | 14.19 | 15.99 | 16.82 |
| EU 4-3c | 6.08 | 3.97 | 5.09 | 5.31 | 8.63 | 9.61 | 9.77 | 12.28 | 12.37 | 14.19 | 15.99 | 16.82 |
| EU 4-4a | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 4-4b | 5.40 | 5.07 | 5.74 | 5.09 | 4.34 | 5.20 | 6.09 | 5.96 | 6.10 | 6.85 | 8.26 | 6.71 |
| EU 4-4c | 6.73 | 4.68 | 6.63 | 6.48 | 10.14 | 12.69 | 12.35 | 13.32 | 16.46 | 18.62 | 20.31 | 21.59 |
| EU 4-4d | 5.03 | 4.06 | 5.04 | 5.56 | 7.87 | 9.58 | 9.51 | 10.25 | 12.13 | 14.19 | 16.14 | 17.62 |
| EU 4-4e | 5.91 | 4.40 | 5.91 | 6.07 | 9.07 | 11.28 | 11.05 | 11.83 | 14.48 | 16.60 | 18.42 | 19.82 |
| EU 4-4f | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 4-4g | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 4-4h | 3.46 | 2.40 | 2.33 | 3.24 | 4.47 | 5.63 | 6.02 | 6.41 | 7.15 | 9.65 | 11.41 | 12.64 |
| EU 4-4i | 3.28 | 2.22 | 2.23 | 3.18 | 4.44 | 5.64 | 6.04 | 6.60 | 6.97 | 9.05 | 10.44 | 11.28 |
| EU 4-4j | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 4-4k | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 4-4l | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| GULF | 29.96 | 27.08 | 26.63 | 25.84 | 22.80 | 24.60 | 23.06 | 24.14 | 25.52 | 27.34 | 29.19 | 30.51 |
| INS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 2.7 Alternative 2: Diversion Hydrographs by Ecosystem Unit (Average of 1997 and 2000) and Resulting Salinity

## Alternative 2:
**Diversion hydrographs (cfs) by ecosystem unit**

| ECO UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 1-1 | 491 | 1540 | 1953 | 2020 | 1808 | 1438 | 1009 | 598 | 282 | 100 | 77 | 216 |
| EU 1-2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 1-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 1-4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 1-5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 1-6 | 180324 | 228126 | 239680 | 239561 | 221766 | 190935 | 153295 | 116568 | 92054 | 91251 | 127614 | 216421 |
| EU 1-7 | 162292 | 205313 | 215712 | 215605 | 199589 | 171841 | 137966 | 104911 | 82849 | 82126 | 114853 | 194779 |
| EU 1-8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Alternative 2:

## Diversion hydrographs (cfs) by ecosystem unit

| ECO UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 1-9 | 90162 | 114063 | 119840 | 119781 | 110883 | 95467 | 76648 | 58284 | 46027 | 45625 | 63807 | 108210 |
| EU 1-10 | 68928 | 89449 | 96176 | 97935 | 91748 | 79165 | 62625 | 45422 | 32686 | 29791 | 43199 | 80431 |
| EU 2-1 | 1972 | 2446 | 2627 | 2701 | 2545 | 2178 | 1661 | 1094 | 649 | 520 | 946 | 2213 |
| EU 2-2 | 9658 | 12743 | 13538 | 13519 | 12425 | 10569 | 8332 | 6149 | 4638 | 4394 | 6104 | 10526 |
| EU 2-3 | 8673 | 11444 | 12158 | 12141 | 11157 | 9491 | 7483 | 5524 | 4167 | 3949 | 5484 | 9452 |
| EU 2-4 | 17265 | 23573 | 25995 | 26794 | 25144 | 21475 | 16497 | 11181 | 7069 | 5777 | 9262 | 19812 |
| EU 2-5 | 8633 | 11787 | 12998 | 13397 | 12572 | 10738 | 8248 | 5591 | 3534 | 2889 | 4631 | 9906 |
| EU 2-6 | 16355 | 24701 | 29083 | 31307 | 30062 | 25621 | 18736 | 10624 | 3432 | 65 | 1795 | 13623 |
| EU 3a-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 3a-2 | 493 | 611 | 657 | 675 | 636 | 545 | 415 | 274 | 162 | 130 | 237 | 557 |
| EU 3a-3 | 177 | 229 | 245 | 247 | 229 | 197 | 155 | 114 | 86 | 85 | 126 | 228 |
| EU 3a-4 | 585 | 734 | 787 | 805 | 756 | 647 | 498 | 338 | 215 | 185 | 314 | 683 |
| EU 3a-5 | 177 | 229 | 245 | 247 | 229 | 197 | 155 | 114 | 86 | 85 | 126 | 228 |
| EU 3a-6 | 381 | 481 | 516 | 526 | 493 | 422 | 327 | 226 | 151 | 135 | 220 | 456 |
| EU 3a-7 | 194 | 252 | 269 | 272 | 252 | 216 | 171 | 126 | 95 | 94 | 138 | 251 |
| EU 3b-1 | 2790 | 3623 | 3868 | 3902 | 3623 | 3104 | 2453 | 1806 | 1366 | 1344 | 1988 | 3600 |
| EU 3b-2 | 6974 | 9058 | 9669 | 9755 | 9057 | 7761 | 6133 | 4515 | 3415 | 3360 | 4971 | 9000 |
| EU 3b-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 3b-4 | 2092 | 2717 | 2901 | 2926 | 2717 | 2328 | 1840 | 1355 | 1025 | 1008 | 1491 | 2700 |
| EU 3b-5 | 2092 | 2717 | 2901 | 2926 | 2717 | 2328 | 1840 | 1355 | 1025 | 1008 | 1491 | 2700 |
| EU 3b-6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 3b-7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 3b-8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 3b-9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-1a | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-1b | 2123 | 2875 | 1316 | 1617 | 1067 | 493 | 592 | 369 | 355 | 340 | 326 | 297 |
| EU 4-1c | 6067 | 8215 | 3761 | 4621 | 3048 | 1408 | 1693 | 1054 | 1013 | 972 | 931 | 847 |
| EU 4-1d | 607 | 822 | 376 | 462 | 305 | 141 | 169 | 105 | 101 | 97 | 93 | 85 |
| EU 4-1e | 1213 | 1643 | 752 | 924 | 610 | 282 | 339 | 211 | 203 | 194 | 186 | 169 |
| EU 4-1f | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-2a | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-2b | 1517 | 2054 | 940 | 1155 | 762 | 352 | 423 | 263 | 253 | 243 | 233 | 212 |
| EU 4-3a | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-3b | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-3c | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4a | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4b | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4c | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4d | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4e | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4f | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Alternative 2:
## Diversion hydrographs (cfs) by ecosystem unit

| ECO UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 4-4g | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4h | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4i | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4j | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4k | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| EU 4-4l | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GULF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| INS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Alternative 2:
## Salinity, ppt

| ECO UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 1-1 | 1.43 | 1.38 | 0.92 | 1.24 | 1.26 | 1.40 | 0.99 | 1.68 | 3.30 | 2.63 | 2.24 | 2.09 |
| EU 1-2 | 5.60 | 4.97 | 4.36 | 3.67 | 3.32 | 3.39 | 4.22 | 5.20 | 6.89 | 6.94 | 6.39 | 6.40 |
| EU 1-3 | 5.31 | 5.89 | 4.80 | 4.04 | 4.33 | 5.10 | 5.94 | 6.95 | 9.82 | 9.34 | 8.80 | 7.20 |
| EU 1-4 | 6.11 | 4.86 | 5.52 | 4.95 | 5.96 | 7.77 | 9.24 | 9.28 | 8.79 | 8.28 | 7.98 | 7.90 |
| EU 1-5 | 5.31 | 5.89 | 4.80 | 4.04 | 4.33 | 5.10 | 5.94 | 6.95 | 9.82 | 9.34 | 8.80 | 7.20 |
| EU 1-6 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 1-7 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 1-8 | 6.11 | 4.86 | 5.52 | 4.95 | 5.96 | 7.77 | 9.24 | 9.28 | 8.79 | 8.28 | 7.98 | 7.90 |
| EU 1-9 | 7.64 | 5.70 | 6.04 | 5.51 | 6.78 | 9.52 | 12.01 | 12.87 | 12.78 | 11.99 | 10.95 | 9.08 |
| EU 1-10 | 0.67 | 0.15 | 0.02 | 0.03 | 0.06 | 0.30 | 0.72 | 1.67 | 3.94 | 5.14 | 3.12 | 0.48 |
| EU 2-1 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.03 | 0.17 | 0.16 | 0.11 | 0.01 |
| EU 2-2 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 1.25 | 1.37 | 0.01 | 0.01 |
| EU 2-3 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 2-4 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.68 | 4.60 | 7.08 | 3.62 | 0.01 |
| EU 2-5 | 18.72 | 17.13 | 15.50 | 14.16 | 13.00 | 12.80 | 15.98 | 17.43 | 19.17 | 22.73 | 23.03 | 19.44 |
| EU 2-6 | 1.70 | 0.61 | 0.53 | 0.61 | 0.57 | 0.97 | 1.54 | 2.71 | 5.57 | 7.36 | 5.32 | 2.22 |
| EU 3a-1 | 0.05 | 0.04 | 0.04 | 0.03 | 0.04 | 0.04 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.05 |
| EU 3a-2 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.21 | 0.41 | 0.01 | 0.01 |
| EU 3a-3 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 3a-4 | 5.57 | 5.44 | 5.72 | 6.80 | 6.50 | 6.13 | 5.49 | 5.86 | 7.67 | 9.80 | 9.42 | 7.43 |
| EU 3a-5 | 8.82 | 8.63 | 9.66 | 9.75 | 10.31 | 9.11 | 7.16 | 9.05 | 13.01 | 15.06 | 15.46 | 12.24 |
| EU 3a-6 | 24.18 | 24.67 | 22.95 | 23.02 | 22.31 | 21.73 | 22.02 | 23.98 | 25.17 | 27.37 | 27.56 | 27.25 |
| EU 3a-7 | 0.75 | 0.10 | 0.01 | 0.01 | 0.01 | 0.12 | 0.32 | 0.57 | 3.61 | 2.81 | 2.55 | 0.01 |
| EU 3b-1 | 3.22 | 2.55 | 2.34 | 1.85 | 2.13 | 3.03 | 2.81 | 3.59 | 8.39 | 9.66 | 8.56 | 3.25 |
| EU 3b-2 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| EU 3b-3 | 0.68 | 0.70 | 0.62 | 0.51 | 0.60 | 0.53 | 0.60 | 0.52 | 0.59 | 0.52 | 0.57 | 0.60 |
| EU 3b-4 | 0.23 | 0.14 | 0.03 | 0.04 | 0.06 | 0.14 | 0.24 | 0.29 | 0.40 | 0.35 | 0.30 | 0.07 |

## Alternative 2:
**Salinity, ppt**

| ECO UNIT | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU 3b-5 | 2.74 | 2.14 | 2.09 | 1.62 | 1.33 | 1.41 | 2.62 | 3.88 | 4.12 | 4.50 | 4.53 | 3.06 |
| EU 3b-6 | 8.15 | 8.02 | 7.66 | 7.47 | 8.14 | 8.11 | 10.16 | 10.55 | 8.37 | 8.60 | 8.61 | 9.03 |
| EU 3b-7 | 3.75 | 2.58 | 2.38 | 1.91 | 1.30 | 1.77 | 2.46 | 4.30 | 4.01 | 4.45 | 4.71 | 4.26 |
| EU 3b-8 | 4.59 | 3.11 | 2.81 | 3.08 | 4.56 | 3.90 | 2.93 | 2.97 | 3.29 | 5.32 | 2.69 | 2.24 |
| EU 3b-9 | 8.15 | 8.02 | 7.66 | 7.47 | 8.14 | 8.11 | 10.16 | 10.55 | 8.37 | 8.60 | 8.61 | 9.03 |
| EU 4-1a | 0.66 | 0.58 | 1.21 | 1.87 | 1.56 | 1.20 | 1.03 | 1.07 | 1.68 | 2.11 | 2.10 | 1.26 |
| EU 4-1b | 0.01 | 0.01 | 0.01 | 0.01 | 0.08 | 0.86 | 0.71 | 0.99 | 1.41 | 1.40 | 1.58 | 0.58 |
| EU 4-1c | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.37 | 0.65 | 1.05 | 1.35 | 0.88 |
| EU 4-1d | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.13 | 0.01 | 0.46 | 0.54 | 0.55 | 0.63 | 0.13 |
| EU 4-1e | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.04 | 0.11 | 0.12 | 0.19 | 0.01 |
| EU 4-1f | 0.14 | 0.15 | 0.15 | 0.20 | 0.26 | 0.26 | 0.26 | 0.27 | 0.26 | 0.26 | 0.21 | 0.18 |
| EU 4-2a | 6.27 | 6.27 | 8.49 | 6.33 | 6.44 | 8.59 | 7.98 | 7.92 | 9.19 | 8.64 | 15.03 | 6.27 |
| EU 4-2b | 7.14 | 6.91 | 9.03 | 7.43 | 7.71 | 11.00 | 10.49 | 10.67 | 11.60 | 11.20 | 15.90 | 7.86 |
| EU 4-3a | 6.66 | 4.75 | 6.66 | 6.52 | 9.91 | 12.50 | 12.18 | 13.08 | 16.05 | 18.05 | 19.63 | 20.44 |
| EU 4-3b | 6.08 | 3.97 | 5.09 | 5.31 | 8.63 | 9.61 | 9.77 | 12.28 | 12.37 | 14.19 | 15.99 | 16.82 |
| EU 4-3c | 6.08 | 3.97 | 5.09 | 5.31 | 8.63 | 9.61 | 9.77 | 12.28 | 12.37 | 14.19 | 15.99 | 16.82 |
| EU 4-4a | 0.01 | 0.01 | 0.50 | 0.50 | 0.50 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.01 |
| EU 4-4b | 5.40 | 5.07 | 5.74 | 5.09 | 4.34 | 5.20 | 6.09 | 5.96 | 6.10 | 6.85 | 8.26 | 6.71 |
| EU 4-4c | 6.73 | 4.68 | 6.63 | 6.48 | 10.14 | 12.69 | 12.35 | 13.32 | 16.46 | 18.62 | 20.31 | 21.59 |
| EU 4-4d | 5.03 | 4.06 | 5.04 | 5.56 | 7.87 | 9.58 | 9.51 | 10.25 | 12.13 | 14.19 | 16.14 | 17.62 |
| EU 4-4e | 5.91 | 4.40 | 5.91 | 6.07 | 9.07 | 11.28 | 11.05 | 11.83 | 14.48 | 16.60 | 18.42 | 19.82 |
| EU 4-4f | 5.92 | 4.40 | 5.91 | 6.08 | 9.08 | 11.29 | 11.06 | 11.84 | 14.50 | 16.62 | 18.44 | 19.83 |
| EU 4-4g | 3.59 | 2.42 | 2.39 | 3.26 | 4.60 | 5.71 | 6.11 | 6.65 | 7.28 | 9.75 | 11.50 | 12.68 |
| EU 4-4h | 3.46 | 2.40 | 2.33 | 3.24 | 4.47 | 5.63 | 6.02 | 6.41 | 7.15 | 9.65 | 11.41 | 12.64 |
| EU 4-4i | 3.28 | 2.22 | 2.23 | 3.18 | 4.44 | 5.64 | 6.04 | 6.60 | 6.97 | 9.05 | 10.44 | 11.28 |
| EU 4-4j | 3.02 | 1.94 | 1.98 | 2.98 | 4.21 | 5.42 | 5.86 | 6.58 | 6.52 | 8.22 | 9.24 | 9.69 |
| EU 4-4k | 3.19 | 2.08 | 2.12 | 3.08 | 4.37 | 5.55 | 5.98 | 6.69 | 6.78 | 8.64 | 9.83 | 10.43 |
| EU 4-4l | 3.08 | 1.96 | 2.09 | 3.06 | 4.41 | 5.62 | 6.06 | 6.94 | 6.71 | 8.22 | 9.11 | 9.39 |
| GULF | 29.96 | 27.08 | 26.63 | 25.84 | 22.80 | 24.60 | 23.06 | 24.14 | 25.52 | 27.34 | 29.19 | 30.51 |
| INS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 2.8 Assumptions for Box Connectivity

Assumptions were made in order to incorporate a ‘90% connectivity rule’ to generate coastwide salinity values. This rule was applied in those Ecosystem Units where volumes were completely overloaded with diversion input, and thereby were completely (or nearly) freshened.

### 2.8.1 Alternative 1

- 90% of EU1-6 diversion flow into EU1-7
- 80% of EU1-6 diversion flow exits EU1-7 and based on length of boundary shared, 50% into EU1-9 and 30% into EU1-10
- 90% of EU2-1 diversion flow into EU2-2 and thus is added to existing diversion flow in EU2-2
- 80% of EU2-1 diversion flow exits EU2-2 and enters 2-3 so this is added to 90% of diversion flow originally in EU2-2 to get a total entering EU2-3.
- 90% of the above calculated total entering EU2-3 exits and is added to current diversion load in EU2-4
- 90% of EU3a-2 diversion flow into EU3a-4
- 90% of EU3a-3 diversion flow exits and put 80% into EU3a-4 and 10% into EU3a-7 (based on boundary shared)
- 90% of EU3b-2 diversion flow exits and put 40% into EU3b-1 and 30% into EU3b-5 and 30% into EU3b-4 (based on boundary shared)
- 90% of EU4-1c diversion flow exits and put 35% into EU4-1b and 25% into EU4-2b and 10% into EU4-1d and 20% into EU4-1e (based on boundary shared)
- 90% of EU4-4j diversion flow into EU4-4i
- 90% of EU4-4i diversion flow exits and put 15% into EU4- 4e and 25% into EU4-4f and 50% into EU4-4k (based on boundary shared)
- 90% of EU4-4k diversion flow into EU4-4l
- 90% of EU4-4l diversion flow into EU4-3c

### 2.8.2 Alternative 2

- 90% of EU1-6 diversion flow into EU1-7
- 80% of EU1-6 diversion flow exits EU1-7 and based on length of boundary shared, 50% into EU1-9 and 30% into EU1-10
- 90% of EU2-1 diversion flow into EU2-2 and thus is added to existing diversion flow in EU2-2
- 80% of EU2-1 diversion flow exits EU2-2 and enters 2-3 so this is added to 90% of diversion flow originally in EU2-2 to get a total entering EU2-3
- 90% of the above calculated total entering EU2-3 exits and is added to current diversion load in EU2-4
- 90% of EU3a-2 diversion flow into EU3a-4
- 90% of EU3a-3 diversion flow exits and put 80% into EU3a-4 and 10% into EU3a-7 (based on boundary shared)
- 90% of EU3b-2 diversion flow exits and put 40% into EU3b-1 and 30% into EU3b-5 and 30% into EU3b-4 (based on boundary shared)
- 90% of EU4-1c diversion flow exits and put 35% into EU4-1b and 25% into EU4-2b and 10% into EU4-1d and 20% into EU4-1e (based on boundary shared)

# 3.0 Desktop Modules

## 3.1 Landscape Change

http://www.clear.lsu.edu/Reports/LCAVol1-pdf/Vol%201_Chpt08.pdf

http://www.clear.lsu.edu/Reports/LCAVol2-pdf/Vol%20II_Chpt20.pdf

Current CLEAR landscape change output is not comparable to that produced during LCA modeling due to a difference in the model domain. The LCA model domain was restricted to the Louisiana Coastal Zone Boundary, while the CLEAR model domain covers a much larger area. In the process of merging multiple datasets to patch holes in TX, MS (National Land Cover Dataset), and the upper portion of the state (GAP Land Cover Dataset), a slight re-sampling error occurred which biased the land use/land cover data. In general, the error led to an over-representation of water. Because this error affected the Alternative 1 and Alternative 2 landscapes consistently, the alternative scorings were unaffected (See Appendix A for scoring process and results). Comparing each alternative to the "no increased action" (and to one another) still yielded information regarding the effectiveness of the alternative as the error affected both equally. This error will be corrected before the Preliminary Draft Plan is modeled.

The CLEAR model is calibrated on 1978-2000 land loss rate. Although the rate is assumed to remain constant through the 50-year projection, it is applied on a yearly basis. This results in a decreasing amount of loss over time (See Figure III.A). It should be noted that land loss rates were determined from relatively small polygons with similar pattern of loss created by Barras et al. (2003).

The current CLEAR model uses discharge data from 1980-2005 to generate daily hydrographs for each diversion as a means of calculating the daily sediment load diverted. All daily loads are summed over 5-year increments (i.e., YR 0 - 5; YR 5 – 10; YR 10 – 15, etc.), and the total sediment diverted in each 5-year time segment is used in the model to generate landscape change output at 5-year intervals. Model output is essentially a 'snapshot' of the landscape every 5 years.

The model still uses the same assumption as in the LCA runs with 15% of the load retained and the remaining weight of sediment transformed to a volume of sediment based on the bulk density of deltaic soils. In addition, the assumption of 35% of the cell remaining open to account for deltaic channels remained. The resulting volume is then distributed over available volume in the cells closest to the diversion point. In contrast to the LCA modeling effort, the current model uses a coastwide bathymetry dataset (Figure I.A.) to calculate the volume available for fill in each cell.

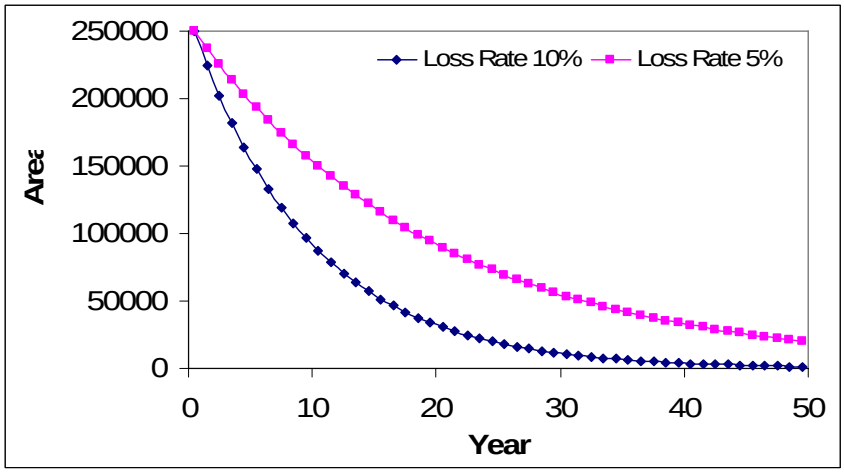


Figure 3.1 Effects of a constant loss rate applied annually on land area change.

CLEAR did not address any limitations on sediment availability for marsh creation features; all features were included exactly as requested by CPRA IPT.

## 3.2 Habitat Switching, Including Productivity

No changes have been made since the LCA reporting. Details may be found on the following website:

http://www.clear.lsu.edu/Reports/LCAVol1-pdf/Vol%201_Chpt09.pdf

## 3.3 Habitat Suitability

No changes have been made since the LCA reporting; however, the CPRA IPT scoring did not consider model output for large mouth bass. Details may be found on the following website:

http://www.clear.lsu.edu/Reports/LCAVol1-pdf/Vol%201_Chpt10.pdf

http://www.clear.lsu.edu/Reports/LCAVol1-pdf/Vol%201_Chpt12.pdf

# 4.0 Model Output for Alternatives 1 and 2

## 4.1 CLEAR Output Used by CPRA-IPT for Scoring

Model output was compiled into summary statistic tables at coastwide, planning unit and ecosystem unit scales. Summary tables were provided to CPRA for use during their scoring process. The four types of model output (and summary scale requested) are as follows:

1. **Land change:** coastwide, planning unit, and ecosystem unit
2. **Habitat type:** coastwide and planning unit
3. **Productivity:** coastwide, planning unit, and ecosystem unit
4. **Habitat suitability:** coastwide and planning unit

Summary tables of these model outputs are included on the following pages.

## 4.2 Land Change

### 4.2.1 Background

In this section, model output for land change is presented. Land change is presented as a rate in units of square kilometers ($km^2$). In addition, the change in rate at two different time steps (year 0 to 10 and year 40 to 50), and the percent change this represents, is provided at the coast wide, planning unit, and ecosystem unit scales.

Resulting from a model coding error, the Wax Lake Outlet delta was omitted from the landscape change output in the Alternative 2 model analysis, and therefore the total wetland area in ecosystem unit 3b-5 was drastically reduced. To alleviate this problem, output from Alternative 1 (which contains a comparable suite of projects) was substituted in the place of Alternative 2 output in ecosystem unit 3b-5. The new values for ecosystem unit 3b-5 were used when calculating values at the planning unit and coastwide scales for Alternative 2.

The following is a key to the first column of each land change table:

Cw = coastwide

Pl = planning unit

Eu = ecosystem unit

Area = entire area in the CLEAR model domain

Upl = area of upland land

Wetland = area of wetland land

Wetland 00 = wetland area land change at year 0

Wetland 05 = wetland area land change at year 5

Wetland 10 = wetland area land change at year 10

Wetland 15 = wetland area land change at year 15

Wetland 20 = wetland area land change at year 20

Wetland 25 = wetland area land change at year 25

Wetland 30 = wetland area land change at year 30

Wetland 35 = wetland area land change at year 35

Wetland 40 = wetland area land change at year 40

Wetland 45 = wetland area land change at year 45

Wetland 50 = wetland area land change at year 50

ch_0_10 = amount of wetland area change between year 0 to year 10

ch_40_50 = amount of wetland area change between year 40 to year 50

ch_0_10 (%) = percent of wetland area change between year 0 and year 10

ch_40_50 (%) = percent of wetland area change between year 40 and year 50

## 4.2.2 Coastwide

**COASTWIDE LAND CHANGE SUMMARY**

| | No Action | Alt 1 | Alt 2 |
|---|---|---|---|
| cw_area | 125261.55 | 125261.55 | 125261.55 |
| cw_upl | 16917.71 | 16917.71 | 16917.715 |
| cw_wetland00 | 18175.51 | 18175.51 | 18175.508 |
| cw_wetland05 | 17842.14 | 18513.46 | 18715.5 |
| cw_wetland10 | 17522.87 | 18372.50 | 18602.648 |
| cw_wetland15 | 17225.60 | 18258.91 | 18521.479 |
| cw_wetland20 | 16941.11 | 18137.90 | 18410.273 |
| cw_wetland25 | 16670.25 | 18020.64 | 18301.17 |
| cw_wetland30 | 16419.02 | 17906.71 | 18199.183 |
| cw_wetland35 | 16177.97 | 17792.85 | 18095.19 |
| cw_wetland40 | 15944.26 | 17694.89 | 18016.645 |
| cw_wetland45 | 15714.98 | 17593.30 | 17933.224 |
| cw_wetland50 | 15496.76 | 17490.40 | 17835.848 |
| | | | |
| cw_ch_0_10 | -652.64 | 196.99 | 427.14 |
| cw_ch_40_50 | -447.50 | -204.48 | -180.80 |
| | | | |
| cw_ch_0_10 (%) | -3.59 | 1.08 | 2.35 |
| cw_ch_40_50 (%) | -2.81 | -1.16 | -1.00 |

### 4.2.3 Planning Unit

**PLANNING UNIT LAND CHANGE SUMMARY**

| **Planning Unit** | **1** | **1** | **1** | **2** | **2** | **2** | **4** | **4** | **4** |
|---|---|---|---|---|---|---|---|---|---|
| **Scenario** | **No Action** | **Alt 1** | **Alt 2** | **No Action** | **Alt 1** | **Alt 2** | **No Action** | **Alt 1** | **Alt 2** |
| pl_area | 12979.71 | 12979.71 | 12979.71 | 6694.71 | 6694.71 | 6694.71 | 6250.20 | 6250.20 | 6250.20 |
| pl_upl | 150.16 | 150.16 | 150.16 | 130.23 | 130.23 | 130.23 | 385.90 | 385.90 | 385.90 |
| pl_wetland00 | 2839.26 | 2839.26 | 2839.26 | 2476.92 | 2476.92 | 2476.92 | 2962.44 | 2962.44 | 2962.44 |
| pl_wetland05 | 2755.38 | 2962.79 | 3016.509 | 2413.15 | 2528.24 | 2579.787 | 2899.54 | 2998.13 | 3030.532 |
| pl_wetland10 | 2675.54 | 2944.77 | 3007.184 | 2351.36 | 2493.07 | 2547.423 | 2838.48 | 2955.21 | 2985.163 |
| pl_wetland15 | 2600.41 | 2941.81 | 3015.169 | 2292.71 | 2461.23 | 2521.635 | 2779.18 | 2913.10 | 2940.73 |
| pl_wetland20 | 2527.43 | 2921.63 | 2991.267 | 2236.02 | 2428.40 | 2491.843 | 2721.59 | 2871.94 | 2897.325 |
| pl_wetland25 | 2456.78 | 2900.41 | 2963.069 | 2181.50 | 2396.15 | 2462.438 | 2665.63 | 2831.63 | 2854.948 |
| pl_wetland30 | 2389.03 | 2879.78 | 2937.998 | 2129.53 | 2365.07 | 2434.119 | 2611.24 | 2792.13 | 2813.539 |
| pl_wetland35 | 2324.16 | 2857.54 | 2911.022 | 2079.33 | 2334.30 | 2406.141 | 2558.36 | 2753.54 | 2773.096 |
| pl_wetland40 | 2262.06 | 2847.08 | 2904.869 | 2031.61 | 2306.73 | 2385.356 | 2506.93 | 2715.79 | 2733.581 |
| pl_wetland45 | 2202.28 | 2831.03 | 2891.865 | 1985.89 | 2279.58 | 2366.402 | 2456.91 | 2678.83 | 2694.919 |
| pl_wetland50 | 2145.03 | 2811.13 | 2868.209 | 1941.84 | 2253.41 | 2343.428 | 2408.22 | 2642.70 | 2657.146 |
| | | | | | | | | | |
| pl_ch_0_10 | -163.73 | 105.51 | 167.92 | -125.57 | 16.15 | 70.50 | -123.97 | -7.23 | 22.72 |
| pl_ch_40_50 | -117.03 | -35.96 | -36.66 | -89.77 | -53.32 | -41.93 | -98.71 | -73.09 | -76.43 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -5.77 | 3.72 | 5.91 | -5.07 | 0.65 | 2.85 | -4.18 | -0.24 | 0.77 |
| pl_ch_40_50 (%) | -5.17 | -1.26 | -1.26 | -4.42 | -2.31 | -1.76 | -3.94 | -2.69 | -2.80 |

**PLANNING UNIT LAND CHANGE SUMMARY**

| Planning Unit | 3a | 3a | 3a | 3b | 3b | 3b |
|---|---|---|---|---|---|---|
| Scenario | No Action | Alt 1 | Alt 2 | No Action | Alt 1 | Alt 2 |
| pl_area | 5271.14 | 5271.14 | 5271.14 | 6204.31 | 6204.31 | 6204.313 |
| pl_upl | 153.28 | 153.28 | 153.28 | 73.25 | 73.25 | 73.251 |
| pl_wetland00 | 1782.92 | 1782.92 | 1782.92 | 2442.85 | 2442.85 | 2442.849 |
| pl_wetland05 | 1721.37 | 1897.47 | 1959.607 | 2390.77 | 2442.46 | 2449.556 |
| pl_wetland10 | 1662.83 | 1859.14 | 1936.885 | 2342.04 | 2426.66 | 2442.932 |
| pl_wetland15 | 1607.12 | 1822.99 | 1915.234 | 2302.67 | 2417.51 | 2442.116 |
| pl_wetland20 | 1554.08 | 1788.11 | 1894.375 | 2267.41 | 2417.50 | 2445.201 |
| pl_wetland25 | 1503.55 | 1755.09 | 1873.756 | 2236.92 | 2419.16 | 2453.507 |
| pl_wetland30 | 1455.39 | 1723.31 | 1854.639 | 2216.44 | 2420.51 | 2462.409 |
| pl_wetland35 | 1409.47 | 1693.04 | 1836.659 | 2197.35 | 2420.86 | 2469.16 |
| pl_wetland40 | 1365.67 | 1664.73 | 1819.012 | 2176.29 | 2419.29 | 2471.813 |
| pl_wetland45 | 1323.86 | 1638.38 | 1801.877 | 2152.09 | 2416.94 | 2473.273 |
| pl_wetland50 | 1283.94 | 1612.76 | 1785.448 | 2130.86 | 2414.69 | 2473.745 |
| | | | | | | |
| pl_ch_0_10 | -120.08 | 76.23 | 153.97 | -100.81 | -16.19 | 0.08 |
| pl_ch_40_50 | -81.73 | -51.97 | -33.56 | -45.43 | -4.60 | 1.93 |
| | | | | | | |
| pl_ch_0_10 (%) | -6.74 | 4.28 | 8.64 | -4.13 | -0.66 | 0.00 |
| pl_ch_40_50 (%) | -5.98 | -3.12 | -1.85 | -2.09 | -0.19 | 0.08 |

### 4.2.4 Ecosystem Unit

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 1-1 | EU 1-1 | EU1_1 | EU 1-10 | EU 1-10 | EU1_10 | EU 1-2 | EU 1-2 | EU1_2 |
|---|---|---|---|---|---|---|---|---|---|
| | No Action | Alt1 | Alt2 | No Action | Alt1 | Alt2 | No Action | Alt1 | Alt2 |
| eu_area | 2177.16 | 2177.16 | 2177.16 | 1216.54 | 1216.54 | 1216.54 | 1280.04 | 1280.04 | 1280.16 |
| eu_upl | 56.26 | 56.26 | 56.11 | 2.58 | 2.58 | 2.58 | 14.24 | 14.24 | 10.76 |
| eu_wetland00 | 1215.35 | 1215.35 | 1216.30 | 188.89 | 188.89 | 188.89 | 101.57 | 101.57 | 101.57 |
| eu_wetland05 | 1169.32 | 1201.89 | 1196.51 | 180.20 | 186.12 | 186.10 | 100.19 | 109.14 | 117.02 |
| eu_wetland10 | 1125.19 | 1185.33 | 1177.35 | 171.93 | 183.05 | 183.02 | 98.83 | 108.13 | 115.46 |
| eu_wetland15 | 1082.87 | 1169.27 | 1158.82 | 164.04 | 180.50 | 180.46 | 97.49 | 107.16 | 113.93 |
| eu_wetland20 | 1042.28 | 1153.72 | 1140.90 | 156.52 | 177.97 | 177.92 | 96.17 | 106.22 | 112.41 |
| eu_wetland25 | 1003.35 | 1138.61 | 1123.53 | 149.36 | 175.71 | 175.09 | 94.87 | 105.32 | 110.93 |
| eu_wetland30 | 966.01 | 1123.96 | 1106.76 | 142.53 | 173.30 | 172.64 | 93.59 | 104.45 | 109.46 |
| eu_wetland35 | 930.20 | 1109.78 | 1090.58 | 136.01 | 170.79 | 170.35 | 92.33 | 103.50 | 108.02 |
| eu_wetland40 | 895.84 | 1096.03 | 1074.96 | 129.96 | 169.87 | 169.33 | 91.09 | 102.50 | 106.60 |
| eu_wetland45 | 862.87 | 1082.72 | 1059.88 | 124.04 | 168.32 | 167.61 | 89.87 | 101.40 | 105.20 |
| eu_wetland50 | 831.24 | 1069.84 | 1045.34 | 118.56 | 167.01 | 165.72 | 88.66 | 100.23 | 103.82 |
| | | | | | | | | | |
| pl_ch_0_10 | -90.16 | -30.02 | -38.95 | -16.96 | -5.84 | -5.86 | -2.74 | 6.56 | 13.89 |
| pl_ch_40_50 | -64.59 | -26.19 | -29.62 | -11.41 | -2.86 | -3.62 | -2.43 | -2.28 | -2.78 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -7.42 | -2.47 | -3.20 | -8.98 | -3.09 | -3.10 | -2.70 | 6.46 | 13.68 |
| pl_ch_40_50 (%) | -7.21 | -2.39 | -2.76 | -8.78 | -1.68 | -2.14 | -2.67 | -2.22 | -2.61 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 1-3 No Action | EU 1-3 Alt1 | EU1_3 Alt2 | EU 1-4 No Action | EU 1-4 Alt1 | EU1_4 Alt2 | EU 1-5 No Action | EU 1-5 Alt1 | EU1_5 Alt2 |
|---|---|---|---|---|---|---|---|---|---|
| eu_area | 394.04 | 394.04 | 394.34 | 294.00 | 294.00 | 294.12 | 192.53 | 192.53 | 192.54 |
| eu_upl | 5.58 | 5.58 | 2.61 | 0.24 | 0.24 | 0.18 | 40.91 | 40.91 | 40.91 |
| eu_wetland00 | 111.47 | 111.47 | 111.47 | 46.46 | 46.46 | 46.46 | 83.22 | 83.22 | 83.22 |
| eu_wetland05 | 106.08 | 107.93 | 128.58 | 44.50 | 55.35 | 55.61 | 81.74 | 91.37 | 84.91 |
| eu_wetland10 | 101.04 | 104.71 | 123.30 | 42.62 | 54.37 | 54.40 | 80.27 | 91.65 | 83.78 |
| eu_wetland15 | 96.32 | 101.77 | 118.33 | 40.83 | 53.44 | 53.23 | 78.85 | 91.85 | 82.80 |
| eu_wetland20 | 91.90 | 99.08 | 113.65 | 39.11 | 52.55 | 52.12 | 77.58 | 92.00 | 81.60 |
| eu_wetland25 | 87.77 | 96.61 | 109.24 | 37.47 | 51.68 | 51.06 | 76.28 | 92.09 | 80.41 |
| eu_wetland30 | 83.89 | 94.38 | 105.08 | 35.89 | 50.86 | 50.04 | 75.00 | 92.11 | 79.25 |
| eu_wetland35 | 80.25 | 92.35 | 101.15 | 34.39 | 50.07 | 49.07 | 73.86 | 92.10 | 78.12 |
| eu_wetland40 | 76.84 | 90.48 | 97.44 | 32.95 | 49.31 | 48.14 | 72.62 | 92.05 | 77.03 |
| eu_wetland45 | 73.64 | 88.77 | 93.94 | 31.57 | 48.59 | 47.41 | 71.58 | 91.98 | 75.97 |
| eu_wetland50 | 70.64 | 87.17 | 90.64 | 30.30 | 47.91 | 46.56 | 70.48 | 91.91 | 74.95 |
| | | | | | | | | | |
| pl_ch_0_10 | -10.43 | -6.75 | 11.83 | -3.83 | 7.92 | 7.94 | -2.95 | 8.42 | 0.55 |
| pl_ch_40_50 | -6.21 | -3.32 | -6.81 | -2.65 | -1.40 | -1.58 | -2.14 | -0.14 | -2.08 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -9.36 | -6.06 | 10.61 | -8.25 | 17.04 | 17.10 | -3.55 | 10.12 | 0.67 |
| pl_ch_40_50 (%) | -8.08 | -3.67 | -6.99 | -8.03 | -2.85 | -3.27 | -2.95 | -0.15 | -2.70 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 1-6 No Action | EU 1-6 Alt1 | EU1_6 Alt2 | EU 1-7 No Action | EU 1-7 Alt1 | EU1_7 Alt2 | EU 1-8 No Action | EU 1-8 Alt1 | EU1_8 Alt2 |
|---|---|---|---|---|---|---|---|---|---|
| eu_area | 581.80 | 581.80 | 581.80 | 1858.35 | 1858.35 | 1858.35 | 2028.51 | 2028.51 | 2028.51 |
| eu_upl | 7.63 | 7.63 | 7.63 | 21.55 | 21.55 | 21.55 | 1.17 | 1.17 | 1.17 |
| eu_wetland00 | 327.25 | 327.25 | 327.25 | 395.07 | 395.07 | 395.07 | 349.11 | 349.11 | 349.11 |
| eu_wetland05 | 332.52 | 360.83 | 340.67 | 387.68 | 414.54 | 428.42 | 333.77 | 378.87 | 421.45 |
| eu_wetland10 | 338.04 | 370.28 | 349.65 | 380.54 | 432.06 | 464.22 | 319.11 | 362.56 | 402.91 |
| eu_wetland15 | 344.61 | 379.58 | 358.48 | 373.64 | 462.47 | 514.69 | 305.09 | 346.97 | 385.19 |
| eu_wetland20 | 349.74 | 388.63 | 367.03 | 366.97 | 474.16 | 531.70 | 291.69 | 332.05 | 368.25 |
| eu_wetland25 | 353.95 | 397.43 | 375.32 | 360.50 | 483.19 | 543.04 | 278.88 | 317.79 | 352.06 |
| eu_wetland30 | 357.94 | 405.89 | 383.25 | 354.24 | 491.76 | 555.53 | 266.64 | 304.15 | 336.68 |
| eu_wetland35 | 361.67 | 414.05 | 390.87 | 348.17 | 497.67 | 564.20 | 254.94 | 291.14 | 322.19 |
| eu_wetland40 | 365.11 | 421.81 | 398.09 | 342.44 | 512.20 | 589.64 | 243.75 | 279.34 | 309.81 |
| eu_wetland45 | 368.31 | 428.83 | 404.88 | 336.73 | 521.01 | 607.48 | 233.05 | 268.35 | 298.10 |
| eu_wetland50 | 371.25 | 435.41 | 411.25 | 331.21 | 525.44 | 614.64 | 222.83 | 257.42 | 286.18 |
| | | | | | | | | | |
| pl_ch_0_10 | 10.80 | 43.03 | 22.40 | -14.53 | 36.99 | 69.15 | -30.01 | 13.45 | 53.80 |
| pl_ch_40_50 | 6.14 | 13.60 | 13.16 | -11.23 | 13.24 | 25.00 | -20.92 | -21.91 | -23.63 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | 3.30 | 13.15 | 6.85 | -3.68 | 9.36 | 17.50 | -8.59 | 3.85 | 15.41 |
| pl_ch_40_50 (%) | 1.68 | 3.22 | 3.31 | -3.28 | 2.58 | 4.24 | -8.58 | -7.85 | -7.63 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 1-9 | EU 1-9 | EU1_9 | EU 2-1 | EU 2-1 | EU2_1 | EU 2-2 | EU 2-2 | EU2_2 |
|---|---|---|---|---|---|---|---|---|---|
| | No Action | Alt1 | Alt2 | No Action | Alt1 | Alt2 | No Action | Alt1 | Alt2 |
| eu_area | 2956.75 | 2956.75 | 2956.75 | 1111.35 | 1111.35 | 1111.35 | 970.83 | 970.83 | 970.83 |
| eu_upl | 0.00 | 0.00 | 0.00 | 52.46 | 52.46 | 52.46 | 25.91 | 25.91 | 25.91 |
| eu_wetland00 | 20.88 | 20.88 | 20.88 | 930.50 | 930.50 | 930.50 | 571.99 | 571.99 | 571.99 |
| eu_wetland05 | 19.37 | 56.75 | 57.24 | 921.01 | 940.38 | 941.16 | 561.42 | 563.17 | 561.74 |
| eu_wetland10 | 17.97 | 52.63 | 53.10 | 911.24 | 947.55 | 949.14 | 550.93 | 554.36 | 551.67 |
| eu_wetland15 | 16.67 | 48.80 | 49.25 | 901.43 | 954.01 | 958.84 | 540.67 | 546.80 | 543.90 |
| eu_wetland20 | 15.46 | 45.26 | 45.69 | 891.67 | 958.83 | 965.17 | 530.66 | 538.55 | 534.33 |
| eu_wetland25 | 14.35 | 41.97 | 42.38 | 881.97 | 962.35 | 969.94 | 520.86 | 530.67 | 525.48 |
| eu_wetland30 | 13.31 | 38.92 | 39.32 | 872.32 | 965.31 | 974.71 | 511.35 | 522.96 | 516.24 |
| eu_wetland35 | 12.35 | 36.10 | 36.47 | 862.69 | 967.38 | 977.91 | 502.20 | 515.25 | 507.35 |
| eu_wetland40 | 11.45 | 33.48 | 33.83 | 853.13 | 969.84 | 982.98 | 493.41 | 508.36 | 500.88 |
| eu_wetland45 | 10.63 | 31.05 | 31.39 | 843.65 | 971.52 | 986.64 | 484.97 | 501.10 | 496.20 |
| eu_wetland50 | 9.86 | 28.79 | 29.12 | 834.29 | 972.56 | 988.67 | 476.84 | 494.36 | 489.94 |
| | | | | | | | | | |
| pl_ch_0_10 | -2.91 | 31.74 | 32.21 | -19.26 | 17.05 | 18.64 | -21.06 | -17.64 | -20.32 |
| pl_ch_40_50 | -1.60 | -4.68 | -4.72 | -18.84 | 2.72 | 5.69 | -16.57 | -14.00 | -10.93 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -13.95 | 151.99 | 154.25 | -2.07 | 1.83 | 2.00 | -3.68 | -3.08 | -3.55 |
| pl_ch_40_50 (%) | -13.93 | -13.99 | -13.94 | -2.21 | 0.28 | 0.58 | -3.36 | -2.75 | -2.18 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 2-3 No Action | EU 2-3 Alt1 | EU2_3 Alt2 | EU 2-4 No Action | EU 2-4 Alt1 | EU2_4 Alt2 | EU 2-5 No Action | EU 2-5 Alt1 | EU2_5 Alt2 |
|---|---|---|---|---|---|---|---|---|---|
| eu_area | 426.05 | 426.05 | 426.05 | 2119.64 | 2119.64 | 2119.64 | 1119.79 | 1119.79 | 1119.79 |
| eu_upl | 9.91 | 9.91 | 9.91 | 20.76 | 20.76 | 20.76 | 9.16 | 9.16 | 9.16 |
| eu_wetland00 | 257.59 | 257.59 | 257.59 | 578.63 | 578.63 | 578.63 | 62.20 | 62.20 | 62.20 |
| eu_wetland05 | 249.06 | 253.21 | 254.11 | 548.81 | 595.62 | 645.88 | 58.33 | 101.33 | 102.38 |
| eu_wetland10 | 240.88 | 248.38 | 249.41 | 520.70 | 574.39 | 626.79 | 54.72 | 95.52 | 97.52 |
| eu_wetland15 | 233.05 | 243.70 | 244.88 | 494.21 | 554.46 | 608.91 | 51.35 | 90.07 | 92.93 |
| eu_wetland20 | 225.55 | 239.19 | 240.50 | 469.24 | 535.78 | 592.14 | 48.20 | 84.96 | 88.59 |
| eu_wetland25 | 218.36 | 234.77 | 236.22 | 445.68 | 518.23 | 576.42 | 45.25 | 80.17 | 84.50 |
| eu_wetland30 | 211.47 | 230.50 | 232.07 | 423.47 | 501.76 | 561.76 | 42.50 | 75.67 | 80.64 |
| eu_wetland35 | 204.86 | 226.34 | 228.02 | 402.53 | 486.30 | 548.42 | 39.93 | 71.46 | 76.99 |
| eu_wetland40 | 198.52 | 222.32 | 224.09 | 382.77 | 471.84 | 537.22 | 37.53 | 67.50 | 73.54 |
| eu_wetland45 | 192.44 | 218.39 | 220.25 | 364.13 | 458.69 | 527.26 | 35.29 | 63.79 | 70.28 |
| eu_wetland50 | 186.60 | 214.57 | 216.51 | 346.54 | 446.53 | 516.23 | 33.19 | 60.31 | 67.19 |
| | | | | | | | | | |
| pl_ch_0_10 | -16.71 | -9.22 | -8.18 | -57.93 | -4.24 | 48.16 | -7.48 | 33.31 | 35.31 |
| pl_ch_40_50 | -11.92 | -7.75 | -7.59 | -36.23 | -25.31 | -20.99 | -4.35 | -7.20 | -6.35 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -6.49 | -3.58 | -3.18 | -10.01 | -0.73 | 8.32 | -12.03 | 53.56 | 56.77 |
| pl_ch_40_50 (%) | -6.00 | -3.48 | -3.39 | -9.47 | -5.36 | -3.91 | -11.58 | -10.66 | -8.63 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 2-6 | EU 2-6 | EU2_6 | EU 3a-1 | EU 3a-1 | EU3a_1 | EU 3a-2 | EU 3a-2 | EU3a_2 |
|---|---|---|---|---|---|---|---|---|---|
| | No Action | Alt1 | Alt2 | No Action | Alt1 | Alt2 | No Action | Alt1 | Alt2 |
| eu_area | 947.05 | 947.05 | 947.05 | 939.30 | 939.30 | 939.30 | 359.35 | 359.35 | 359.35 |
| eu_upl | 12.03 | 12.03 | 12.03 | 21.02 | 21.02 | 21.02 | 98.25 | 98.25 | 98.25 |
| eu_wetland00 | 76.00 | 76.00 | 76.00 | 691.47 | 691.47 | 691.47 | 202.89 | 202.89 | 203.06 |
| eu_wetland05 | 74.51 | 74.52 | 74.52 | 681.17 | 686.70 | 687.20 | 194.74 | 202.11 | 203.59 |
| eu_wetland10 | 72.88 | 72.88 | 72.88 | 671.10 | 681.34 | 682.34 | 186.97 | 201.14 | 204.01 |
| eu_wetland15 | 72.02 | 72.19 | 72.19 | 661.23 | 676.01 | 677.24 | 179.54 | 200.36 | 204.59 |
| eu_wetland20 | 70.71 | 71.10 | 71.10 | 651.58 | 670.27 | 672.23 | 172.45 | 199.40 | 204.94 |
| eu_wetland25 | 69.38 | 69.95 | 69.88 | 642.12 | 664.71 | 666.67 | 165.68 | 198.43 | 205.21 |
| eu_wetland30 | 68.41 | 68.86 | 68.70 | 632.85 | 658.79 | 661.33 | 159.22 | 197.49 | 205.44 |
| eu_wetland35 | 67.12 | 67.56 | 67.46 | 623.76 | 652.89 | 655.91 | 153.04 | 196.52 | 205.64 |
| eu_wetland40 | 66.25 | 66.87 | 66.65 | 614.86 | 647.20 | 650.75 | 147.13 | 195.64 | 205.85 |
| eu_wetland45 | 65.41 | 66.09 | 65.79 | 606.12 | 641.42 | 645.31 | 141.49 | 194.71 | 206.01 |
| eu_wetland50 | 64.39 | 65.08 | 64.88 | 597.55 | 635.72 | 640.04 | 136.10 | 193.80 | 206.11 |
| | | | | | | | | | |
| pl_ch_0_10 | -3.12 | -3.12 | -3.12 | -20.37 | -10.13 | -9.13 | -15.92 | -1.75 | 0.95 |
| pl_ch_40_50 | -1.86 | -1.78 | -1.76 | -17.30 | -11.48 | -10.71 | -11.04 | -1.84 | 0.26 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -4.11 | -4.10 | -4.10 | -2.95 | -1.46 | -1.32 | -7.85 | -0.86 | 0.47 |
| pl_ch_40_50 (%) | -2.81 | -2.67 | -2.64 | -2.81 | -1.77 | -1.65 | -7.50 | -0.94 | 0.13 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 3a-3 No Action | EU 3a-3 Alt1 | EU3a_3 Alt2 | EU 3a-4 No Action | EU 3a-4 Alt1 | EU3a_4 Alt2 | EU 3a-5 No Action | EU 3a-5 Alt1 | EU3a_5 Alt2 |
|---|---|---|---|---|---|---|---|---|---|
| eu_area | 108.52 | 108.52 | 108.52 | 1832.37 | 1832.37 | 1832.75 | 1156.30 | 1156.30 | 1156.30 |
| eu_upl | 10.17 | 10.17 | 10.17 | 16.30 | 16.30 | 16.30 | 2.09 | 2.09 | 2.09 |
| eu_wetland00 | 78.47 | 78.47 | 78.47 | 390.87 | 390.87 | 390.87 | 307.86 | 307.86 | 307.86 |
| eu_wetland05 | 75.87 | 79.16 | 79.19 | 368.65 | 436.02 | 462.02 | 294.14 | 354.42 | 388.39 |
| eu_wetland10 | 73.39 | 79.64 | 79.70 | 347.84 | 415.57 | 448.95 | 281.06 | 344.27 | 384.52 |
| eu_wetland15 | 71.02 | 80.05 | 80.05 | 328.34 | 396.51 | 436.90 | 268.58 | 334.65 | 380.82 |
| eu_wetland20 | 68.77 | 80.39 | 80.34 | 310.08 | 378.77 | 425.56 | 256.67 | 325.52 | 377.33 |
| eu_wetland25 | 66.61 | 80.63 | 80.57 | 292.96 | 362.26 | 414.79 | 245.31 | 316.86 | 374.06 |
| eu_wetland30 | 64.55 | 80.86 | 80.79 | 276.91 | 346.87 | 404.57 | 234.47 | 308.60 | 370.99 |
| eu_wetland35 | 62.58 | 81.08 | 80.99 | 261.87 | 332.50 | 394.94 | 224.12 | 300.76 | 368.13 |
| eu_wetland40 | 60.69 | 81.26 | 81.15 | 247.75 | 319.08 | 385.87 | 214.24 | 293.33 | 365.51 |
| eu_wetland45 | 58.89 | 81.54 | 81.35 | 234.51 | 306.56 | 377.41 | 204.81 | 286.27 | 363.12 |
| eu_wetland50 | 57.16 | 81.71 | 81.50 | 222.09 | 294.88 | 369.35 | 195.81 | 279.54 | 360.94 |
| | | | | | | | | | |
| pl_ch_0_10 | -5.08 | 1.17 | 1.23 | -43.03 | 24.70 | 58.08 | -26.80 | 36.42 | 76.66 |
| pl_ch_40_50 | -3.53 | 0.45 | 0.35 | -25.67 | -24.20 | -16.53 | -18.43 | -13.78 | -4.56 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -6.47 | 1.50 | 1.56 | -11.01 | 6.32 | 14.86 | -8.70 | 11.83 | 24.90 |
| pl_ch_40_50 (%) | -5.82 | 0.55 | 0.43 | -10.36 | -7.58 | -4.28 | -8.60 | -4.70 | -1.25 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 3a-6 | EU 3a-6 | EU3a_6 | EU 3a-7 | EU 3a-7 | EU3a_7 | EU 3b-1 | EU 3b-1 | EU3b_1 |
|---|---|---|---|---|---|---|---|---|---|
| | No Action | Alt1 | Alt2 | No Action | Alt1 | Alt2 | No Action | Alt1 | Alt2 |
| eu_area | 710.26 | 710.26 | 710.26 | 165.04 | 165.04 | 165.04 | 593.26 | 593.26 | 593.26 |
| eu_upl | 1.06 | 1.06 | 1.06 | 4.38 | 4.38 | 4.38 | 0.57 | 0.57 | 0.57 |
| eu_wetland00 | 15.42 | 15.42 | 15.42 | 95.95 | 95.95 | 95.95 | 209.29 | 209.29 | 209.29 |
| eu_wetland05 | 14.57 | 42.72 | 42.72 | 92.23 | 96.35 | 96.49 | 199.58 | 199.80 | 218.05 |
| eu_wetland10 | 13.78 | 40.45 | 40.45 | 88.70 | 96.73 | 96.92 | 190.35 | 190.78 | 214.87 |
| eu_wetland15 | 13.03 | 38.31 | 38.32 | 85.36 | 97.10 | 97.31 | 181.57 | 182.27 | 211.86 |
| eu_wetland20 | 12.33 | 36.31 | 36.32 | 82.20 | 97.45 | 97.65 | 173.22 | 178.98 | 209.16 |
| eu_wetland25 | 11.68 | 34.43 | 34.44 | 79.19 | 97.77 | 98.02 | 165.27 | 172.68 | 206.38 |
| eu_wetland30 | 11.06 | 32.66 | 32.67 | 76.34 | 98.04 | 98.85 | 157.72 | 165.37 | 203.63 |
| eu_wetland35 | 10.48 | 31.00 | 31.01 | 73.63 | 98.30 | 100.05 | 150.53 | 160.18 | 201.06 |
| eu_wetland40 | 9.94 | 29.43 | 29.45 | 71.05 | 98.78 | 100.44 | 143.68 | 157.96 | 198.60 |
| eu_wetland45 | 9.43 | 27.97 | 27.98 | 68.61 | 99.92 | 100.71 | 137.17 | 156.89 | 196.36 |
| eu_wetland50 | 8.95 | 26.58 | 26.60 | 66.28 | 100.51 | 100.91 | 131.29 | 154.55 | 194.15 |
| | | | | | | | | | |
| pl_ch_0_10 | -1.64 | 25.03 | 25.04 | -7.25 | 0.78 | 0.97 | -18.94 | -18.51 | 5.58 |
| pl_ch_40_50 | -0.99 | -2.85 | -2.85 | -4.78 | 1.73 | 0.47 | -12.39 | -3.41 | -4.45 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -10.64 | 162.37 | 162.40 | -7.55 | 0.81 | 1.01 | -9.05 | -8.84 | 2.67 |
| pl_ch_40_50 (%) | -9.97 | -9.68 | -9.67 | -6.72 | 1.75 | 0.47 | -8.62 | -2.16 | -2.24 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 3b-2 No Action | EU 3b-2 Alt1 | EU3b_2 Alt2 | EU 3b-3 No Action | EU 3b-3 Alt1 | EU3b_3 Alt2 | EU 3b-4 No Action | EU 3b-4 Alt1 | EU3b_4 Alt2 |
|---|---|---|---|---|---|---|---|---|---|
| eu_area | 1038.09 | 1038.09 | 1038.09 | 180.01 | 180.01 | 180.01 | 325.79 | 325.79 | 325.79 |
| eu_upl | 1.07 | 1.07 | 1.07 | 0.40 | 0.40 | 0.40 | 1.97 | 1.97 | 1.97 |
| eu_wetland00 | 717.76 | 717.76 | 717.76 | 124.84 | 124.84 | 124.84 | 233.49 | 233.49 | 233.49 |
| eu_wetland05 | 690.47 | 718.04 | 723.33 | 124.61 | 124.63 | 129.85 | 238.51 | 239.10 | 238.12 |
| eu_wetland10 | 664.47 | 718.59 | 724.57 | 125.38 | 125.66 | 133.63 | 241.01 | 241.43 | 239.96 |
| eu_wetland15 | 639.90 | 720.65 | 725.71 | 125.84 | 126.20 | 135.90 | 242.75 | 242.99 | 243.18 |
| eu_wetland20 | 616.67 | 718.79 | 726.86 | 126.36 | 127.84 | 137.08 | 243.82 | 244.64 | 244.43 |
| eu_wetland25 | 594.77 | 716.68 | 728.23 | 128.18 | 131.35 | 139.45 | 245.08 | 245.86 | 246.08 |
| eu_wetland30 | 574.01 | 714.02 | 728.20 | 130.99 | 133.34 | 140.81 | 245.99 | 247.04 | 247.90 |
| eu_wetland35 | 554.31 | 710.80 | 728.14 | 132.63 | 134.11 | 141.95 | 246.80 | 248.14 | 248.92 |
| eu_wetland40 | 535.64 | 707.75 | 728.07 | 133.31 | 134.90 | 142.40 | 247.54 | 249.12 | 251.39 |
| eu_wetland45 | 517.94 | 704.49 | 728.47 | 133.82 | 134.94 | 142.73 | 248.28 | 251.50 | 254.60 |
| eu_wetland50 | 501.14 | 701.28 | 728.33 | 133.86 | 135.15 | 143.02 | 249.58 | 254.68 | 257.23 |
| | | | | | | | | | |
| pl_ch_0_10 | -53.29 | 0.84 | 6.82 | 0.54 | 0.82 | 8.79 | 7.52 | 7.94 | 6.48 |
| pl_ch_40_50 | -34.51 | -6.47 | 0.26 | 0.55 | 0.25 | 0.62 | 2.04 | 5.57 | 5.84 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -7.42 | 0.12 | 0.95 | 0.43 | 0.65 | 7.04 | 3.22 | 3.40 | 2.77 |
| pl_ch_40_50 (%) | -6.44 | -0.91 | 0.04 | 0.42 | 0.18 | 0.43 | 0.82 | 2.24 | 2.32 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 3b-5 No Action | EU 3b-5 Alt1 | EU 3b-5 Alt2 |
|---|---|---|---|
| eu_area | 760.26 | 760.26 | 760.26 |
| eu_upl | 0.18 | 0.18 | 0.18 |
| eu_wetland00 | 48.15 | 48.15 | 48.15 |
| eu_wetland05 | 56.28 | 57.90 | 57.90 |
| eu_wetland10 | 66.62 | 73.75 | 73.75 |
| eu_wetland15 | 84.61 | 94.64 | 94.64 |
| eu_wetland20 | 104.70 | 121.36 | 121.36 |
| eu_wetland25 | 125.53 | 150.80 | 150.80 |
| eu_wetland30 | 153.43 | 182.30 | 182.30 |
| eu_wetland35 | 181.80 | 211.80 | 211.80 |
| eu_wetland40 | 207.11 | 235.67 | 235.67 |
| eu_wetland45 | 227.48 | 256.37 | 256.37 |
| eu_wetland50 | 248.54 | 276.60 | 276.60 |
| | | | |
| pl_ch_0_10 | 18.46 | 25.59 | 25.59 |
| pl_ch_40_50 | 41.43 | 40.93 | 40.93 |
| | | | |
| pl_ch_0_10 (%) | 38.35 | 53.15 | 53.15 |
| pl_ch_40_50 (%) | 20.00 | 17.37 | 17.37 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 3b-6 No Action | EU 3b-6 Alt1 | EU3b_6 Alt2 | EU 3b-7 No Action | EU 3b-7 Alt1 | EU3b_7 Alt2 | EU 3b-8 No Action | EU 3b-8 Alt1 | EU3b_8 Alt2 |
|---|---|---|---|---|---|---|---|---|---|
| eu_area | 634.03 | 634.03 | 634.03 | 1175.75 | 1175.75 | 1175.75 | 1008.36 | 1008.36 | 1008.36 |
| eu_upl | 0.66 | 0.66 | 0.66 | 0.35 | 0.35 | 0.35 | 64.22 | 64.22 | 64.22 |
| eu_wetland00 | 226.02 | 226.02 | 226.02 | 2.32 | 2.32 | 2.32 | 654.72 | 654.72 | 654.72 |
| eu_wetland05 | 222.72 | 233.90 | 222.83 | 2.32 | 7.24 | 2.32 | 633.93 | 639.28 | 634.55 |
| eu_wetland10 | 219.48 | 230.61 | 219.70 | 2.32 | 7.12 | 2.32 | 613.93 | 619.79 | 615.12 |
| eu_wetland15 | 216.28 | 227.36 | 216.60 | 2.32 | 7.01 | 2.32 | 594.68 | 601.02 | 596.42 |
| eu_wetland20 | 213.13 | 224.17 | 213.56 | 2.33 | 6.90 | 2.33 | 576.15 | 582.95 | 578.41 |
| eu_wetland25 | 210.02 | 221.02 | 210.55 | 2.33 | 6.80 | 2.34 | 558.32 | 565.54 | 561.07 |
| eu_wetland30 | 206.96 | 217.91 | 207.59 | 2.34 | 6.70 | 2.35 | 541.15 | 548.77 | 544.35 |
| eu_wetland35 | 203.95 | 214.85 | 204.68 | 2.35 | 6.62 | 2.36 | 524.62 | 532.61 | 528.26 |
| eu_wetland40 | 200.98 | 211.84 | 201.80 | 2.38 | 6.52 | 2.37 | 508.71 | 517.04 | 512.74 |
| eu_wetland45 | 198.06 | 208.87 | 198.97 | 2.38 | 6.56 | 2.37 | 493.38 | 502.03 | 497.79 |
| eu_wetland50 | 195.18 | 205.94 | 196.18 | 2.37 | 6.76 | 2.36 | 478.62 | 487.56 | 483.38 |
| | | | | | | | | | |
| pl_ch_0_10 | -6.54 | 4.59 | -6.32 | 0.00 | 4.81 | 0.00 | -40.79 | -34.93 | -39.60 |
| pl_ch_40_50 | -5.80 | -5.90 | -5.62 | -0.01 | 0.24 | 0.00 | -30.09 | -29.47 | -29.36 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -2.90 | 2.03 | -2.80 | 0.08 | 207.71 | 0.15 | -6.23 | -5.33 | -6.05 |
| pl_ch_40_50 (%) | -2.89 | -2.78 | -2.79 | -0.22 | 3.61 | -0.19 | -5.92 | -5.70 | -5.73 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 3b-9 | EU 3b-9 | EU3b_9 | EU 4-1 | EU 4-1 | EU 4-1 | EU 4-2 | EU 4-2 | EU 4-2 |
|---|---|---|---|---|---|---|---|---|---|
| | No Action | Alt1 | Alt2 | No Action | Alt1 | Alt2 | No Action | Alt1 | Alt2 |
| eu_area | 488.78 | 488.78 | 488.78 | 2230.68 | 2230.68 | 2230.68 | 1142.53 | 1142.53 | 1142.53 |
| eu_upl | 3.83 | 3.83 | 3.83 | 180.72 | 180.72 | 180.72 | 16.81 | 16.81 | 16.81 |
| eu_wetland00 | 226.27 | 226.27 | 226.27 | 1278.23 | 1278.23 | 1278.23 | 466.37 | 466.37 | 466.37 |
| eu_wetland05 | 222.35 | 222.57 | 222.61 | 1251.41 | 1269.02 | 1273.80 | 452.26 | 453.04 | 483.24 |
| eu_wetland10 | 218.50 | 218.93 | 219.02 | 1225.32 | 1254.42 | 1264.77 | 438.77 | 440.28 | 469.70 |
| eu_wetland15 | 214.73 | 215.37 | 215.49 | 1199.93 | 1239.99 | 1255.60 | 425.85 | 428.03 | 456.72 |
| eu_wetland20 | 211.03 | 211.87 | 212.02 | 1175.22 | 1225.76 | 1246.42 | 413.48 | 416.29 | 444.26 |
| eu_wetland25 | 207.41 | 208.43 | 208.62 | 1151.16 | 1211.72 | 1237.29 | 401.62 | 405.02 | 432.30 |
| eu_wetland30 | 203.85 | 205.06 | 205.28 | 1127.73 | 1197.89 | 1228.17 | 390.26 | 394.19 | 420.80 |
| eu_wetland35 | 200.36 | 201.75 | 202.00 | 1104.92 | 1184.29 | 1219.10 | 379.36 | 383.79 | 409.75 |
| eu_wetland40 | 196.94 | 198.49 | 198.77 | 1082.69 | 1170.91 | 1210.09 | 368.90 | 373.79 | 399.13 |
| eu_wetland45 | 193.58 | 195.30 | 195.61 | 1061.04 | 1157.73 | 1201.09 | 358.85 | 364.17 | 388.90 |
| eu_wetland50 | 190.29 | 192.16 | 192.50 | 1039.94 | 1144.77 | 1192.18 | 349.20 | 354.92 | 379.06 |
| | | | | | | | | | |
| pl_ch_0_10 | -7.77 | -7.33 | -7.25 | -52.90 | -23.81 | -13.45 | -27.60 | -26.09 | 3.33 |
| pl_ch_40_50 | -6.65 | -6.33 | -6.27 | -42.75 | -26.14 | -17.91 | -19.69 | -18.87 | -20.07 |
| | | | | | | | | | |
| pl_ch_0_10 (%) | -3.43 | -3.24 | -3.21 | -4.14 | -1.86 | -1.05 | -5.92 | -5.59 | 0.71 |
| pl_ch_40_50 (%) | -3.38 | -3.19 | -3.16 | -3.95 | -2.23 | -1.48 | -5.34 | -5.05 | -5.03 |

**ECO UNIT LAND CHANGE SUMMARY**

| eco_unit | EU 4-3 No Action | EU 4-3 Alt1 | EU 4-3 Alt2 | EU 4-4 No Action | EU 4-4 Alt1 | EU 4-4 Alt2 |
|---|---|---|---|---|---|---|
| eu_area | 817.28 | 817.28 | 817.28 | 2059.71 | 2059.71 | 2059.71 |
| eu_upl | 82.39 | 82.39 | 82.39 | 105.98 | 105.98 | 105.98 |
| eu_wetland00 | 207.49 | 207.49 | 207.49 | 1010.36 | 1010.36 | 1010.36 |
| eu_wetland05 | 203.71 | 203.97 | 203.97 | 992.16 | 1072.10 | 1069.52 |
| eu_wetland10 | 200.02 | 200.52 | 200.52 | 974.37 | 1059.99 | 1050.17 |
| eu_wetland15 | 196.41 | 197.15 | 197.15 | 956.99 | 1047.92 | 1031.26 |
| eu_wetland20 | 192.89 | 193.85 | 193.85 | 940.01 | 1036.04 | 1012.79 |
| eu_wetland25 | 189.44 | 190.62 | 190.62 | 923.41 | 1024.27 | 994.75 |
| eu_wetland30 | 186.07 | 187.45 | 187.45 | 907.17 | 1012.59 | 977.12 |
| eu_wetland35 | 182.78 | 184.36 | 184.36 | 891.30 | 1001.10 | 959.88 |
| eu_wetland40 | 179.56 | 181.32 | 181.32 | 875.78 | 989.77 | 943.04 |
| eu_wetland45 | 176.41 | 178.35 | 178.35 | 860.60 | 978.58 | 926.57 |
| eu_wetland50 | 173.33 | 175.44 | 175.44 | 845.75 | 967.57 | 910.47 |
| | | | | | | |
| pl_ch_0_10 | -7.47 | -6.96 | -6.96 | -35.99 | 49.63 | 39.80 |
| pl_ch_40_50 | -6.23 | -5.88 | -5.88 | -30.03 | -22.20 | -32.57 |
| | | | | | | |
| pl_ch_0_10 (%) | -3.60 | -3.36 | -3.36 | -3.56 | 4.91 | 3.94 |
| pl_ch_40_50 (%) | -3.47 | -3.25 | -3.25 | -3.43 | -2.24 | -3.45 |

## 4.3 Habitat Type: Coastwide and Planning Unit Summary

In this section, model output for habitat type is presented. Habitat type is presented as a rate in units of square kilometers ($km^2$). In addition, the change in rate at different time steps (years 0 to 10 and years 0 to 50), and the percent change this represents, is provided at the coastwide and planning unit scales. No increased action output is compared to that of Alternative 1 and Alternative 2 at these time steps as well.

The following is a key to the first column of the habitat type table:

Coastwide Yr 10 vs NO Action = coastwide habitat type area at year 10 (under either Alternative 1 or 2) compared to that at year 10 under the no increased action scenario

Coastwide Yr 50 vs NO Action = coastwide habitat type area at year 50 (under either Alternative 1 or 2) compared to that at year 50 under the no increased action scenario

PU = planning unit

BRM = brackish marsh

FAM = fresh marsh

INM = intermediate marsh

SAW = salt marsh

SWF = swamp forest

**Habitat Type Summary**

| **Coastwide Yr 10** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | -846 | -22 | -517 | -13 | BRM | -5354 | -64 | -5025 | -60 | -4508 | -54 |
| FAM | 8991 | 41 | 7204 | 33 | FAM | 6135 | 25 | 4348 | 17 | -2856 | -11 |
| INM | -2423 | -19 | -1025 | -8 | INM | 132 | 1 | 1530 | 15 | 2555 | 24 |
| SAW | -2552 | -25 | -553 | -6 | SAW | 2248 | 43 | 4247 | 81 | 4800 | 92 |
| SWF | 147 | 1 | 165 | 1 | SWF | -609 | -3 | -591 | -2 | -756 | -3 |
| | Number '- | 3 | | 3 | | Number '- | 1 | | 1 | | 2 |
| | Number '+ | 1 | | 1 | | Number '+ | 2 | | 3 | | 2 |

| **Coastwide Yr 50** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | -546 | -17 | -257 | -8 | BRM | -5664 | -68 | -5375 | -64 | -5118 | -61 |
| FAM | 10630 | 52 | 9783 | 48 | FAM | 6085 | 24 | 5238 | 21 | -4545 | -18 |
| INM | -3628 | -30 | -2077 | -17 | INM | -1964 | -19 | -413 | -4 | 1664 | 16 |
| SAW | -1437 | -27 | 702 | 13 | SAW | -1284 | -25 | 855 | 16 | 153 | 3 |
| SWF | 333 | 1 | 347 | 1 | SWF | -777 | -3 | -763 | -3 | -1110 | -5 |
| | Number '- | 3 | | 2 | | Number '- | 3 | | 1 | | 2 |
| | Number '+ | 1 | | 2 | | Number '+ | 1 | | 2 | | 1 |

| **PU 1 Yr 10** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | -470 | -87 | -410 | -76 | BRM | -2308 | -97 | -2248 | -95 | -1838 | -77 |
| FAM | 2638 | 156 | 2563 | 152 | FAM | 3143 | 266 | 3068 | 260 | 505 | 43 |
| INM | -435 | -22 | -404 | -21 | INM | -545 | -27 | -514 | -25 | -110 | -5 |
| SAW | -680 | -22 | -182 | -6 | SAW | 660 | 38 | 1158 | 67 | 1340 | 77 |
| SWF | 11 | 0 | 26 | 1 | SWF | -84 | -2 | -69 | -2 | -95 | -2 |
| | Number '- | 3 | | 3 | | Number '- | 2 | | 2 | | 1 |
| | Number '+ | 1 | | 1 | | Number '+ | 2 | | 2 | | 1 |

| **PU 1 Yr 50** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | -405 | -81 | -396 | -80 | BRM | -2285 | -96 | -2276 | -96 | -17 | -1 |
| FAM | 3094 | 183 | 3438 | 203 | FAM | 3606 | 305 | 3950 | 334 | 7 | 1 |
| INM | -65 | -5 | -78 | -6 | INM | -738 | -36 | -751 | -37 | -133 | -6 |
| SAW | -743 | -44 | -735 | -44 | SAW | -807 | -47 | -799 | -46 | -388 | -22 |
| SWF | 90 | 2 | 100 | 2 | SWF | -174 | -4 | -164 | -4 | -74 | -2 |
| | Number '- | 3 | | 2 | | Number '- | 3 | | 3 | | 2 |
| | Number '+ | 1 | | 1 | | Number '+ | 1 | | 1 | | 0 |

| **PU 2 Yr 10** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | -106 | -96 | -106 | -96 | BRM | -811 | -100 | -811 | -100 | -705 | -87 |
| FAM | 3463 | 525 | 3566 | 540 | FAM | 1441 | 54 | 1544 | 58 | -2022 | -75 |
| INM | -1481 | -44 | -1115 | -33 | INM | 681 | 56 | 1047 | 86 | 2162 | 178 |
| SAW | -1428 | -82 | -1426 | -82 | SAW | -1024 | -77 | -1022 | -77 | 404 | 30 |
| SWF | 123 | 3 | 124 | 3 | SWF | -71 | -2 | -70 | -2 | -194 | -5 |
| | Number '- | 3 | | 3 | | Number '- | 2 | | 2 | | 2 |
| | Number '+ | 1 | | 1 | | Number '+ | 2 | | 2 | | 2 |

| **PU 2 Yr 50** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | -81 | -95 | -81 | -95 | BRM | -811 | -100 | -811 | -100 | -730 | -90 |
| FAM | 3163 | 494 | 3369 | 526 | FAM | 1121 | 42 | 1327 | 49 | -2042 | -76 |
| INM | -1964 | -65 | -1624 | -53 | INM | -139 | -11 | 201 | 17 | 1825 | 150 |
| SAW | -231 | -54 | -228 | -53 | SAW | -1137 | -85 | -1134 | -85 | -906 | -68 |
| SWF | 121 | 3 | 122 | 3 | SWF | -90 | -2 | -89 | -2 | -211 | -5 |
| | Number '- | 3 | | 3 | | Number '- | 3 | | 2 | | 3 |
| | Number '+ | 1 | | 1 | | Number '+ | 1 | | 2 | | 1 |

| **PU 3a Yr 10** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | 18 | 62 | 46 | 159 | BRM | -777 | -94 | -749 | -91 | -795 | -96 |
| FAM | 139 | 17 | 139 | 17 | FAM | 41 | 4 | 41 | 4 | -98 | -11 |
| INM | 6 | 1 | 28 | 4 | INM | 183 | 40 | 205 | 45 | 177 | 39 |
| SAW | 846 | 49 | 1352 | 79 | SAW | 1229 | 92 | 1735 | 130 | 383 | 29 |
| SWF | 11 | 0 | 11 | 0 | SWF | -27 | -1 | -27 | -1 | -38 | -1 |
| | Number '- | 0 | | 0 | | Number '- | 1 | | 1 | | 2 |
| | Number '+ | 4 | | 4 | | Number '+ | 2 | | 2 | | 2 |

| **PU 3a Yr 50** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | 62 | 2067 | 148 | 4933 | BRM | -759 | -92 | -673 | -82 | -821 | -100 |
| FAM | 423 | 72 | 439 | 75 | FAM | 80 | 9 | 96 | 10 | -343 | -37 |
| INM | 192 | 60 | 243 | 76 | INM | 54 | 12 | 105 | 23 | -138 | -30 |
| SAW | 488 | 125 | 1665 | 427 | SAW | -454 | -34 | 723 | 54 | -942 | -71 |
| SWF | 92 | 3 | 92 | 3 | SWF | -49 | -1 | -49 | -1 | -141 | -4 |
| | Number '- | 0 | | 0 | | Number '- | 2 | | 1 | | 4 |
| | Number '+ | 4 | | 4 | | Number '+ | 2 | | 3 | | 0 |

| **PU 3b Yr 10** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | -286 | -18 | -184 | -11 | BRM | -797 | -37 | -695 | -33 | -511 | -24 |
| FAM | 183 | 5 | 294 | 7 | FAM | -312 | -7 | -201 | -4 | -495 | -11 |
| INM | 683 | 27 | 720 | 28 | INM | 1035 | 47 | 1072 | 49 | 352 | 16 |
| SAW | -476 | -45 | -598 | -57 | SAW | 275 | 93 | 153 | 52 | 751 | 254 |
| SWF | -2 | 0 | -1 | 0 | SWF | -21 | -1 | -20 | -1 | -19 | -1 |
| | Number '- | 2 | | 2 | | Number '- | 2 | | 2 | | 2 |
| | Number '+ | 1 | | 2 | | Number '+ | 2 | | 2 | | 2 |

| **PU 3b Yr 50** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | -137 | -10 | -32 | -2 | BRM | -851 | -40 | -746 | -35 | -714 | -33 |
| FAM | 1139 | 38 | 1492 | 50 | FAM | -399 | -9 | -46 | -1 | -1538 | -34 |
| INM | -599 | -18 | -242 | -7 | INM | 460 | 21 | 817 | 37 | 1059 | 48 |
| SAW | -229 | -30 | -335 | -44 | SAW | 236 | 80 | 130 | 44 | 465 | 157 |
| SWF | 11 | 1 | 12 | 1 | SWF | -40 | -3 | -39 | -3 | -51 | -3 |
| | Number '- | 3 | | 3 | | Number '- | 2 | | 1 | | 2 |
| | Number '+ | 1 | | 1 | | Number '+ | 2 | | 2 | | 2 |

| **PU 4 Yr 10** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | -2 | 0 | 137 | 9 | BRM | -645 | -29 | -506 | -23 | -643 | -29 |
| FAM | 2527 | 63 | 606 | 15 | FAM | 1151 | 21 | -770 | -14 | -1376 | -26 |
| INM | -1196 | -26 | -254 | -6 | INM | -1147 | -25 | -205 | -5 | 49 | 1 |
| SAW | -814 | -34 | 301 | 12 | SAW | 1077 | 206 | 2192 | 420 | 1891 | 362 |
| SWF | 7 | 11 | -1 | -2 | SWF | -6 | -8 | -14 | -19 | -13 | -18 |
| | Number '- | 2 | | 1 | | Number '- | 3 | | 3 | | 3 |
| | Number '+ | 2 | | 3 | | Number '+ | 2 | | 1 | | 1 |

| **PU 4 Yr 50** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs NO Action** | Net Alt 1 | % | Net Alt 2 | % | **vs Yr 0** | Net Alt 1 | % | Net Alt 2 | % | No Action | % |
| BRM | 15 | 1 | 104 | 8 | BRM | -942 | -43 | -853 | -39 | -957 | -43 |
| FAM | 2667 | 73 | 908 | 25 | FAM | 958 | 18 | -801 | -15 | -1709 | -32 |
| INM | -1192 | -28 | -376 | -9 | INM | -1526 | -34 | -710 | -16 | -334 | -7 |
| SAW | -722 | -35 | 335 | 16 | SAW | 847 | 162 | 1904 | 365 | 1569 | 301 |
| SWF | 8 | 13 | 0 | 0 | SWF | -6 | -8 | -14 | -19 | -14 | -19 |
| | Number '- | 2 | | 1 | | Number '- | 3 | | 4 | | 4 |
| | Number '+ | 2 | | 3 | | Number '+ | 2 | | 1 | | 1 |

## 4.4 Productivity

### 4.4.1 Background

In this section, model output for productivity is presented. Productivity evaluates the effect of salinity and inundation on a particular habitat, based on measures of productivity including total biomass, stem/leaf elongation, photosynthesis, etc. Productivity is presented as an index. In addition, the change in rate at two different time steps (year 0 to 10 and year 40 to 50), and the percent change this represents, is provided at the coastwide, planning unit, and ecosystem unit scales.

The following is a key to the first column of each land change table:

Cw = coastwide

Pl = planning unit

Eu = ecosystem unit

Ppa = productivity

ppa00 = productivity at year 0

ppa05 = productivity at year 5

ppa10 = productivity at year 10

ppa 15 = productivity at year 15

ppa 20 = productivity at year 20

ppa 25 = productivity at year 25

ppa 30 = productivity at year 30

ppa 35 = productivity at year 35

ppa 40 = productivity at year 40

ppa 45 = productivity at year 45

ppa 50 = productivity at year 50

ppa _0_10 = productivity change between year 0 to year 10

ppa _40_50 = productivity change between year 40 to year 50

ppa _0_10 (%) = percent productivity change between year 0 and year 10

ppa _40_50 (%) = percent productivity change between year 40 and year 50

### 4.4.2 Coastwide

**COASTWIDE PRODUCTIVITY**

| | NIA | ALT1 | ALT2 |
|---|---|---|---|
| cw_ppa00 | 5833.79 | 5833.79 | 5833.79 |
| cw_ppa05 | 6121.91 | 6718.40 | 6935.49 |
| cw_ppa10 | 5961.67 | 6611.99 | 6847.58 |
| cw_ppa15 | 5806.04 | 6529.28 | 6791.62 |
| cw_ppa20 | 5653.96 | 6429.36 | 6707.66 |
| cw_ppa25 | 5497.98 | 6338.80 | 6636.14 |
| cw_ppa30 | 5356.86 | 6217.05 | 6507.51 |
| cw_ppa35 | 5209.39 | 6120.46 | 6426.70 |
| cw_ppa40 | 5065.61 | 6029.06 | 6360.93 |
| cw_ppa45 | 4917.75 | 5900.47 | 6190.42 |
| cw_ppa50 | 4788.05 | 5806.72 | 6111.24 |
| | | | |
| cw_ppa_0_10 | 127.89 | 778.20 | 1013.79 |
| cw_ppa_40_50 | -277.55 | -222.34 | -249.70 |
| | | | |
| % 0-10 | 2.2 | 13.3 | 17.4 |
| %40-50 | -5.5 | -3.7 | -3.9 |

### 4.4.3 Planning Unit

**PLANNING UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|
| PLAN_UNIT | 1 | 1 | 1 | 2 | 2 | 2 | 3a | 3a | 3a |
| pl_ppa00 | 838.53 | 838.53 | 838.53 | 592.83 | 592.83 | 592.83 | 371.62 | 371.62 | 371.62 |
| pl_ppa05 | 853.82 | 973.32 | 1023.62 | 695.82 | 826.42 | 899.30 | 376.46 | 467.11 | 536.67 |
| pl_ppa10 | 824.46 | 964.85 | 1016.28 | 665.20 | 795.56 | 869.61 | 348.37 | 445.68 | 523.63 |
| pl_ppa15 | 793.39 | 961.73 | 1020.22 | 637.18 | 778.67 | 855.45 | 322.52 | 430.89 | 517.15 |
| pl_ppa20 | 762.57 | 951.76 | 1010.35 | 609.35 | 752.53 | 831.28 | 297.19 | 412.12 | 505.89 |
| pl_ppa25 | 730.05 | 939.07 | 997.90 | 581.04 | 733.91 | 815.33 | 272.11 | 399.17 | 499.78 |
| pl_ppa30 | 699.70 | 927.39 | 972.59 | 557.00 | 704.53 | 773.03 | 249.23 | 364.81 | 478.12 |
| pl_ppa35 | 667.70 | 912.37 | 959.55 | 533.73 | 689.82 | 760.72 | 227.31 | 350.13 | 465.78 |
| pl_ppa40 | 636.03 | 902.99 | 957.08 | 512.80 | 672.25 | 747.05 | 208.21 | 338.85 | 458.67 |
| pl_ppa45 | 605.34 | 869.86 | 878.39 | 491.12 | 660.69 | 734.14 | 187.26 | 315.45 | 444.93 |
| pl_ppa50 | 579.40 | 852.49 | 863.16 | 473.02 | 643.82 | 718.64 | 167.92 | 306.59 | 438.78 |
| | | | | | | | | | |
| pl_ppa_0_10 | -14.08 | 126.32 | 177.74 | 72.37 | 202.74 | 276.79 | -23.25 | 74.05 | 152.01 |
| pl_ppa_40_50 | -56.63 | -50.50 | -93.92 | -39.78 | -28.43 | -28.41 | -40.29 | -32.27 | -19.89 |
| | | | | | | | | | |
| % 0-10 | -1.7 | 15.1 | 21.2 | 12.2 | 34.2 | 46.7 | -6.3 | 19.9 | 40.9 |
| %40-50 | -8.9 | -5.6 | -9.8 | -7.8 | -4.2 | -3.8 | -19.4 | -9.5 | -4.3 |

**PLANNING UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|
| PLAN_UNIT | 3b | 3b | 3b | 4 | 4 | 4 |
| pl_ppa00 | 1089.71 | 1089.71 | 1089.71 | 1381.95 | 1381.95 | 1381.95 |
| pl_ppa05 | 1108.77 | 1169.73 | 1206.44 | 1481.27 | 1659.94 | 1628.79 |
| pl_ppa10 | 1076.58 | 1148.03 | 1194.67 | 1442.95 | 1632.45 | 1600.33 |
| pl_ppa15 | 1046.71 | 1125.92 | 1182.57 | 1404.57 | 1604.19 | 1571.93 |
| pl_ppa20 | 1017.47 | 1105.32 | 1169.65 | 1367.86 | 1577.66 | 1544.56 |
| pl_ppa25 | 986.37 | 1084.18 | 1158.81 | 1331.13 | 1550.82 | 1517.49 |
| pl_ppa30 | 960.60 | 1063.65 | 1145.51 | 1295.30 | 1523.12 | 1490.55 |
| pl_ppa35 | 932.13 | 1040.77 | 1132.25 | 1256.08 | 1492.68 | 1460.32 |
| pl_ppa40 | 902.00 | 1017.07 | 1119.81 | 1216.42 | 1461.48 | 1429.45 |
| pl_ppa45 | 871.83 | 995.92 | 1101.60 | 1174.34 | 1420.99 | 1381.80 |
| pl_ppa50 | 846.75 | 974.15 | 1087.90 | 1135.27 | 1390.95 | 1352.53 |
| | | | | | | |
| pl_ppa_0_10 | -13.13 | 58.33 | 104.96 | 61.00 | 250.50 | 218.38 |
| pl_ppa_40_50 | -55.25 | -42.92 | -31.92 | -81.15 | -70.53 | -76.92 |
| | | | | | | |
| % 0-10 | -1.2 | 5.4 | 9.6 | 4.4 | 18.1 | 15.8 |
| %40-50 | -6.1 | -4.2 | -2.9 | -6.7 | -4.8 | -5.4 |

### 4.4.4 Ecosystem Unit

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU1_1 | EU1_1 | EU1_1 | EU1_10 | EU1_10 | EU1_10 | EU1_2 | EU1_2 | EU1_2 |
| eu_ppa00 | 175.01 | 175.01 | 175.01 | 57.01 | 57.01 | 57.01 | 38.31 | 38.31 | 38.31 |
| eu_ppa05 | 174.51 | 173.91 | 175.49 | 70.38 | 67.52 | 67.60 | 43.71 | 48.08 | 53.68 |
| eu_ppa10 | 167.58 | 170.01 | 171.05 | 64.12 | 65.51 | 65.58 | 42.79 | 47.37 | 52.70 |
| eu_ppa15 | 161.19 | 166.57 | 167.08 | 57.99 | 63.21 | 63.28 | 41.85 | 46.63 | 51.65 |
| eu_ppa20 | 154.58 | 162.77 | 162.83 | 52.53 | 61.05 | 61.12 | 40.67 | 45.67 | 50.55 |
| eu_ppa25 | 148.42 | 159.33 | 158.91 | 46.07 | 58.88 | 58.76 | 39.72 | 44.95 | 49.49 |
| eu_ppa30 | 142.50 | 156.17 | 155.27 | 39.80 | 57.11 | 56.86 | 38.77 | 44.23 | 48.42 |
| eu_ppa35 | 136.81 | 152.90 | 151.64 | 33.72 | 54.90 | 54.89 | 37.91 | 43.54 | 47.45 |
| eu_ppa40 | 131.08 | 149.61 | 148.01 | 28.32 | 53.53 | 53.53 | 37.00 | 42.77 | 46.48 |
| eu_ppa45 | 125.70 | 146.63 | 144.61 | 23.01 | 51.85 | 51.72 | 36.25 | 42.08 | 45.07 |
| eu_ppa50 | 120.41 | 143.52 | 141.23 | 18.42 | 49.98 | 49.67 | 35.57 | 41.42 | 44.30 |
| | | | | | | | | | |
| eu_ppa_0_10 | -7.43 | -5.00 | -3.96 | 7.11 | 8.50 | 8.57 | 4.48 | 9.06 | 14.40 |
| eu_ppa_40_50 | -10.67 | -6.09 | -6.78 | -9.90 | -3.55 | -3.86 | -1.43 | -1.35 | -2.18 |
| | | | | | | | | | |
| % 0-10 | -4.2 | -2.9 | -2.3 | 12.5 | 14.9 | 15.0 | 11.7 | 23.6 | 37.6 |
| %40-50 | -8.1 | -4.1 | -4.6 | -35.0 | -6.6 | -7.2 | -3.9 | -3.2 | -4.7 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU1_3 | EU1_3 | EU1_3 | EU1_4 | EU1_4 | EU1_4 | EU1_5 | EU1_5 | EU1_5 | EU1_6 | EU1_6 | EU1_6 |
| eu_ppa00 | 37.28 | 37.28 | 37.28 | 15.70 | 15.70 | 15.70 | 31.18 | 31.18 | 31.18 | 173.83 | 173.83 | 173.83 |
| eu_ppa05 | 40.44 | 40.05 | 54.44 | 15.49 | 19.74 | 24.03 | 36.69 | 40.84 | 38.18 | 166.81 | 200.42 | 187.92 |
| eu_ppa10 | 37.50 | 37.82 | 52.11 | 14.42 | 19.37 | 23.37 | 35.80 | 41.04 | 37.36 | 169.99 | 207.90 | 195.19 |
| eu_ppa15 | 34.13 | 35.81 | 49.81 | 13.12 | 18.65 | 22.68 | 34.93 | 41.13 | 36.57 | 173.31 | 215.20 | 202.21 |
| eu_ppa20 | 31.25 | 33.86 | 47.79 | 11.70 | 17.81 | 22.10 | 33.91 | 41.08 | 35.67 | 175.52 | 221.55 | 208.27 |
| eu_ppa25 | 27.47 | 31.15 | 45.65 | 10.45 | 17.21 | 21.54 | 33.10 | 41.11 | 34.91 | 177.91 | 228.11 | 214.55 |
| eu_ppa30 | 23.55 | 28.12 | 29.30 | 9.04 | 16.40 | 20.77 | 32.24 | 41.22 | 34.09 | 180.26 | 234.49 | 220.61 |
| eu_ppa35 | 19.81 | 25.48 | 28.14 | 7.73 | 15.92 | 20.08 | 31.41 | 41.19 | 33.30 | 182.43 | 240.69 | 226.50 |
| eu_ppa40 | 15.95 | 22.57 | 27.56 | 6.74 | 15.43 | 19.72 | 30.46 | 41.07 | 32.38 | 184.48 | 247.22 | 232.69 |
| eu_ppa45 | 13.46 | 21.08 | 25.33 | 5.49 | 14.30 | 14.45 | 29.79 | 39.93 | 31.76 | 186.29 | 252.99 | 238.31 |
| eu_ppa50 | 12.72 | 20.92 | 24.78 | 4.72 | 13.77 | 14.37 | 29.10 | 39.90 | 31.11 | 188.64 | 258.32 | 243.50 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | 0.22 | 0.54 | 14.83 | -1.28 | 3.67 | 7.67 | 4.62 | 9.86 | 6.19 | -3.83 | 34.08 | 21.36 |
| eu_ppa_40_50 | -3.23 | -1.65 | -2.77 | -2.02 | -1.66 | -5.35 | -1.36 | -1.17 | -1.27 | 4.16 | 11.10 | 10.81 |
| | | | | | | | | | | | | |
| % 0-10 | 0.6 | 1.4 | 39.8 | -8.1 | 23.4 | 48.9 | 14.8 | 31.6 | 19.8 | -2.2 | 19.6 | 12.3 |
| %40-50 | -20.2 | -7.3 | -10.1 | -30.0 | -10.8 | -27.1 | -4.5 | -2.8 | -3.9 | 2.3 | 4.5 | 4.6 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU1_7 | EU1_7 | EU1_7 | EU1_8 | EU1_8 | EU1_8 | EU1_9 | EU1_9 | EU1_9 | EU2_1 | EU2_1 | EU2_1 |
| eu_ppa00 | 148.44 | 148.44 | 148.44 | 158.54 | 158.54 | 158.54 | 3.25 | 3.25 | 3.25 | 151.30 | 151.30 | 151.30 |
| eu_ppa05 | 155.87 | 197.81 | 196.86 | 147.05 | 173.22 | 213.38 | 2.87 | 11.71 | 12.06 | 150.40 | 154.62 | 161.71 |
| eu_ppa10 | 152.91 | 203.04 | 206.69 | 136.74 | 161.94 | 201.03 | 2.60 | 10.86 | 11.19 | 148.89 | 156.52 | 164.03 |
| eu_ppa15 | 149.32 | 214.48 | 228.17 | 125.63 | 150.06 | 188.38 | 1.91 | 10.00 | 10.39 | 147.24 | 158.40 | 167.51 |
| eu_ppa20 | 144.44 | 217.99 | 235.05 | 116.89 | 140.73 | 177.33 | 1.08 | 9.25 | 9.62 | 145.72 | 159.74 | 169.80 |
| eu_ppa25 | 140.53 | 221.04 | 240.30 | 105.79 | 128.72 | 164.86 | 0.59 | 8.58 | 8.93 | 144.29 | 160.94 | 171.69 |
| eu_ppa30 | 136.50 | 222.87 | 245.25 | 96.66 | 118.83 | 153.72 | 0.39 | 7.95 | 8.29 | 142.73 | 162.06 | 173.73 |
| eu_ppa35 | 131.39 | 222.55 | 247.22 | 86.50 | 107.82 | 142.63 | 0.00 | 7.38 | 7.70 | 141.23 | 162.62 | 174.99 |
| eu_ppa40 | 126.90 | 227.85 | 259.09 | 75.10 | 96.12 | 130.48 | 0.00 | 6.84 | 7.15 | 139.66 | 163.87 | 177.59 |
| eu_ppa45 | 122.24 | 229.67 | 265.59 | 63.11 | 64.98 | 55.20 | 0.00 | 6.34 | 6.34 | 138.09 | 164.70 | 179.28 |
| eu_ppa50 | 117.70 | 230.24 | 267.77 | 52.12 | 54.43 | 46.42 | 0.00 | 0.00 | 0.00 | 136.71 | 165.20 | 180.30 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | 4.48 | 54.60 | 58.25 | -21.80 | 3.40 | 42.49 | -0.65 | 7.61 | 7.95 | -2.41 | 5.23 | 12.74 |
| eu_ppa_40_50 | -9.20 | 2.39 | 8.69 | -22.98 | -41.69 | -84.05 | 0.00 | -6.84 | -7.15 | -2.95 | 1.33 | 2.70 |
| | | | | | | | | | | | | |
| % 0-10 | 3.0 | 36.8 | 39.2 | -13.8 | 2.1 | 26.8 | -20.0 | 234.2 | 244.5 | -1.6 | 3.5 | 8.4 |
| %40-50 | -7.3 | 1.0 | 3.4 | -30.6 | -43.4 | -64.4 | #DIV/0! | -100.0 | -100.0 | -2.1 | 0.8 | 1.5 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU2_2 | EU2_2 | EU2_2 | EU2_3 | EU2_3 | EU2_3 | EU2_4 | EU2_4 | EU2_4 | EU2_5 | EU2_5 | EU2_5 |
| eu_ppa00 | 163.76 | 163.76 | 163.76 | 91.08 | 91.08 | 91.08 | 160.02 | 160.02 | 160.02 | 8.15 | 8.15 | 8.15 |
| eu_ppa05 | 249.98 | 267.27 | 273.17 | 105.19 | 137.43 | 142.34 | 161.84 | 226.61 | 281.03 | 7.23 | 20.49 | 21.05 |
| eu_ppa10 | 245.12 | 262.95 | 268.07 | 100.99 | 133.56 | 138.41 | 143.78 | 208.84 | 264.87 | 5.90 | 14.48 | 15.01 |
| eu_ppa15 | 240.14 | 258.53 | 262.83 | 97.49 | 130.91 | 135.74 | 127.49 | 194.66 | 252.54 | 5.13 | 17.62 | 18.27 |
| eu_ppa20 | 235.58 | 254.53 | 258.06 | 93.75 | 127.81 | 132.61 | 111.47 | 180.25 | 240.14 | 3.73 | 12.06 | 12.53 |
| eu_ppa25 | 230.83 | 250.33 | 253.06 | 89.72 | 124.30 | 129.03 | 95.52 | 166.61 | 229.24 | 2.77 | 14.64 | 15.20 |
| eu_ppa30 | 225.84 | 245.82 | 247.76 | 86.08 | 121.30 | 125.99 | 83.15 | 149.03 | 198.93 | 2.02 | 9.99 | 10.35 |
| eu_ppa35 | 220.80 | 241.16 | 242.34 | 82.38 | 117.94 | 122.43 | 71.01 | 139.67 | 191.93 | 1.60 | 12.59 | 13.18 |
| eu_ppa40 | 216.61 | 237.28 | 237.89 | 78.52 | 114.55 | 118.98 | 60.60 | 132.30 | 188.08 | 1.18 | 8.68 | 9.09 |
| eu_ppa45 | 212.10 | 233.12 | 233.10 | 74.27 | 110.43 | 114.69 | 50.12 | 126.45 | 180.50 | 0.86 | 11.06 | 11.78 |
| eu_ppa50 | 207.56 | 228.84 | 228.22 | 70.49 | 107.05 | 111.23 | 42.67 | 122.28 | 177.89 | 0.49 | 6.03 | 6.66 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | 81.36 | 99.20 | 104.31 | 9.91 | 42.47 | 47.33 | -16.24 | 48.82 | 104.85 | -2.25 | 6.33 | 6.86 |
| eu_ppa_40_50 | -9.06 | -8.44 | -9.67 | -8.03 | -7.50 | -7.75 | -17.93 | -10.02 | -10.19 | -0.69 | -2.65 | -2.44 |
| | | | | | | | | | | | | |
| % 0-10 | 49.7 | 60.6 | 63.7 | 10.9 | 46.6 | 52.0 | -10.1 | 30.5 | 65.5 | -27.6 | 77.7 | 84.1 |
| %40-50 | -4.2 | -3.6 | -4.1 | -10.2 | -6.5 | -6.5 | -29.6 | -7.6 | -5.4 | -58.8 | -30.5 | -26.8 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU2_6 | EU2_6 | EU2_6 | EU3a_1 | EU3a_1 | EU3a_1 | EU3a_2 | EU3a_2 | EU3a_2 | EU3a_3 | EU3a_3 | EU3a_3 |
| eu_ppa00 | 18.52 | 18.52 | 18.52 | 77.60 | 77.60 | 77.60 | 69.84 | 69.84 | 69.84 | 13.28 | 13.28 | 13.28 |
| eu_ppa05 | 21.18 | 19.99 | 20.00 | 76.63 | 80.92 | 85.37 | 68.41 | 73.73 | 76.28 | 13.50 | 14.64 | 15.23 |
| eu_ppa10 | 20.52 | 19.21 | 19.22 | 74.75 | 80.96 | 85.50 | 65.17 | 73.63 | 76.65 | 13.01 | 14.74 | 15.33 |
| eu_ppa15 | 19.70 | 18.54 | 18.55 | 72.73 | 80.80 | 85.33 | 62.28 | 73.37 | 76.97 | 12.45 | 14.83 | 15.40 |
| eu_ppa20 | 19.09 | 18.13 | 18.14 | 71.03 | 80.90 | 85.66 | 59.22 | 73.02 | 77.14 | 12.04 | 14.90 | 15.46 |
| eu_ppa25 | 17.92 | 17.10 | 17.10 | 69.13 | 81.05 | 85.60 | 56.68 | 72.74 | 77.35 | 11.53 | 15.09 | 15.71 |
| eu_ppa30 | 17.18 | 16.33 | 16.28 | 67.51 | 80.92 | 85.62 | 54.01 | 72.54 | 77.40 | 11.13 | 15.28 | 15.90 |
| eu_ppa35 | 16.72 | 15.84 | 15.85 | 66.14 | 80.68 | 85.46 | 51.23 | 72.15 | 77.68 | 10.70 | 15.41 | 15.95 |
| eu_ppa40 | 16.23 | 15.56 | 15.41 | 65.03 | 80.44 | 85.42 | 48.69 | 71.78 | 77.73 | 10.28 | 15.46 | 15.99 |
| eu_ppa45 | 15.68 | 14.93 | 14.79 | 63.59 | 80.24 | 85.29 | 45.16 | 71.61 | 77.91 | 9.87 | 15.50 | 16.02 |
| eu_ppa50 | 15.11 | 14.41 | 14.34 | 62.52 | 80.00 | 85.11 | 40.68 | 71.32 | 78.02 | 8.50 | 15.67 | 16.17 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | 2.00 | 0.69 | 0.70 | -2.85 | 3.36 | 7.90 | -4.67 | 3.79 | 6.81 | -0.27 | 1.46 | 2.05 |
| eu_ppa_40_50 | -1.13 | -1.15 | -1.07 | -2.51 | -0.44 | -0.31 | -8.01 | -0.46 | 0.28 | -1.78 | 0.21 | 0.18 |
| | | | | | | | | | | | | |
| % 0-10 | 10.8 | 3.7 | 3.8 | -3.7 | 4.3 | 10.2 | -6.7 | 5.4 | 9.8 | -2.0 | 11.0 | 15.4 |
| %40-50 | -6.9 | -7.4 | -7.0 | -3.9 | -0.5 | -0.4 | -16.5 | -0.6 | 0.4 | -17.3 | 1.4 | 1.1 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU3a_4 | EU3a_4 | EU3a_4 | EU3a_5 | EU3a_5 | EU3a_5 | EU3a_6 | EU3a_6 | EU3a_6 | EU3a_7 | EU3a_7 | EU3a_7 |
| eu_ppa00 | 94.76 | 94.76 | 94.76 | 73.13 | 73.13 | 73.13 | 2.36 | 2.36 | 2.36 | 40.67 | 40.67 | 40.67 |
| eu_ppa05 | 96.70 | 124.30 | 148.74 | 79.04 | 118.17 | 154.09 | 2.17 | 9.91 | 9.92 | 40.00 | 45.44 | 47.04 |
| eu_ppa10 | 84.42 | 112.87 | 140.80 | 71.44 | 111.24 | 151.56 | 1.80 | 6.54 | 6.54 | 37.78 | 45.69 | 47.24 |
| eu_ppa15 | 73.48 | 102.69 | 134.04 | 64.05 | 104.56 | 149.20 | 1.63 | 8.84 | 8.85 | 35.90 | 45.79 | 47.36 |
| eu_ppa20 | 62.51 | 92.99 | 127.31 | 56.85 | 98.84 | 147.26 | 1.40 | 5.87 | 5.87 | 34.14 | 45.60 | 47.19 |
| eu_ppa25 | 52.34 | 84.15 | 120.37 | 49.29 | 92.27 | 145.33 | 1.16 | 7.89 | 7.89 | 31.99 | 45.98 | 47.52 |
| eu_ppa30 | 43.31 | 60.98 | 106.49 | 42.16 | 83.93 | 139.99 | 1.00 | 5.22 | 5.23 | 30.11 | 45.94 | 47.49 |
| eu_ppa35 | 34.81 | 52.67 | 98.64 | 35.52 | 75.78 | 132.88 | 0.69 | 7.11 | 7.11 | 28.22 | 46.32 | 48.06 |
| eu_ppa40 | 27.87 | 48.87 | 94.76 | 29.50 | 71.35 | 132.06 | 0.61 | 4.71 | 4.71 | 26.24 | 46.25 | 47.98 |
| eu_ppa45 | 20.96 | 43.48 | 90.78 | 23.85 | 52.33 | 120.92 | 0.48 | 6.37 | 6.37 | 23.37 | 45.92 | 47.63 |
| eu_ppa50 | 16.53 | 41.72 | 88.26 | 18.83 | 49.41 | 121.12 | 0.43 | 2.68 | 2.68 | 20.44 | 45.78 | 47.42 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | -10.34 | 18.11 | 46.05 | -1.69 | 38.12 | 78.43 | -0.55 | 4.18 | 4.19 | -2.88 | 5.02 | 6.57 |
| eu_ppa_40_50 | -11.33 | -7.15 | -6.50 | -10.67 | -21.94 | -10.94 | -0.18 | -2.03 | -2.03 | -5.81 | -0.47 | -0.56 |
| | | | | | | | | | | | | |
| % 0-10 | -10.9 | 19.1 | 48.6 | -2.3 | 52.1 | 107.3 | -23.4 | 177.6 | 177.9 | -7.1 | 12.4 | 16.2 |
| %40-50 | -40.7 | -14.6 | -6.9 | -36.2 | -30.8 | -8.3 | -29.8 | -43.1 | -43.1 | -22.1 | -1.0 | -1.2 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU3b_1 | EU3b_1 | EU3b_1 | EU3b_2 | EU3b_2 | EU3b_2 | EU3b_3 | EU3b_3 | EU3b_3 | EU3b_4 | EU3b_4 | EU3b_4 |
| eu_ppa00 | 108.42 | 108.42 | 108.42 | 354.65 | 354.65 | 354.65 | 17.74 | 17.74 | 17.74 | 109.71 | 109.71 | 109.71 |
| eu_ppa05 | 102.96 | 100.78 | 116.29 | 339.16 | 383.29 | 399.69 | 19.38 | 19.99 | 23.19 | 114.36 | 119.27 | 124.66 |
| eu_ppa10 | 96.07 | 94.12 | 114.03 | 321.36 | 380.97 | 400.53 | 19.92 | 20.01 | 25.03 | 115.58 | 119.72 | 125.66 |
| eu_ppa15 | 88.93 | 87.06 | 111.76 | 303.85 | 378.05 | 400.64 | 20.25 | 19.96 | 26.02 | 116.29 | 120.30 | 127.42 |
| eu_ppa20 | 82.18 | 80.42 | 109.65 | 285.38 | 375.59 | 400.71 | 20.57 | 19.91 | 26.47 | 116.82 | 120.66 | 128.08 |
| eu_ppa25 | 75.05 | 73.45 | 107.22 | 264.85 | 372.90 | 401.47 | 21.41 | 19.86 | 27.53 | 117.51 | 121.03 | 129.02 |
| eu_ppa30 | 68.50 | 67.01 | 104.85 | 244.88 | 369.79 | 400.43 | 22.79 | 19.75 | 28.19 | 118.11 | 121.74 | 130.11 |
| eu_ppa35 | 60.76 | 59.64 | 101.97 | 222.81 | 365.49 | 399.46 | 23.64 | 19.78 | 28.71 | 118.67 | 122.00 | 130.78 |
| eu_ppa40 | 53.34 | 52.34 | 99.63 | 200.45 | 359.32 | 397.96 | 23.98 | 19.82 | 28.87 | 118.82 | 122.04 | 132.13 |
| eu_ppa45 | 46.66 | 45.74 | 91.50 | 180.06 | 355.56 | 397.43 | 24.30 | 20.05 | 29.07 | 118.99 | 122.08 | 133.80 |
| eu_ppa50 | 39.23 | 38.60 | 89.28 | 166.31 | 352.71 | 395.81 | 24.40 | 20.08 | 29.22 | 119.33 | 121.83 | 134.91 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | -12.35 | -14.30 | 5.61 | -33.29 | 26.32 | 45.88 | 2.18 | 2.27 | 7.29 | 5.87 | 10.00 | 15.94 |
| eu_ppa_40_50 | -14.11 | -13.74 | -10.34 | -34.15 | -6.62 | -2.15 | 0.43 | 0.26 | 0.35 | 0.50 | -0.20 | 2.78 |
| | | | | | | | | | | | | |
| % 0-10 | -11.4 | -13.2 | 5.2 | -9.4 | 7.4 | 12.9 | 12.3 | 12.8 | 41.1 | 5.4 | 9.1 | 14.5 |
| %40-50 | -26.5 | -26.2 | -10.4 | -17.0 | -1.8 | -0.5 | 1.8 | 1.3 | 1.2 | 0.4 | -0.2 | 2.1 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | ***NIA*** | ***ALT1*** | ***ALT2*** | **NIA** | **ALT1** | **ALT2** | **NIA** | **ALT1** | **ALT2** | **NIA** | **ALT1** | **ALT2** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU3b_5 | EU3b_5 | EU3b_5 | EU3b_6 | EU3b_6 | EU3b_6 | EU3b_7 | EU3b_7 | EU3b_7 | EU3b_8 | EU3b_8 | EU3b_8 |
| eu_ppa00 | 13.64 | 13.64 | 13.64 | 121.84 | 121.84 | 121.84 | 0.43 | 0.43 | 0.43 | 245.26 | 245.26 | 245.26 |
| eu_ppa05 | 21.61 | 17.99 | 18.35 | 127.87 | 135.07 | 131.10 | 0.43 | 3.35 | 0.45 | 259.99 | 265.58 | 266.80 |
| eu_ppa10 | 26.68 | 18.66 | 19.04 | 125.82 | 133.01 | 129.05 | 0.50 | 3.35 | 0.52 | 250.30 | 256.42 | 257.17 |
| eu_ppa15 | 33.94 | 19.32 | 19.73 | 123.73 | 130.83 | 127.07 | 0.50 | 3.28 | 0.52 | 241.31 | 247.62 | 248.31 |
| eu_ppa20 | 42.19 | 20.29 | 20.78 | 121.51 | 128.68 | 124.85 | 0.51 | 3.21 | 0.53 | 232.67 | 239.30 | 239.80 |
| eu_ppa25 | 50.40 | 21.31 | 22.11 | 119.29 | 126.40 | 122.54 | 0.51 | 3.15 | 0.53 | 224.17 | 231.16 | 231.55 |
| eu_ppa30 | 61.85 | 21.86 | 22.79 | 117.09 | 124.15 | 120.43 | 0.52 | 3.08 | 0.54 | 215.93 | 223.38 | 223.40 |
| eu_ppa35 | 74.03 | 22.51 | 24.12 | 115.32 | 122.26 | 118.67 | 0.58 | 3.08 | 0.60 | 207.51 | 215.13 | 215.18 |
| eu_ppa40 | 84.85 | 23.67 | 25.66 | 113.07 | 119.94 | 116.42 | 0.59 | 3.03 | 0.61 | 200.04 | 207.85 | 207.78 |
| eu_ppa45 | 93.54 | 24.92 | 26.75 | 110.90 | 117.88 | 114.23 | 0.59 | 2.97 | 0.62 | 192.06 | 199.65 | 199.83 |
| eu_ppa50 | 102.41 | 26.11 | 28.64 | 108.85 | 115.78 | 112.28 | 0.60 | 2.92 | 0.63 | 183.12 | 191.08 | 191.04 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | 13.04 | 5.02 | 5.40 | 3.97 | 11.17 | 7.21 | 0.07 | 2.91 | 0.09 | 5.04 | 11.15 | 11.91 |
| eu_ppa_40_50 | 17.56 | 2.44 | 2.98 | -4.22 | -4.16 | -4.13 | 0.01 | -0.11 | 0.01 | -16.92 | -16.77 | -16.74 |
| | | | | | | | | | | | | |
| % 0-10 | 95.5 | 36.8 | 39.6 | 3.3 | 9.2 | 5.9 | 15.3 | 672.6 | 19.9 | 2.1 | 4.5 | 4.9 |
| %40-50 | 20.7 | 10.3 | 11.6 | -3.7 | -3.5 | -3.6 | 2.0 | -3.6 | 2.0 | -8.5 | -8.1 | -8.1 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU3b_9 | EU3b_9 | EU3b_9 | EU4_1a | EU4_1a | EU4_1a | EU4_1b | EU4_1b | EU4_1b | EU4_1c | EU4_1c | EU4_1c |
| eu_ppa00 | 118.00 | 118.00 | 118.00 | 117.26 | 117.26 | 117.26 | 252.00 | 252.00 | 252.00 | 99.21 | 99.21 | 99.21 |
| eu_ppa05 | 123.01 | 124.41 | 125.90 | 115.42 | 116.09 | 117.30 | 251.55 | 274.09 | 273.56 | 102.12 | 122.66 | 121.39 |
| eu_ppa10 | 120.35 | 121.79 | 123.63 | 113.68 | 114.38 | 115.59 | 246.75 | 269.64 | 269.02 | 100.30 | 122.98 | 121.81 |
| eu_ppa15 | 117.90 | 119.49 | 121.09 | 111.93 | 112.65 | 113.87 | 242.44 | 265.55 | 265.00 | 98.26 | 122.92 | 121.81 |
| eu_ppa20 | 115.66 | 117.26 | 118.78 | 110.20 | 110.96 | 112.19 | 238.32 | 261.91 | 261.27 | 96.42 | 123.12 | 122.22 |
| eu_ppa25 | 113.17 | 114.92 | 116.84 | 108.20 | 109.12 | 110.36 | 234.14 | 258.06 | 257.40 | 94.92 | 123.20 | 122.23 |
| eu_ppa30 | 110.93 | 112.88 | 114.77 | 106.56 | 107.56 | 108.80 | 229.84 | 254.11 | 253.36 | 93.16 | 123.23 | 122.44 |
| eu_ppa35 | 108.81 | 110.88 | 112.76 | 104.76 | 105.78 | 107.03 | 225.84 | 250.11 | 249.35 | 91.48 | 123.05 | 122.52 |
| eu_ppa40 | 106.85 | 109.06 | 110.77 | 103.06 | 104.10 | 105.36 | 221.52 | 245.90 | 245.13 | 89.49 | 122.48 | 122.20 |
| eu_ppa45 | 104.72 | 107.06 | 108.36 | 101.21 | 102.32 | 103.58 | 217.14 | 241.73 | 240.96 | 87.75 | 121.96 | 121.89 |
| eu_ppa50 | 102.51 | 105.03 | 106.10 | 99.56 | 100.55 | 101.81 | 213.10 | 237.77 | 237.00 | 85.79 | 121.50 | 121.59 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | 2.35 | 3.78 | 5.63 | -3.58 | -2.88 | -1.67 | -5.25 | 17.64 | 17.02 | 1.09 | 23.77 | 22.60 |
| eu_ppa_40_50 | -4.34 | -4.02 | -4.67 | -3.50 | -3.55 | -3.54 | -8.42 | -8.13 | -8.13 | -3.70 | -0.97 | -0.61 |
| | | | | | | | | | | | | |
| % 0-10 | 2.0 | 3.2 | 4.8 | -3.1 | -2.5 | -1.4 | -2.1 | 7.0 | 6.8 | 1.1 | 24.0 | 22.8 |
| %40-50 | -4.1 | -3.7 | -4.2 | -3.4 | -3.4 | -3.4 | -3.8 | -3.3 | -3.3 | -4.1 | -0.8 | -0.5 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU4_1d | EU4_1d | EU4_1d | EU4_1e | EU4_1e | EU4_1e | EU4_1f | EU4_1f | EU4_1f | EU4_2a | EU4_2a | EU4_2a |
| eu_ppa00 | 60.85 | 60.85 | 60.85 | 101.44 | 101.44 | 101.44 | 45.73 | 45.73 | 45.73 | 157.24 | 157.24 | 157.24 |
| eu_ppa05 | 62.13 | 67.78 | 67.60 | 96.44 | 115.75 | 116.19 | 44.16 | 46.98 | 48.38 | 166.03 | 167.04 | 179.91 |
| eu_ppa10 | 60.38 | 66.07 | 66.87 | 91.62 | 114.06 | 116.34 | 42.79 | 46.66 | 49.05 | 158.75 | 160.05 | 172.67 |
| eu_ppa15 | 58.75 | 64.64 | 66.27 | 86.61 | 111.89 | 116.38 | 41.07 | 46.11 | 50.01 | 151.71 | 153.17 | 165.55 |
| eu_ppa20 | 57.06 | 62.95 | 65.29 | 82.44 | 110.32 | 116.47 | 39.57 | 45.96 | 51.04 | 144.90 | 146.37 | 158.52 |
| eu_ppa25 | 55.41 | 61.31 | 64.56 | 77.83 | 108.43 | 116.64 | 37.63 | 45.57 | 51.94 | 137.81 | 139.65 | 151.57 |
| eu_ppa30 | 53.88 | 59.87 | 63.83 | 73.62 | 106.34 | 116.70 | 35.95 | 44.97 | 52.94 | 131.35 | 133.36 | 145.06 |
| eu_ppa35 | 52.02 | 58.31 | 62.94 | 69.13 | 104.71 | 116.98 | 34.75 | 44.98 | 53.65 | 122.54 | 124.91 | 136.57 |
| eu_ppa40 | 50.18 | 56.55 | 62.16 | 64.92 | 102.84 | 117.08 | 33.41 | 44.93 | 54.33 | 112.24 | 115.13 | 126.57 |
| eu_ppa45 | 48.46 | 54.98 | 61.27 | 59.98 | 99.55 | 116.37 | 31.96 | 44.78 | 55.29 | 101.00 | 104.12 | 114.25 |
| eu_ppa50 | 46.39 | 53.11 | 60.01 | 54.89 | 97.43 | 116.59 | 30.58 | 44.48 | 55.76 | 92.46 | 96.16 | 106.13 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | -0.48 | 5.21 | 6.01 | -9.82 | 12.62 | 14.89 | -2.94 | 0.92 | 3.31 | 1.50 | 2.81 | 15.43 |
| eu_ppa_40_50 | -3.79 | -3.44 | -2.15 | -10.03 | -5.41 | -0.49 | -2.83 | -0.45 | 1.44 | -19.78 | -18.97 | -20.44 |
| | | | | | | | | | | | | |
| % 0-10 | -0.8 | 8.6 | 9.9 | -9.7 | 12.4 | 14.7 | -6.4 | 2.0 | 7.2 | 1.0 | 1.8 | 9.8 |
| %40-50 | -7.5 | -6.1 | -3.5 | -15.5 | -5.3 | -0.4 | -8.5 | -1.0 | 2.6 | -17.6 | -16.5 | -16.1 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU4_2b | EU4_2b | EU4_2b | EU4_3a | EU4_3a | EU4_3a | EU4_3b | EU4_3b | EU4_3b | EU4_3c | EU4_3c | EU4_3c |
| eu_ppa00 | 89.91 | 89.91 | 89.91 | 21.34 | 21.34 | 21.34 | 66.88 | 66.88 | 66.88 | 0.07 | 0.07 | 0.07 |
| eu_ppa05 | 91.04 | 92.56 | 103.36 | 29.86 | 30.39 | 29.96 | 70.38 | 70.51 | 70.66 | 0.07 | 0.07 | 0.07 |
| eu_ppa10 | 88.64 | 90.44 | 100.90 | 29.03 | 29.78 | 29.36 | 69.06 | 69.33 | 69.48 | 0.07 | 0.07 | 0.07 |
| eu_ppa15 | 86.31 | 88.35 | 98.48 | 28.30 | 28.89 | 28.47 | 67.81 | 68.18 | 68.35 | 0.07 | 0.07 | 0.07 |
| eu_ppa20 | 83.96 | 86.28 | 96.10 | 27.65 | 28.27 | 27.86 | 66.44 | 66.95 | 67.11 | 0.07 | 0.07 | 0.07 |
| eu_ppa25 | 81.93 | 84.36 | 93.88 | 26.81 | 27.46 | 27.07 | 65.24 | 65.76 | 65.92 | 0.07 | 0.07 | 0.07 |
| eu_ppa30 | 79.84 | 82.36 | 91.28 | 25.96 | 26.76 | 26.37 | 64.01 | 64.58 | 64.74 | 0.00 | 0.00 | 0.00 |
| eu_ppa35 | 77.20 | 80.04 | 88.70 | 25.24 | 26.05 | 25.67 | 62.74 | 63.41 | 63.57 | 0.00 | 0.00 | 0.00 |
| eu_ppa40 | 75.02 | 77.98 | 86.39 | 24.43 | 25.38 | 25.01 | 61.62 | 62.34 | 62.49 | 0.00 | 0.00 | 0.00 |
| eu_ppa45 | 72.99 | 76.17 | 80.94 | 23.83 | 24.86 | 24.50 | 60.51 | 61.35 | 61.50 | 0.00 | 0.00 | 0.00 |
| eu_ppa50 | 70.48 | 73.93 | 78.63 | 22.98 | 24.08 | 23.73 | 59.53 | 60.33 | 60.48 | 0.00 | 0.00 | 0.00 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | -1.27 | 0.53 | 10.99 | 7.69 | 8.44 | 8.02 | 2.18 | 2.45 | 2.59 | 0.00 | 0.01 | 0.00 |
| eu_ppa_40_50 | -4.54 | -4.05 | -7.76 | -1.45 | -1.30 | -1.28 | -2.09 | -2.01 | -2.01 | 0.00 | 0.00 | 0.00 |
| | | | | | | | | | | | | |
| % 0-10 | -1.4 | 0.6 | 12.2 | 36.0 | 39.5 | 37.6 | 3.3 | 3.7 | 3.9 | -0.3 | 7.4 | 0.1 |
| %40-50 | -6.1 | -5.2 | -9.0 | -5.9 | -5.1 | -5.1 | -3.4 | -3.2 | -3.2 | 0.0 | 0.0 | 0.0 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU4_4a | EU4_4a | EU4_4a | EU4_4b | EU4_4b | EU4_4b | EU4_4c | EU4_4c | EU4_4c | EU4_4d | EU4_4d | EU4_4d |
| eu_ppa00 | 10.89 | 10.89 | 10.89 | 55.57 | 55.57 | 55.57 | 0.90 | 0.90 | 0.90 | 50.63 | 50.63 | 50.63 |
| eu_ppa05 | 11.03 | 11.11 | 11.11 | 64.87 | 74.95 | 79.40 | 1.02 | 1.05 | 1.02 | 61.43 | 60.95 | 61.50 |
| eu_ppa10 | 10.68 | 10.76 | 10.76 | 61.98 | 71.67 | 75.96 | 1.00 | 1.04 | 1.00 | 60.47 | 59.99 | 60.54 |
| eu_ppa15 | 10.43 | 10.49 | 10.49 | 58.51 | 67.96 | 72.01 | 0.92 | 0.96 | 0.93 | 59.44 | 58.97 | 59.51 |
| eu_ppa20 | 10.29 | 10.36 | 10.36 | 55.28 | 64.45 | 68.40 | 0.91 | 0.94 | 0.91 | 58.27 | 57.81 | 58.34 |
| eu_ppa25 | 10.08 | 10.15 | 10.15 | 52.16 | 61.02 | 64.83 | 0.88 | 0.93 | 0.88 | 57.24 | 56.78 | 57.31 |
| eu_ppa30 | 9.88 | 9.95 | 9.95 | 48.79 | 57.39 | 61.10 | 0.86 | 0.92 | 0.87 | 56.32 | 55.87 | 56.38 |
| eu_ppa35 | 9.59 | 9.66 | 9.66 | 44.89 | 53.16 | 56.65 | 0.85 | 0.91 | 0.86 | 55.34 | 54.90 | 55.41 |
| eu_ppa40 | 9.47 | 9.53 | 9.53 | 41.59 | 49.61 | 53.00 | 0.79 | 0.84 | 0.80 | 54.45 | 54.01 | 54.51 |
| eu_ppa45 | 9.21 | 9.27 | 9.27 | 38.25 | 40.10 | 39.63 | 0.78 | 0.83 | 0.79 | 53.30 | 52.87 | 53.37 |
| eu_ppa50 | 8.97 | 9.03 | 9.02 | 34.95 | 36.66 | 36.38 | 0.77 | 0.80 | 0.78 | 52.31 | 51.88 | 52.37 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | -0.20 | -0.13 | -0.13 | 6.41 | 16.10 | 20.38 | 0.10 | 0.14 | 0.11 | 9.84 | 9.36 | 9.91 |
| eu_ppa_40_50 | -0.51 | -0.51 | -0.51 | -6.64 | -12.95 | -16.61 | -0.02 | -0.04 | -0.02 | -2.14 | -2.13 | -2.15 |
| | | | | | | | | | | | | |
| % 0-10 | -1.9 | -1.2 | -1.2 | 11.5 | 29.0 | 36.7 | 11.5 | 15.4 | 11.7 | 19.4 | 18.5 | 19.6 |
| %40-50 | -5.3 | -5.3 | -5.3 | -16.0 | -26.1 | -31.3 | -2.7 | -5.3 | -2.6 | -3.9 | -3.9 | -3.9 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 | NIA | ALT1 | ALT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU4_4e | EU4_4e | EU4_4e | EU4_4f | EU4_4f | EU4_4f | EU4_4g | EU4_4g | EU4_4g | EU4_4h | EU4_4h | EU4_4h |
| eu_ppa00 | 32.47 | 32.47 | 32.47 | 4.33 | 4.33 | 4.33 | 76.06 | 76.06 | 76.06 | 5.53 | 5.53 | 5.53 |
| eu_ppa05 | 53.57 | 81.28 | 69.27 | 11.24 | 35.69 | 28.80 | 81.10 | 82.23 | 81.23 | 15.32 | 17.17 | 15.32 |
| eu_ppa10 | 52.58 | 80.01 | 68.04 | 10.84 | 35.07 | 28.15 | 79.76 | 80.88 | 79.88 | 15.03 | 16.99 | 15.03 |
| eu_ppa15 | 51.66 | 78.66 | 66.90 | 10.43 | 34.45 | 27.50 | 78.26 | 79.36 | 78.38 | 14.67 | 16.97 | 14.67 |
| eu_ppa20 | 50.58 | 77.12 | 65.65 | 10.13 | 33.92 | 26.96 | 76.78 | 77.83 | 76.90 | 14.33 | 16.77 | 14.32 |
| eu_ppa25 | 49.76 | 75.88 | 64.61 | 9.92 | 33.47 | 26.57 | 75.44 | 76.48 | 75.56 | 13.98 | 16.50 | 13.98 |
| eu_ppa30 | 48.89 | 74.60 | 63.51 | 9.53 | 32.81 | 25.95 | 74.19 | 75.21 | 74.31 | 13.71 | 16.38 | 13.71 |
| eu_ppa35 | 47.77 | 73.01 | 62.18 | 9.27 | 32.30 | 25.51 | 72.83 | 73.82 | 72.94 | 13.32 | 16.05 | 13.31 |
| eu_ppa40 | 46.50 | 71.24 | 60.76 | 8.94 | 31.72 | 24.96 | 71.43 | 72.41 | 71.54 | 13.05 | 15.86 | 13.05 |
| eu_ppa45 | 45.61 | 69.93 | 59.66 | 8.52 | 30.99 | 24.31 | 70.12 | 71.08 | 70.23 | 12.73 | 15.69 | 12.73 |
| eu_ppa50 | 44.88 | 68.83 | 58.71 | 8.33 | 30.57 | 23.84 | 68.65 | 69.57 | 68.75 | 12.41 | 15.73 | 12.41 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | 20.10 | 47.54 | 35.57 | 6.51 | 30.75 | 23.82 | 3.70 | 4.82 | 3.83 | 9.50 | 11.47 | 9.50 |
| eu_ppa_40_50 | -1.62 | -2.41 | -2.05 | -0.61 | -1.14 | -1.12 | -2.79 | -2.84 | -2.79 | -0.64 | -0.13 | -0.64 |
| | | | | | | | | | | | | |
| % 0-10 | 61.9 | 146.4 | 109.5 | 150.5 | 710.7 | 550.6 | 4.9 | 6.3 | 5.0 | 172.0 | 207.5 | 171.9 |
| %40-50 | -3.5 | -3.4 | -3.4 | -6.8 | -3.6 | -4.5 | -3.9 | -3.9 | -3.9 | -4.9 | -0.8 | -4.9 |

**ECOSYSTEM UNIT PRODUCTIVITY SUMMARY**

| | **NIA** | **ALT1** | **ALT2** | **NIA** | **ALT1** | **ALT2** | **NIA** | **ALT1** | **ALT2** | **NIA** | **ALT1** | **ALT2** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO_UNIT | EU4_4i | EU4_4i | EU4_4i | EU4_4j | EU4_4j | EU4_4j | EU4_4k | EU4_4k | EU4_4k | EU4_4l | EU4_4l | EU4_4l |
| eu_ppa00 | 42.75 | 42.75 | 42.75 | 21.33 | 21.33 | 21.33 | 69.54 | 69.54 | 69.54 | 0.00 | 0.00 | 0.00 |
| eu_ppa05 | 50.79 | 65.78 | 50.91 | 33.18 | 38.58 | 33.22 | 68.50 | 87.21 | 68.64 | 0.00 | 0.00 | 0.00 |
| eu_ppa10 | 49.73 | 67.37 | 49.85 | 32.47 | 37.84 | 32.52 | 67.34 | 87.38 | 67.47 | 0.00 | 0.00 | 0.00 |
| eu_ppa15 | 48.95 | 69.24 | 49.07 | 32.05 | 37.45 | 32.10 | 66.00 | 87.28 | 66.13 | 0.00 | 0.00 | 0.00 |
| eu_ppa20 | 48.17 | 71.11 | 48.29 | 31.43 | 36.95 | 31.48 | 64.68 | 87.23 | 64.81 | 0.00 | 0.00 | 0.00 |
| eu_ppa25 | 47.40 | 72.96 | 47.53 | 30.84 | 36.42 | 30.89 | 63.43 | 87.22 | 63.55 | 0.00 | 0.00 | 0.00 |
| eu_ppa30 | 46.72 | 74.26 | 46.84 | 30.29 | 35.95 | 30.34 | 61.95 | 86.65 | 62.08 | 0.00 | 0.00 | 0.00 |
| eu_ppa35 | 45.92 | 75.42 | 46.05 | 29.72 | 35.51 | 29.77 | 60.89 | 86.58 | 61.00 | 0.00 | 0.00 | 0.00 |
| eu_ppa40 | 45.06 | 76.96 | 45.19 | 29.34 | 35.15 | 29.39 | 59.89 | 86.51 | 60.01 | 0.00 | 0.00 | 0.00 |
| eu_ppa45 | 43.97 | 78.18 | 44.09 | 28.67 | 34.46 | 28.72 | 58.34 | 85.77 | 58.45 | 0.00 | 0.00 | 0.00 |
| eu_ppa50 | 43.13 | 79.31 | 43.26 | 28.06 | 33.88 | 28.11 | 57.06 | 85.33 | 57.17 | 0.00 | 0.00 | 0.00 |
| | | | | | | | | | | | | |
| eu_ppa_0_10 | 6.98 | 24.62 | 7.10 | 11.13 | 16.51 | 11.18 | -2.20 | 17.84 | -2.07 | 0.00 | 0.00 | 0.00 |
| eu_ppa_40_50 | -1.93 | 2.34 | -1.93 | -1.28 | -1.26 | -1.28 | -2.83 | -1.18 | -2.84 | 0.00 | 0.00 | 0.00 |
| | | | | | | | | | | | | |
| % 0-10 | 16.3 | 57.6 | 16.6 | 52.2 | 77.4 | 52.4 | -3.2 | 25.7 | -3.0 | 0 | 0 | 0 |
| %40-50 | -4.3 | 3.0 | -4.3 | -4.4 | -3.6 | -4.4 | -4.7 | -1.4 | -4.7 | 0 | 0 | 0 |

## 4.5 Habitat Suitability: Coastwide and Planning Unit Summary

In this section, model output for habitat suitability is presented. Habitat suitability is determined by first rating individual factors (e.g., water temperature) from zero to one (quality value) in spatial cells, then the ratings of multiple factors in each spatial cell are combined to obtain a single value for each cell. Finally, the values are summed over spatial cells to obtain an overall quality-weighted habitat use index value for a particular spatial area. Information below also contains the change in rate at different time steps (years 0 to 10 and years 0 to 50), and the percent change this represents, is provided at the coastwide and planning unit scales. No increased action output is compared to that of Alternative 1 and Alternative 2 at these time steps as well.

The following is a key to the first column of the habitat suitability table:

PU = planning unit

Croaker = Atlantic croaker

Trout = spotted sea trout

Menhaden = Gulf menhaden

Br Sh = brown shrimp

Wh Sh = white shrimp

Oyster = oyster

Mink = mink

Otter = otter

Muskrat = muskrat

Allig = American alligator

Duck = dabbling ducks

**Habitat Suitability Summary**

| **Coastwide** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs No Action** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | **vs Yr 0** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | No Action | % |
| Croaker | -11286 | -11 | -10857 | -11 | Croaker | -5911 | -6 | -5482 | -6 | 5375 | 6 |
| Trout | -22676 | -7 | -19759 | -6 | Trout | -21018 | -7 | -18101 | -6 | 1658 | 1 |
| Menhaden | -19025 | -18 | -16459 | -16 | Menhaden | -13830 | -14 | -11264 | -11 | 5195 | 5 |
| Br Sh | -15909 | -12 | -14431 | -10 | Br Sh | -11059 | -8 | -9580 | -7 | 4851 | 4 |
| Wh Sh | -13239 | -10 | -11735 | -8 | Wh Sh | -5959 | -5 | -4455 | -3 | 7280 | 6 |
| Oyster | -15265 | -6 | -14243 | -6 | Oyster | -14472 | -6 | -13450 | -6 | 793 | 0 |
| Mink | -585 | -3 | -1006 | -5 | Mink | 2720 | 15 | 2299 | 13 | 3305 | 18 |
| Otter | -714 | -3 | -1123 | -5 | Otter | 1972 | 10 | 1563 | 8 | 2686 | 14 |
| Muskrat | 1364 | 4 | 2844 | 7 | Muskrat | -122 | 0 | 1359 | 3 | -1486 | -4 |
| Allig | 1629 | 10 | 1522 | 9 | Allig | 3050 | 20 | 2943 | 19 | 1421 | 9 |
| Duck | 3212 | 18 | 2431 | 13 | Duck | 3659 | 21 | 2878 | 16 | 447 | 3 |
| | Number '- | 6 | | 6 | | Number '- | 5 | | 5 | | 0 |
| | Number '+ | 2 | | 3 | | Number '+ | 4 | | 4 | | 5 |

| **vs No Action** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | **vs Yr 0** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | No Action | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Croaker | -14613 | -14 | -14191 | -13 | Croaker | -3252 | -3 | -2829 | -3 | 11362 | 12 |
| Trout | -22931 | -7 | -19775 | -6 | Trout | -20468 | -7 | -17311 | -6 | 2463 | 1 |
| Menhaden | -20511 | -19 | -17593 | -16 | Menhaden | -12507 | -13 | -9589 | -10 | 8003 | 8 |
| Br Sh | -17696 | -13 | -15655 | -11 | Br Sh | -9331 | -7 | -7290 | -5 | 8365 | 6 |
| Wh Sh | -16353 | -11 | -14041 | -10 | Wh Sh | -3491 | -3 | -1179 | -1 | 12862 | 10 |
| Oyster | -15761 | -7 | -14662 | -6 | Oyster | -13540 | -6 | -12441 | -5 | 2221 | 1 |
| Mink | -909 | -5 | -950 | -5 | Mink | -701 | -4 | -742 | -4 | 208 | 1 |
| Otter | -1031 | -6 | -958 | -5 | Otter | -1651 | -9 | -1579 | -8 | -621 | -3 |
| Muskrat | 2914 | 9 | 5058 | 15 | Muskrat | -4067 | -10 | -1924 | -5 | -6981 | -18 |
| Allig | -1968 | -10 | -492 | -2 | Allig | 2469 | 16 | 3945 | 26 | 4438 | 29 |
| Duck | 182 | 1 | 691 | 3 | Duck | 5239 | 29 | 5749 | 32 | 5058 | 28 |
| | Number '- | 8 | | 6 | | Number '- | 6 | | 3 | | 1 |
| | Number '+ | 1 | | 1 | | Number '+ | 2 | | 2 | | 6 |

| **PU1** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs No Action** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | **vs Yr 0** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | No Action | % |
| Croaker | -3891 | -12 | -3854 | -12 | Croaker | -2606 | -8 | -2569 | -8 | 1285 | 4 |
| Trout | -9656 | -28 | -9467 | -28 | Trout | -9475 | -28 | -9286 | -27 | 181 | 1 |
| Menhaden | -7782 | -20 | -7539 | -19 | Menhaden | -6309 | -17 | -6065 | -16 | 1474 | 4 |
| Br Sh | -5247 | -27 | -4898 | -25 | Br Sh | -3892 | -21 | -3543 | -20 | 1355 | 7 |
| Wh Sh | -4563 | -18 | -4100 | -17 | Wh Sh | -2341 | -10 | -1878 | -8 | 2222 | 10 |
| Oyster | -7644 | -36 | -7711 | -36 | Oyster | -7517 | -36 | -7584 | -36 | 127 | 1 |
| Mink | -256 | -7 | -313 | -8.6 | Mink | 922 | 37 | 866 | 35 | 1178 | 48 |
| Otter | -237 | -7 | -359 | -9.9 | Otter | 512 | 18 | 390 | 14 | 750 | 26 |
| Muskrat | 336 | 5 | 779 | 12.5 | Muskrat | -244 | -4 | 199 | 3 | -580 | -8 |
| Allig | 592 | 23 | 349 | 13.3 | Allig | 346 | 12 | 102 | 4 | -246 | -9 |
| Duck | 1212 | 45 | 1150 | 42.4 | Duck | 1262 | 47 | 1200 | 45 | 50 | 2 |
| | Number '- | 8 | | 8 | | Number '- | 6 | | 6 | | 2 |
| | Number '+ | 2 | | 3 | | Number '+ | 4 | | 3 | | 4 |

| **vs No Action** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | **vs Yr 0** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | No Action | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Croaker | -4908 | -14 | -4645 | -14 | Croaker | -2411 | -7.7 | -2148 | -6.8 | 2497 | 8 |
| Trout | -9746 | -28 | -9456 | -28 | Trout | -9532 | -28 | -9242 | -27 | 214 | 1 |
| Menhaden | -8116 | -20 | -7650 | -19 | Menhaden | -6249 | -16 | -5783 | -15 | 1867 | 5 |
| Br Sh | -5528 | -28 | -4910 | -25 | Br Sh | -3722 | -20 | -3103 | -17 | 1807 | 10 |
| Wh Sh | -5023 | -20 | -4149 | -16 | Wh Sh | -2014 | -8.9 | -1141 | -5 | 3009 | 13 |
| Oyster | -7737 | -36 | -7759 | -36 | Oyster | -7340 | -35 | -7362 | -35 | 397 | 2 |
| Mink | 519 | 27 | 596 | 31.4 | Mink | -49 | -2 | 28 | 1 | -568 | -23 |
| Otter | 392 | 20 | 468 | 23.6 | Otter | -499 | -17 | -423 | -15 | -891 | -31 |
| Muskrat | 820 | 17 | 1055 | 21.8 | Muskrat | -1162 | -17 | -926 | -14 | -1981 | -29 |
| Allig | 225 | 9 | 678 | 26.4 | Allig | -80 | -2.8 | 373 | 13 | -305 | -11 |
| Duck | 393 | 10 | 981 | 25.4 | Duck | 1589 | 59.7 | 2177 | 81.8 | 1196 | 45 |
| | Number '- | 6 | | 6 | | Number '- | 8 | | 7 | | 4 |
| | Number '+ | 5 | | 5 | | Number '+ | 1 | | 2 | | 4 |

| **PU2** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs No Action** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | **vs Yr 0** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | No Action | % |
| Croaker | -4213 | -26 | -4258 | -26 | Croaker | -3253 | -21 | -3297 | -22 | 960 | 6 |
| Trout | -9681 | -58 | -9693 | -58 | Trout | -9326 | -57 | -9338 | -57 | 355 | 2 |
| Menhaden | -6164 | -36 | -6119 | -36 | Menhaden | -5318 | -33 | -5272 | -32 | 846 | 5 |
| Br Sh | -6608 | -58 | -6594 | -58 | Br Sh | -5907 | -55 | -5892 | -55 | 701 | 7 |
| Wh Sh | -4393 | -33 | -4374 | -33 | Wh Sh | -3337 | -27 | -3318 | -27 | 1056 | 9 |
| Oyster | -5193 | -55 | -5199 | -55 | Oyster | -5041 | -54 | -5046 | -54 | 152 | 2 |
| Mink | -220 | -8 | -310 | -11 | Mink | 538 | 27 | 447 | 23 | 757 | 39 |
| Otter | -282 | -10 | -407 | -14 | Otter | 495 | 24 | 370 | 18 | 777 | 37 |
| Muskrat | 224 | 5 | 427 | 9.24 | Muskrat | -387 | -7 | -184 | -4 | -611 | -12 |
| Allig | 468 | 21 | 975 | 43.8 | Allig | 1100 | 69 | 1607 | 101 | 631 | 40 |
| Duck | 1256 | 80 | 1401 | 88.9 | Duck | 1020 | 56 | 1165 | 64 | -236 | -13 |
| | Number '- | 8 | | 8 | | Number '- | 7 | | 6 | | 2 |
| | Number '+ | 2 | | 3 | | Number '+ | 4 | | 4 | | 6 |

| **vs No Action** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | **vs Yr 0** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | No Action | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Croaker | -5082 | -30 | -5162 | -30 | Croaker | -3036 | -20 | -3116 | -21 | 2046 | 13 |
| Trout | -9665 | -57 | -9669 | -58 | Trout | -9301 | -57 | -9304 | -57 | 364 | 2 |
| Menhaden | -6490 | -37 | -6434 | -37 | Menhaden | -5347 | -33 | -5291 | -32 | 1143 | 7 |
| Br Sh | -6841 | -59 | -6758 | -58 | Br Sh | -5998 | -56 | -5916 | -55 | 843 | 7.9 |
| Wh Sh | -5105 | -37 | -4977 | -36 | Wh Sh | -3566 | -29 | -3439 | -28 | 1539 | 13 |
| Oyster | -5418 | -56 | -5430 | -56 | Oyster | -4957 | -53 | -4969 | -54 | 461 | 5 |
| Mink | -1053 | -41 | -1049 | -40 | Mink | -420 | -21 | -415 | -21 | 633 | 32 |
| Otter | -1010 | -39 | -1006 | -39 | Otter | -507 | -24 | -503 | -24 | 503 | 24 |
| Muskrat | 707 | 20 | 974 | 28.2 | Muskrat | -1069 | -20 | -803 | -15 | -1777 | -34 |
| Allig | -819 | -29 | -385 | -14 | Allig | 381 | 23.9 | 815 | 51.1 | 1200 | 75 |
| Duck | 406 | 17 | 697 | 29.8 | Duck | 932 | 51.5 | 1224 | 67.6 | 527 | 29 |
| | Number '- | 9 | | 9 | | Number '- | 9 | | 9 | | 1 |
| | Number '+ | 2 | | 2 | | Number '+ | 2 | | 2 | | 8 |

| **PU3a** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs No Action** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | **vs Yr 0** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | No Action | % |
| Croaker | -553 | -4 | -780 | -5.9 | Croaker | 163 | 1 | -64 | -1 | 716 | 5.7 |
| Trout | -212 | -2 | -218 | -1.7 | Trout | -153 | -1 | -159 | -1 | 59 | 0.5 |
| Menhaden | -261 | -2 | -291 | -2.3 | Menhaden | 81 | 1 | 51 | 0 | 342 | 2.8 |
| Br Sh | -171 | -2 | -183 | -2 | Br Sh | 165 | 2 | 152 | 2 | 336 | 3.8 |
| Wh Sh | -226 | -2 | -250 | -2.4 | Wh Sh | 328 | 3 | 303 | 3 | 553 | 5.7 |
| Oyster | -444 | -6 | -531 | -7.1 | Oyster | -360 | -5 | -448 | -6 | 83 | 1.1 |
| Mink | -185 | -9 | -230 | -11 | Mink | 352 | 23 | 307 | 20 | 537 | 35 |
| Otter | -163 | -8 | -197 | -10 | Otter | 189 | 12 | 155 | 10 | 352 | 22 |
| Muskrat | 700 | 21 | 1154 | 35.4 | Muskrat | 221 | 6 | 676 | 18 | -478 | -13 |
| Allig | 408 | 38 | -96 | -9 | Allig | 432 | 42 | -71 | -7 | 25 | 2.4 |
| Duck | 246 | 19 | -55 | -4.1 | Duck | 220 | 16 | -81 | -6 | -26 | -1.9 |
| | Number '- | 3 | | 5 | | Number '- | 0 | | 3 | | 1 |
| | Number '+ | 3 | | 1 | | Number '+ | 5 | | 3 | | 4 |

| **vs No Action** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | **vs Yr 0** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | No Action | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Croaker | -980 | -7 | -1418 | -10 | Croaker | 656 | 5.24 | 219 | 2 | 1637 | 13 |
| Trout | -246 | -2 | -250 | -1.9 | Trout | -222 | -1.7 | -226 | -2 | 24 | 0.2 |
| Menhaden | -444 | -3 | -481 | -3.7 | Menhaden | 3 | 0.02 | -34 | 0 | 447 | 3.6 |
| Br Sh | -241 | -3 | -142 | -1.6 | Br Sh | 7 | 0.08 | 106 | 1 | 248 | 2.8 |
| Wh Sh | -405 | -4 | -319 | -3.1 | Wh Sh | 236 | 2.42 | 322 | 3 | 641 | 6.6 |
| Oyster | -450 | -6 | -618 | -8.1 | Oyster | -169 | -2.3 | -337 | -5 | 281 | 3.8 |
| Mink | -177 | -9 | -208 | -10 | Mink | 294 | 19.4 | 263 | 17 | 471 | 31 |
| Otter | -126 | -7 | -129 | -7.1 | Otter | 102 | 6.43 | 99 | 6 | 228 | 14 |
| Muskrat | 789 | 41 | 1793 | 93.6 | Muskrat | -1032 | -28 | -27 | -1 | -1821 | -49 |
| Allig | 8 | 1 | 33 | 3.43 | Allig | -62 | -6 | -37 | -4 | -70 | -6.7 |
| Duck | -177 | -11 | -163 | -10 | Duck | 102 | 7.57 | 116 | 9 | 279 | 21 |
| | Number '- | 5 | | 5 | | Number '- | 2 | | 0 | | 2 |
| | Number '+ | 1 | | 1 | | Number '+ | 3 | | 3 | | 5 |

| **PU3b** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs No Action** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | **vs Yr 0** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | No Action | % |
| Croaker | -809 | -5 | -910 | -6.1 | Croaker | 131 | 1 | 29 | 0 | 940 | 7 |
| Trout | -308 | -4 | -350 | -5 | Trout | -27 | 0 | -69 | -1 | 281 | 4 |
| Menhaden | -1486 | -9 | -1564 | -9.8 | Menhaden | -410 | -3 | -488 | -3 | 1076 | 7 |
| Br Sh | -1559 | -16 | -1662 | -17 | Br Sh | -423 | -5 | -525 | -6 | 1136 | 13 |
| Wh Sh | -1924 | -14 | -2065 | -15 | Wh Sh | -356 | -3 | -497 | -4 | 1569 | 13 |
| Oyster | -654 | -21 | -646 | -21 | Oyster | -545 | -18 | -537 | -18 | 109 | 4 |
| Mink | 89 | 3 | 78 | 3 | Mink | 419 | 15 | 408 | 15 | 330 | 12 |
| Otter | 104 | 3 | 114 | 3 | Otter | 418 | 13 | 428 | 13 | 314 | 10 |
| Muskrat | -219 | -3 | -129 | -2 | Muskrat | -264 | -4 | -173 | -3 | -45 | -1 |
| Allig | 336 | 9 | 324 | 8.85 | Allig | 1015 | 34 | 1003 | 34 | 679 | 23 |
| Duck | -69 | -2 | -72 | -2 | Duck | 451 | 15 | 448 | 15 | 520 | 17 |
| | Number '- | 4 | | 5 | | Number '- | 1 | | 2 | | 0 |
| | Number '+ | 1 | | 1 | | Number '+ | 4 | | 4 | | 8 |

| **vs No Action** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | **vs Yr 0** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | No Action | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Croaker | -1044 | -7 | -1337 | -8.4 | Croaker | 861 | 6.17 | 568 | 4 | 1905 | 14 |
| Trout | -311 | -4 | -372 | -5.1 | Trout | 199 | 2.94 | 137 | 2 | 510 | 7.5 |
| Menhaden | -1706 | -10 | -1830 | -11 | Menhaden | 120 | 0.81 | -3 | 0 | 1827 | 12 |
| Br Sh | -2271 | -20 | -2377 | -21 | Br Sh | 306 | 3.5 | 200 | 2 | 2577 | 29 |
| Wh Sh | -3044 | -20 | -3200 | -21 | Wh Sh | 524 | 4.38 | 368 | 3 | 3568 | 30 |
| Oyster | -707 | -21 | -706 | -21 | Oyster | -414 | -14 | -413 | -14 | 293 | 9.6 |
| Mink | 59 | 3 | 15 | 0.67 | Mink | -466 | -17 | -510 | -18 | -525 | -19 |
| Otter | 54 | 2 | 25 | 0.95 | Otter | -538 | -17 | -567 | -18 | -592 | -18 |
| Muskrat | 62 | 1 | 461 | 7.9 | Muskrat | -654 | -10 | -255 | -4 | -716 | -11 |
| Allig | -619 | -13 | -282 | -5.7 | Allig | 1309 | 43.8 | 1646 | 55 | 1928 | 65 |
| Duck | -295 | -7 | -124 | -2.7 | Duck | 1202 | 39.8 | 1373 | 45 | 1497 | 50 |
| | Number '- | 7 | | 6 | | Number '- | 4 | | 3 | | 3 |
| | Number '+ | 0 | | 1 | | Number '+ | 3 | | 2 | | 8 |

| **PU4** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **vs No Action** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | **vs Yr 0** | net Alt 1 Yr 10 | % | net Alt 2 Yr 10 | % | No Action | % |
| Croaker | -1764 | -13 | -1027 | -7.3 | Croaker | -554 | -4 | 183 | 1 | 1210 | 9 |
| Trout | -2819 | -24 | -31 | -0.3 | Trout | -2037 | -18 | 751 | 7 | 782 | 7 |
| Menhaden | -3489 | -22 | -1110 | -7.1 | Menhaden | -2033 | -14 | 347 | 2 | 1457 | 10 |
| Br Sh | -2326 | -22 | -1096 | -10 | Br Sh | -1004 | -11 | 226 | 2 | 1322 | 14 |
| Wh Sh | -2148 | -16 | -961 | -7 | Wh Sh | -268 | -2 | 919 | 8 | 1880 | 16 |
| Oyster | -1358 | -20 | -185 | -2.7 | Oyster | -1037 | -16 | 137 | 2 | 322 | 5 |
| Mink | 153 | 5 | -136 | -4.3 | Mink | 365 | 12 | 76 | 3 | 212 | 7 |
| Otter | 17 | 0 | -186 | -4.8 | Otter | 238 | 7 | 35 | 1 | 221 | 6 |
| Muskrat | 305 | 4 | 592 | 8 | Muskrat | 323 | 4 | 611 | 8 | 19 | 0 |
| Allig | -120 | -3 | 5 | 0 | Allig | 98 | 2 | 223 | 5 | 218 | 5 |
| Duck | 678 | 21 | 75 | 2 | Duck | 520 | 15 | -84 | -2 | -158 | -5 |
| | Number '- | 6 | | 4 | | Number '- | 4 | | 0 | | 0 |
| | Number '+ | 1 | | 1 | | Number '+ | 3 | | 3 | | 7 |

| **vs No Action** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | **vs Yr 0** | net Alt 1 Yr 50 | % | net Alt 2 Yr 50 | % | No Action | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Croaker | -2283 | -15 | -1377 | -8.8 | Croaker | 483 | 4 | 1390 | 10.8 | 2766 | 22 |
| Trout | -2964 | -24 | -28 | -0.2 | Trout | -1613 | -15 | 1323 | 12 | 1351 | 12 |
| Menhaden | -3912 | -23 | -1361 | -8.1 | Menhaden | -1192 | -8.4 | 1359 | 10 | 2720 | 19 |
| Br Sh | -2816 | -23 | -1469 | -12 | Br Sh | 74 | 1 | 1421 | 15.4 | 2891 | 31 |
| Wh Sh | -2792 | -17 | -1411 | -8.8 | Wh Sh | 1314 | 11.1 | 2695 | 22.7 | 4106 | 35 |
| Oyster | -1477 | -20 | -177 | -2.4 | Oyster | -688 | -11 | 611 | 9 | 788 | 12 |
| Mink | 112 | 4 | -81 | -2.7 | Mink | 205 | 7 | 12 | 0 | 93 | 3 |
| Otter | -4 | 0 | -112 | -3.1 | Otter | 22 | 1 | -87 | -2.4 | 26 | 1 |
| Muskrat | 460 | 7 | 693 | 10 | Muskrat | -394 | -5 | -160 | -2 | -853 | -11 |
| Allig | -574 | -10 | -426 | -7.6 | Allig | 942 | 23.1 | 1089 | 26.8 | 1515 | 37 |
| Duck | 283 | 6 | -443 | -9.9 | Duck | 1322 | 38.6 | 597 | 17.4 | 1040 | 30 |
| | Number '- | 7 | | 6 | | Number '- | 3 | | 0 | | 1 |
| | Number '+ | 2 | | 1 | | Number '+ | 4 | | 8 | | 8 |

# 5.0 Landscape Change Simulation Model for the Preliminary Draft Master Plan

The CLEAR landscape change simulation model is used to forecast the effects of different restoration scenarios on the amount of wetland area along the coast for 50 years into the future. This module uses a combination of empirical relationships and landscape analogs to reflect the complex processes controlling land change in the Louisiana coastal zone.

Several changes were made to the landscape change simulation model following the analyses of Alternatives 1 and 2 in October 2006. This chapter reports on changes that were made to the landscape change simulation model for analyzing the Preliminary Draft Master Plan (PDMP), and the results of the landscape change analysis for the PDMP. Ecosystem benefits have not yet been analyzed. For specific model details, see Chapter 2.

## 5.1 Measures Considered as Input Data to the CLEAR Model for the Preliminary Draft Master Plan as of January 2007

CLEAR considered the spatial data provided by the Coastal Protection and Restoration Authority Integrated Planning Team (CPRA IPT), as referenced below by a particular measure number. Because measures are defined only to the detail required for planning, spatial data provided may not encompass all features which will make up that measure once engineering and design is completed.

The following list contains the full list of measures included as input data into the CLEAR model. Not all measures could be incorporated into the CLEAR model, usually because they are studies or because they were too conceptual to be adequately described for modeling purposes. The color code, below, was developed to catalog which measures were actually included in the model.

Black = Considered as spatial input data.

Red = Not considered as CLEAR did not receive spatial input data or was told to exclude the feature from consideration.

Orange = Not considered as the feature was too small or impossible at this stage to incorporate into a landscape scale, system response model.

Magenta = Feature effect is typically captured by the hydrodynamic module; however, given the difficulties associated at this time with the model, the feature is not represented in model output.

Blue = Conceptual (not a specific measure).

### 5.1.1 Planning Unit 1

1-1. Levee from Pearl River to Braithwaite (0.2% annual probability) and from Braithwaite to Belair (1.0% annual probability) Maintain existing levees from Phoenix to Bohemia (Levee effect on salinity and hydrodynamic flow was not measured)

1-1a. Hurricane Protection from Caernarvon to Pearl River (0.2% annual Probability) (Levee effect on salinity and hydrodynamic flow was not measured)
1-1b. Ring Levees from Belair to Caernarvon (1.0% annual probability). (Levee effect on salinity and hydrodynamic flow was not measured)
1-1c. Maintain Existing Levees from Pointe a la Hache to Phoenix
1-1d. Raise St. Bernard 40 Arpent Levee System and Connect through Verret. (Feature effect on salinity and hydrodynamic flow was not measured)
1-2. West Shore of Lake Pontchartrain Levee (Levee effect on salinity and hydrodynamic flow was not measured)
1-3. Re-Evaluate Raising Levee Protection at Southshore of Lake Pontchartrain to function with measure PD 1-1 to provide protection equivalent to 0.2% annual probability
1-4. Evaluate the Impact of a 0.2% Annual Probability Storm on the Communities Surrounding Lake Pontchartrain and Lake Maurepas with Measure PD 1-1 in Place and Provide Structural Protection Where Needed or Elevate/Relocate Assets at Risk
1-5. Raise/Maintain Evacuation Routes Located Outside Hurricane Protection Plans (Feature effect on salinity and hydrodynamic flow was not measured)
1-6. Small Diversion at Hope Canal
1-7. Small Diversion at Convent/Blind River
1-8. Bankline Stabilization along Maurepas Landbridge (Lake Maurepas and Lake Pontchartrain)
1-9. St. Tammany Marsh Restoration and Shoreline Protection with Dredge Material and Vegetation Planting
1-10. Shoreline Protection on South Shore of Lake Pontchartrain at Jefferson Parish
1-11. Maintain Critical Marsh Shorelines and Ridges of the East Orleans Landbridge
1-12. Close Mississippi River Gulf Outlet (MRGO) at Bayou La Loutre ridge (Feature effect on salinity and hydrodynamic flow was not measured)
1-13. Mississippi River Gulf Outlet (MRGO) Shoreline Stabilization
1-14. Sediment Delivery by Pipeline at Central Wetlands and Establishment of Cypress Swamp through Hydraulic Management
1-15. Sediment Delivery by Pipeline at Golden Triangle
1-16. Construct Large Violet Diversion to Sustain Biloxi Marshes
1-17. Maintain MRGO-Lake Borgne Landbridge Including Landbridge Shoreline Protection
1-18. Modify Authorization of Caernarvon Diversion (8,500 cfs)
1-19. Maintain and Restore the Breton Sound Marshes
1-20. Medium Diversion at White Ditch
1-21. Maintain and Restore Biloxi Landbridge and Barrier Reefs
1-22. Restore Bayou LaLoutre Ridge
1-23. Medium Diversion at Bayou Lamoque
1-24. Complete Construction of the Inner Harbor Navigation Lock

### 5.1.2 Planning Unit 2

2-1. Levee Along GIWW from Golden Meadow to Oakville, including Lafitte and Barataria (Protection from 1% annual probability surge in Lafourche and Central Basin; Protection from 0.2% annual probability surge in West Bank) (Levee effect on salinity and hydrodynamic flow was not measured)
2-2. Levee from Oakville to Myrtle Grove (1% annual probability) (Levee effect on salinity and hydrodynamic flow was not measured)
2-2a. Maintain Existing Levees from Myrtle Grove to Venice
2-3. Grand Isle and Vicinity Project
2-4. Raise/Maintain Evacuation Routes Outside the Hurricane Protection Plans
2-5. Upper Barataria Hydrologic Improvements at Highway 90

2-6. Develop a Watershed Management Plan for Upper Barataria Basin to Improve Storm Water Drainage/Hydrology North of Highway 90 and Redirect Freshwater, Sediment, Storm Water, and Treated Sewage Water to Sustain Upper Basin Swamps and Middle Basin Freshwater Marsh
2-7. Move Freshwater to Terrebonne Basin from Barataria Basin via Gulf Intracoastal Waterway (GIWW)
2-8. Small Diversion at Bayou Lafourche
2-9. Small Diversions at Strategic Locations in Upper Basin *(these diversions were excluded from model runs due to errors stemming from the abundance of water flowing into the basin behind a levee)*
2-10. Modify Authorization of Davis Pond Diversion
2-11. Medium Diversion with Dedicated Dredging at Myrtle Grove
2-12. Medium Diversion at West Point a la Hache
2-13. Pipeline Conveyance of Sediment to Create Strategic Marsh Platforms in Fringing Marsh and Middle Basin Marsh Areas
2-14. Ridge Restoration in the Barataria Basin
2-15. Barataria Basin Barrier Shoreline Restoration Caminada Headland to Sandy Point
2-16. Bankline Protection for Gulf Intracoastal Waterway (GIWW)

### 5.1.3 Planning Unit 3a

3a-1. Morganza to the Gulf Hurricane Protection and Lower Atchafalaya River (LAR) Barrier Plan Alignment (1% annual probability) (Levee effect on salinity and hydrodynamic flow was not measured)
3a-2. Internal Hurricane Levee Alignment (0.2% annual probability) (Levee effect on salinity and hydrodynamic flow was not measured)
3a-3. Raise/Maintain Evacuation Routes Located outside the Hurricane Protection Plans (Feature effect on salinity and hydrodynamic flow was not measured)
3a-4. Bankline Protection for Houma Navigation Canal (HNC)
3a-5. Multipurpose Operation of the Houma Navigation Canal Lock
3a-6. Bankline protection for Gulf Intracoastal Waterway (GIWW)
3a-7. Pipeline Conveyance of Sediment to Create Strategic Marsh Platforms
3a-8. Implement Chacahoula Basin Plan and Other Projects to Alleviate Inundation Issues in the Verret Sub-basin
3a-9. Freshwater Introduction via Blue Hammock Bayou
3a-10. Protect and Maintain Ridges
3a-11. Maintain Landbridge between Caillou Lake and Gulf of Mexico
3a-12. Terrebonne Basin Barrier Shoreline Protection
3a-13. Develop a Watershed Management Plan for Upper Terrebonne Basin to Improve Storm Water Drainage/Hydrology and Redirect Freshwater, Sediment, Storm Water, and Treated Sewage Water to Sustain Upper Basin Swamps and Middle Basin Freshwater Marsh
2-7. Move Freshwater to Terrebonne Basin from Barataria Basin via the Gulf Intracoastal Waterway (GIWW)
3b-3. Convey Atchafalaya River Water to Terrebonne Marshes

### 5.1.4 Studies and Common Measures for Planning Units 1, 2, and 3a

D-1. Louisiana/Mississippi Hydrodynamic Study
D-2. Mississippi River Hydrodynamic and Delta Management Study
D-3. Third Delta Study
D-4. Upper Atchafalaya Basin Study
D-5. Maximize Beneficial Use of Dredged Material Where Feasible

D-6. Strategize and Implement Plan to Elevate and/or Relocate Assets Located Outside the Hurricane Protection Plans
D-7. Backfill and/or Plug Non-essential Oil and Gas Canals

### 5.1.5 Planning Unit 3b

3b-3. Increase Atchafalaya River Water Influence in Terrebonne Marshes via the Gulf Intracoastal Waterway (GIWW)
3b-4. Freshwater Bayou Bank Stabilization - Belle Isle Bayou to Freshwater Bayou Canal Lock
3b-5. Increase Sediment Transport Down Wax Lake Outlet
3b-6. Stabilize Banks of Southwest Pass off Marsh Island
3b-7. Stabilize Gulf Shorelines - Lighthouse Point to South Point/Marsh Island
3b-8. Stabilize Banks of Gulf Intracoastal Waterway (GIIWW)
3b-9. Stabilize Gulf Shorelines from Freshwater Bayou to Southwest Pass
3b-10. Convey Atchafalaya River Water Westward to St. Mary, Iberia and Vermilion Marshes
3b-11. Create Marsh at Weeks Bay
3b-12. Restore Marsh at Marsh Island via Dedicated Dredging
3b-13. Pipeline Conveyance of Sediment to Create Strategic Marsh Platform, including Beneficial Use of Dredged Material from the Atchafalaya River Navigation Channel
3b-14. Stabilize Shoreline of Vermilion Bay and East and West Cote Blanche Bays
3b-15. Freshwater Management for Penchant Basin
3b-16 Raise/Maintain Evacuation Routes Located outside the Hurricane Protection Plans (Feature effect on salinity and hydrodynamic flow was not measured)
3b-17. Fortify Spoil Banks on GIWW in St. Mary and Vermilion Parish, Freshwater Bayou Canal
3b-18. Maintain Existing Levees from Atchafalaya River to Franklin

### 5.1.6 Planning Unit 4

4-1. Hurricane Surge Protection for Lake Charles Metropolitan Area and Vinton Using Ring Levee (0.2% annual probability) (Levee effect on salinity and hydrodynamic flow was not measured)
3b-1. Levee Protection from Franklin to West of Abbeville (0.2% annual probability) (Levee effect on salinity and hydrodynamic flow was not measured)
4-3. Hurricane Surge Protection from Vermilion River to GIWW/Calcasieu River Lock (1% annual probability) (Levee effect on salinity and hydrodynamic flow was not measured)
4-4. Raise and Maintain Highways 82 and 27 for Hurricane Surge Protection, Hurricane Evacuation and Marsh Protection
4-5. Provide Water Control Structures at Strategic Locations along Highways 82 and 27
4-6. Stabilize Banks of Gulf Intracoastal Waterway (GIWW)
4-7. Stabilize Grand Lake Shoreline
4-8. Stabilize White Lake Shoreline
4-9. Bank Stabilization of Freshwater Bayou
4-10. Salinity Control Structure in Calcasieu Ship Channel near Ferry
4-11. Stabilize Gulf Shoreline and Beach from Sabine River to Calcasieu River
4-12. Stabilize Gulf Shoreline and Beach East Of Calcasieu River to Freshwater Bayou Using Dredged Sediments and/or Breakwaters
4-13. Build New Chamber for Navigation at Calcasieu Lock on GIWW and Use Old Lock to Evacuate Excess Water from Mermentau River

4-14. Dedicated Dredging from the Gulf of Mexico for Marsh Creation and Enhancement
4-15. Beneficial Uses of Dredged Material from Calcasieu Ship Channel
4-16. Salinity Control Structure at Sabine Pass near Highway 82 Causeway

3b-10. Convey Atchafalaya River Water Westward to St. Mary, Iberia, and Vermilion Marshes
3b-17. Fortify Spoil Banks on GIWW in St. Mary and Vermilion Parish, Freshwater Bayou Canal

### 5.1.7 Studies and Common Measures for Planning Units 3b and 4

C-1. Develop a Plan to Elevate and/or Relocate Assets Located Outside of the Hurricane Protection Plan
C-4. Maintain Mermentau Basin as Fresh Water Basin: Complete/Accelerate the Chenier Plain Freshwater and Sediment Management and Allocation Reassessment Study which was Included in the LCA Near-Term Plan
C-5. Maintain Mermentau Basin as Freshwater Basin: Manage Watershed to Reduce Rapid Inflows into Mermentau Sub-Basin
C-6. Maximize Freshwater Inflow from Sabine River

## 5.2 Diversion Hydrographs Used to Generate Sediment Loads

In order to generate sediment loads for each diversion, daily hydrographs were created for each diversion based on actual Mississippi River flow. Flow is based on data from 1980 to 2005 which are repeated to create 50 years of flow. At times of low river flow, diversion flows were decreased accordingly. All hydrographs take into consideration the average head differential between the river and the wetlands. As an example, monthly hydrographs are provided for 2002 (i.e., an 'average flow year'). Diversion ID's marked with an * indicate that discharge was set to 0 cfs because any level of flow created instability in the model. Instability of this nature occurred in Diversions 6 and 7, resulting from too much sediment being diverted into an area impounded by a levee. Discharge from Diversion 13 was removed from its original location (i.e., northern most point of Bayou Lafourche) and added to the discharge of Diversion 16 (i.e., mouth of Bayou Lafourche); therefore, Diversion 16 actually had the combined discharge of Diversion 13 and Diversion 16.

Monthly hydrograph for PDMP diversions in an 'average discharge year,' 2002.

| Monthly Hydrograph for PDMP Diversions in an Average Discharge Year (2002) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Diversion ID** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** |
| **1** | 5804 | 7319 | 7774 | 8164 | 7580 | 6495 | 5127 | 3753 | 2858 | 2812 | 4160 | 6504 |
| **2** | 63882 | 80513 | 85584 | 89807 | 83375 | 71444 | 56421 | 41315 | 31439 | 30930 | 45764 | 71674 |
| **3** | 286 | 366 | 382 | 409 | 379 | 325 | 256 | 185 | 143 | 141 | 208 | 317 |
| **4** | 286 | 366 | 382 | 409 | 379 | 325 | 256 | 185 | 143 | 141 | 208 | 317 |
| **5** | 286 | 366 | 382 | 409 | 379 | 325 | 256 | 185 | 143 | 141 | 208 | 317 |
| ***6** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ***7** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **8** | 576 | 732 | 770 | 816 | 758 | 649 | 511 | 372 | 286 | 281 | 416 | 641 |
| **10** | 7323 | 9455 | 10379 | 10300 | 9414 | 7997 | 6351 | 4798 | 3765 | 3647 | 4879 | 7962 |
| **11** | 3072 | 3679 | 4093 | 4207 | 3965 | 3394 | 2588 | 1704 | 1011 | 810 | 1474 | 3469 |
| **12** | 3072 | 3679 | 4093 | 4207 | 3965 | 3394 | 2588 | 1704 | 1011 | 810 | 1474 | 3469 |
| ***13** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **14** | 5596 | 7614 | 8958 | 9451 | 8997 | 7705 | 5814 | 3695 | 1968 | 1309 | 2555 | 6734 |
| **15** | 9562 | 11756 | 12798 | 12767 | 11785 | 10113 | 8094 | 6142 | 4855 | 4837 | 6788 | 11547 |
| **16** | 922 | 1104 | 1228 | 1262 | 1189 | 1018 | 776 | 511 | 303 | 243 | 442 | 1041 |
| **17** | 9716 | 10594 | 11440 | 11841 | 11535 | 10488 | 8850 | 6949 | 5405 | 4952 | 6525 | 11306 |
| **18** | 479 | 1452 | 1907 | 1973 | 1765 | 1404 | 985 | 584 | 275 | 98 | 75 | 217 |
| **19** | 1198 | 3631 | 4768 | 4931 | 4413 | 3510 | 2463 | 1460 | 689 | 244 | 187 | 541 |
| **20** | 5419 | 6662 | 7252 | 7235 | 6678 | 5731 | 4587 | 3481 | 2752 | 2741 | 3847 | 6543 |
| **21** | 31875 | 39187 | 42660 | 42558 | 39282 | 33710 | 26979 | 20472 | 16183 | 16123 | 22627 | 38489 |
| **22** | 7354 | 10059 | 12035 | 12924 | 12504 | 10851 | 8249 | 5182 | 2514 | 1198 | 2437 | 7722 |
| **23** | 161730 | 219260 | 150710 | 319170 | 304520 | 252390 | 73467 | 54665 | 60202 | 104050 | 101420 | 99727 |
| **24** | 16355 | 23849 | 29083 | 31307 | 30062 | 25621 | 18736 | 10624 | 3432 | 65 | 1795 | 13687 |

## 5.3 Modification to the landscape change simulation model between October 2006 and January 2007

### 5.3.1 Marsh Creation and Barrier Island Maintenance

Several of the restoration measures proposed under the PDMP included marsh creation and/or barrier island restoration. The created areas and timing of creations were obtained from the CPRA IPT. These areas were included in Year 0, and land change rates of neighboring cells (historic and nourishment) were applied to them over the 50 year simulation period. A maintenance schedule was included for both habitat types: marsh creation areas were restored to a land:water ratio of 65:35 at Year 25, and barrier islands were restored to a land:water ratio of 90:10 upon degradation of the land:water ratio to 50:50.

### 5.3.2 Land Loss Rates

Land loss rates have been modified slightly from earlier CLEAR Model runs. An overestimation of coastwide land loss rates initially occurred when the CLEAR Model cell size was reduced from $1km^2$ to $0.25km^2$. This issue has been resolved for the analysis of the PDMP. The reference provided in Chapter III for coastwide land loss rates is still applicable.

## 5.4 Results

### 5.4.1 Maps

The CLEAR Landscape Change Simulation Model was used to predict land change over 50 years under a scenario of no increased action (NIA) and under the PDMP scenario. As expected, the PDMP resulted in an increase of wetland area and reduction in wetland loss from Year 0 to Year 50 (Figure 1) when compared to a future of NIA (Figure 2). It is worth noting that both Figure 1 and 2 depicts *change* in wetland area, not *total* wetland area. See Figure 3 for total wetland area at Year 0 (current landscape), Figure 4 for total wetland area at Year 50 under an NIA scenario, and Figure 5 for total wetland area at Year 50 under the PDMP.

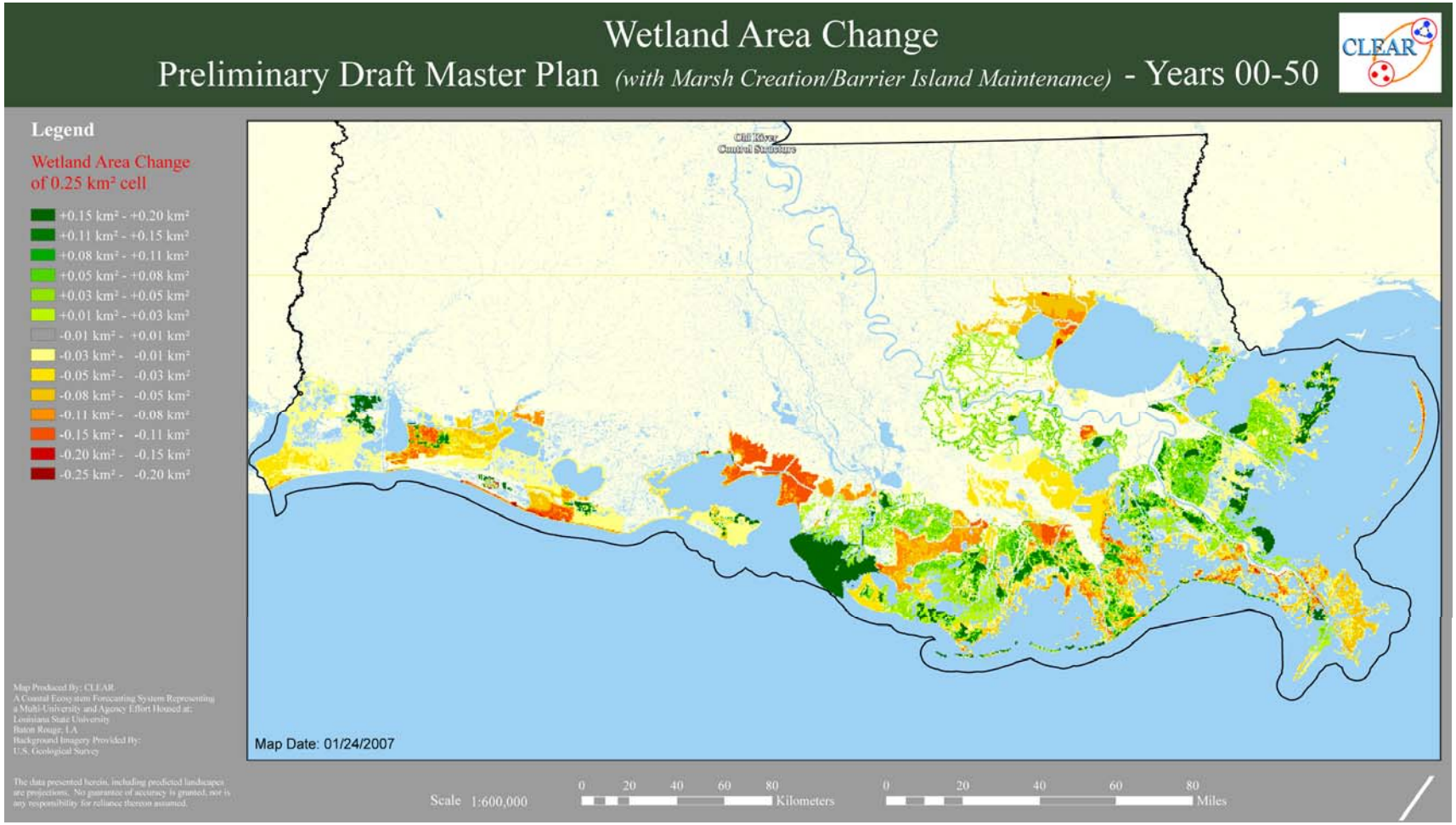


Figure 5.1. Change in wetland area over 50 years as a result of the suite of projects proposed by the Louisiana CPRA IPT PDMP.

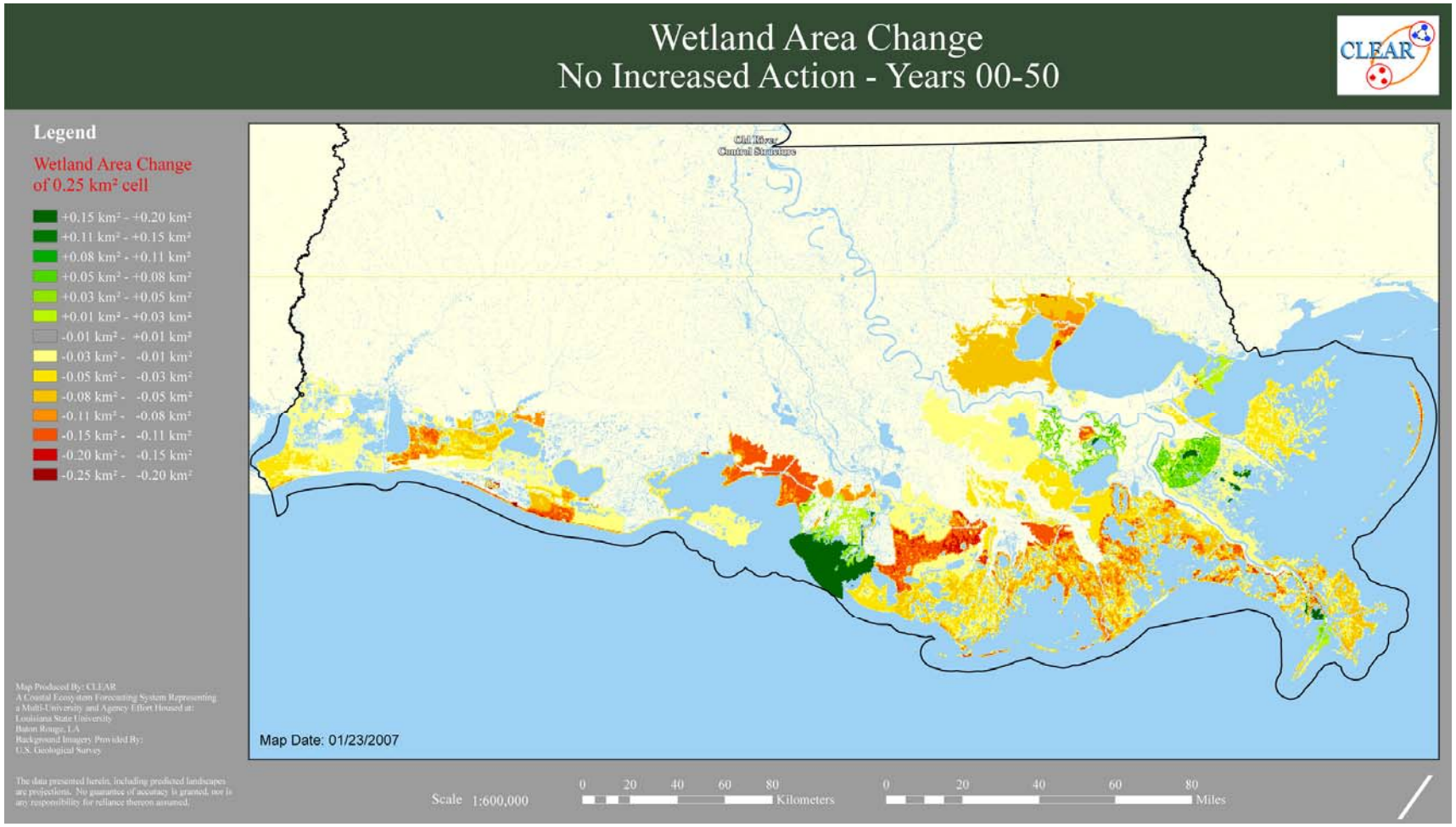


Figure 5.2. Change in wetland area over 50 years under a future of no increased restorative action.

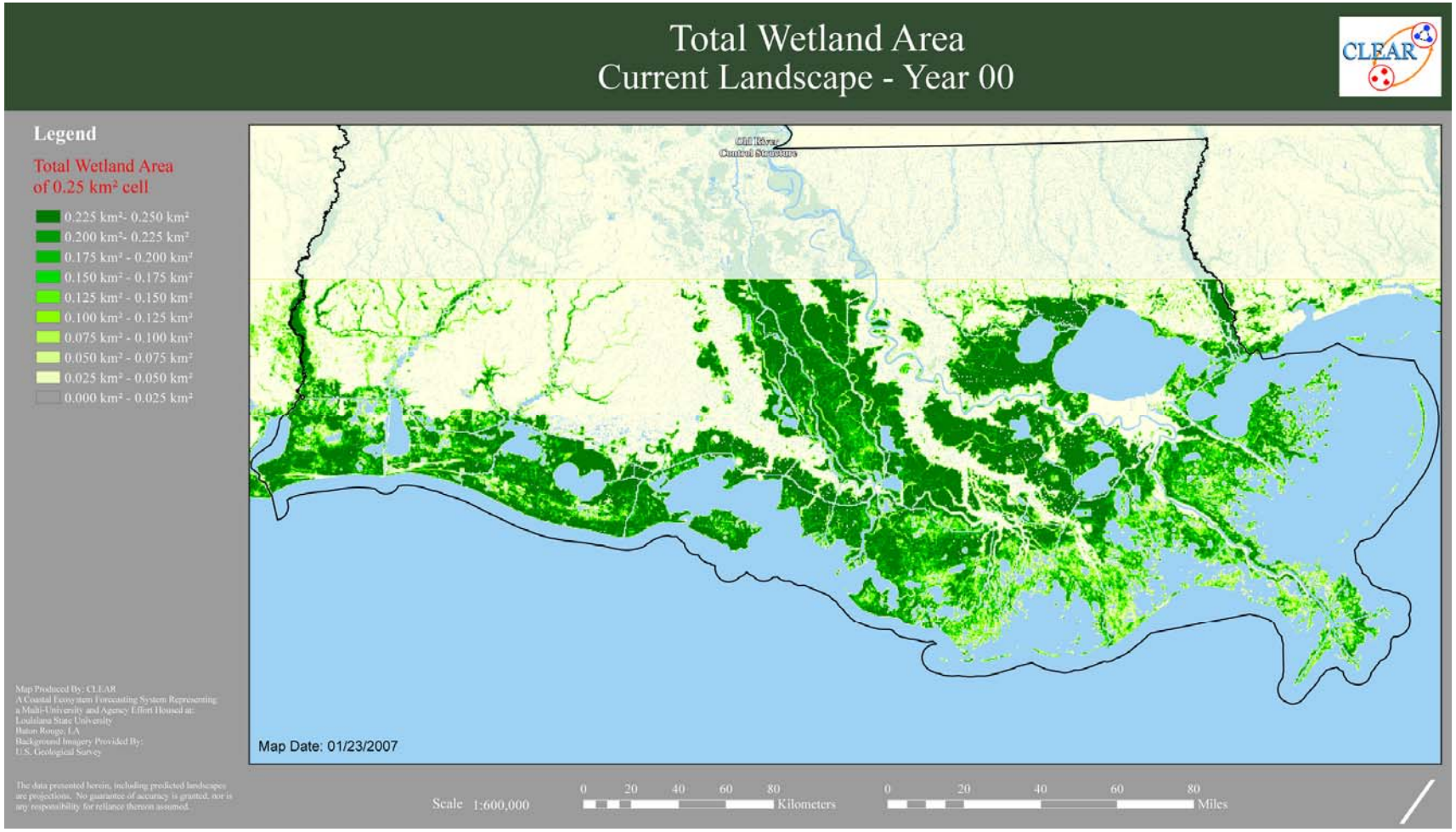


Figure 5.3. Total wetland area at Year 0.

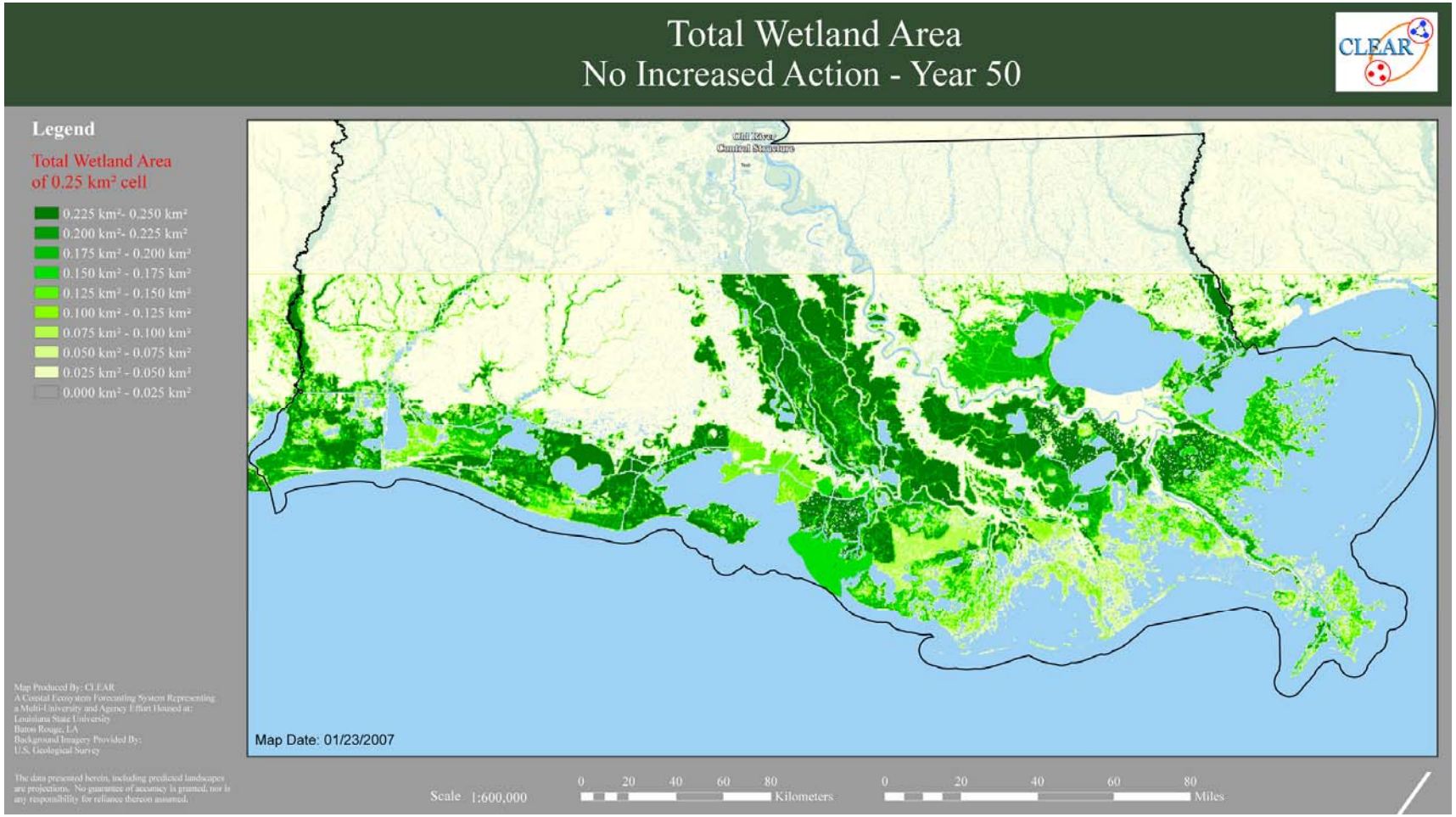


Figure 5.4. Total wetland area at Year 50 under a no increased action scenario.

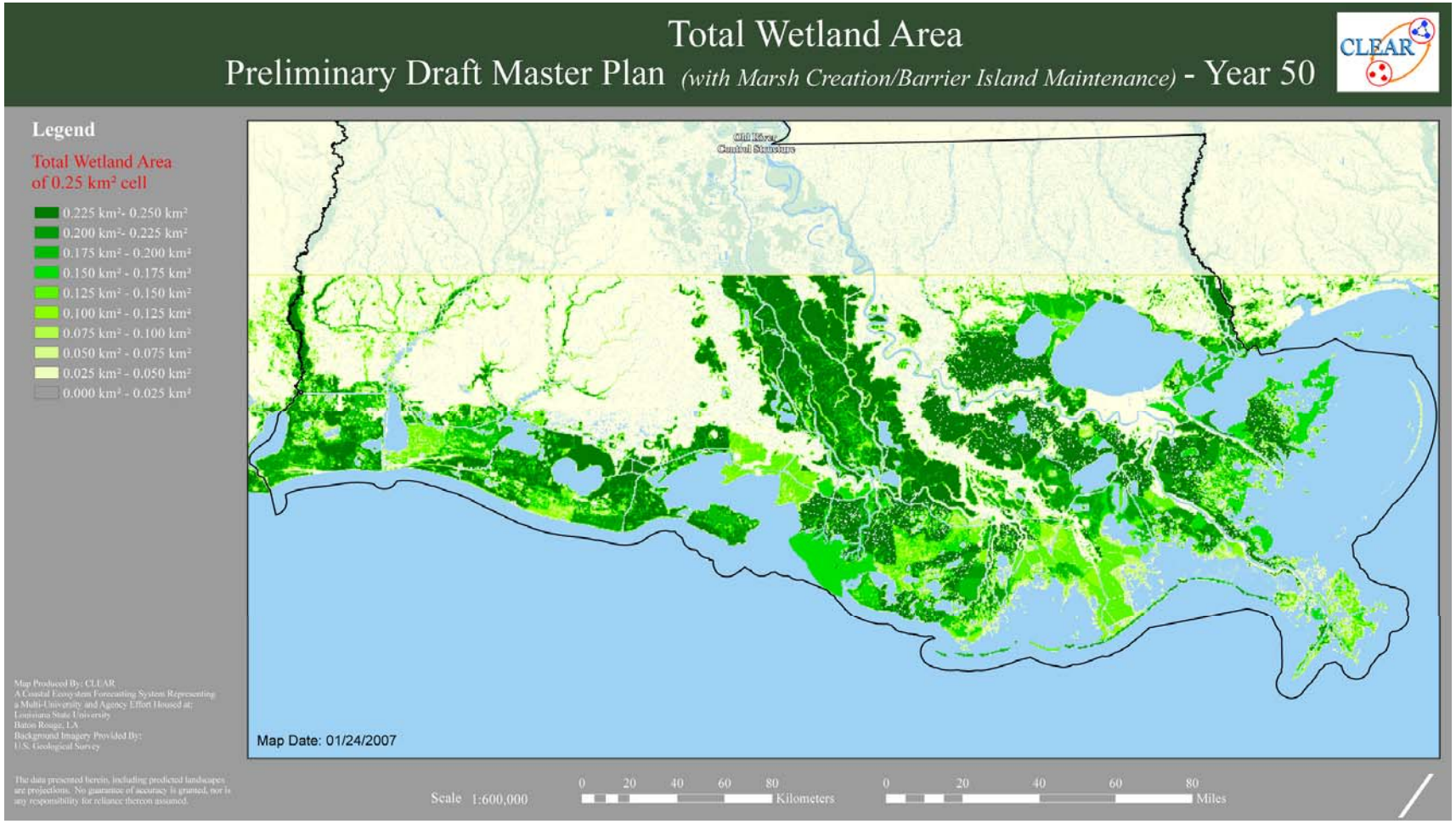


Figure 5.5. Total wetland area at Year 50 under a scenario containing the suite of projects proposed by the Louisiana CPRA IPT PDMP.

### 5.4.2 Summary Statistics

Total wetland area and wetland change is also presented in the form of summary statistics for a 50 year simulation under both an NIA and e PMDP scenario. Wetland area is presented in units of square kilometers ($km^2$), and wetland change is presented as a rate in units of square kilometers ($km^2$). In addition, the change in rate at three different time steps (year 0 to 10, year 40 to 50, and year 0 to 50), and the percent change this represents, is provided at the coast wide (Table 2), planning unit (Table 3), and ecosystem unit (Table 4) scales.

The following list is a key to the first column of each wetland area / change table:

*Cw = coast wide*
*Pl = planning unit*
*Eu = ecosystem unit*
*Area = entire area in the CLEAR model domain*
*Upl = area of uplands*
*Wetland = area of wetlands*
*Wetland 00 = total wetland area at year 0 ($km^2$)*
*Wetland 05 = total wetland area at year 5 ($km^2$)*
*Wetland 10 = total wetland area at year 10 ($km^2$)*
*Wetland 15 = total wetland area at year 15 ($km^2$)*
*Wetland 20 = total wetland area at year 20 ($km^2$)*
*Wetland 25 = total wetland area at year 25 ($km^2$)*
*Wetland 30 = total wetland area at year 30 ($km^2$)*
*Wetland 35 = total wetland area at year 35 ($km^2$)*
*Wetland 40 = total wetland area at year 40 ($km^2$)*
*Wetland 45 = total wetland area at year 45 ($km^2$)*
*Wetland 50 = total wetland area at year 50 ($km^2$)*
*ch_0_10 = amount of wetland area change between year 0 to year 10 ($km^2$)*
*ch_40_50 = amount of wetland area change between year 40 to year 50 ($km^2$)*
*ch_0_50 = amount of wetland area change between year 0 to year 50 ($km^2$)*
*ch_0_10 (%) = percent of wetland area change between year 0 and year 10 (%)*
*ch_40_50 (%) = percent of wetland area change between year 40 and year 50 (%)*
*ch_0_50 (%) = percent of wetland area change between year 0 and year 50 (%)*

### 5.4.2.1 Coastwide land change summary.

| Total Wetland Area Inside Louisiana Coastal Zone: | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Planning Unit Boundaries (excluding fastlands) | | | | | | | | |
| Unit of Measure | Square Kilometers | | | Square Miles | | | Acres | |
| Scenario | NIA | PDMP | | NIA | PDMP | | NIA | PDMP |
| cw_wetland00 | 13,466 | 13,466 | | 5,199 | 5,199 | | 3,327,348 | 3,327,348 |
| cw_wetland05 | 13,175 | 14,135 | | 5,087 | 5,458 | | 3,255,651 | 3,492,841 |
| cw_wetland10 | 12,915 | 13,993 | | 4,986 | 5,403 | | 3,191,300 | 3,457,742 |
| cw_wetland15 | 12,699 | 13,900 | | 4,903 | 5,367 | | 3,137,959 | 3,434,774 |
| cw_wetland20 | 12,498 | 13,813 | | 4,826 | 5,333 | | 3,088,302 | 3,413,243 |
| cw_wetland25 | 12,300 | 13,875 | | 4,749 | 5,357 | | 3,039,445 | 3,428,483 |
| cw_wetland30 | 12,111 | 13,756 | | 4,676 | 5,311 | | 2,992,523 | 3,399,070 |
| cw_wetland35 | 11,935 | 13,645 | | 4,608 | 5,268 | | 2,949,023 | 3,371,782 |
| cw_wetland40 | 11,782 | 13,574 | | 4,549 | 5,241 | | 2,911,447 | 3,354,060 |
| cw_wetland45 | 11,639 | 13,511 | | 4,494 | 5,217 | | 2,875,981 | 3,338,519 |
| cw_wetland50 | 11,489 | 13,431 | | 4,436 | 5,186 | | 2,838,854 | 3,318,737 |
| | | | | | | | | |
| cw_ch_0_10 | -551 | 528 | | -213 | 204 | | -136,047 | 130,394 |
| cw_ch_40_50 | -294 | -143 | | -113 | -55 | | -72,593 | -35,323 |
| cw_ch_0_50 | -1,977 | -35 | | -763 | -13 | | -488,494 | -8,610 |
| | | | | | | | | |
| cw_ch_0_10 (%) | -4.1 | 3.9 | | -4.1 | 3.9 | | -4.1 | 3.9 |
| cw_ch_40_50 (%) | -2.5 | -1.1 | | -2.5 | -1.1 | | -2.5 | -1.1 |
| cw_ch_0_50 (%) | -14.7 | -0.3 | | -14.7 | -0.3 | | -14.7 | -0.3 |

### 5.4.2.2. Planning unit land change summary.

| Planning Unit Land Change Summary (square kilometers) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Planning Unit** | **PU 1** | | **PU 2** | | **PU 3a** | | **PU 3b** | | **PU 4** | |
| **Scenario** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** |
| pl_wetland00 | 3,093 | 3,093 | 2,673 | 2,673 | 1,961 | 1,961 | 2,600 | 2,600 | 3,138 | 3,138 |
| pl_wetland05 | 3,039 | 3,261 | 2,605 | 2,864 | 1,899 | 2,193 | 2,537 | 2,610 | 3,095 | 3,207 |
| pl_wetland10 | 2,988 | 3,255 | 2,542 | 2,820 | 1,842 | 2,160 | 2,489 | 2,594 | 3,055 | 3,164 |
| pl_wetland15 | 2,941 | 3,263 | 2,484 | 2,779 | 1,788 | 2,128 | 2,470 | 2,608 | 3,016 | 3,122 |
| pl_wetland20 | 2,894 | 3,265 | 2,430 | 2,745 | 1,738 | 2,100 | 2,457 | 2,620 | 2,979 | 3,083 |
| pl_wetland25 | 2,847 | 3,238 | 2,380 | 2,806 | 1,692 | 2,150 | 2,438 | 2,617 | 2,943 | 3,064 |
| pl_wetland30 | 2,802 | 3,228 | 2,332 | 2,762 | 1,648 | 2,119 | 2,419 | 2,621 | 2,909 | 3,025 |
| pl_wetland35 | 2,758 | 3,220 | 2,288 | 2,722 | 1,608 | 2,088 | 2,405 | 2,626 | 2,876 | 2,989 |
| pl_wetland40 | 2,717 | 3,219 | 2,252 | 2,702 | 1,570 | 2,062 | 2,400 | 2,635 | 2,844 | 2,955 |
| pl_wetland45 | 2,676 | 3,219 | 2,216 | 2,677 | 1,534 | 2,044 | 2,399 | 2,649 | 2,814 | 2,922 |
| pl_wetland50 | 2,635 | 3,219 | 2,178 | 2,645 | 1,500 | 2,021 | 2,391 | 2,656 | 2,784 | 2,890 |
| | | | | | | | | | | |
| pl_ch_0_10 | -105 | 162 | -131 | 147 | -120 | 199 | -112 | -6 | -83 | 26 |
| pl_ch_40_50 | -82 | 0 | -74 | -58 | -69 | -42 | -9 | 21 | -60 | -64 |
| pl_ch_0_50 | -458 | 125 | -495 | -28 | -461 | 59 | -209 | 56 | -353 | -247 |
| | | | | | | | | | | |
| pl_ch_0_10 (%) | -3.4 | 5.2 | -4.9 | 5.5 | -6.1 | 10.1 | -4.3 | -0.2 | -2.7 | 0.8 |
| pl_ch_40_50 (%) | -3.0 | 0.0 | -3.3 | -2.1 | -4.4 | -2.0 | -0.4 | 0.8 | -2.1 | -2.2 |
| pl_ch_0_50 (%) | -14.8 | 4.1 | -18.5 | -1.1 | -23.5 | 3.0 | -8.0 | 2.2 | -11.3 | -7.9 |

### 5.4.2.3 Ecosystem Unit Land Change Summary

| Ecosystem Unit Land Change Summary | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ecosystem Unit** | **EU 1-1** | | **EU 1-2** | | **EU 1-3** | | **EU 1-4** | | **EU 1-5** | | **EU 1-6** | | **EU 1-7** | |
| **Scenario** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** |
| eu_wetland00 | 1260 | 1260 | 121 | 121 | 127 | 127 | 55 | 55 | 93 | 93 | 362 | 362 | 443 | 443 |
| eu_wetland05 | 1222 | 1246 | 121 | 126 | 125 | 143 | 54 | 70 | 93 | 104 | 373 | 391 | 438 | 455 |
| eu_wetland10 | 1186 | 1232 | 120 | 126 | 125 | 143 | 53 | 70 | 92 | 104 | 383 | 406 | 433 | 460 |
| eu_wetland15 | 1150 | 1219 | 120 | 125 | 126 | 144 | 51 | 70 | 92 | 104 | 394 | 421 | 429 | 478 |
| eu_wetland20 | 1116 | 1205 | 119 | 125 | 126 | 144 | 50 | 73 | 91 | 104 | 400 | 431 | 427 | 491 |
| eu_wetland25 | 1083 | 1192 | 119 | 124 | 127 | 138 | 49 | 72 | 91 | 108 | 406 | 419 | 425 | 494 |
| eu_wetland30 | 1052 | 1180 | 118 | 123 | 127 | 136 | 48 | 73 | 91 | 108 | 411 | 428 | 422 | 498 |
| eu_wetland35 | 1021 | 1168 | 118 | 123 | 127 | 137 | 48 | 74 | 90 | 107 | 416 | 437 | 420 | 502 |
| eu_wetland40 | 992 | 1156 | 117 | 122 | 128 | 137 | 47 | 77 | 90 | 107 | 419 | 446 | 419 | 511 |
| eu_wetland45 | 963 | 1145 | 117 | 122 | 128 | 137 | 46 | 79 | 90 | 106 | 423 | 454 | 418 | 522 |
| eu_wetland50 | 936 | 1134 | 116 | 121 | 128 | 138 | 45 | 80 | 89 | 106 | 426 | 462 | 416 | 532 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 | -75 | -28 | -1 | 4 | -2 | 16 | -2 | 15 | -1 | 11 | 21 | 45 | -9 | 18 |
| eu_ch_40_50 | -56 | -22 | -1 | -1 | 1 | 1 | -2 | 4 | -1 | -1 | 6 | 16 | -3 | 21 |
| eu_ch_0_50 | -325 | -127 | -5 | 0 | 1 | 11 | -10 | 26 | -4 | 13 | 64 | 100 | -26 | 90 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 (%) | -5.9 | -2.2 | -0.8 | 3.6 | -1.2 | 12.9 | -3.9 | 28.2 | -0.6 | 12.3 | 5.8 | 12.3 | -2.1 | 4.0 |
| eu_ch_40_50 (%) | -5.6 | -1.9 | -0.8 | -0.8 | 0.5 | 0.6 | -3.9 | 4.6 | -0.9 | -1.0 | 1.5 | 3.6 | -0.7 | 4.1 |
| eu_ch_0_50 (%) | -25.8 | -10.0 | -4.1 | -0.1 | 1.0 | 8.5 | -18.1 | 46.7 | -3.9 | 13.8 | 17.6 | 27.7 | -5.9 | 20.3 |

| Ecosystem Unit Land Change Summary | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ecosystem Unit** | **EU 1-8** | | **EU 1-9** | | **EU 1-10** | | **EU 2-1** | | **EU 2-2** | | **EU 2-3** | | **EU 2-4** | |
| **Scenario** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** |
| eu_wetland00 | 390 | 390 | 24 | 24 | 218 | 218 | 945 | 945 | 599 | 599 | 273 | 273 | 683 | 683 |
| eu_wetland05 | 384 | 494 | 22 | 22 | 209 | 209 | 941 | 956 | 595 | 595 | 267 | 282 | 641 | 836 |
| eu_wetland10 | 377 | 494 | 19 | 19 | 200 | 200 | 937 | 963 | 590 | 591 | 262 | 281 | 603 | 802 |
| eu_wetland15 | 371 | 494 | 17 | 17 | 191 | 191 | 932 | 969 | 585 | 588 | 258 | 279 | 567 | 771 |
| eu_wetland20 | 365 | 494 | 15 | 15 | 183 | 183 | 927 | 973 | 581 | 584 | 253 | 278 | 534 | 743 |
| eu_wetland25 | 358 | 503 | 14 | 14 | 176 | 176 | 922 | 977 | 576 | 580 | 249 | 274 | 504 | 814 |
| eu_wetland30 | 352 | 502 | 12 | 12 | 168 | 168 | 917 | 979 | 570 | 575 | 245 | 272 | 476 | 782 |
| eu_wetland35 | 346 | 501 | 11 | 11 | 161 | 161 | 912 | 981 | 565 | 571 | 241 | 270 | 450 | 753 |
| eu_wetland40 | 340 | 499 | 10 | 10 | 155 | 155 | 907 | 983 | 561 | 567 | 237 | 268 | 426 | 727 |
| eu_wetland45 | 335 | 498 | 8 | 8 | 148 | 148 | 902 | 985 | 556 | 563 | 233 | 265 | 403 | 703 |
| eu_wetland50 | 329 | 496 | 8 | 8 | 142 | 142 | 897 | 986 | 551 | 558 | 230 | 263 | 382 | 680 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 | -13 | 104 | -5 | -5 | -18 | -18 | -9 | 18 | -9 | -7 | -10 | 8 | -80 | 119 |
| eu_ch_40_50 | -11 | -3 | -2 | -2 | -12 | -12 | -10 | 3 | -10 | -8 | -7 | -4 | -43 | -47 |
| eu_ch_0_50 | -61 | 106 | -17 | -17 | -76 | -76 | -48 | 41 | -48 | -41 | -43 | -9 | -301 | -2 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 (%) | -3.4 | 26.6 | -21.1 | -21.1 | -8.4 | -8.4 | -0.9 | 1.9 | -1.5 | -1.2 | -3.8 | 3.1 | -11.7 | 17.5 |
| eu_ch_40_50 (%) | -3.4 | -0.6 | -20.8 | -20.8 | -8.0 | -8.0 | -1.1 | 0.3 | -1.8 | -1.5 | -3.0 | -1.6 | -10.2 | -6.4 |
| eu_ch_0_50 (%) | -15.7 | 27.2 | -69.2 | -69.2 | -34.8 | -34.8 | -5.1 | 4.3 | -8.0 | -6.8 | -15.6 | -3.4 | -44.0 | -0.4 |

| Ecosystem Unit Land Change Summary | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ecosystem Unit** | **EU 2-5** | | **EU 2-6** | | **EU 3a-1** | | **EU 3a-2** | | **EU 3a-3** | | **EU 3a-4** | | **EU 3a-5** | |
| **Scenario** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** |
| eu_wetland00 | 79 | 79 | 95 | 95 | 712 | 712 | 214 | 214 | 83 | 83 | 469 | 469 | 362 | 362 |
| eu_wetland05 | 69 | 102 | 92 | 92 | 709 | 713 | 209 | 209 | 80 | 81 | 437 | 600 | 350 | 437 |
| eu_wetland10 | 60 | 92 | 90 | 90 | 705 | 713 | 205 | 205 | 77 | 80 | 408 | 575 | 339 | 438 |
| eu_wetland15 | 53 | 83 | 89 | 89 | 702 | 712 | 200 | 201 | 74 | 79 | 381 | 552 | 328 | 439 |
| eu_wetland20 | 47 | 80 | 88 | 88 | 699 | 712 | 196 | 197 | 72 | 77 | 357 | 531 | 318 | 441 |
| eu_wetland25 | 42 | 75 | 87 | 87 | 696 | 712 | 192 | 193 | 70 | 76 | 334 | 586 | 308 | 437 |
| eu_wetland30 | 38 | 68 | 86 | 86 | 694 | 711 | 188 | 189 | 68 | 75 | 313 | 563 | 298 | 439 |
| eu_wetland35 | 34 | 62 | 86 | 86 | 691 | 711 | 185 | 185 | 66 | 74 | 294 | 540 | 289 | 440 |
| eu_wetland40 | 31 | 68 | 90 | 90 | 689 | 710 | 181 | 182 | 64 | 73 | 276 | 520 | 280 | 442 |
| eu_wetland45 | 28 | 68 | 93 | 93 | 687 | 710 | 178 | 178 | 62 | 72 | 260 | 501 | 271 | 443 |
| eu_wetland50 | 26 | 65 | 92 | 92 | 685 | 710 | 174 | 175 | 60 | 70 | 245 | 483 | 263 | 445 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 | -18 | 13 | -5 | -5 | -7 | 0 | -9 | -9 | -6 | -2 | -61 | 106 | -23 | 76 |
| eu_ch_40_50 | -5 | -4 | 2 | 2 | -4 | -1 | -7 | -7 | -3 | -2 | -31 | -37 | -17 | 4 |
| eu_ch_0_50 | -53 | -14 | -3 | -3 | -28 | -3 | -40 | -39 | -22 | -12 | -224 | 14 | -99 | 83 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 (%) | -23.4 | 16.4 | -5.0 | -5.0 | -1.0 | 0.0 | -4.3 | -4.2 | -6.8 | -3.0 | -13.0 | 22.6 | -6.3 | 21.0 |
| eu_ch_40_50 (%) | -17.0 | -5.4 | 2.0 | 2.0 | -0.6 | -0.1 | -3.8 | -3.7 | -5.3 | -3.1 | -11.3 | -7.1 | -6.1 | 0.8 |
| eu_ch_0_50 (%) | -67.2 | -18.0 | -3.1 | -3.1 | -3.9 | -0.4 | -18.5 | -18.2 | -26.7 | -14.6 | -47.7 | 3.0 | -27.4 | 22.9 |

| Ecosystem Unit Land Change Summary | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ecosystem Unit** | **EU 3a-6** | | **EU 3a-7** | | **EU 3b-1** | | **EU 3b-2** | | **EU 3b-3** | | **EU 3b-4** | | **EU 3b-5** | |
| **Scenario** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** |
| eu_wetland00 | 17 | 17 | 104 | 104 | 226 | 226 | 772 | 772 | 132 | 132 | 245 | 245 | 54 | 54 |
| eu_wetland05 | 15 | 39 | 99 | 114 | 219 | 234 | 740 | 776 | 132 | 133 | 248 | 250 | 58 | 58 |
| eu_wetland10 | 14 | 38 | 94 | 112 | 212 | 232 | 711 | 776 | 132 | 133 | 250 | 252 | 72 | 71 |
| eu_wetland15 | 12 | 34 | 89 | 111 | 205 | 230 | 684 | 774 | 133 | 133 | 252 | 254 | 113 | 113 |
| eu_wetland20 | 11 | 33 | 85 | 109 | 200 | 229 | 659 | 770 | 133 | 133 | 254 | 256 | 155 | 155 |
| eu_wetland25 | 10 | 37 | 81 | 108 | 194 | 229 | 636 | 762 | 133 | 133 | 255 | 258 | 188 | 184 |
| eu_wetland30 | 9 | 36 | 77 | 107 | 188 | 227 | 615 | 757 | 133 | 133 | 256 | 259 | 218 | 217 |
| eu_wetland35 | 9 | 32 | 74 | 106 | 182 | 226 | 595 | 752 | 133 | 133 | 257 | 260 | 250 | 250 |
| eu_wetland40 | 8 | 31 | 71 | 105 | 177 | 225 | 576 | 747 | 133 | 133 | 257 | 261 | 289 | 285 |
| eu_wetland45 | 7 | 36 | 69 | 104 | 172 | 224 | 559 | 742 | 132 | 133 | 258 | 262 | 330 | 324 |
| eu_wetland50 | 7 | 34 | 66 | 103 | 167 | 223 | 544 | 737 | 132 | 133 | 259 | 263 | 360 | 355 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 | -3 | 20 | -11 | 8 | -14 | 6 | -61 | 4 | 0 | 1 | 5 | 7 | 19 | 18 |
| eu_ch_40_50 | -1 | 3 | -5 | -2 | -10 | -2 | -33 | -10 | 0 | 0 | 1 | 2 | 71 | 70 |
| eu_ch_0_50 | -11 | 17 | -38 | -1 | -59 | -3 | -228 | -35 | 0 | 1 | 14 | 17 | 306 | 301 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 (%) | -20.1 | 117.3 | -10.2 | 7.7 | -6.3 | 2.7 | -7.8 | 0.5 | 0.1 | 0.5 | 2.0 | 2.8 | 34.6 | 33.0 |
| eu_ch_40_50 (%) | -14.8 | 10.2 | -7.2 | -1.5 | -5.6 | -0.9 | -5.7 | -1.3 | -0.2 | -0.2 | 0.5 | 0.6 | 24.4 | 24.6 |
| eu_ch_0_50 (%) | -61.2 | 98.9 | -36.4 | -1.1 | -26.1 | -1.4 | -29.6 | -4.6 | 0.2 | 0.6 | 5.6 | 7.1 | 571.1 | 561.9 |

| Ecosystem Unit Land Change Summary | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ecosystem Unit** | **EU 3b-6** | | **EU 3b-7** | | **EU 3b-8** | | **EU 3b-9** | | **EU 4-1a** | | **EU 4-1b** | | **EU 4-1c** | |
| **Scenario** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** |
| eu_wetland00 | 236 | 236 | 3 | 3 | 695 | 695 | 238 | 238 | 213 | 213 | 499 | 499 | 213 | 213 |
| eu_wetland05 | 234 | 251 | 3 | 3 | 667 | 670 | 237 | 237 | 213 | 213 | 497 | 497 | 212 | 212 |
| eu_wetland10 | 232 | 249 | 3 | 3 | 640 | 643 | 236 | 236 | 213 | 213 | 494 | 494 | 211 | 211 |
| eu_wetland15 | 231 | 247 | 3 | 3 | 616 | 618 | 235 | 235 | 212 | 212 | 492 | 492 | 210 | 210 |
| eu_wetland20 | 229 | 246 | 3 | 3 | 592 | 595 | 234 | 234 | 212 | 212 | 490 | 490 | 209 | 209 |
| eu_wetland25 | 227 | 242 | 2 | 3 | 570 | 573 | 233 | 233 | 211 | 211 | 488 | 488 | 208 | 208 |
| eu_wetland30 | 225 | 240 | 2 | 3 | 550 | 553 | 232 | 232 | 211 | 211 | 486 | 486 | 207 | 207 |
| eu_wetland35 | 224 | 238 | 2 | 3 | 531 | 533 | 231 | 231 | 211 | 211 | 484 | 484 | 206 | 206 |
| eu_wetland40 | 222 | 236 | 2 | 3 | 513 | 515 | 230 | 230 | 210 | 210 | 482 | 482 | 205 | 205 |
| eu_wetland45 | 220 | 235 | 2 | 3 | 496 | 498 | 229 | 229 | 210 | 210 | 480 | 481 | 204 | 204 |
| eu_wetland50 | 219 | 233 | 2 | 3 | 480 | 483 | 228 | 228 | 210 | 210 | 479 | 479 | 203 | 203 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 | -4 | 13 | 0 | 0 | -55 | -52 | -2 | -2 | -1 | -1 | -4 | -4 | -2 | -2 |
| eu_ch_40_50 | -3 | -4 | 0 | 0 | -33 | -33 | -2 | -2 | -1 | -1 | -4 | -4 | -2 | -2 |
| eu_ch_0_50 | -17 | -3 | 0 | 0 | -215 | -213 | -9 | -9 | -4 | -4 | -20 | -20 | -11 | -11 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 (%) | -1.5 | 5.7 | -2.2 | 4.8 | -7.9 | -7.5 | -0.8 | -0.8 | -0.3 | -0.3 | -0.9 | -0.9 | -1.0 | -1.0 |
| eu_ch_40_50 (%) | -1.5 | -1.5 | -2.2 | -2.3 | -6.4 | -6.4 | -0.8 | -0.8 | -0.3 | -0.3 | -0.8 | -0.8 | -1.0 | -1.0 |
| eu_ch_0_50 (%) | -7.3 | -1.3 | -8.5 | -2.0 | -30.9 | -30.6 | -3.9 | -3.9 | -1.7 | -1.7 | -4.1 | -4.0 | -4.9 | -4.9 |

| Ecosystem Unit Land Change Summary | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ecosystem Unit** | **EU 4-1d** | | **EU 4-1e** | | **EU 4-1f** | | **EU 4-2a** | | **EU 4-2b** | | **EU 4-3a** | | **EU 4-3b** | |
| **Scenario** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** |
| eu_wetland00 | 120 | 120 | 197 | 197 | 94 | 94 | 311 | 311 | 184 | 184 | 69 | 69 | 146 | 146 |
| eu_wetland05 | 119 | 119 | 192 | 196 | 91 | 91 | 301 | 317 | 180 | 192 | 68 | 68 | 144 | 144 |
| eu_wetland10 | 117 | 117 | 188 | 191 | 89 | 89 | 291 | 307 | 177 | 187 | 66 | 66 | 142 | 142 |
| eu_wetland15 | 116 | 116 | 184 | 187 | 87 | 87 | 282 | 297 | 175 | 184 | 65 | 65 | 140 | 140 |
| eu_wetland20 | 115 | 115 | 179 | 183 | 85 | 85 | 273 | 288 | 172 | 181 | 64 | 64 | 138 | 138 |
| eu_wetland25 | 114 | 114 | 175 | 179 | 83 | 83 | 265 | 283 | 170 | 185 | 62 | 62 | 136 | 136 |
| eu_wetland30 | 112 | 112 | 171 | 175 | 81 | 81 | 258 | 274 | 168 | 181 | 61 | 61 | 135 | 135 |
| eu_wetland35 | 111 | 111 | 167 | 171 | 80 | 80 | 250 | 266 | 167 | 178 | 60 | 60 | 133 | 133 |
| eu_wetland40 | 110 | 110 | 163 | 167 | 78 | 78 | 243 | 259 | 165 | 175 | 59 | 59 | 131 | 131 |
| eu_wetland45 | 109 | 109 | 160 | 163 | 76 | 76 | 237 | 252 | 164 | 173 | 58 | 58 | 129 | 129 |
| eu_wetland50 | 107 | 107 | 156 | 159 | 75 | 75 | 231 | 246 | 163 | 172 | 57 | 57 | 128 | 128 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 | -3 | -3 | -9 | -6 | -5 | -5 | -20 | -4 | -7 | 4 | -3 | -3 | -4 | -4 |
| eu_ch_40_50 | -2 | -2 | -7 | -8 | -3 | -3 | -13 | -13 | -3 | -4 | -2 | -2 | -3 | -3 |
| eu_ch_0_50 | -13 | -13 | -41 | -38 | -19 | -19 | -80 | -65 | -21 | -12 | -12 | -12 | -18 | -18 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 (%) | -2.3 | -2.3 | -4.6 | -2.8 | -4.9 | -4.9 | -6.4 | -1.4 | -3.6 | 2.0 | -4.1 | -4.1 | -2.7 | -2.7 |
| eu_ch_40_50 (%) | -2.2 | -2.2 | -4.5 | -4.6 | -4.0 | -4.0 | -5.3 | -5.2 | -1.6 | -2.1 | -3.2 | -3.2 | -2.6 | -2.6 |
| eu_ch_0_50 (%) | -10.6 | -10.6 | -20.8 | -19.1 | -20.4 | -20.4 | -25.8 | -21.0 | -11.5 | -6.6 | -16.9 | -16.9 | -12.6 | -12.6 |

| Ecosystem Unit Land Change Summary | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ecosystem Unit** | **EU 4-3c** | | **EU 4-4a** | | **EU 4-4b** | | **EU 4-4c** | | **EU 4-4d** | | **EU 4-4e** | | **EU 4-4f** | |
| **Scenario** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** |
| eu_wetland00 | 1 | 1 | 26 | 26 | 168 | 168 | 10 | 10 | 125 | 125 | 129 | 129 | 42 | 42 |
| eu_wetland05 | 1 | 1 | 26 | 26 | 160 | 180 | 10 | 10 | 124 | 124 | 128 | 156 | 42 | 75 |
| eu_wetland10 | 1 | 1 | 25 | 25 | 153 | 171 | 10 | 10 | 124 | 124 | 127 | 155 | 42 | 75 |
| eu_wetland15 | 1 | 1 | 25 | 25 | 146 | 164 | 10 | 10 | 123 | 123 | 127 | 154 | 42 | 75 |
| eu_wetland20 | 1 | 1 | 25 | 25 | 140 | 156 | 10 | 10 | 122 | 122 | 126 | 154 | 41 | 75 |
| eu_wetland25 | 1 | 1 | 25 | 25 | 134 | 157 | 10 | 10 | 122 | 122 | 126 | 154 | 41 | 75 |
| eu_wetland30 | 1 | 1 | 24 | 24 | 128 | 150 | 10 | 10 | 121 | 121 | 125 | 153 | 41 | 75 |
| eu_wetland35 | 1 | 1 | 24 | 24 | 123 | 143 | 10 | 10 | 121 | 121 | 124 | 152 | 41 | 75 |
| eu_wetland40 | 1 | 1 | 24 | 24 | 118 | 137 | 10 | 10 | 120 | 120 | 124 | 152 | 41 | 75 |
| eu_wetland45 | 1 | 1 | 24 | 24 | 113 | 131 | 10 | 10 | 119 | 119 | 123 | 151 | 41 | 74 |
| eu_wetland50 | 1 | 1 | 23 | 23 | 108 | 126 | 9 | 9 | 119 | 119 | 123 | 150 | 41 | 74 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 | 0 | 0 | -1 | -1 | -15 | 3 | 0 | 0 | -1 | -1 | -1 | 26 | 0 | 33 |
| eu_ch_40_50 | 0 | 0 | -1 | -1 | -9 | -11 | 0 | 0 | -1 | -1 | -1 | -1 | 0 | 0 |
| eu_ch_0_50 | 0 | 0 | -3 | -3 | -60 | -42 | 0 | 0 | -6 | -6 | -6 | 22 | -1 | 32 |
| | | | | | | | | | | | | | | |
| eu_ch_0_10 (%) | 0.0 | 0.0 | -2.2 | -2.2 | -8.9 | 2.1 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | 20.6 | -0.7 | 79.3 |
| eu_ch_40_50 (%) | 0.0 | 0.0 | -2.1 | -2.1 | -7.9 | -8.2 | -0.9 | -0.9 | -1.0 | -1.0 | -1.0 | -1.0 | -0.7 | -0.6 |
| eu_ch_0_50 (%) | 0.0 | 0.0 | -10.4 | -10.4 | -35.4 | -25.2 | -4.5 | -4.5 | -4.9 | -4.9 | -4.7 | 16.9 | -3.3 | 76.6 |

| Ecosystem Unit Land Change Summary | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ecosystem Unit** | **EU 4-4g** | | **EU 4-4h** | | **EU 4-4i** | | **EU 4-4j** | | **EU 4-4k** | | **EU 4-4l** | |
| **Scenario** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** | **NIA** | **PDMP** |
| eu_wetland00 | 183 | 183 | 50 | 50 | 121 | 121 | 76 | 76 | 161 | 161 | 1 | 1 |
| eu_wetland05 | 181 | 181 | 50 | 50 | 120 | 120 | 76 | 76 | 160 | 160 | 1 | 1 |
| eu_wetland10 | 180 | 180 | 50 | 50 | 119 | 120 | 75 | 75 | 159 | 159 | 1 | 1 |
| eu_wetland15 | 178 | 178 | 50 | 50 | 119 | 119 | 75 | 75 | 157 | 157 | 1 | 1 |
| eu_wetland20 | 176 | 176 | 50 | 50 | 118 | 118 | 74 | 74 | 156 | 156 | 1 | 1 |
| eu_wetland25 | 175 | 175 | 50 | 50 | 118 | 118 | 74 | 74 | 155 | 155 | 1 | 1 |
| eu_wetland30 | 173 | 173 | 50 | 50 | 117 | 117 | 74 | 74 | 154 | 154 | 1 | 1 |
| eu_wetland35 | 172 | 172 | 49 | 49 | 116 | 117 | 73 | 73 | 152 | 152 | 1 | 1 |
| eu_wetland40 | 170 | 170 | 49 | 49 | 116 | 116 | 73 | 73 | 151 | 151 | 1 | 1 |
| eu_wetland45 | 169 | 169 | 49 | 49 | 115 | 115 | 73 | 73 | 150 | 150 | 1 | 1 |
| eu_wetland50 | 167 | 167 | 49 | 49 | 115 | 115 | 72 | 72 | 149 | 149 | 1 | 1 |
| | | | | | | | | | | | | |
| eu_ch_0_10 | -3 | -3 | 0 | 0 | -1 | -1 | -1 | -1 | -3 | -3 | 0 | 0 |
| eu_ch_40_50 | -3 | -3 | 0 | 0 | -1 | -1 | -1 | -1 | -2 | -2 | 0 | 0 |
| eu_ch_0_50 | -16 | -16 | 0 | 0 | -6 | -6 | -4 | -4 | -12 | -12 | 0 | 0 |
| | | | | | | | | | | | | |
| eu_ch_0_10 (%) | -1.8 | -1.8 | -0.1 | -0.1 | -1.0 | -0.9 | -1.0 | -1.0 | -1.6 | -1.6 | -0.3 | -0.3 |
| eu_ch_40_50 (%) | -1.8 | -1.8 | -0.1 | -0.1 | -1.0 | -1.0 | -1.0 | -1.0 | -1.6 | -1.6 | -0.3 | -0.3 |
| eu_ch_0_50 (%) | -8.7 | -8.7 | -0.4 | -0.4 | -5.0 | -5.0 | -5.0 | -5.0 | -7.7 | -7.7 | -1.5 | -1.5 |